

Article XV Construction Specifications
(MOVED FROM: APPENDIX.CONSTRUCTION SPECIFICATIONS)

A. Introduction

The purpose of these specifications is to establish standards to be followed by Developers and Contractors on any construction project within the Town of Tiverton. These standards shall govern roadwork, trenching, erosion control utility installations, inspections, procedures, and all other matters related to construction

B. General Construction Procedures and Requirements

The following procedures shall be followed by the developer, and by contractors under the direction of the developer, in the construction of any development, subdivision, or related improvements:

1. Construction Requirements

- a. Hours of construction activity are permitted only between 7:00 a.m. to 7:00 p.m. Machines shall not be left idling prior to or after this timeframe. No building, construction, removal of trees, or disturbance to the land may occur on a Sunday or a Holiday, as recognized by the State of Rhode Island, in any approved subdivision or development.
- b. No tree cutting, land clearing, or site grading, nor any infrastructure construction shall be permitted prior to Preliminary Plan approval, unless authorized by the Planning Board, and in accordance with an approved Soil Erosion and Sediment Control Plan (Town Ordinance Chapter 65). Once an application has been submitted to the Planning Board for a subdivision or development project, no building permits, nor any other pre-development construction, shall be granted until the final plan has been approved by the Planning Board and recorded in the Land Evidence Records.
- c. Proposed conservation lands and other sensitive features, such as historic stone walls and large specimen trees shall be adequately protected during construction, such as including the use of fencing and informational signage. Such protective measures, including limits of disturbance and erosion and sedimentation controls, shall be installed prior to the start of construction, in accordance with the 2014 Rhode Island Soil Erosion and Sediment Control Handbook.

d. Safety

The developer shall provide safe and convenient access to all parts of the development that require inspection. The developer shall comply with the rules and regulations promulgated by U.S. Occupational Safety and Health Administration (OSHA), Dig Safe and all other relevant federal and state agencies. All work related to the development shall be done so as to avoid hazard, damage or inconvenience to adjoining property owners and to the public.

2. Construction Plans

The applicant shall submit three (3) complete sets of construction plans including profiles, cross sections, and other working drawings of required construction improvements to the Administrative Officer, Director of Public Works and to the Planning Board's consultant engineer. The approval by the Planning Board's consultant engineer of the construction plans must be given in writing to the Administrative Officer prior to any construction.

3. Pre-Construction Meeting

A pre-construction meeting shall be held with the Director of Public Works, the Administrative Officer, and the Planning Board's consultant engineer at least seven (7) days prior to the start of any subdivision or development project improvements. The developer (or his duly authorized representative), the developer's Planning Board's consultant engineer and the designated on-site project manager shall attend this meeting.

4. Notifications

No step in the construction of required improvements shall commence until the Director of Public Works, Planning Board's consultant engineer and Administrative Officer have been notified, in writing, at least 48-hours exclusive of Saturday, Sunday and holidays, in advance of the beginning of the step.

5. Construction Wastes and Sanitation

All job sites are required to have a dumpster, or some other method of containing debris, and sanitary facilities. Discarded building materials, concrete truck washout, litter, and other debris shall be properly disposed of and removed from the site. Burying or dumping of debris is prohibited. Fuel and oil, if contained on the site, shall be properly stored and contained to prevent spills.

6. Inspection of Work

- a. Inspection and written approval by the Director of Public Works and/or Planning Board's consultant engineer shall be required at several phases of subdivision improvements, including but not limited to:
 1. Upon completion of clearing, grubbing, and excavation, but prior to placement or grading of any suitable fill to reach subgrade.
 2. Upon completion of the installation of the underground utilities, drainage structures, and drainage piping, but **prior** to backfilling;
 3. Prior to the installation of gravel on the subgrade for streets and sidewalks. Grade stakes must be installed prior to the inspection and installation of gravel.
 4. Upon completion of the gravel base for streets and sidewalks at two stages: the placement of the bank run gravel, and the placement of the crushed gravel;
 5. Prior to the initiation of each application of bituminous concrete.
 6. Prior to the pouring of concrete in sidewalks;
 7. Prior to placement of curbing, shoulders, and retaining walls.
 8. At such time as materials and other items of work are ready for inspection such as the installation of bounds, loam and seeding, general cleanup or other items pertaining to the development.
- b. The Director of Public Works and/or the Planning Board's consultant engineer may require inspection of subdivision improvements or development project site improvements at such other intervals as he/she may deem necessary to assure proper construction of improvements, and to ensure compliance with the approved Soil Erosion and Sediment Control Plan.
- c. Whenever an inspection is required, the developer shall request the Planning Board's consultant engineer to make such inspection. The Planning Board's consultant engineer or his/her representative shall within 48 hours exclusive of Saturday, Sunday and holidays, make such inspection. After consultation with the Administrative Officer, Director of Public Works or other Town official, the Planning Board's consultant engineer shall give to the developer written approval or disapproval of the improvements inspected by him/her. Such written approval or disapproval shall become part of the permanent record for the project. No subsequent step or phase shall commence until an inspection has been made and approval granted.

- d. The Town may require inspections on development project sites on an as-needed basis, and a final inspection shall be performed in order to ensure compliance with the approved plans prior to issuance of any Certificate of Occupancy.
- e. If any violations are found, the property owner shall be notified in writing of the nature of the violation and the required corrective actions. No added work shall proceed until all violations are corrected and all work previously completed has received approval by the Town.

7. Post Construction Stormwater

The Developer must conform to the Tiverton Code of Ordinances, Part III Chapter 65 Post-Construction Storm Water Controls, as amended. This ordinance establishes the administrative mechanisms necessary for the Town of Tiverton to ensure proper storm water management after site construction and development is complete. The ordinance is written to work in conjunction with the current state regulations, local building and zoning codes, and subdivision regulations. The requirements of Part III, Chapter 65 are in addition to those imposed for storm water management or erosion control during site construction and development.

If a failure to comply with the provisions of Part III, Chapter 65 occurs, the Director of Public Works, Administrator Officer and/or the Planning Board's consultant engineer have the right to notify the Developer that he or she has five (5) calendar days from receipt of the notice to temporarily correct the violation and thirty (30) calendar days from receipt of notice to permanently correct the violations. Enforcement of Penalties as described in Section 65-22 shall apply.

C. Soil Erosion and Sediment Control

All soil erosion and sediment control measures required by these Regulations shall be constructed in accordance with the standards and procedures set forth in the "Rhode Island Soil Erosion and Sediment Control Handbook, 2014, prepared by the Rhode Island State Conservation Committee with support from the Rhode Island Department of Environmental Management, Rhode Island Coastal Resources Management Council, Rhode Island Department of Transportation and University of Rhode Island.

Installation of all erosion and sediment control are required to be in place and functional before any site disturbance begins. Upon acceptable completion of site preparation and installation of erosion and sediment controls, site construction actives may commence.

Routine inspections and maintenance and/or modifications to erosion and sediment controls shall be in accordance with the Rhode Island Soil Erosion and Sediment Control Handbook, 2014.

Details of selected erosion and sediment control measures may be added to this document as an Appendix.

D. Street Construction

All street construction shall conform to the Rhode Island Department of Transportation (RIDOT) the “Standard Specification for Road and Bridge Construction”, 2004 (or latest edition), “2010 Compilation of Approved Sections” and the 2012 (or latest edition) “Rhode Island Standard Details”, unless otherwise noted, and the American Association State Highway Transportation Officials (AASHTO) Standards. Should there be a conflict between RIDOT and AASHTO and the standard of this section, the more stringent standard shall control.

1. General Condition

During construction maintain the subdivision roads in passable condition and take appropriate measures to eliminate the creation of a dust nuisance during construction.

2. Clearing and Grubbing

The area extending 6.5 feet from the edge of the proposed roadway, as shown on the plan or plat, shall be cleared and grubbed. All trees not intended for preservation, and all root systems, stumps, bushes and other objectionable material, shall be removed and disposed of, followed by removal of all loam and other yielding material prior to construction of the roadway sub base. Additional clearing may be required under special circumstances.

Only area that can be reasonably expected to have active construction work being performed within 21-days of disturbance will be cleared/grubbed at any one time. It is NOT acceptable to clear and grub the entire construction site if disturbed portions will not be active within the 21-day time frame.

Stumps from the public improvements shall not be buried on site.

3. Earth Excavation

Earth excavation includes but is not limited to: the removal of clay, sand, gravel, loam, soft or disintegrated rock which can be removed without blasting, boulders of less than one (1) cubic yard in volumes (one half cubic yard in all trenches) and other unacceptable materials within the limits of the roadway, drainage or other excavation. This item of work also includes the backfilling of all stump holes and other surface irregularities with suitable fill materials. Excavation shall be to a depth and cross-section as shown on the approved plans, profiles and cross section drawings.

4. Rock and Ledge Excavation

Rock and ledge excavation includes removal and disposal of all boulders one (1) cubic yard or more in volume (one half (1/2) cubic yard in all trenches) and all hard ledge rock which can be removed only by drilling and splitting by hand, by mechanical means or by blasting. Such excavation shall be to a depth at least three (3) feet below finished grade, where applicable, ledge side slopes shall be four (4) feet vertical to one (1) foot horizontal beyond the Right-of-Way. Backfilled soil in areas where blasting has occurred must utilize water jetting to reduce the amount of settlement due to fissures created during blasting.

Burying of boulders is permissible only with permission of the Planning Board. The Preliminary Plan shall indicate all proposed areas of burying boulders. The Final As-Built Plans shall indicate the location where items are buried.

5. Subgrade

- a. Where objectionable materials are encountered to a greater depth than anticipated, the developer shall remove said materials, to the satisfaction of the Director of Public Works and/or the Planning Board's consultant engineer.
- b. The subgrade shall be compacted to 95 percent proper density and optimum moisture content prior to grading or placement of any fill material.
- c. The developer shall provide and maintain grade stakes at a minimum of one foot off of the edge of pavement at all 50-foot stations, prior to the placement of any fill on the subgrade or placement of the gravel base.
- d. The Director of Public Works will require a minimum of two compaction tests per street, or one test every 300 feet, whichever is greater. Test locations shall be determined and witnessed by the Director of Public Works, Planning Board's consultant engineer or their designee. Compaction must be at 95 percent proper density and optimum moisture content. The costs for undertaking the tests shall be borne by the developer.
- e. When a pipe is to be laid in unstable material, as determined by the Director of Public Works or the Planning Board's consultant engineer, the unsuitable material shall be removed and replaced with a bedding of gravel or crushed stone to the specifications of the director or the Planning Board's consultant engineer

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- f. In locations where high groundwater is encountered, or where in the opinion of the Director of Public Works or the Planning Board's consultant engineer it may be encountered, or in wet spongy areas, sub drains shall be installed. The director or Planning Board's consultant engineer may, upon visual inspection of field conditions, require that additional sub drains be installed during construction, at the sole cost of the Developer.

6. Trenching

All excavations shall be protected by the Developer with public safeguards and adequate warning devices such as lighted barricades, danger and warning signs, detour signs and flaggers/police detail No unattended excavations shall be left open.

- a. The backfill of trenches within the pavement areas and sidewalk areas, where applicable, shall be done in layers not six (6) inches in thickness, and shall be thoroughly compacted. Each layer shall be tamped with a mechanical tamper to the satisfaction of the Director of Public Works or the Planning Board's consultant engineer.
- b. Trenches shall be completely backfilled with approved materials and compacted to the satisfaction of the Director of Public Works and/or the Planning Board's consultant engineer. Gravel made from reclaimed and/or recycled materials may be used for backfill if approved by the Director of Public Works and/or the Planning Board's consultant engineer.

Crushed processed gravel shall meet the following gradation requirements:

<u>Sieve Size</u>	<u>% Passing</u>
2-inch	100
3/4 -inch	50-80
#4	30-50
#200	0-5

- c. Bedding materials and methods for utility extension shall be as determined by the appropriate utility. A minimum of 12 inches of select material, with stones no larger than 1 1/2 inches, shall be placed over and on the sides of each utility line
- d. All utility trenches shall be backfilled a minimum of 30 days prior to the placement of the gravel base, unless waived by the Director of Public Works or the Planning Board's consultant engineer.

7. Gravel

- a. Where bank run gravel or recycled road base material is used, processed gravel conforming to the requirements of subsection M.01.09, table I, column II, of the Rhode Island Department of Transportation (R.I. DOT) Standard Specifications for Road and Bridge Construction shall be placed within the street pavement area to an average depth of four inches and thoroughly compacted.
- b. The Director of Public Works will require a minimum of two tests per street, or one test every 300 feet, whichever is greater, for gradation and compaction of the gravel to ensure compliance with the R.I. DOT standard specifications. Test locations shall be approved by the director or the Planning Board's consultant engineer. The costs for undertaking the tests shall be borne by the developer.

8. Bituminous Concrete

Bituminous concrete pavement shall in general consist of two (2) courses. A binder course shall be placed over a compacted processed gravel base, followed by the surface course. Bituminous concrete shall conform to all applicable portions of Section 400 of the Rhode Island Department of Transportation "Standard specifications for Road and Bridge Construction", 2004 edition as amended. Unless otherwise directed these two courses shall be a minimum of 2 inches of Class I-1 Binder course and 1-½ inches of Class I-1 Surface Course.

- a. Seasonal limits. Bituminous concrete shall only be placed between the dates of April 1 and November 15, as weather conditions permit, unless waived by the Director of Public Works or the Planning Board's consultant engineer and approved by the Planning Board. Air and ground temperatures must be at least 38-degrees Fahrenheit and rising for bituminous concrete placement. Paving shall never be permitted on frozen or water-soaked surfaces.
- b. Binder course. The binder course shall consist of bituminous concrete pavement (hot mix) class I, type I-1, conforming to the requirements of subsection M.03.06 of the R.I. DOT standard specifications. The binder course shall be applied at a temperature between 250 and 350 degrees Fahrenheit by means of an approved paving spreader. Such material shall be placed in sufficient quantity to provide a minimum compacted cross section of 2 inches. The binder course shall be compacted as specified in section 401.03.11 of the R.I. DOT standard specifications.
- c. Surface course. The surface course shall consist of an application of bituminous concrete pavement (hot mix) class I, type I-1. The binder course shall first be swept clean of all sand and debris. Ripples or unevenness in the surface shall be brought back to true line and cross

section by the spot application and proper compaction of class I mix. The surface course shall be applied at a temperature between 250 and 350 degrees Fahrenheit by means of an approved paving spreader. Such material shall be placed in sufficient quantity to provide a minimum compacted cross section of 1-½ inches. The surface course shall be compacted as specified in section 401.03.11 of the R.I. DOT standard specifications. Upon completion of the application and compaction of the surface course, the street shall be allowed to stand for a minimum of eight hours without traffic.

- d. The Director of Public Works, or the Planning Board's consultant engineer, may require a core boring every 300 feet of the pavement, if in the opinion of the director or the Planning Board's consultant engineer, respectively, the integrity of the bituminous pavement is less than desired. The cost of this process, and pavement repair, shall be borne by the developer.
- e. A delivery ticket from an automatic printer system shall be supplied to the Director of Public Works or his designated inspector for each load of bituminous concrete, or portion thereof, delivered to the development and placed.
- f. If the surface course will not be applied within 90 days following placement of the binder course all roadway castings shall be installed so that the tops are at the binder course grade level.
- g. Surface course shall be applied to the binder course no later than three (3) years. In the event that the binder course shows evidence of failure as determined by the Director of Public Works, the Director of Public Works may require a 1-inch leveling course be applied over the entire roadway surface, at the sole cost to the Developer.
- h. A five year construction moratorium will apply to all roads that have experienced full-width reconstruction or any other form of full width rehabilitation. If any work is necessary within the five (5) years, the Contractor shall replace 10 feet on both sides of the excavation for the entire roadway width.

E. Curbs

1. Streets must be curbed with one of the following types:
 - i. Cape Cod Berm- Per typical Town of Tiverton Cross Section detail (See Figure 1)
 - ii. Rhode Island Standard 7.1.0 Concrete curbing
 - iii. Rhode Island Standard 7.3.0 Granite Curbing

2. At Streets intersections, provide curb returns or shoulders with a radius of at least twenty-five (25) feet.
3. Use appropriate Rhode Island Standard curb shapes for curb transition inlet and apron installations.
4. Install handicapped access transition drops in curbs as directed by the Planning Board. Handicap transitions shall meet all applicable standards, including but not limited to the Americans with Disabilities Act, as amended.
5. The Planning Board shall require concrete curbing where necessary to control excessive drainage and runoff caused by steep street slopes.

F. Sidewalks and Pedestrian Ways

Sidewalks when required shall be in accordance with the sidewalk cross-section as detailed in Figure 1 of these Regulations. The placement of concrete where required shall conform to all applicable portions of Section 600 of the Rhode Island Department of Transportation “Standard Specifications for Road and Bridge Construction” 2004 Edition, as amended. Pavement and Sidewalks shall be Class A concrete with a maximum size of coarse aggregate of $\frac{3}{4}$ ” minimum cement content of 6.5 bags per cubic yard and a 28-day compressive strength of 3,500 PSI, and air entrained. No chemical admixtures shall be used in the work unless specifically allowed and approved by the Town.

Chemical admixtures shall be those listed on the RIDOT’s Approved Materials List and shall conform to the requirements below:

Chemical Admixtures- AASHTO M194
Air-entraining Admixtures- AASHTO M154

G. Drainage Structures & Facilities

1. All drainage pipes and structures within the street right-of-way shall conform to the following specifications and/or the Rhode Island Department of Transportation Standard specification for road and Bridge Construction, 2004 as amended:
 - i. Reinforced Concrete pipe shall be Class III, Wall thickness B, ASTM Designated C-76, latest revision. Each pipe shall be marked for strength class identification and must show the name or tradesmen of the manufacture and date of manufacture.

- ii. ADS drainage pipe may be substituted for the RCP provided it is backfilled with Controlled Low strength Material (Flowable Fill).
- iii. The placement of flowable fill shall conform to all applicable portions of Section 600 of the Rhode Island Department of Transportation Standard Specifications for Road and Bridge Construction, 2004 Edition as amended. Flowable fill will be placed level with subbase, and a base course installed over it prior to paving. The flowable fill shall be discharged directly from the mixer truck into the space to be filled. The mix may be placed part depth or full depth as conditions dictated. Care is to taken to prevent pipes from floating. Flowable fill takes 12 to 24 hours to cure adequately before asphalt surface can be completed on the trench. In that interim period of time, steel plates will need to be in place covering the trenches to allow traffic to proceed with the trench is curing.

2. Design and requirements

- i. The State of Rhode Island Stormwater Design and Installation Standards Manual 2010 Rhode Island Department of Environmental Management (RIDEM) and Coastal Research Management Council (CRMC) for design structural stormwater treatment practices for water quality, pretreatment practices, and storage practices for stormwater quantity are incorporated by reference into these construction standards.
- ii. All storm drainage structures and facilities, including culverts and storm drains, manholes, inlets and catch basins, underdrains and paved waterways, shall conform to all applicable portions of Section 700 of the Rhode Island Department of Transportation “Standard Specifications for Road and Bridge Construction” 2004 Edition, as amended.
- iii. Catch basins shall be built on both sides of the street on continuous grades such that surface water will not run along the edge of the pavement for a distance of more than 300 feet, at low points and sags in the street, and at intersections.
- iv. Drain pipes shall be located, when possible, approximately one foot from the nearer edge of the pavement, and shall be laid in straight segments. Manholes shall be required at all changes in direction or grade of drain lines, and at all pipe connections from catch basins or other drainage structures.

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- v. Drain pipes shall be laid at a slope of not less than one percent nor greater than ten percent, and there shall be a minimum of 24 inches of fill between any reinforced concrete pipe and the finish grade. Storm drain pipes shall have a minimum diameter of 12 inches, and subsurface drainage system pipes shall have a minimum diameter of six inches.
- vi. When vertical drains or other systems are designed to introduce stormwater into the ground, the leaching system shall be wrapped with a nonwoven filter fabric to prevent fine materials from being carried between the washed crushed stone and surrounding materials.
- vii. All detention and filtration systems shall be designed so that the bottom of any such facility is elevated at least three-feet above the elevation of the highest groundwater table, in areas where it is strictly residential the separation distance may be reduced to two-feet. Groundwater elevation tests, will be undertaken in any detention basin and in critical areas of road construction, to determine the highest groundwater elevation. The costs for undertaking the tests shall be borne by the developer.
- viii. Water collected from an on-site drainage system will be detained and filtered through manmade detention and filtration systems before discharging into the town drainage system, unless waived by the Director of Public Works or the Planning Board's consultant engineer and approved by the Planning Board.
- ix. All manmade embankments shall be completely cleared of organic matter and shall consist of clean inorganic fill. Detention area embankments shall be properly compacted with maximum side slopes of three feet horizontal to one foot vertical. The interior side of the embankment shall not exceed six feet in height from the bottom of the detention area to the top. The embankment shall be covered with a minimum of four inches of loam and seeded. The Planning Board's consultant engineer is encouraged to design basins and embankments that make use of existing topographic features.
- x. Fencing is required around basins that exceed three feet of water during the 100-year storm. Such fencing shall be installed in accordance with Building Code requirements for fall prevention and shall be effective to control access to the area in which the stormwater facility encompasses.

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- xi. All new open watercourses will be seeded, sodded or paved, or riprapped, depending on grades and soil types, as directed by the Director of Public Works and/or the Planning Board's consultant engineer.
- xii. Where volume velocity of the surface runoff is high, the flow thereof shall be controlled by riprap, sediment basins, flow spreaders or other applicable devices and/or techniques recommended in the Rhode Island Soil Erosion and Sediment Control Handbook and the State of Rhode Island Stormwater Design and Installation Standards Manual.

3. Street Excavators License

Only excavating contractors or public utility companies (hereinafter "street excavators"), licensed by the Town as set forth in Section 70-3 subsection (b) of the Town Ordinances shall be allowed to install drainage or said utilities of any Town approved streets (public and private). Prior to proceeding with any installation or excavating within the street (public and private) in the Town, the street excavator shall first obtain from the Director of Public Works a permit which shall be issued only after:

- i. The final plan has been recorded in land evidence;
- ii. The applicant has paid the Director of Public Works a fee of \$100.00 to cover the expenses of the issuance of the permit;
- iii. The applicant has filed with the Town Clerk a bond satisfactory to the Director of Public Works, but no less than \$10,000.00.
- iv. The street excavator shall verbally notify the Director of Public Works of any significant deviation from the approved plans prior to performing work. Any work performed that significantly deviates from the approved plans, and that has not been approved in writing by the Director of Public Works, shall be grounds for cancellation of the permit. The Director of Public Works or his/her designee may issue an immediate cease and desist order. The Director, upon issuance of such order, shall schedule a hearing, if one is in writing by the permit holder, within 48-hours.
- v. Permit application shall be submitted to the Director of Public Works as far in advance as possible, but not less than 48-hours in advance of intended project commencement.

H. Installation of Water Main

The water shutoff shall be marked at the property line for every lot. Marker posts shall be oak or pressure treated wood a minimum of two inches by four inches, placed a minimum of 12 inches into the ground and exposed a minimum of 24 inches above the ground. Marker posts shall be painted blue and shall be in place for final inspection.

I. Plantable soil and loam

Plantable soil or loam used for replacing disturbed loam areas shall in every aspect meet the requirements of Section M.20 of the Rhode Island Department of Transportation “Standard Specifications for Road and Bridge Construction”, 2004 Edition, as amended. The location from which the Contractor will furnish loam shall be subject to the approval of the Director of Public Works and/or the Planning Board’s consultant engineer.

J. Special Grading Provision

Within ten (10) feet of adjoining property, limit changes to existing grade to slope of 2:1, with adequate stabilizing measures. Provide retaining structures to contain slopes that exceed the 2:1 ratio.

K. Repaving of Road due to Disturbance

Any disturbance to an existing asphalt street including, but not limiting to: installation of public water, public sewers or natural gas, shall require the repaving of an area not smaller than six (6) feet on both sides of the edges of the disturbed area-said repaving to be from curb to curb. The intent of this section is to create areas of transition over disturbed areas of asphalt, rather than, a depressed area or cut area of a few feet in width- deemed to be a safety hazard to drivers. Full depth flowable fill maybe required for trenches crossing roadways.