

Section 9.0

Construction of Ways and Installation of Utilities

9.0 General

- a) The developer shall meet with the Highway, Water District and Sewer Departments, and the Board's consulting engineer and Town Planner prior to commencement of any road construction to discuss the sequence of road construction and the Town's expectation of how the work will be performed.
- b) No water main, drain, catch basins, utility, road sub grade or surface or any other improvements shall be backfilled, paved over or otherwise permanently covered until inspected by the Highway Superintendent and/or the Board's Agent who shall confer with the Superintendent of the Sewer Department and the Water District in the field at the site, and found to be in conformance with these Rules and Regulations and applicable Town of Raynham specifications.
- c) The sub divider shall notify in writing the designated inspector at least forty-eight (48) hours prior to the time of each required inspection. The sub divider shall provide safe and convenient access to all parts of work to be inspected.
- d) The contractor is required to perform all work in compliance with the approved definitive plan and Massachusetts Highway Department standards. If non-compliant work and/or unfavorable work conditions are observed, the inspector may then recommend to the Highway Superintendent that all work cease for good cause. The Highway Superintendent may then issue a work stoppage order. Failure to comply with work stoppage will forfeit the opportunity for the developer to seek street acceptance as a public way. No additional obligation to the town or liability for that stoppage shall be incurred.
- e) No work shall be approved unless it has been inspected, and any work covered before being inspected shall be uncovered and inspected at the owner's expense.
- f) No paving activities shall take place from November 15th to April 15th, except for maintenance. The Highway Superintendent may approve waivers from this restriction.

9.1 Water Facilities

The Board shall require that water mains and appurtenances, such as hydrants, valves and all service connections, be installed to conform to specifications of the respective water supplying agency or district. Water facilities shall be inspected by the respective water-supplying agency or district.

9.2 Sanitary Sewer

The Board shall require all sewer mains and appurtenances, such as manholes, pump stations and all service connections, be installed to conform to specifications of the Sewer Commission. The Sewer Commission shall inspect sanitary sewer installation.

9.3 Other Utilities

- a) All lots within the subdivision shall be provided with other necessary utilities such as but not limited to, gas, electricity, telephone and Cable TV. Service connections shall be installed from

the main utility to the exterior street line of each individual lot as shown in the approved Definitive Plan.

- b) Electrical, telephone conduits, cable TV and related equipment in streets shall be placed underground, unless the Board determines that such placement is not feasible or in the best interest of the Town.
- c) Each utility system shall be laid out in conformance with the requirements of the respective utilities and the Raynham Highway Superintendent and/or Board's Agent.
- d) Backfilling of utilities see details in the Appendix.
- e) All traffic signs, street signs, utility poles, etc. shall be located not more than eighteen (18) inches from the gutter line or face of curb.
- f) Where feasible, all gas main service connections shall be located adjacent to water service connections. Where feasible, electric and telephone service shall be located at side lot lines alternating with water and gas service.

9.4 Sewerage:

Where public sewer is available or has been approved by Town meeting or is proposed to be within 2,000 feet of the subdivision, then at the sole discretion of the Board, sewer and sewer lines shall be designed and installed by the developer to connect to public sewer to serve the subdivision. The minimum diameter of sewers shall be in accordance with the requirements of the sewer commission.

9.5 Fire Alarm (To be deleted if approved by the Fire Chief)

9.6 Reserve for future use.

9.7 Drainage:

- a) Pipe, pipe sizes, manhole and catch basin locations and elevations shall be in accordance with the Definitive Plan.
- b) Installation of catch basins, manholes, head walls retaining walls and pipe shall be in accordance with MassHighway the Massachusetts Department of Public Works Standard Specifications and Details approved by the Highway Superintendent.
- c) Backfilling shall consist of suitable materials uniformly distributed and compacted. (See Appendix) When suitable backfilling cannot be obtained from the excavation, the filling shall consist of satisfactory borrow. Both sides should be thoroughly tamped. The contractor shall place no backfilling on masonry or other structure without the specific prior approval by the Highway Superintendent or the Board's Agent. It shall be formed of successive layers not more than twelve (12) inches in depth, each layer being thoroughly compacted before the successive layer is placed.
- d) All street drain grates shall be of the checkered type and approved by the Highway Superintendent (See Appendix)
- e) The pipe trench shall be excavated to the required line and grade shown on the approved plan including earth, boulders and ledge. This trench width shall apply from the top of the pipe to the

bottom of the trench. Above the top of the pipe the trench may be as wide as necessary to properly install the pipe. Trenches with side slopes steeper than the natural angle of repose of the soil shall be sheeted as necessary to avoid cave-ins and sloughing. All trenching shall be performed in accordance with Occupational Safety and Health Administration (OSHA) as most recently amended.

- f) All excavation shall be properly barricaded and lighted at night where they are close to pedestrian or vehicular traffic.
- g) The roadways shall be graded and compacted to sub-grade before any utility activity begins. If any obstructions prohibit adequate fill compaction then flowable fill shall be used to obtain desirable results.
- h) Soil, which is considered to be unstable by the Board or its Agent or Consulting Engineer, shall be removed to a depth of not less than two (2) feet below the bottom of the pipe and replaced with compacted sand and gravel to the bottom of the pipe. Unstable soil or other excavated material shall be disposed of off-site. When PVC pipe is used the bedding shall be backfilled to the spring-line of the pipe.
- i) Pipe shall be laid starting with the downstream end. Grade boards or other approved devices shall be provided to insure that the pipe is laid true to line and grade. Reference benchmarks shall be clearly marked to enable the Inspector to quickly check the grade and invert elevations. The joints of all pipes shall be filled with mortar composed of one part Portland Cement to three (3) parts clean sharp sand. O-ring pipe is acceptable. Lime may be added up to twenty-five (25) percent of the cement and enough water to make a workable mix. The downstream pipe shall be laid with groove or bell end facing upstream in the proper position, and a dab of mortar shall be placed in the bell or groove. The spigot or tongue end shall be placed in the bell or groove, such that inverts match, and the peripheral space shall be filled with stiff mortar. All mortar squeezed out in the inside of the pipe shall be removed before it sets.
- j) No work shall be approved unless it has been inspected, and any work covered before being inspected shall be uncovered and inspected at the owner's expense.
- k) After the pipe has been laid and inspected, the trench shall be backfilled. The space under the pipe haunches shall be carefully filled with selected material, free from stones or frozen earth, and compacted carefully to prevent the pipe from moving. The layer of backfill up to twelve (12) inches over the top of the pipe shall also be of selected material free from stones and frozen earth, well compacted. The remainder of the trench shall be backfilled in twelve (12) inch layers except as noted below, and each layer shall be fully compacted in an approved manner. Under roads or other traffic areas the trench shall be backfilled in six (6) inch layers with each layer compacted to the density of the surrounding soil. Pavement and base course shall match those removed. No old pavement shall be backfilled into trenches. When, in the opinion of the Board or its Agent or Consultant Engineer, the excavation is deep enough to warrant it, temporary pavement shall be provided as directed. The contractor as directed by the Board or its Agent or Consultant Engineer shall leave Trenches not in pavement in mounded condition.
- l) Concrete or Field Stone masonry headwalls (See Appendix) shall be provided at both ends of culverts and the discharge ends of storm drains.
- m) After the drainage system (pipe, manholes, catch basins and other drainage structures) is installed, but before it is covered, the inspector shall enter each catch basin to sight drainage pipe runs to

adjacent basins. Any defective runs shall be corrected before approval is given. The purpose of this inspection is to ensure that the lines have been installed correctly.

9.8 Street and Roadway

- a) The entire layout plus three (3) feet on each side shall be cleared of all stumps, brush, roots, boulders, or like material and all trees not intended for preservation. Upon completion of clearing and grubbing activities the right-of-way line, points of tangency and all lot corners shall be staked and maintained until binder installation.
- b) All unsuitable materials such as but not limited to: clay, loam and silt shall be removed from the roadway areas of each street to a suitable depth for roadway construction to one (1) foot beyond gutter line. The contractor, after as determination by the Highway Superintendent or Designated Agent shall then replace the removed material with suitable material. (See Typical Roadway Cross-Section Appendix III).
- c) All roadways shall be brought to a grade of nineteen (19) inches below finished roadway and inspected before road construction continues. Test holes and sieve analysis shall be conducted every two-hundred (200) feet or as directed by the Highway Superintendent or Designated Agent. The Highway Superintendent may require a thicker base after inspecting and testing the sub-base material. If the sub-base material is not sufficient to support the roadway, the Highway Superintendent or Designated Agent, will require increased cross-section to meet the loading requirements.
- d) Sieve analysis shall be performed on the roadway gravel and the dense graded crushed stone before delivery to the site. Final approval will be based on sieve analysis and compaction test conducted on the material in place. Sieve analysis and compaction test shall be conducted on in place material every two-hundred (200) foot or as directed by the Highway Superintendent or Designated Agent. See typical roadway cross-section. Completion of this work shall be done within one (1) year from filing of the performance guarantee, or once work has been started, whichever event occurs first. The use of approved recycled materials will be allowed subject to Highway Superintendent approval. The developer shall notify the Highway Superintendent or Designated Agent before each phase of work is started.
- e) The completed gravel surface shall be compacted until a firm even surface true to lines and grades is obtained. Unsuitable sub-base material that does not meet sieve and compaction requirements shall be removed and replaced with suitable material at the required density. To make the determination the Highway Superintendent and/or the Board's Agent may require compaction test(s), soil tests and/or material analysis to verify density all testing cost, etc. to be paid by the Developer.
- f) After the gravel course has been approved by the Highway Superintendent or Designated Agent then the paving operations may proceed. Paving shall permitted when the ambient temperature is forty (40) degrees Fahrenheit and rising. (See Appendix III for Typical Roadway Cross Section).
- g) Grades and Stakes - The subdivider shall provide an original survey showing the base line or centerline of construction as well as the location of stakes at fifty (50) foot intervals for the line and grade of streets, utilities and culverts and for other major structures. Grade stakes shall be maintained until binder course is in place and inspected by the Highway Superintendent or his agent. Grades shall be set such that a tying line may be strung from stake to stake at the same station with the string representing a level line from which grades may be checked. The

subdivider shall furnish and set all stakes for the construction and grade of roadways utilities, culverts and other structures.

9.9 Curbing

- a) Vertical granite curbing shall be installed on all streets; see detail for installation. (See Appendix)
- b) Granite inlets shall be installed at all catch basins with curb throat inlets meeting Mass Spec M9.04.5 (or successor) with six (6) foot long transition stones on each end of inlet.
- c) The ends of curbing are to be flared down where the proposed curbing does not abut an existing curbing. The curbing for wheelchair ramps shall be constructed at all intersections in accordance with the wheel chair ramp detail design standards of MHD and American with Disabilities Act (ADA) requirements at the time of installation.

9.10 Sidewalks

- a) Bituminous concrete sidewalks of not less than five (5) feet in width shall be constructed on both sides of the street. (See Appendix) Sidewalks shall have a minimum of a five (5) foot grass strip between berm curbing and sidewalk and shall not be encumbered or obstructed in any way and must be continuous in nature.
- b) Bituminous Concrete Sidewalk shall be constructed in accordance with the sidewalk detail. It shall have a pitch of $\frac{1}{4}$ of an inch per foot to provide for proper drainage. Bituminous concrete shall be laid in two courses, two (2) inch binder and one and a half (1.5) inch finish course. A sidewalk that crosses a driveway shall be constructed in accordance with the typical driveway detail. (See Appendix)
- c) All sidewalks shall have wheelchair ramps at the time of construction in accordance with ADA standards as most recently amended. The owners shall be responsible for all costs associated with changes that are necessary to meet the current laws before the Town has fully accepted ownership of the property or ways.

9.11 Driveway Opening/Curb-cuts

Driveway aprons shall be located on definitive plans. All above ground utilities including street trees shall be a minimum of ten (10) feet from the driveway. All changes in width and location of the driveway openings shall require a curb-cut permit from the Highway Superintendent. Prior to and after acceptance, all approved changes shall be shown on the house as-built plan and the roadway as-built plan.

9.12 Bikeways

Where the subdivision location is such that it may become part of a Town bikeway system or where the size of the subdivision, expected traffic flow, or expected bicycle use within the subdivision, makes bikeway provisions necessary, the Board may require the developer to make provisions in the design, layout and construction of the subdivision to provide for the safe and convenient use of bicycles. These provisions may include, but may not be limited to, the following: warning or information signs along the bike route, bikeway pavement stencils, a special line on a roadway marked off by a painted line. In certain cases, the Board may permit sidewalks to be used as bikeways. Under these circumstances, one of the two required sidewalks may be used as a bikeway. The sidewalk may be designed as a bikeway if additional pavement is provided as required by the Board. Where sidewalks are used as bikeways, curb

cuts and ramps shall be required. Property adjacent to an existing public way that is part of the town's bikeway system shall reserve an easement for the bikeway.

9.13 Monuments (Street Bounds)

- a) Monuments shall be required at all street intersections, at all points of change in direction or curvature of streets, and at a maximum intermediate distance of five hundred (500) feet, and at other points where, in the opinion of the Board, permanent monuments are necessary. Such monuments shall conform to the standards and specifications of the MassHighway M.D.P.W. and shall be set according to such specifications. Iron pins shall be installed to mark bounds until permanent monuments are installed. No permanent monuments shall be installed until all construction, which would destroy or disturb the monuments is completed.
- b) The As-built plan(s) shall contain certification by a Massachusetts Registered Land Surveyor that permanent monuments have been set as shown on said plan (s).

9.14 Street Signs and Street Names

Streets, which join and are in alignment with streets of abutting or neighboring properties, shall bear the same name. Names of new streets shall not duplicate or sound like the names of existing streets within the municipality and shall be subject to the approval of the Board and the Raynham Fire Chief. Street name signs shall be furnished and installed by the developer. The type, size, and location shall be subject to the approval of the Highway Superintendent. Temporary street name signs with letters 4 inches tall shall be erected at the time work is started in that portion of the subdivision and shall be replaced with permanent signs within 30 days of the application of finished roadway pavement.

9.15 Loam and Seed

Topsoil shall not be removed from the site until the Highway Superintendent approves such removal. Topsoil moved during construction shall be regarded and additional loam added where necessary in order to provide a permanent cover of not less than six (6) inches on all grass or planting strips, embankments, and all other areas cleared or otherwise disturbed by construction. The loam cover shall be shaped, and a permanent grass cover established on all disturbed areas. Washouts and sunken areas shall be redone. The Board shall approve all grass seed to conform to the 'Standard Specifications for Highways, Bridges, and Waterways of the Comm. of Mass., Dept. of Public Works.

9.16 Shade Trees

All subdivisions shall have shade trees planted every (40 feet) on each side of the street unless existing trees are to be preserved. The exact location of all shade trees, both existing and proposed shall be shown on the plan. The trees shall be staggered from one side of the street to the other. Trees shall be located a min. of 10 feet beyond the proposed sidewalk layout line. Each tree shall be a min. of 1 ½ inch caliper and of nursery stock quality. The Developer shall be responsible for maintaining the health of trees until two growing seasons after plantings, the as-built plans of the street are approved by the Board, or until the intended public ways are accepted at Town Meeting. The Board may require that surety be posted to replace shade trees that do not survive two growing seasons.

9.17 Cut and Fill

A subdivision roadway system shall have a balance of cuts and fills within the site for sub-grade elevations. Additional materials bought to the site to meet a specified standard is excluded from the balance site requirement. Removal of more than 1 cubic yard of material per linear foot of road shall require an earth removal permit. (earth removal bylaw)

9.18 Lot grading

Lot grading shall be shown on the definitive plan. Deviation from the lot grading shown on the definitive plan at the time of construction shall require approval from the Planning Board through the Highway Superintendent or his designated agent. The lot owner or signatory of the building permit shall pay the cost of this review.