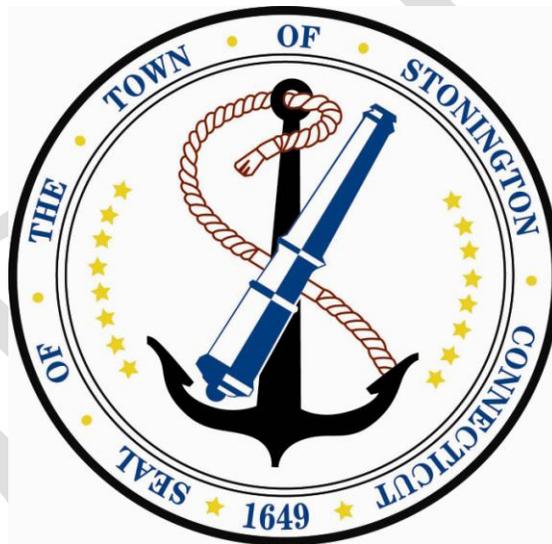


Technical Standards for Land Development & Road Construction



TOWN of STONINGTON, CONNECTICUT

Effective March 21, 2011

Technical Standards for Land Development & Road Construction

TOWN of STONINGTON, CONNECTICUT

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SECTION 1 GENERAL GUIDANCE

1.1 INTRODUCTION.

This document shall be adopted as the Technical Standards for Land Development and Road Construction, Town of Stonington, Connecticut (Standards). These Standards have been adopted by the Stonington Board of Selectman on _____, and by the Planning and Zoning Commission on _____.

The purpose of these Standards is to:

- 1.1.1 Provide for the best possible design and construction of public and private improvements in terms of service, safety, economy, environmental protection and ease of long-term maintenance.
- 1.1.2 Promote health, safety and welfare by protecting the public against the dangers of unsafe roads or unsafe public and private improvements.
- 1.1.3 Reduce costs and expenses in repair and maintenance through careful planning, appropriate design and competent construction.

1.2 USE OF STANDARDS.

- 1.2.1 These Standards shall govern design and construction of all roads, sidewalks, stormwater drainage systems, sanitary sewers, and related appurtenances in the Town of Stonington, including subdivisions and private developments that require approval from the Planning and Zoning Commission, Department of Public Works, and/or Water Pollution Control Authority.
- 1.2.2 These Standards are considered to be the minimum acceptable standards, and the Town shall have the right to require higher standards or special designs for projects where unusual or extreme conditions are encountered. Deviations from these Standards must be approved by the Technical Standards Review Committee. Developers and their consultants are advised that during the design stage, they should periodically check with Town staff to minimize final plan revisions.
- 1.2.3 Omissions, errors, or discrepancies in these Standards shall not relieve the developer, consultants, or their agents from their responsibility to design and construct all facilities in a professional manner.

1.3 AUTHORITY.

- 1.3.1 A Technical Standard Review Committee (Committee) shall manage these Standards. This Committee shall be comprised of the following officials: Public Works Director, Planning Director, WPCA Director, and Town Engineer.
- 1.3.2 If developers, design consultants or contractors need interpretation regarding these Standards, it shall be requested in writing directed to the Technical Standards Review Committee. If there is disagreement with the Committee's written interpretation, an appeal may be made to the Board of Selectman and, in the case of sanitary sewers, to the Water Pollution Control Authority, whose decision(s) shall be final.
- 1.3.3 The Town is under no obligation to approve any variations to approved plans, and may refuse to accept any improvements failing to conform to approved plans or installed contrary to original specifications as approved by the Town. Developers are required to notify the Town when required inspections are to be made, and to install all improvements in accordance with the approved plans and these Standards.
- 1.3.4 The Committee shall have the authority to update these Standards with minor modifications, provided such modifications do not affect public safety, conflict with Town, State, or Federal laws or regulations, nor alter the intent of these Standards.

1.4 VALIDITY.

If any Chapter or provision of these Standards is declared by the Courts as invalid or unconstitutional for any reason, such decision shall not affect the validity of these Standards as a whole, or any part thereof, other than the part so declared to be invalid or unconstitutional.

1.5 REFERENCES.

The following documents are to be used in conjunction with these Standards:

- 1.5.1 Town of Stonington, Zoning Regulations, as amended.
- 1.5.2 Town of Stonington, Subdivision Regulations, as amended.
- 1.5.3 Town of Stonington, WPCA Rules and Regulations, as amended.
- 1.5.4 Town of Stonington, Plan of Conservation and Development (POCD), Adopted 2004, as amended.

- 1.5.5 CT DOT, Standard Specifications for Roads, Bridges and Incidental Construction, Form 816 (2004), and any subsequent supplements or revisions.
- 1.5.6 CT DEP, 2004 Connecticut Stormwater Quality Manual.
- 1.5.7 CT DEP, CT Guidelines for Soil Erosion and Sediment Control, as amended.
- 1.5.8 American Association of State Highway Transportation Officials (AASHTO), Geometric Design for Local Roads and Streets, latest edition.
- 1.5.9 Federal Highway Administration (FHWA), Manual of Uniform Traffic Control Devices (MUTCD), latest edition.
- 1.5.10 Guidelines for the Design of Wastewater Treatment Works (TR-16), as amended, prepared by The New England Interstate Water Pollution Control Commission.
- 1.5.11 Minimum Standards for surveys and Maps in the State of Connecticut as prepared and adopted by the Connecticut Association of Land Surveyors, September 26, 1996, as amended.

SECTION 2 ROADWAY CONSTRUCTION

2.1 PURPOSE.

The purpose of this Chapter is to assure that all properties and land developments have access to existing or proposed roadways that are of sufficient width, grade, condition, and design to safely handle site generated traffic and related needs; prevent flooding and icing of streets through proper drainage; and provide access for emergency vehicles. Guidance for inspection during construction is contained in Section 11 of these Regulations.

2.2 ROADWAY FUNCTIONAL CLASSIFICATION.

The following roadway functional classifications group Stonington's streets and highways according to the character of traffic they serve, adjacent land uses, and the degree of land access that should be allowed.

- 2.2.1 Arterials -- Serve the highest level of average daily and peak hour traffic, with access management control as a top priority. Includes all roads in Stonington defined as "Arterials" in the Plan of Conservation and Development (POCD).
- 2.2.2 Major Collectors -- Serve slightly lower levels of average daily and peak hour traffic, at lower speeds and for shorter distances, by collecting traffic from local streets and connecting it with arterials. Includes roads defined as "Major Connectors" in the POCD. Access management remains a priority.
- 2.2.3 Minor Collectors -- Includes roads defined as "Major Feeder Roads" in the POCD.
- 2.2.4 Local Streets -- Defined as "Minor Feeder Roads" in the POCD, includes all other roads in Stonington not categorized as arterial, collector, or residential access streets. Local streets have limited or no through movement, primarily providing direct access to individual properties.
- 2.2.5 Residential Access -- Cul-de-sac streets that serve no more than 15 dwelling units, without potential for future extension or through traffic.

See Appendix A for a list of road classifications from the POCD

2.3 ISSUANCE OF BUILDING PERMITS AND CERTIFICATES OF OCUPANCY

Completion of the subgrade and all drainage improvements described herein shall occur prior to the issuance of any building permits for lots on a proposed street. Completion of the *Class 1* binder course shall occur prior to the issuance of a Certificate of Occupancy for any structure accessed by the street. The Town does not

recommend installation of a *Class II* bituminous top surface until a substantial portion of construction associated with the development project has been completed.

2.4 MINIMUM ROADWAY GEOMETRIC STANDARDS.

ROADWAY DESIGN ELEMENT	ARTERIALS	MAJOR COLLECTORS	MINOR COLLECTORS	LOCAL STREETS	RESIDENTIAL ACCESS
Pavement Width	SEE NOTE 3	36'	30'	26'	22'
Right-of-way Width		60'	50'	50'	50'
Design Speed		40 mph	30 mph	25 mph	20 mph
Maximum Grade		10%	10%	10%	10%
Minimum Grade		1.0%	1.0%	1.0%	1.0%
Minimum Stop Sight Distance ¹		300'	200'	150'	125'
K Value for Vertical Curve ²					
Crest		70	36	25	20
Sag		80	40	30	24
Minimum Center Line Curve Radius		400'	150'	150'	150'
Minimum Tangent Between Curves	200'	100'	100'	100'	

Notes:

1. Minimum Stop Sight Distance is determined by the minimum distance an observer whose eye level is 3.5 feet above the road surface can observe an object 0.5 feet above the road surface. Minimum horizontal Stop Sight Distance is determined by the minimum distance an observer can see an object in the center line of the inside lane while not requiring a line of sight outside of the road right-of-way.
2. K value is a coefficient by which the algebraic difference in grade may be multiplied to determine the length in feet of the vertical curve which will provide minimum sight distance.
3. Typically, Arterial Streets are state highways, therefore, the applicant should consult with CT DOT for their design standards.

2.5 MINIMUM INTERSECTION GEOMETRIC STANDARDS.

INTERSECTION DESIGN ELEMENT	ARTERIALS	MAJOR COLLECTORS	MINOR COLLECTORS	LOCAL STREETS	RESIDENTIAL ACCESS
Minimum Radius Along Property Line	SEE NOTE 4	30'	25'	25'	25'
Radius Along Gutter Line		40'	35'	35'	35'
Minimum Offset of Intersections ¹		500'	200'	200'	200'
Minimum Tangent Length ²		100'	100'	75'	75'
Maximum Grade on Tangent		2%	2%	2%	2%
Minimum Sight Distance ³		445'	335'	225'	225'

Notes:

1. Measured from the points of intersection of the centerlines.
2. Measured from the gutter line of the intersecting street.
3. Intersection sight distance is measured from a point of the intersecting road ten (10) feet from the edge of the other road pavement and measured from a height of eye of three and one-half (3½) feet on the intersecting road to a height of object of three and one-half (3½) feet on either lane of the other road.
4. Typically, Arterial Streets are state highways, therefore, the applicant should consult with CT DOT for their design standards.

2.6 INTERSECTION DESIGN CRITERIA.

- 2.6.1 Alignment of Intersections. No more than two (2) new streets shall intersect or meet at any one (1) point. Centerlines of all streets entering the intersection shall pass through a single point. Streets intersecting on opposite sides of a street shall intersect exactly opposite to one another or shall have the minimum spacing as required in this section.
- 2.6.2 Angle of Intersection. Wherever possible, roads shall intersect at a 90-degree angle, or as close thereto as practical. In no event shall an intersection be allowed where the angle of the intersection is less than 75 degrees within 100 feet of the intersection.

2.6.3 Intersection Sightlines.

- .1 Sufficient clearing and re-grading shall be accomplished to meet sight distance visibility requirements. No structures, fences, walls, hedges, rock, shrubs, trees or other landscaping shall be permitted to obstruct such visibility. Banks located at intersections shall be cut back to maintain minimum sight distance for intersections as required by these Standards.
- .2 Permanent sightline easements shall be provided to the Town of Stonington on all private property as needed so as to maintain sightline requirements established in this Chapter. Easement documents must state that no objects of any kind shall be located within a permanent sightline easement that obstructs a driver's ability to see oncoming vehicles or pedestrians.

2.6.4 Intersection Grading. Grading for the intersection shall be shown on a plan with a scale of one (1) inch equals ten (10) feet and a zero point one (0.1) foot contour interval.

2.7 CUL-DE-SAC TURNAROUNDS.

- 2.7.1 All cul-de-sacs, permanent and temporary, shall be provided with a circular right-of-way at the terminating end. Alternative turnaround designs may be approved by the Public Works Director for previously subdivided land with narrow right of ways.
- 2.7.2 Snow Storage. A ten (10) foot wide open area shall be reserved at the end of all turnarounds for storage of snow. This area, which shall be delineated on the drawings, shall be free from obstructions including, but not limited to, driveways, mailboxes, landscaping and fences.
- 2.7.3 Maximum Grade and Minimum Radius. The maximum grade of a turnaround shall be four (4) percent and the minimum grade shall be one and one-half (1.5) percent. The minimum radius of circular turnarounds shall be 50 feet.
- 2.7.4 If a developer is extending an existing cul-de-sac street then the existing cul-de-sac turnaround shall remain in place until the new roadway section is approved by the Town to allow Town plow trucks and other large vehicles an area to turn around without having to enter onto the private road.

2.8 SIDE SLOPES.

- 2.8.1 Streets in cut or fill sections shall be provided with roadway side slopes not steeper than 2:1 (two feet horizontal to one foot vertical), unless other structural measures are provided to retain the slope. Steeper slopes, up to 1:6 (one foot horizontal to six feet vertical) may be permitted in rock cuts, but care shall be

taken to insure that all exposed rock is stable and free from faults, cracks, or other infirmities which might lead to collapse or flaking.

2.8.2 Shoulder areas shall be graded so as to slope toward the centerline of the road where the road is in cut and away from the centerline of the road where the road is in fill. In either case, shoulder cross slopes shall be one (1) inch per foot.

2.8.3 Based on actual soil conditions encountered during construction, the Town may require additional measures to maintain stability of slopes and to control groundwater seepage. These measures may include, but are not limited to, a decrease in the maximum allowable slope, stabilization blankets or grids, stone slope protection, plantings, wedge drains, underdrains, terracing, drainage swales or retaining structures. In cases where the exposed face of a cut slope consists of decomposed, flaking, highly fractured or unstable rock, slopes shall be flattened so as to protect public safety and minimize future maintenance.

2.9 CROSS-SECTIONS.

Streets shall be designed with a Typical Cross-Section as shown on details in Section 12 of these Standards.

2.10 CURBING.

Curbs shall be constructed along the edge of street pavement in accordance with the dimensions and details as shown on details in Chapter 12 of these Standards.

2.11 GUIDE RAILS.

Guide rails shall be installed wherever necessary to minimize the risk of personal injury or property damage. In general, guide rails shall be installed at the following locations:

2.11.1 Embankments – Guide rails shall be required on any new roadway section constructed on an embankment where the slope is steeper than 4:1 (four feet horizontal to one foot vertical).

2.11.2 Culvert Endwalls – Guide rails may be required in front of culvert endwall depending on the height of the endwall and its proximity to the edge of the road.

2.11.3 Roadside Obstacles – Guide rails may be required to shield natural or man-made fixed object hazards including, but not limited to rock outcrops, ditches, retaining walls, bridge abutments and permanent bodies of water.

2.11.4 Where marginal situations occur with respect to guide rail placement, or where it is determined that a vehicle accident resulting from striking a guide rail could potentially be more severe than hitting an unshielded roadside obstacle, the Town may approve the use of a reflective object marker.

2.12 FENCING.

A securely anchored PVC coated chain link fence shall be installed wherever necessary to minimize the risk of personal injury. Height of the fence shall be as specified by the Town. In general, fencing should be installed at the following locations:

- 2.12.1 Rock Cuts – along the top of slope where rock cuts exceed five (5) feet in height.
- 2.12.2 Retaining Walls and Endwalls – at the top of any wall that is within the public right-of-way and whose height exceeds five (5) feet.
- 2.12.3 Stormwater Management Basins – along the outer perimeter of basins that contain permanent standing water or that are not designed to entirely drain within seventy-two (72) hours. Lockable gates shall be installed to allow periodic maintenance by large equipment.

2.13 MONUMENTS AND STREET BOUND STONES.

All new roads shall be accurately monumented pursuant to Chapter 5.7 of the Subdivision Regulations.

2.14 ROAD NAMES AND SIGNS.

Proposed road names shall not duplicate any other existing road located in Stonington. Road name signs shall be installed at all intersections, and shall be erected in such places as to assure their clear visibility. Size, color, material and physical details shall conform to the Federal Highway Administration (FHWA) Manual of Uniform Traffic Control Devices (MUTCD), latest edition.

2.15 TRAFFIC CONTROL DEVICES AND SIGNAGE.

Traffic control devices, including signs, pavement markings and object markers, shall be provided in such places as necessary to minimize risk of accidents involving vehicles or pedestrians and to assure safe and convenient vehicle and pedestrian passage. The location, type, color, and placement of all regulatory, warning and guide signs and pavement markings shall conform to the latest edition of FHWA's *Manual on Uniform Traffic Control Devices*.

2.16 CONSTRUCTION SURVEY PROCEDURE.

- 2.16.1 Roadway Centerline. The centerline of the traveled portion of the road shall be placed in the center of the right-of-way, when possible, and shall be staked out by a Connecticut registered land surveyor. Suitable construction ties shall be

established at all control points, which shall be protected during construction so that the centerline may be re-established at any time.

- 2.16.2 Stationing. Stations shall be established every 50 feet and at all radius points (P.C. and P.T.). The beginning of the baseline shall be located in the gutterline of the intersected street. A construction stake shall be placed at right angles to each station clear of construction and grading. This stake will show the station, the measured distance to centerline (offset) and on the face nearest to centerline, the cut or fill which will establish the center line grade. A grade list showing the Stations, stake elevations, offset from centerline grade, cuts and fills shall be provided to the Town before construction begins.
- 2.16.3 Bench Marks. A permanent benchmark shall be established at the beginning and end of each road and at intervals not exceeding 500 feet along the length of the road. These benchmarks shall be referenced to the same datum shown and identified on the As Built drawings for the road.
- 2.16.4 Protection of Stakes and Bench Marks. Grade stakes and permanent benchmarks shall be protected and preserved throughout the period of construction. If such stakes or benchmarks are disturbed, they shall be immediately replaced by the developer.

2.17 CLEARING AND GRUBBING.

- 2.17.1 Prior to any site work, the limit of clearing shall be staked by the project surveyor and reviewed and approved by the Town.
- 2.17.2 All trees, brush, boulders, structures, walls, fences, perishable matter and debris shall be removed from within the clearing limits, including areas necessary for cuts and fills, construction of storm drainage systems, and required sight lines.
- 2.17.3 All roots and stumps within the clearing limits shall be grubbed and excavated. No stumps shall be buried on site within the road right-of-way or associated easement areas.
- 2.17.4 Topsoil shall be stripped from all surfaces of the roadbed and areas to be disturbed by cut or fill operations. Suitable topsoil material shall be stockpiled on site and utilized for landscaping roadway shoulders.

2.18 ROADWAY EXCAVATION, FORMATION OF EMBANKMENT AND DISPOSAL OF SURPLUS MATERIAL.

- 2.18.1 The excavation, filling, compaction and disposal of all surplus or unsuitable materials required to construct the roadbed, subgrade, shoulders, slopes and other associated improvements shall be accomplished in accordance with

applicable requirements of CT DOT Form 816 for "Roadway Excavation, Formation of Embankment and Disposal of Surplus Material."

- 2.18.2 All unsuitable material, including material removed during clearing and grubbing and preparation of subgrade, shall be removed from within the limits of the right-of-way and disposed of in a lawful manner.
- 2.18.3 Blasting shall be performed only by licensed competent personnel and shall be done in accordance with all applicable State and Federal laws, local ordinances, rules and regulations.
- 2.18.4 Surplus suitable material may be used to flatten fill slopes within the limits of the right-of-way and any slope easements if approved by the Town. Surplus materials that cannot be so utilized shall be disposed of in a lawful manner.

2.19 PREPARATION OF SUBGRADE.

All topsoil, peat, other organic matter and all soft and yielding material shall be stripped and removed to their full depth; boulders and ledge rock removed to a depth of at least 24 inches below finished subgrade. The surface shall then be backfilled up to subgrade elevation with bank or crushed gravel conforming to requirements of CT DOT Form 816 Sections M.02.1 and M.02.06 (Grading B). Construction methods shall conform to requirements of CT DOT Form 816 for "Subgrade."

2.20 CONCRETE CURBING.

- 2.20.1 Concrete curbing shall be placed on both sides of the pavement along the entire length of new and improved roads at the offset from centerline of road shown on details in Section 12 of these Standards.
- 2.20.2 Irregular or damaged curbing shall not be accepted by the Town, and all improperly placed curbing shall be removed and replaced.
- 2.20.3 All materials and construction methods shall conform to requirements of CT DOT Form 816 for "Concrete Curbing".

2.21 ROLLED GRANULAR BASE.

- 2.21.1 After the subgrade has been compacted, proof rolled, tested and approved by the Town, a rolled granular base shall be applied to the full pavement width. The rolled granular base shall not be less than ten (10) inches thick after compaction and shall have the cross-slope shown on details in Section 12 of these Standards.
- 2.21.2 Construction methods shall conform to requirements of CT DOT Form 816 for "Rolled Granular Base," and materials shall conform to requirements of CT DOT Form 816 Sections M.02.03 and M.02.06 (Grading A).

2.22 PROCESSED AGGREGATE BASE.

- 2.22.1 After the rolled granular base has been placed, compacted and tested, a processed aggregate base shall be applied to the full pavement width plus one (1) foot beyond each curb line.
- 2.22.2 The processed aggregate base shall not be less than six (6) inches thick after compaction and shall have the cross slope shown on details in Chapter 12 of these Standards.
- 2.22.3 Construction methods shall conform to requirements of CT DOT Form 816 for "Processed Aggregate Base," and materials shall conform to requirements of CT DOT Form 816 Section M.05.01.

2.23 BITUMINOUS CONCRETE PAVEMENT.

- 2.23.1 After the processed aggregate base has been brought to the required grade and cross slope, rolled, compacted, and tested, the roadway shall be surfaced with a bituminous concrete *Class I* binder course for the full pavement width to a compacted depth of not less than two (2) inches. A bituminous concrete *Class II* surface (top) course not less than one and one-half (1½) inches thick after compaction shall then be installed. Total compacted depth of *Class I* binder course and *Class II* surface course shall not be less than three and one-half (3½) inches. Prior to installation of the *Class II* top course, the surface of the binder course shall be broomed clean and a tack coat applied. No paving shall be permitted between October 31st and April 1st unless the Town specifically permits an exception due to mild weather conditions. No paving shall be permitted on any day where the base temperature is less than 35 degrees Fahrenheit, when weather conditions of fog or rain prevail, or when the pavement surface shows any signs of moisture. Pavement shall be placed so that each course shall have the cross-slope shown on details in Section 12 of these Standards. Pavement shall also be placed to meet the final top of frame elevations for all structures installed within the roadway.
- 2.23.2 All materials and construction methods shall conform to requirements of CT DOT Form 816 for "Bituminous Concrete". Materials shall conform to requirements of CT DOT Form 816 Sections M.04.01 and M.04.03 (*Class I* for the binder course and *Class II* for the surface course).

SECTION 3 STORMWATER MANAGEMENT

3.1 GENERAL REQUIREMENTS.

3.1.1 Purpose. All systems designed and constructed for management of surface and subsurface water shall be in conformance with these Standards. Care shall be taken to protect the life and property of residents and the traveling public, facilities owned or maintained by the Town or the State, with full consideration given to the adverse effects of land development on downstream properties. All systems shall be designed and constructed such that erosion and sedimentation are properly controlled. Guidance for inspection during construction is contained in Section 11 of these Standards.

3.1.2 Stormwater Quality and Best Management Practices. New developments and redevelopment projects (including phased developments), that meet the following criteria are required to address stormwater quality design requirements detailed in this Section. Site designers are encouraged to incorporate Best Management Practices (BMPs) to reduce imperviousness, runoff volumes, and stormwater pollutant sources. Applicants should refer to the Non-Point Education for Municipal Officials' (NEMO) website at www.nemo.uconn.edu for information on low impact development (LID) practices. BMP design criteria shall be based upon CT DEP's *Stormwater Quality Manual*. Other BMPs can be used to meet the water quality volume (WQV) and total suspended solids (TSS) removal requirements provided they are approved by the Public Works Director.

- .1 Any development resulting in actual disturbance greater than one acre (43,560 sq. ft.).
- .2 Residential developments consisting of five (5) or more dwelling units.
- .3 Residential developments consisting of less than five (5) dwelling units involving construction of a new road, reconstruction of an existing road, or where imperviousness of the site after construction exceeds 30 percent.
- .4 Stormwater discharge to sensitive freshwater wetlands or watercourses, and discharges located less than 500 feet from tidal wetlands.
- .5 Land uses or activities with potential for higher pollutant loadings excluding the groundwater recharge criterion.
- .6 Industrial and commercial development projects which result in 10,000 square feet or greater of impervious surface.
- .7 New highway, road, and street construction.

.8 Modifications to existing storm drainage systems.

3.1.3 Alternative Drainage Systems. The Town encourages use of alternative drainage systems where such systems would be more consistent with the surrounding neighborhood and where proposed BMPs will reduce imperviousness, runoff volumes, and stormwater pollutant sources. Applicants proposing an alternative drainage system should meet with Town staff early in the design process to discuss submission of an *Alternative Drainage System Report* that addresses the following site criteria. Based on information contained in this report, the Public Works Director shall make a final determination concerning the drainage system to be used.

- .1 Proof of sufficient depth to ground water.
- .2 Location of the site in the watershed and the amount of overland flow anticipated.
- .3 Design of the storm drainage system for the surrounding street system.
- .4 Natural features of the site (such as slopes and depth to ledge) that would permit construction of open swales.
- .5 Percentage of impervious surface for proposed subdivision or land development relative to lot size.
- .6 Impacts of ground water recharge that may result from the alternate drainage system; the Public Works Director may require the applicant to provide data, reports, studies, test borings, and other information to make this determination.
- .7 Roadway intersections where a closed drainage system may be more acceptable.
- .8 Location of existing or proposed open space.
- .9 Types of roadway swale linings proposed.
- .10 Potential for erosion and sedimentation both on and downgradient of the site.

3.1.4 Drainage Analysis. Computations, conforming to requirements outlined in this Section, shall be submitted for sizing all proposed storm drainage facilities as well as the analysis of any existing off-site facilities required by the Town. In addition, computations shall be submitted for both predevelopment and post-development conditions for the 2, 10, 25 and 100-year frequency 24-hour

duration Type III storm events at each location from which storm water discharges will exit the property under development.

3.1.5 Potential Overload. Where the proposed land development, including roadway and drainage facility construction, has potential to increase rates of stormwater runoff capable of hydraulically overloading or damaging existing downstream drainage structures, facilities, or watercourses, and/or cause flooding, adequate stormwater runoff control measures shall be designed and constructed to prevent or alleviate such harmful effects.

3.1.6 Stormwater Detention and Runoff Control.

1. Where required, stormwater runoff control measures shall include, but not be limited to, retention and/or detention structures with controlled release of increased flows, increased hydraulic capacity of downstream drainage facilities, erosion protection measures, stormwater treatment, and/or any combination of the above.
- .2 When stormwater detention facilities are required, they shall be sized such that the peak discharge after development shall not exceed the peak discharge prior to development for each of the storm frequencies identified in Section 3.1.4 of these Standards.
- .3 Design and construction of stormwater detention facilities shall conform to the requirements for "Detention Basin" as outlined in CT DEP's *Guidelines for Soil Erosion and Sediment Control*, as amended.
- .4 For all stormwater management basins, a management plan shall be prepared that describes how the facility will be maintained and the party responsible for long-term maintenance. The Town may require establishment of a Homeowner's Association to own and maintain the detention basins.
- .5 When stormwater detention facilities are proposed for Town ownership, they shall be conveyed to the Town and shall be readily accessible for maintenance via an improved access drive. The Director may also require that a fee be paid to the Town in order for the Town to accept the responsibility for the maintenance of the detention facilities.

3.1.7 Discharge. Unless otherwise approved by the Public Works Director, discharge of all stormwater shall be into established watercourses, wetlands, or Town/State highway drains with adequate design capacity to accommodate such discharges. The applicant is responsible for securing all necessary permits from agencies responsible for regulating these areas or facilities.

- 3.1.8 Drainage Easements and Rights to Drain. Where discharge of stormwater shall be onto or through private property, perpetual drainage easements and discharge rights, in favor of the Town of Stonington, shall be secured by the applicant at no cost to the Town. Where drainage easements are required, they shall have a minimum width of 30 feet. For open channels, flared end sections/headwalls, and other outlet protection measures, they shall extend a minimum of 15 feet beyond the outside edge of such measures. Easements located along a property line shall not be extended onto both properties, except where required.
- 3.1.9 Protecting Existing Watercourses. All work within established watercourses shall be accomplished in such a way as to minimize adverse impacts, including provisions to prevent or minimize scour or erosion in the adjacent upstream and downstream reaches of the watercourse.
- 3.1.10 Capacity within the Roadway. Storm drainage systems within the roadway, exclusive of culverts and bridges carrying flows under the road, shall be designed to safely accommodate flows resulting from the 25-year frequency 24-hour duration storm event without being surcharged.
- 3.1.11 Capacity Under Roadways. Culverts crossing under roadways shall be designed to accommodate the following flows:
- .1 Minor Structures. These shall include pipe, box culverts or bridges providing for the drainage of adjacent lands less than one square mile in area in which there is no established watercourse. These structures shall be designed to pass a 25-year frequency discharge without flooding or damaging the highway or adjacent property.
 - .2 Small Structures. These shall include pipe, box culverts or bridges providing for the drainage of adjacent lands less than one square mile in area in which there is an established watercourse. These structures shall be designed to pass a 50-year frequency discharge with one foot of freeboard, and without flooding or damaging adjacent property. The effects of a discharge equal to the 100-year frequency storm shall also be checked. Where such effects are likely to cause damage to persons or property, structures shall be designed to alleviate identified problems.
 - .3 Large Structures. These shall include pipe, box culverts or bridges for the drainage of adjacent lands one square mile or larger in area. These structures shall be designed to pass a 100-year frequency discharge with a minimum one foot under clearance, relative to the low chord of the upstream face of the structure, and shall not create a backwater which will flood or endanger property or roads upstream.

3.2 DESIGN REQUIREMENTS.

3.2.1 General.

- .1 Upstream Drainage Area. Storm drainage systems shall provide for proper drainage of upstream drainage areas in accordance with these specifications.
- .2 Storm Drain Flows. Except where indicated by special design studies, storm drainpipes and culverts will be designed to flow full for the "design storm". Total allowable headwater depths on pipes and culverts should normally be restricted to less than 1.2 times the clear height of the pipe or culvert in order to preserve this condition. Pipes or culverts designed to flow under greater heads will require special studies and designs.
- .3 Placement of drainage structures. The first set of catch basins in a storm drain system shall be located within 350 feet of the street high point unless otherwise approved by the Public Works Director. Spacing between sets of catch basins shall be located as necessary to collect runoff and at a maximum distance of 300 feet unless otherwise approved by the Public Works Director. When outfall distances exceed 400 feet, manholes shall be placed to give a maximum length of pipe between structures of 400 feet. Drainage structures shall be placed at each grade change and at each junction point of two or more storm drains. Inlet structures shall be located and connected to the system to pick up low spots in shoulder areas of the right-of-way and adjacent properties.
- .4 Placement of pipes. Pipes shall generally be laid on straight alignments, both horizontally and vertically, with structures providing access at all deflection points or at a junction of two or more lines. In special cases, pipes may be placed on curved alignments but such curvature shall not exceed the manufacturer's recommendations, and approval must be obtained from the Public Works Director.
- .5 Minimum Slope. All storm sewers shall be designed to provide a self-cleansing velocity of at least two and one-half (2.5) feet per second when flowing full. Generally, storm sewers shall have a minimum pitch of one-half of one percent (0.5) percent). Lesser pitch may be approved by the Public Works Director, provided the self-cleansing velocity is maintained.
- .6 Minimum Pipe Size and Type. Pipe for the main line of storm systems shall be a minimum of 15 inches inside diameter. Inlet connections may be a minimum of 12 inches inside diameter. Pipe arches of equal cross sectional area to the above noted circular pipes may be substituted with approval of the Public Works Director.

- .7 Minimum Cover. The minimum cover over all storm drainage within curb lines shall be 30 inches unless otherwise approved by the Public Works Director.
- .8 Outlet Structures. All storm drain systems shall be terminated with a flared end section, endwall, or other approved structure. HDPE flared end units are not allowed. Energy dissipaters may be required at the outlet of pipes to prevent erosion.
- .9 Intersection Drainage. Inlets shall be installed to properly drain all intersections of new streets, as well as the intersection of new streets with existing streets. Improvements to surface drainage at existing intersections may be required if the new development significantly increases traffic volume at the intersection.
- .10 Discharge from drainage system. The overall drainage system shall be designed such that post-development runoff rates to downgradient properties do not exceed the rate of runoff that existed before such development. This may be accomplished by detention basins, infiltration basins, or other acceptable means. Final discharge points shall be approved by the Town. The final discharge shall be into suitable streams or rivers, or into Town or State drains having demonstrated capacity to carry the additional water.
- .11 Channels / Swales. The use of channels or swales to carry storm water to natural watercourses will be considered on a case by case basis, and require approval of the Public Works Director. Channels shall be properly sized for design flows and stabilized according to flow velocity.
- .12 Underdrains. Underdrains shall be required beneath the edge of pavement wherever the high groundwater level is known to be less than three (3) feet below the proposed finished grade of a street. The Public Works Director may require underdrains to be installed where localized seeps, springs or high groundwater less than three (3) feet below the proposed grade of the street are observed within proposed street lines during construction. The diameter of underdrains shall not be less than six (6) inches. Outlets for underdrains shall be connected directly to drainage structures or shall be terminated with an approved outlet. Underdrains shall be placed in two (2) foot wide trenches, filled with three-quarter (¾) inch stone and lined with filter fabric.
- .13 Surface and Subsurface Combined Drains. Combined surface storm water and subsurface water drains may be installed only with the permission of the Public Works Director. Graded aggregate shall be used around the pipe; with the pipe and aggregate enclosed in an approved

filter fabric. Combined drains shall not be used when crossing the roadway.

3.2.2 Computation of Stormwater Flows.

- .1 Stormwater flows may be computed using the Rational Method, or by alternative methods described in current editions of the National Resources Conservation Service (NRCS) Technical Release No. 20, or Technical Release No. 55. The Rational Method is discouraged for computing flows from drainage areas in excess of 200 acres or for computing flows from 100-year frequency storms.
- .2 All computations shall include a *Pre-Development Drainage Analysis Map* and *Post-Development Drainage Analysis Map* which clearly delineate drainage areas and flow paths used for determining the time of concentrations to each proposed drainage facility and each existing downstream drainage structure that may become hydraulically overloaded or damaged.
- .3 The *Pre-Development Drainage Analysis Map* shall show existing topography (based on the best available existing mapping), existing roads, watercourses, wetlands, flood hazard zones, vegetation (woods, fields, lawns, etc.), drainage facilities and structures. When NRCS methods are used, the drainage analysis map shall also show soil types as shown on the most currently available soils maps.
- .4 The *Post-Development Drainage Analysis Map* shall show watercourses, wetlands, flood hazard zones, proposed topography, all proposed roads and other impervious surfaces, proposed vegetation type, and proposed structures and drainage facilities.

3.2.3 Rational Method Computations. Rational Method computations shall conform to the following guidelines:

- .1 **Runoff Coefficients.** Runoff coefficient ("C") shall be the minimum value utilized for each type of surface, and a composite "C" value shall be computed for each tributary drainage area. A composite "C" value of less than 0.30 shall not be used for single-family residential developments.

TYPE OF SURFACE	RUNOFF COEFFICIENT "C"
Pavement, roofs and impervious surfaces	0.90
Embankment Slopes (cuts and fills)	0.40
Lawns:	

TYPE OF SURFACE	RUNOFF COEFFICIENT "C"
Flat Slope (2% or less)	0.20
Average Slope (2% to 7%)	0.25
Steep Slope (7% or greater)	0.35
Cultivated Fields	0.45
Pasture	0.30
Meadows (moist, level grassland)	0.20
Forested Areas	0.20

- .2 Time of Concentration. Time of concentration (t) shall be determined by the Seelye Chart (Nomograph) for overland flows and the Kirpich Chart (Nomograph) for concentrated flows.
- .3 Rainfall Intensities. Rainfall intensities (i) shall be determined using the frequency/intensity/duration curves found in the latest edition of the CT DOT Design Manual. The minimum allowable time of concentration shall be five (5) minutes.

3.2.4 Opens Channels. In general, open channels shall be avoided, except in conjunction with an approved roadway or development design capable of conveying stormwater discharges to an acceptable outlet. Where open channel flow is permitted, the channel shall be properly designed to safely carry the design flow. Open channels shall be in the form of a trapezoid having a bottom width of at least two (2) feet and side slopes of not less than two (2) feet horizontal to one (1) foot vertical. The channel shall be seeded and protected with erosion control blankets, sodded, riprapped or otherwise stabilized as flow quantities and velocities require.

Special attention shall be given to the stabilization of open channels in immediate vicinity of pipe inlets and outlets, bridges, at bends and curves and at other critical locations to prevent scouring, erosion and/or siltation, and undermining of drainage structures.

Hydraulic design of open channels and design of bed and bank stabilization shall be done in accordance with the applicable criteria of the current edition of FHWA's publication *Design of Roadside Drainage Channels*.

3.2.5 Connection of Private Drains. Unless otherwise approved by the Public Works Director, no private drains shall be connected to the Town's drainage system. In no case shall interior floor drains be hooked into the Town drainage system. See Appendix D, Public Storm Drainage Connection policy, for additional information.

3.2.6 Detention Structures. Detention structures shall conform to the following:

- .1 Requirements. Surface and subsurface detention structures shall be constructed to limit peak discharge from the storm system of the developed area, where such discharge would adversely impact peak flows on downgradient streams, storm systems and properties.
- .2 Storm Return Frequency. Detention structures shall be designed for a storm return frequency of not less than 2, 10, 25, and 100 year or as otherwise specified by the Public Works Director.
- .3 Procedure. Computing outflows from detention areas shall include development of an inflow hydrograph and routing of the inflow through the detention basin to develop an outflow hydrograph.
- .4 Inflow Hydrograph. Inflow hydrographs may be developed by the modified Rational Method or by NRCS Methods. Routing through the detention structure shall be by application of standard storage equation. Other acceptable methods may be used as approved by the Public Works Director.
- .5 Basin Design. Types and requirements for detention basin design shall be as appropriate for the site and be in general accordance with CT DEP's *Guidelines for Soil Erosion and Sediment Control* and the most recent edition of CT DOT's *Drainage Manual*. All designs shall be reviewed and approved by the Public Works Director.
- .6 Maintenance Driveways. Maintenance driveways and access easements shall be provided for all detention facilities. Driveways shall be 12 feet wide with a surface consisting of 12 inches of a rolled gravel base. Grades for detention basin maintenance roads shall not exceed ten (10) percent.
- .7 Fencing. Fencing around the perimeter of a basin shall be provided and approved by the Public Works Director.
- .8 Landscaping. See Section 7 of these Standards.

3.2.7 Sediment and Erosion Control. Permanent and/or temporary control measures shall be constructed to prevent sedimentation of streams, watercourses, lakes, ponds, and storm systems.

3.3 MATERIALS.

- 3.3.1 Reinforced Concrete Pipe. Reinforced concrete pipe, of the same size indicated on approved plans, shall be Class IV, conforming to requirements of Article M.08.01, paragraph 6 of CT DOT Form 816. Class V pipe shall be used in deep fills. Joints in concrete pipe shall be sealed with either cold-applied bituminous sealer, preformed plaster gaskets, or flexible, water-tight, rubber-type gaskets conforming to requirements of Article M.08.01 of CT DOT Form 816. If the temperature is above 35 degrees F, joints may be Portland cement conforming to the requirements of Article M.11.04 of the CT DOT Form 816. Reinforced concrete culvert ends shall conform to the requirements of Article M.08.01, paragraph 22 of CT DOT Form 816.
- 3.3.2 Corrugated Polyethylene Pipe. Corrugated polyethylene pipe, either corrugated interior surface (Type C) or smooth interior surface (Type S) without perforations or with perforations (Type CP or SP), shall conform to AASHTO M294 and Article M.08.01-25 of CT DOT Form 816.
- 3.3.3 High Density Polyethylene Pipe. High density polyethylene pipe with a smooth interior surface (Type D) shall conform to AASHTO M294. Installation of HDPE pipe shall be in accordance with ASTM recommended practice D2321.
- 3.3.4 Underdrains. Perforated pipe shall comply with appropriate paragraphs of Article M.08.01 of CT DOT Form 816. Aggregate for filling the trench shall meet the requirements of Article M.08.03 of CT DOT Form 816.
- 3.3.5 Catch Basins.
- .1 Catch basins shall be of the type specified, as shown in Section 12 of these Standards, and shall be constructed in locations shown on the approved plans. Catch basins shall have a two (2) foot deep sump unless otherwise specified by the Public Works Director.
 - .2 Catch basin tops and sumps shall be precast units conforming to Article M.08.02, paragraph 4 of CT DOT Form 816. Catch basins may be constructed of concrete building brick or precast masonry units conforming to Article M.08.02, paragraphs 2 and 3, respectively of CT DOT Form 816.
 - .3 Metal for grates and frames as shown in Section 12 of these Standards shall conform to Article M.08.02, paragraph 5 of CT DOT Form 816.
 - .4 Catch basin tops shall be adjusted to the required finished road grade.
- 3.3.6 Riprap. Riprap materials and construction methods shall conform to the applicable requirements of CT DOT Form 816 for "Culvert Ends."
- 3.3.7 Filter Fabric. Filter fabric shall conform to Article M.08.01-26 of CT DOT Form 816, as applicable.

3.3.8 Miscellaneous Open Channel Stabilization. General seeding, sodding, burlap erosion protection and other methods of stabilizing beds and banks of open channel shall conform to applicable materials and construction methods specified in CT DOT Form 816 for the particular method approved for use. If CT DOT Form 816 does not cover the proposed stabilization method, materials and construction methods shall conform to Standards and Specifications contained in CT DEP's *Guidelines for Soil Erosion and Sediment Control*.

3.4 CONSTRUCTION SPECIFICATIONS.

3.4.1 General Requirements.

- .1 Construction survey stakes shall be established at 50 foot intervals and at all structures. The construction stakes shall be marked with the station, offset to the pipeline or structures, and cut to invert.
- .2 The backfilled trenches and any adjacent disturbed slopes shall be stabilized to prevent erosion by implementing the appropriate measures described in Chapter 12 and in the *Guidelines for Soil Erosion and Sediment Control*.
- .3 When excavation takes place in dry weather, reasonable precautions shall be taken by the contractor to insure that inhabitants in the vicinity of the excavation are not inconvenienced by dust raised from construction operations. Dust should be stabilized by water spray or chemical means, such as calcium chloride.

3.4.2 Trench and Other Excavations.

- .1 Trench and other excavations shall be of sufficient width and depth at all points to allow for pipe to be laid, joints to be formed, and other construction to be built in the most thorough and workmanlike manner, and to allow for trench-side protection, pumping and draining, and removal of any unsuitable material.
- .2 Storm sewer trenches shall be of a depth necessary to cover pipe as shown on approved plans.
- .3 Excavations shall be at least 12 inches wider than outside dimensions of the structures they are to contain. The bottom of the pipe trench shall be excavated to lines and shapes as shown on approved plans, so that the pipe shall have a continuous and even bearing. When trench excavation encounters rock or boulders, such material shall be excavated to six (6) inches below the pipe bottom and refilled to grade with sand well-tamped in place. Sides of the trench or other excavation in rock shall be

excavated to such width that no rock shall be closer than six (6) inches to the pipe barrel or other structures. Suitable excavated material may be used for backfill. Unsuitable material shall be replaced with bank run gravel conforming to Article M.02.01 of CT DOT Form 816. When soft or unsuitable material is encountered, the depth of excavation shall be increased to one (1) foot below the pipe bottom, and excavated material shall be replaced with compacted gravel fill conforming to Article M.02.02 of CT DOT Form 816.

3.4.3 Blasting. All blasting shall be executed by experienced powdermen in strict accordance with local and state regulations, and shall be conducted with all possible precautions to avoid injury to persons and property. It is further required that the rock shall be covered; that sufficient warning shall be given to all persons in the vicinity of the work before blasting; that care shall be taken to avoid damage to electric and telephone lines, drains and other structures; and that caps or other exploders shall not be kept in the same place in which dynamite or other explosives are stored. The contractor shall be held responsible for all claims for damage caused by blasting. In addition to observing all laws and ordinances relating to the storage and handling of explosives, the contractor shall comply with any further regulations which the Local Fire Marshal deems necessary.

3.4.4 Water Removal.

- .1 The contractor shall remove any water which may accumulate or be found in the trench or other excavations by pumping, draining or bailing, and shall form all sumps and build drains or other works necessary to maintain them. The contractor shall at all times have upon the work site sufficient pumping machinery.
- .2 Water from trenches and excavations shall be properly disposed of so as to not endanger health, public or private property, work completed or in progress, the surface of highways, wetlands and watercourses, or cause any interference with public use of existing highways and traveled ways.
- .3 Temporary roadway drainage systems shall utilize erosion checks to prevent sedimentation of any water bodies.

3.4.5 Pipe Installation.

- .1 Typically, placement of pipes shall start at the downstream end of the drainage system and progress upstream. All pipe shall be carefully laid, true to the lines and grades shown on the drawings; for reinforced concrete pipe, place hubs upgrade and with the spigot ends fully entered into the adjacent hubs.

- .2 Jointing shall be in accordance with Article 6.51.03 of CT DOT Form 816.
- .3 If so ordered by the inspector, any pipe not in true alignment or showing any settlement or deflection after laying shall either be re-laid or corrected to the satisfaction of the inspector.
- .4 Where shown on the drawings, the contractor shall connect the proposed drainage system with existing structures or pipes in a workman like manner.
- .5 Culvert ends shall be placed as specified in Article 6.52.03 of CT DOT Form 816.

3.4.6 Backfilling.

- .1 After joints of storm pipe lines have been completed, the trench shall be backfilled with existing material or new material if existing material is unsuitable. Backfill around sides of the pipe shall be deposited in evenly distributed six (6) inch compacted layers, evenly distributed on both sides of the pipe and tamped in place with power tampers or other suitable tools. Remaining fill above the pipe shall be compacted to the elevation of the road subgrade.
- .2 Backfill around manholes and other appurtenant structures shall be placed and compacted as specified above for backfill around pipes. No stones weighing over 50 pounds shall be backfilled into the pipe trench or against the structures.

3.4.7 Placing Riprap. The area indicated on the drawings to be protected by riprap shall be accurately shaped as shown on the detail drawings in the plan set. Riprap shall be placed in accordance with Article 7.03.03 of CT DOT Form 816.

3.4.8 Constructing Catch Basins. Catch basins, manholes, and drop inlets shall be constructed in accordance with Article 5.07.03 of CT DOT Form 816.

3.4.9 Underdrains. Underdrains shall be constructed in accordance with Article 7.51.02 of CT DOT Form 816.

3.4.10 Filter Fabric. Installation shall be in accordance with the manufacturer's instructions or as specified by the Public Works Director.

3.4.11 Erosion and Sedimentation Control Structures. These structures shall be constructed in accordance with Section 10 of these Standards, CT DOT's *Drainage Manual* and CT DEP's *Connecticut Guidelines for Soil Erosion and Sediment Control*.

SECTION 4 SIDEWALKS, HANDICAP RAMPS & BIKE PATHS

4.1 PURPOSE.

These specifications provide uniform material and construction standards for cement concrete sidewalks, handicap ramps, and bike paths.

4.2 SIDEWALKS.

4.2.1 Location. Sidewalks shall be installed adjacent to State and Town roadways in all portions of "Core Village Areas" and "Village Fringe Areas" as defined in the 2004 Plan of Conservation and Development.

4.2.2 Sidewalk Specifications

- .1 Minimum width. The minimum width of sidewalks shall be five (5) feet unless otherwise approved by the Public Works Director.
- .2 Sidewalks shall be constructed of a minimum of 3,000 PSI Portland Cement Concrete with an air entraining admixture. Sidewalks shall be a minimum of five (5) inches thick, shall be constructed on a granular fill base having a minimum compacted thickness of eight (8) inches and have welded wire fabric reinforcement provided. At all driveway crossings, the concrete thickness shall be increased to minimum of eight (8) inches and welded wire fabric reinforcement provided.
- .3 All materials and construction methods shall conform to requirements of CT DOT Form 816 for "Concrete Sidewalks". "Granular Fill" shall conform to requirements of CT DOT Form 816 Sections M.02.01 and M.02.06 (Grading A). Portland Cement Concrete shall conform to requirements of CT DOT Form 816 Section M.03.01 (Class A). Welded wire fabric reinforcement shall be WWF 6x6 - W2.9xW2.9. Sidewalks shall be designed in accordance with details contained in Section 12 of these Standards.

4.3 HANDICAP RAMPS.

4.3.1 Handicap ramps shall be constructed in accordance with details contained in Section 12 of these Standards.

4.3.2 Handicap ramps shall be placed at all pedestrian crosswalks, intersections, commercial driveways, or other areas where handicapped accessibility is required along the sidewalk route.

- 4.3.3 Handicap ramps shall be placed opposite each other at all corners of an intersection. At "T" intersections, ramps shall typically be placed in three locations.
- 4.3.4 At intersections, handicap ramps shall be located in front of the stop sign to allow pedestrians and handicapped persons to cross the street in front of stopped traffic.
- 4.3.5 Detectable warnings, which shall be in accordance with the latest revision of the Americans with Disabilities Act Accessibility Guidelines (ADAAG), should be provided on all sidewalk ramps.

4.4 BIKE PATHS.

- 4.4.1 Two-way, off-street bike paths shall have a minimum paved width of eight (8) feet. Paths shall be constructed of Bituminous Concrete having a minimum two (2) inch thickness, and shall be constructed on a granular fill base having a minimum compacted thickness of eight (8) inches. Alternative surfaces may be approved by the Public Works Director. All brush, trees and any other obstructions shall be cleared and removed for a distance of three (3) feet beyond the outside edge of pavement along both sides of the entire length of the bike path.

SECTION 5 DRIVEWAYS AND APRONS

5.1 PURPOSE.

These guidelines provide standards for commercial and residential driveway location and construction, including driveway aprons.

5.2 CURB CUT PLACEMENT AND DRIVEWAY WIDTH.

5.2.1 Number of Curb Cuts. One (1) curb cut shall be allowed as of right for each property. Additional curb cuts for residential properties shall require approval of the Public Works Director, and additional curb cuts for commercial properties require approval of the Planning and Zoning Commission.

5.2.2 Proximity to Road Intersections. The outside edge of a driveway apron should be located a minimum of fifty (50) feet from the outside paved edge of a road intersection. The Public Works Director may reduce this requirement for preexisting conditions.

5.2.3 Sight Line. Grading and clearing at driveway entrances shall ensure adequate sight distance for exiting vehicles. Refer to Section 2.3 (Minimum Roadway Geometric Standards) for specific sightline distances based on functional classification of the road that intersects the driveway. Vertical stop sight distance is defined as the minimum distance an observer whose eye level is 3.5 feet above the road surface can observe an object 0.5 feet above the road surface. Horizontal stop sight distance is defined as the minimum distance an observer can see an object in the center line of the inside lane while not requiring a line of sight outside of the road right-of-way.

5.2.4 Commercial Driveway Curb Cut Width. The driveway curb cut width shall be twelve (12) feet for each proposed laneway.

5.2.5 Residential Driveway Curb Cut Width. The driveway curb cut width shall not be less than ten (10) feet nor greater than sixteen (16) feet without approval from the Public Works Director.

5.4 DRIVEWAY APRON INSTALLATION GUIDELINES.

5.4.1 Definition. The apron is defined as that portion of a driveway extending perpendicular from the edge of roadway pavement to the right-of-way line, or a minimum distance of ten (10) feet in from the edge of road pavement, whichever is greater.

5.4.2 Drainage Nuisances. Aprons shall be constructed such that they do not permit runoff of water from the roadway to enter private property and thereby create a

nuisance, unless a drainage easement in a form satisfactory to the Town is granted by such owner to the Town. Under no circumstances shall a driveway apron be constructed so as to obstruct or alter the free flow of water in the road gutter line or other drainage ways of the Town.

5.4.3 Grade. The driveway apron shall have a maximum grade of three percent slope (3 feet vertical to 100 feet horizontal) and the next ten feet beyond the apron shall not exceed a 5 percent slope. For commercial properties, the remainder of the driveway shall not exceed 10 percent slope. For residential properties, the remainder of the driveway shall not exceed fifteen (15) percent for paved driveways or ten (10) percent for unpaved driveways.

- .1 Ascending driveways shall be graded to minimize the discharge of concentrated runoff onto public roadways.
- .2 For driveways that descend into private property, aprons shall rise in elevation from the roadway gutter line to the right-of-way line a minimum of five (5) inches before descending into the property.

5.4.4 Apron Surface Material.

- .1 Driveway aprons crossing existing or proposed sidewalks shall be graded to meet the grade of the sidewalk, and the section of the sidewalk in the area of the driveway shall be replaced with an eight (8) inch thick reinforced concrete section, designed in accordance with details contained in Section 12 of these Standards.
- .2 When sidewalks are not present, the driveway apron shall consist of a minimum of two (2) inches of bituminous on top of an eight (8) inch bed of compacted processed gravel or stone. Alternative driveway apron materials may be used with the approval of the Public Works Director, however, the first one (1) foot of the apron shall be bituminous concrete.

5.4.5 Side Slopes. Where grading is required in a town road right-of-way, side slopes shall not be steeper than 2:1 (2 feet horizontal to 1 foot vertical), and shall be covered with a minimum of four (4) inches topsoil, and limed, fertilized, seeded and mulched.

5.4.6 Lip. When the road has curbing, all paved driveway aprons shall have a lip of one and one-half (1½) inches at the town road gutter line. When the road does not have curbing, the driveway apron shall be flush with the road surface. If a driveway apron is constructed prior to the placement of the surface course of a subdivision road, then the driveway lip shall be increased in height accordingly to meet the above requirements

- 5.4.7 Driveways Intersecting Guide Rail. When driveway installation requires removal of an existing guide rail, remaining portions of the rail shall be secured with concrete end anchorages. All such work shall be the responsibility, and at the expense of the applicant.
- 5.4.8 Driveways Adjacent to Property Lines. The outside edge of a driveway apron shall not be located any closer than five (5) feet from an adjacent property line. The point at which the driveway curb radius intersects the edge of pavement or curb line of a roadway shall not encroach beyond the point where the extension of the property line meets the roadway. This requirement is waived for common or shared driveways.
- 5.4.9 Monumentation. Driveway aprons shall be located such that no disturbance of road right-of-way monumentation occurs. In the event of accidental disturbance of a monument, the property owner served by the driveway shall reset the monument, and be responsible for retaining and paying for services of a Connecticut licensed land surveyor.

5.5 RESIDENTIAL DRIVEWAY CONSTRUCTION REQUIREMENTS.

- 5.5.1 Surface Water Drainage. Even distribution of driveway run-off onto the lot is encouraged. Impervious driveway surfaces should be crowned and/or pitched to direct runoff to pervious areas. If run-off drains toward a road, water shall be retained in the roadway gutter or side swale, or picked up by the storm drainage system. As a general principle, driveway length and width should be kept to a minimum and the surface kept as porous as possible to minimize impervious surface on the site. Allowed pervious surfaces include porous asphalts, paver blocks laid on a sand bed, concrete and grass grid pavers, crushed stone and gravel.
- 5.5.2 Culverts Under Driveways. Where culverts are required for passage of stormwater, they shall be constructed of RCP with concrete flared end sections provided at the pipe inlet and outlet. HDPE culverts shall only be allowed if specifically authorized by the Director. Culverts shall be a minimum of 12 inches in diameter, or otherwise sized to adequately convey under the driveway all surface runoff expected to reach the inlet during a storm with a ten (10) year recurrence interval. All culverts shall withstand AASHTO H-20 loadings and have a minimum cover over the top of the culvert of one (1) foot, unless otherwise approved by the Director.
- 5.5.3 Clearing of Trees and Brush. All brush, trees and any other obstructions shall be cleared and removed for a distance of three (3) feet beyond the outside edge of pavement along both sides of the entire length of the driveway.
- 5.5.4 Roof Gutter Downspouts. Roof gutter downspouts should not be directed onto driveway surfaces.

5.6 DRIVEWAYS SERVING MORE TWO OR MORE RESIDENTIAL PROPERTIES.

Any driveway strip or access serving two (2) or more residential parcels requires the following:

- 5.6.1 The entire driveway accessing multiple properties shall be paved to a minimum of 15 feet in width with two (2) inches of bituminous concrete over eight (8) inches of processed gravel. This requirement may be waived by the Planning and Zoning Commission and/or Inland Wetlands and Watercourses Commission if it is found that doing so protects surface water and groundwater quality.
- 5.6.2 Construction plans and profiles signed and sealed by a Connecticut licensed Professional Engineer shall be submitted to the Town, incorporating all guidelines identified in this Section. Designs must provide drainage structures as necessary to ensure that no adverse impacts from drainage arise from driveway installation.

SECTION 6 SANITARY SEWERS

6.1 PURPOSE.

- 6.1.1 These Technical Standards provide uniform guidance throughout the Town of Stonington for connections to and extensions from existing public wastewater collection systems, hereafter called sanitary sewers, from initial design stage through final approval.
- 6.1.2 To ensure compliance with these standards, any person or entity requiring an extension to a sanitary sewer must submit a detailed set of engineering drawings. Design criteria not covered in this Section shall be performed accordance with *Guidelines for the Design of Wastewater Treatment Works* (TR-16) as amended, prepared by the New England Interstate Water Pollution Control Commission. Situations that arise but not governed herein shall be addressed on a case-by-case basis, subject to the approval of the Water Pollution Control Authority (WPCA) or its designated agent.
- 6.1.3 No person or entity shall uncover, make any connection with, alter, repair, or disturb any public sewer, or any private sewer that is connected to a public sewer, unless a valid permit has been issued by WPCA.
- 6.1.4 No sanitary sewer system shall be approved that allows the introduction of rainwater, surface drainage, non-contact cooling water or any other sources of inflow or infiltration.

6.2 APPLICANT AND CONTRACTOR RESPONSIBILITIES.

- 6.2.1 Compliance with these Standards do not relieve the applicant or contractors from any and all safe and sound engineering and construction practices.
- 6.2.2 It is the applicant's responsibility to obtain all necessary permits from any affected agencies (municipal, state or federal), that may be required for completion of a project.
- 6.2.3 The applicant is advised to review and conform to all applicable ordinances and regulations in force whether by the WPCA or other Town agencies.
- 6.2.4 All material, labor and other associated costs are to be borne entirely by the applicant or his agents regardless as to whether said costs were part

of the original design or incurred during construction due to requirements of the WPCA, or any other agency of the Town, State or Federal government.

6.2.5 Construction permits shall only be issued to:

- .1 A contractor holding a valid State of Connecticut license to perform unsupervised installation of sewer mains, services, and appurtenances; or
- .2 A person installing or repairing a building sewer within the confines of a single-family residential lot owned and occupied by such person, as long as such person is solely responsible for doing the work.

6.3 SANITARY SEWER DESIGN CRITERIA.

6.3.1 Specifications: All sanitary sewer construction materials and procedures shall conform to these Technical Standards and other Rules and Regulations of Stonington WPCA; CT DOT's *Standard Specifications for Roads, Bridges and Incidental Construction, Form 816*, as amended; and *Guidelines For The Design Of Wastewater Treatment Works (TR-16)*, as amended..

6.3.2 Special Sanitary Structures: Details of special or unusual sanitary structures shall be submitted to WPCA for review and approval before construction.

6.3.3 Sanitary Sewer Design Criteria.

- .1 Proposed main sewers shall be designed to provide required capacity (peak flow, infiltration and other wastewater) to handle all projected flow from the upper waste shed based on anticipated build-out under current zoning. Design flows shall be based on an average daily per capita flow of sewage of not less than 75 gallons per day. Allowances for inflow and infiltration shall be added to this value in accordance with TR-16. Sewer capacity shall be designed to accommodate a peak design flow of four (4) times the average daily flow at build-out of the drainage area based on the maximum density allowed by zoning, unless otherwise determined by WPCA to reflect generally accepted ratios of peak-to-average daily flow. As a basis of design, the developer's engineer shall submit average wastewater flow and/or water consumption data. Sanitary Sewer Systems shall be designed for 50 years and interceptor sewers for

the ultimate tributary population (i.e., commercial, industrial and/or residential).

2. Average daily flow and peak flow for domestic, commercial and industrial generators shall be based on engineering documentation. Hydraulic design shall be based on the Manning formula for a pipe flowing 0.8 full at peak design flow capacity under open channel flow conditions at all points.
- .3 Slopes.
 - .1 All sewers shall be designed and constructed to give a velocity when flowing full of not less than two (2.0) feet per second (0.61m/s) based on Manning's formula using a "n" value of 0.013 constant with depth. Minimum slopes may be used only if absolutely necessary due to grade restrictions. Minimum slopes shall be in accordance with TR-16.
 - .2 Pipe diameters and slopes shall be selected for the greatest practical velocities to minimize settling problems -- use of oversized sewers in order to justify flatter slopes is discouraged. If proposed slopes are less than the minimum slope of the smallest pipe, the design engineer shall calculate the actual depths and velocities at minimum, average, and maximum day and peak hourly flow for each section of the sewer and submit this information to WPCA.
 - .3 Sewers must be laid out with uniform slopes between manholes.
 - .4 Velocities greater than 12 feet per second are not permitted under any flow conditions, unless special provisions have been made to protect against displacement caused by erosion and impact.
 - .5 To prevent displacement, sewers on 15 percent slopes or greater shall be securely anchored.
 - .6 Impervious dams within main line sewer trenches shall be required as directed by WPCA.
- .4 Lateral sewers shall be laid to a straight line, preferably not less than two (2) percent grade (one-quarter ($\frac{1}{4}$) inch per foot), except where impractical or where a hardship would be created. In such cases, the pipe may be laid to a grade of not less than one (1)

percent (one-eighth ($\frac{1}{8}$) inch per foot). Sewer chimneys shall be provided as required to maintain an optimum grade in the lateral and building sewer while insuring that residences will receive basement service without the need for pumping.

- .5 Sewers shall be laid at a minimum depth and no less than a minimum slope to insure that residences will receive basement service without the need for individual wastewater pumps. Sewers located in public rights-of-way or low areas shall be constructed at a depth having no less than four (4) feet cover. Special cases will be reviewed on a case-by-case basis.
- .6 When the sewer is under a paved roadway, manholes shall be placed in the center of pavement in so far as practical. If installed in a paved gutter area where no other suitable alternative is available, the manhole shall be provided with a water tight frame and cover to exclude surface stormwater flows.
- .7 Minimum size of pipe for main sewers shall be eight (8) inches inside diameter, and six (6) inches inside diameter for lateral sewers. As a minimum standard, pipe shall be SDR 35 PVC.
- .8 Manholes shall be provided at all sewer junctions, end of lines, changes in direction, and changes in grade. All drop inlets to manholes shall be outside drop inlets. No inside drop inlets will be allowed.
- .9 Manhole spacing shall not exceed 300 feet. Manholes not in pavement areas shall have locking rims set a minimum of two (2) inches and maximum of four (4) inches above grade to avoid stormwater inflow. Watertight covers shall be used wherever a manhole is located within an A-Zone or V-Zone (100 year flood hazard areas as defined on FEMA Flood Insurance Rate Maps) or as directed by WPCA.
- .10 Sewers shall be laid with uniform slope between manholes. On long reaches with relatively flat slopes, provisions for odor control shall be considered based on such factors as sewage temperature, pH ranges and/or dissolved oxygen levels.
- .11 Alignment. All gravity sewers shall be laid with a straight alignment between manholes.
- .12 Building Sewers.

- .1 No portion of any sewer may be located within 25 feet of a well. Any portion that is less than 75 feet from a well shall be comprised of extra heavy material as required by Connecticut Public Health Code (Ref. Sec. 10-13-B51d)
- .2 When plumbing of a building to be connected is not vented, or in the judgment of WPCA is inadequately vented, a house trap with cleanout and air vents shall be installed in accordance with applicable building codes.
- .3 Building sewers shall be not less than 4 inch diameter. Minimum grades shall be as follows:
 - 4" not less than ¼ inch per foot
 - 6" not less than 1/8 inch per foot
- .4 Insofar as possible, pipe should be laid to a straight line and grade. Long radius fittings must be used at changes in alignment. Fittings with bends exceeding 1/8 will not be allowed.
5. Cleanouts or manholes shall be installed at intervals not exceeding 100 feet. Manholes shall be constructed according to Section 6.5.4 of these Standards. The WPCA may require locking and/or watertight covers.
- .13 Commercial / Industrial Sites.
 - .1 For all buildings in an Industrial or Commercial zoning district, a manhole is required in the building sewer between the building and the main sewer.
 - .2 A DEP discharge permit shall be required for all projected waste discharges greater than 5,000 gallons per day, or if the discharge involves industrial process wastewater.
 - .3 For public sewers, physical and chemical limitations are defined by the Rules and Regulations of WPCA.
- .14 Wastewater Pumping Station. Developments shall be served by gravity sewer whenever possible. If gravity sewer is not feasible, a wastewater pumping station designed in conformance with TR-16 shall be provided. Design shall be provided by a Connecticut licensed professional engineer. All pumping station designs, whether intended to remain privately owned and operated or become part of the public sanitary sewer system, shall be submitted to WPCA for review and approval.

- .15 Sewer Force Main (associated with a wastewater pumping station).
 - .1 Force mains should measure a minimum of four (4) inches in diameter. Smaller sizes two (2) to three (3) inches) may be approved on a case by case basis by WPCA.
 - .2 Velocities in excess of three (3) feet per second should be maintained.
 - .3 As far as possible, alignment and depth of force main should provide a constant upgrade profile.
 - .4 Pipes shall be placed with a minimum of four (4) feet of cover.
 - .5 Automatic air release valves shall be placed at all relative high points in the force main.
 - .6 Drain valves shall be placed at all relative low points in the force main. These valves must be connected to gravity sewers or be provided with connections for vacuum pumper trucks.

- .16 Low Pressure Sewers. When no practical alternative exists, the WPCA at its sole discretion may permit a low pressure sewer system in lieu of a municipal pumping station. Designs for low pressure sewers shall be prepared by a Connecticut licensed Professional Engineer, and shall have the following characteristics:
 - .1 At design average flow, velocity in excess of three (3) feet per second should be maintained in all pressure lines.
 - .2 As far as possible, alignment and depth of force main shall provide a constant upgrade profile.
 - .3 Pipes shall be placed with a minimum of four (4) feet of cover.
 - .4 An automatic air release valve manhole must be placed at all relative high points in the force main.
 - .5 Drain valves manholes shall be placed at all relative low points in the force main. These valves must be connected

- to gravity sewers or be provided with connections for vacuum pumper trucks.
- .6 In-line access manholes shall be placed at every change in pipe size.
- .7 The low pressure sewer system design, regardless of whether the sewer is intended to remain privately owned and operated or become part of the public sanitary sewer system, shall be submitted to WPCA for review and approval.

6.4 PROTECTION OF WATER SUPPLIES AND RELATION TO WATERMAINS.

6.4.1 Relation to Water Supply Structures. Sewers shall be kept remote from public water supply wells or other potable water supply sources and structures, as required by Connecticut Public Health Code.

6.4.2 Horizontal Separation. Whenever possible sewers shall be laid at a minimum at least ten (10) feet, horizontally, from any existing or proposed water main. Should local conditions prevent this lateral separation, a sewer may be laid closer than ten (10) feet to a water main if:

- .1 It is laid in a separate trench, or
- .2 It is laid in the same trench with the water mains located at one side on a bench of undisturbed earth, and
- .3 In either case, the elevation of the top (crown) of the sewer is at least 18 inches below the bottom (invert) of the water main.

6.4.3 Vertical Separation. Whenever sewers must cross beneath water mains, the sewer shall be laid at such an elevation that the top of the sewer is at least 18 inches below the bottom of the water main. When the elevation of the sewer cannot be varied to meet this requirement, the water main shall be relocated to provide this separation or reconstructed with mechanical-joint cement lined ductile iron pipe or equivalent for a distance of ten (10) feet on each side of the sewer. One full length of water main should be centered over the sewer so that both joints will be as far from the sewer as possible. When it is impossible to obtain horizontal and/or vertical separation as stipulated herein, both the water main and sewer shall be constructed of mechanical-joint cement lined ductile iron pipe or other equivalent based on water tightness and by an approved method to assure water tightness or both pipes shall be encased in concrete.

6.5 MATERIAL AND CONSTRUCTION METHODS.

6.5.1 This section provides material and installation specifications for sanitary sewer pipe, manholes, force mains, and building sewers.

6.5.2 Materials – Sewer Pipe

- .1 Gravel bedding for PVC sanitary sewer pipe including laterals, building sewers, and force main shall be three-quarter ($\frac{3}{4}$) inch crushed stone. Crushed stone shall consist of hard, durable fragments of crushed rock and shall be free from clay, organic matter or other objectionable material. Crushed stone shall conform to the gradation table for three-quarter ($\frac{3}{4}$) inch crushed stone as specified in Article M.0101 of CT DOT Form 816.
- .2 Filter Fabric. The fabric shall be non-rotting, acid and alkali resistant and have sufficient strength and permeability for the purpose intended, including handling and backfilling operations.
- .3 Polyvinyl Chloride (PVC) Sewer (Gravity Flow). PVC sewer pipe shall be unplasticized polyvinyl chloride plastic gravity sewer pipe having integral wall bell and spigot joints. Pipe and fittings shall meet and/or exceed all requirements of ASTM Specifications D 3034, latest revision, SDR 35, Type PSM. All pipes 18 inches through 24 inches shall be in full compliance with ASTM F-679. All pipes 18 inches through 24 inches shall be T-1 heavy wall and laying lengths shall be 13 feet plus or minus one (1) inch. All fittings and accessories shall be as manufactured and furnished by the pipe supplier and have bell and/or spigot configurations identical to that of the pipe.
- .4 Polyvinyl Chloride (PVC) Sewer Force Mains (Pressure Pipe). Polyvinyl chloride pressure pipe and fittings shall be class 200 with integral bell end assembled in accordance with the manufacturer's instructions. It shall conform to ASTM Standard Specification for Pressure Rated Pipe ASTM-2241, SDR-21.
- .5 Materials -- Sewer Manhole.
 - .1 Precast reinforced concrete manhole sections shall conform to latest ASTM specification C-478, and as specified herein. All precast manhole units shall have rubber "O" ring joints.
 - .2 Brick shall conform to requirements of ASTM. Designation C-32 latest revision, grade MA.
 - .3 Concrete masonry units shall conform to requirements of ASTM Designation C-139, latest revision. Block shall be eight (8) inch radial units. Corbel blocks shall be used for taper.

- .4 Mortar used for laying brick, blocks, bedding castings, parging the outside of manholes, and similar uses, and grout used for filling joints, voids, etc., shall unless otherwise provided or ordered, be composed of one part Portland Cement and two parts sand of suitable fineness, measured and mixed by means and methods similar to those specified for concrete ingredients insofar as those requirements are applicable. However, if the quantity of mortar or grout to be mixed or used at one time or place is small, measurement by volume on the job and hand-mixing in suitable watertight mortar beds will be permitted. Mortar containing lime may be used only as approved by WPCA. Mortar or richer cement content shall be used where required for the top surface finish of inverts. Coloring, hardening or similar materials shall be added where required.
- .5 Manhole steps shall be copolymer polypropylene plastic coating one-half ($\frac{1}{2}$) inch grade 60 steel reinforcement by Hydro Conduit Corporation or equal.
- .6 Manhole frames and covers shall be as shown on Plan Details.
- .7 Flexible watertight pipe connections shall be KOR-N-SEAL or equal.
- .8 Pipe for manhole drops shall be PVC as specified above. New manhole drop connections shall be concrete encased on the outside of the manhole.

6.5.3 Construction Methods – Sewer Pipe.

- .1 Sewer pipe for both main and lateral sewers, shall be laid as indicated on the approved plans. When in place, all pipe shall be true to the specified line and grade. Unless otherwise directed, all pipe shall be laid upgrade without any breaks of continuity in the line between manholes or other structures. The contractor shall provide laser beam type equipment to ensure vertical and horizontal pipe alignment at each pipe segment.
- .2 Foundations of crushed stone shall be brought carefully to the proper grade for the barrel of the pipe, well tamped or compacted and the pipe laid thereon. Grade of the stone bedding shall be checked at intervals of not more than three (3) feet immediately before pipe is laid upon it. The bedding shall be such that the

barrel of the pipe will be evenly supported for its entire length except for a distance of not more than four (4) inches outside each end of each pipe joint.

- .3 All sanitary sewer pipe shall be laid in a trench free of water. The contractor shall furnish all equipment necessary to keep trenches free of water during the laying of pipe.
- .4 Pipe shall be installed in accordance with the manufacturer's requirements and details provided herein. Open ends of sewers or pipe under construction shall be kept closed with temporary stoppers at night and during construction to exclude foreign matter and flows of water. The newly installed sewer must be clean, and free from sediment and foreign objects.
- .5 Leakage within the sanitary sewer system shall be reduced to a practical minimum attainable only with first-class workmanship. Leakage into or out of the sewer system shall not exceed 100 gallons per day per inch of pipe diameter per mile of sewer. Appropriate testing methods as specified below shall be made upon completion of all pipe placement including service laterals.

6.5.4 Construction Methods -- Sewer Manhole.

- .1 Precast manhole sections shall be manufactured in accordance with latest ASTM Specifications C-478. Brick or block manholes shall only be constructed where specifically authorized by WPCA. Joints of manhole sections shall be formed entirely of concrete employing a rubber "O" gasket and which, when assembled, shall be self-centering and make a uniform watertight joint.
- .2 All manhole steps shall be built into walls or the precast sections and set in straight alignments so as to form a continuous ladder with a maximum distance of 12 inches between steps.
- .3 Each section of the precast manhole shall have not more than two (2) lifting holes for the purpose of handling and laying. These holes shall be tapered and shall be plugged with mortar after installation.
- .4 Precast base sections shall be installed on a firm stabilized foundation prepared similar to that required for proper installation of the adjacent pipeline as described elsewhere in these specifications. The bell of the manhole base should be wiped clean, be free of all dirt and grit and liberally soaped in preparation for receiving the riser, cone or slab top section. Prior to snapping the gasket into the spigot groove of the riser or cone section, the

gasket shall be wiped clean and well soaped. The riser or cone section with gasket in place should then be lowered into the bell of the manhole base, taking care that no dirt gets into the joint or on the gasket. Additional riser or cone sections should be joined in a similar manner.

- .5 Knock-outs in manhole riser sections to allow the installation of pipes may be provided during manufacturing of the riser section and shall be provided only to the maximum allowable pipe size recommended by the manufacturer. Watertight pipe connections shall be cast or installed in the manhole base in accordance with the manufacturer's recommendations.
- .6 Invert channels shall be constructed of brick. Inverts shall be smooth and accurately shaped to a semi-circular bottom conforming to the inside of the adjacent sewer sections. Changes in direction of the sewer and entering branches shall have a circular curve of as large a radius as the manhole will permit.
- .7 The outside of all brick or block work below the ground surface shall be covered with mortar parging not less than three-quarter ($\frac{3}{4}$) inch in thickness applied in two layers. A curing compound for concrete shall be applied immediately upon completion of parging.
- .8 Prior to connection with an operating sewer system, all new and existing manholes in the project area shall be cleaned of trash and debris and made fully operational by the Contractor.
- .9 Manholes shall be built smooth, well formed and watertight until such time as frames and covers are set; manholes shall be kept covered with plank or temporary covering to prevent persons, animals and foreign substances from entering the manhole.
- .11 The contractor shall not backfill around any brick or concrete block circular manhole until the masonry work has set for 48 hours or until ordered by WPCA to backfill. The contractor shall not permit any wheel load on manholes until permission is granted by WPCA. Backfilling and loadings on non-circular manholes shall be under the direction of WPCA.

6.5.5 Construction Methods – Building Sewers

- .1 Work on building sewers shall proceed from the sewer (or sewer lateral) toward the structure being connected. All pipes must be clean before placing. The trench shall be kept free of water, and in no event shall water or any foreign material be permitted to enter

the pipe. Joints shall be assembled as prescribed by the manufacturer; suitable approved adaptors manufactured for the purpose shall be used when joining pipes of dissimilar size and/or material.

- .2 Pipe Bedding. A foundation of crushed stone shall uniformly support the entire length of each pipe segment. When material at the base of the trench is, in the sole opinion of WPCA, unsuitable as a foundation or if the excavation exceeds the desired depth, such material shall be removed and replaced with gravel bedding conforming to the requirements of Section 6.5.2.1.
- .3 Under no circumstances shall the trench be backfilled until the pipe, joints, and workmanship have been inspected and approved by WPCA.
- .4 Installed pipe shall be backfilled with approved, hand placed material to a depth of at least one foot above the pipe. Any excavated material that, in the sole judgment of WPCA, is unsuitable for backfill shall be replaced with suitable material. The installer is responsible for sufficient compaction so as to avoid future settlement.
- .5 It shall be the responsibility of the installer to investigate any existing plumbing and disconnect all unauthorized connections. Unauthorized connections include roof drains, yard drains, cellar drains, cooling water, industrial waste, and all other sources of material that is not sanitary sewage.
- .6 All excavations shall be properly guarded with barricades and lights. Streets, sidewalks, and other public property shall be restored as directed.
- .7 Upon activation of the building sewer, any existing on-site septic tank or cesspool used for disposal of wastewater shall be decommissioned by emptying the contents and disposing of them in an approved manner. Each structure shall be broken in at the top and backfilled with clean material in a manner that prevents future settling.

6.6 TESTING NEWLY INSTALLED SEWERS.

6.6.1 Connections to an Existing Main Sewer. Any newly installed sanitary sewer systems to be connected to an existing main sewer shall be plugged and secured until the following activities are accomplished to satisfaction of WPCA:

- .1 All air testing meeting these standards has been completed.
- .2 An occupied facility is connected to the new main sewer.
- .3 The new main sewer is cleaned out (flushing and removal of all construction debris and foreign material).
- .4 The new sewer is TV inspected.

6.6.2 Testing -- Gravity Sewer Pipe.

- .1 Exfiltration testing shall use the pneumatic testing system in conformance with the Low Pressure Air Test for Sanitary Sewers as outlined in the ASCE Proceedings, Volume 90, No. SA2, April 1964 and shall be used for gravity sewer lines.
- .2 The Contractor shall furnish test plugs, test gauge, stop watch, an air compressor, and personnel for conducting the test under direction of WPCA.
- .3 Air shall be slowly introduced to each section plugged pipe until pressure reaches four (4.0) psi. At least two minutes shall be allowed for air pressure stabilization.
- .4 The rate of air loss shall then be determined by measuring the time interval required for pressure to decrease from three and one-half (3.5) to two and one-half (2.5) psig greater than the average back pressure of any groundwater that may be over the pipe.
- .5 The pipeline shall be considered acceptable when tested at an average pressure of three (3.0) psi if:
 - .1 The total rate of air loss from any section tested does not exceed two (2.0) CFM; or
 - .2 The section under test does not lose air at a rate greater than 0.0030 CFM per square foot of internal pipe surface.
- .6 In areas where ground water is known to exist above the top of the sewer, the contractor shall at the time the sewer line is installed, provide a one-

half (1/2) inch diameter capped pipe nipple, approximately ten (10) inches long, through the manhole wall on top of one of the sewer lines entering the manhole. Immediately prior to performance of the Line Acceptance Test, presence of ground water shall be determined by removing the pipe cap, blowing air through the pipe nipple into the ground so as to clear it, and then connecting a clear plastic tube to the nipple. The hose shall be held vertically and a measurement of the height in feet of water over the invert of the pipe shall be taken after the water has stopped rising in this plastic tube. The height in feet shall be divided by 2.3 to establish the pounds of pressure that will be added to all readings. (For example, if the height of water is 9.2 feet, then the added pressure will be four (4) psig. This increases the three and one-half (3.5) psig to seven and one-half (7.5) psig, and the two and one-half (2.5) psig to six and one-half (6.5) psig. The allowable drop of one pound and timing remain the same).

- .7 The requirements of this specification shall be considered satisfied if the time required in seconds for the pressure to decrease from three and one-half (3.5) to two and one-half (2.5) psig (greater than the average back pressure of any ground water that may be over the pipe) is not less than shown in the "*Allowable Time Table*".

Allowable Time Table		
PIPE SIZE	TIME	
	MINUTES	SECONDS
6"	2	15
8"	3	57
10"	4	43
12"	5	40

- .8 Sewers may be tested for infiltration in several separate sections, as they may be completed, or as authorized by the WPCA. After any such section has been tested, the WPCA may, at its discretion, permit house connections to be made within such section of sewers and said sections may be used (for sanitary sewer purposes only) without waiting until all sewers contemplated under the project have been completed and tested.

.6.6.3 Testing -- Sewer Force Main.

- .1 Pressure testing and leakage testing shall be carried out in accordance with appropriate paragraphs of Section 4 of ANSI/AWWA C600 with the following clarifications and qualifications.

- .2 Unless otherwise permitted, testing shall be performed after either backfilling or partially backfilling the completed pipelines or sections thereof. Before testing, the contractor shall submit, in writing to WPCA, his proposed method of testing the completed pipeline. Testing shall begin only after WPCA's approval of the proposed methods. Testing of force mains shall be witnessed by WPCA personnel. Any required coordination with WPCA shall be the responsibility of the contractor.
- .3 All new sections of force main shall be hydrostatically tested at a pressure of 100 pounds per square inch (or as specified by WPCA) for a period of at least two hours. "Pressurization" and "air removal" shall be accomplished as specified in Section 4.1.2 and 4.1.3 of ANSI/AWWA C600. After the test pressure is applied, any defective pipe, fitting, or valve discovered in consequence of this pressure test shall be removed from the job site and replaced at the contractor's expense. The test shall be repeated until satisfactory to the WPCA.
- .4 A leakage test shall be conducted concurrently with the pressure test. The contractor shall furnish the gage, pump, connections and all other necessary apparatus and shall furnish the necessary assistance to conduct the test.
- .5 Leakage shall be defined as the quantity of water that must be supplied into the newly laid pipe, or any valved section thereof, to maintain pressure within five (5) psi of the specified test pressure after the air in the pipeline has been expelled and the pipe has been filled with water.
- .6 No pipe installation will be accepted if the leakage is greater than that determined by the following formula:
$$L = \frac{USD\sqrt{PU}}{133,200}$$
where: L = Allowable leakage in gallons/hour
S = Length of pipe tested in feet
D = Normal pipe diameter in inches
P = Average test pressure during leakage test in pounds per square inch
- .7 If any test of pipe discloses leakage greater than that specified above, the contractor shall locate and repair the defective materials until the leakage is within the specified allowance. All visible leaks shall be repaired regardless of the amount of leakage.

6.7 GRINDER PUMPS.

- 6.7.1 The preferred method for discharge of sewage from individual buildings (or groups of buildings) to the public sewer is by gravity flow. Sewer connections which, in the sole opinion of the WPCA, cannot reasonably be discharged by gravity flow may be discharged to a low pressure sewer via a grinder pump system.
- 6.7.2 Grinder pumps must be of a brand that has been used in multiple locations in two or more communities within Connecticut for not less than five (5) years. All grinder pump systems shall be privately owned and maintained.
- 6.7.3 Grinder pump systems intended to serve more than one (1) single family dwelling (or building with equivalent flow) or any system that discharges to a pressure sewer shall be designed by a Connecticut licensed Professional Engineer. The applicant shall submit to WPCA plans and/or specifications which demonstrate compliance with general requirements of these Standards. Submittals should include descriptive data, design basis, performance characteristics, material specifications, wiring diagrams, and drawings showing the layout of the system. The entire installation must be designed in conformity with ASA, ASME, AIEE and NEMA standards.
- 6.7.4 Grinder pumps may be installed inside or outside of a single occupancy building if connected to a gravity sewer. Grinder pumps serving multiple occupancy buildings or connected to a multi-unit low pressure sewer must be installed outside. All outside installations shall be provided with a poured in place anti-flotation collar sufficient to overcome buoyancy forces. Installation must prevent the entrance of ground or surface water. All external piping shall be a minimum of four (4) feet deep.
- 6.7.5 Grinder pumps shall be suitable for use with domestic wastewater and capable of reducing all components of normal domestic sewage including a reasonable quantity of “foreign matter” such as paper, wood, plastic, glass and the like to finely divided particles that will pass freely through the pump and discharge piping. Grinders shall be constructed so as to avoid clogging, jamming, stalling, or overloading under normal operating conditions.
- 6.7.6 The grinder pump system shall have a minimum of 40 gallon capacity between the inlet and the pump off position. The basin shall be watertight and constructed of reinforced polyester resin or corrugated high density polyethylene having a smooth interior surface. A self sealing flange shall be provided for connecting to the gravity inlet. Discharge connections shall be fabricated of non-corrosive materials and terminate outside the pump chamber with a 1-1/4 inch or larger connection. Adequate screened ventilation must be provided.

- 6.7.7 The grinder shall be direct driven by a single one-piece stainless steel motor shaft. Operating pressure of the pump shall be 20% greater than the maximum discharge head. Minimum designed discharge velocity shall be 2½ feet per second.
- 6.7.8 Grinder pumps that discharge to a gravity sewer shall discharge into a manhole prior to entering the street right-of-way and then flow by gravity to the gravity sewer. The discharge line shall be Class 200 1½ inch SDR-21 PVC or greater with compression fittings or 1 ¼ inch butt fused HDPE. A ball valve and a full ported check valve installed in the horizontal position shall be built into the discharge piping. Additionally, a redundant check valve shall be provided either at the property line or at the pump when discharging to a low pressure sewer system.
- 6.7.9 The grinder pump system shall be provided with an alarm light and bell. Duplex units shall have alarm lights that indicate when one pump requires service. A single NEMA electrical quick disconnect shall be installed for all power functions. The station shall be equipped with a push to run switch and redundant pump starting control, a pump removal system, a shut off valve, and an anti-siphon valve. When located outside, electrical and alarm controls shall be located in an enclosure that that protects the controls from corrosion.
- 6.7.10 The pump must be readily removable without the need to manually disconnect piping using a guide rail system and lifting chain. All mechanical and electrical connections must provide easy disconnect. Maintenance must be possible without requiring OSHA Confined Space Entry.
- 6.7.11 Prior to placing the system in service, the applicant shall submit to the WPCA written certification that:
1. The system conforms to the requirements of this Standard;
 2. Operation, testing, and required adjustments have been performed by an authorized manufacturer's representative and that the equipment is in proper condition for satisfactory operation under the specified conditions;
 3. The user has been furnished with a complete set of instructions, technical bulletins, and any other printed matter required for the proper operation, maintenance, and repair of the equipment.

6.8 RECORD DRAWINGS.

- 6.8.1 Reproducible "as built" record drawings shall be provided to WPCA upon completion of all work. These shall be prepared to A-2 accuracy and shall have

the original seal and signature of a Connecticut licensed land surveyor. Record drawing shall be provided in digital, paper and mylar formats.

6.8.2 Information Required -- Horizontal Alignment.

- .1 All main sewers, laterals, and manholes are to be adjusted on plans to reflect actual construction.
- .2 All manholes are to be tied down to at least two permanent physical objects wherever possible.
- .3 All laterals, wyes, tees and stubs will be shown along the main sewer. These are to be identified by distance from the nearest manhole, length of lateral, and depth of its stub end. In addition, at least two swing ties must be shown to permanent physical objects (if no other objects are available, then the two nearest manholes are to be used).
- .4 Each manhole to manhole main sewer section shall be identified by distance, size, and pipe type (e.g. 200'-8" PVC) on the plan view only.

6.8.3 Information Required -- Vertical Alignment.

- .1 All sewer lines and manholes are to be adjusted on the plans to reflect actual vertical changes made during construction.
- .2 All revised invert elevations and pipe slopes shall be reflected on the profile. Actual location of existing facilities such as gas, water, storm lines, etc., shall be shown in so far as reasonably possible.
- .3 Profiles of subsurface rock locations along with other important ground conditions shall be recorded for future reference.
- .4 All chimney connections are to be shown on the profile including final elevations boxed in.
- .5 Manhole numbers shall be shown on both the plan and profile.

6.9 EASEMENTS.

6.9.1 Permanent easements outside of street lines shall be a minimum of 20 feet wide centered on the sanitary sewer main. For deep excavations (deeper than eight (8) feet from flow line), wider easements may be required.

6.9.2 For a "cross country" sewer line, a "roadway" ten (10) feet wide shall be provided. This roadway shall consist of a gravel base a minimum of eight (8) inch deep with a filter fabric (where required) and shall provide sufficient support for typical Town or maintenance vehicles. Four inches of topsoil, seeded and fertilized, may be placed on top of the gravel. When a raised manhole is located within the "roadway," the roadway shall be widened to provide sufficient room for vehicles to pass on both sides of the structure. This may require additional easement area beyond the minimum 20-foot requirement.

6.9.3 It is the responsibility of the applicant to acquire all necessary easements, which shall be conveyed to the Town of Stonington. Such easements, which must be executed and filed in the Stonington Land Records, shall be binding on all property owners and their successors.

SECTION 7 LANDSCAPING

7.1 PURPOSE.

This Section provides guidance on landscaping for site plans and subdivisions that require Planning and Zoning Commission approval. Additional guidance is found in the Zoning Regulations, Articles 2.16.1.3 (Design Review Requirements – Landscaping), 2.16.3 (Landscape Maintenance Requirements), 7.10.6 (Off-Street Parking Lot Design Requirements), and 8.4.2.2 (Type 2 Site Plan – Landscape Plan).

7.2 LANDSCAPE PLAN.

All landscape plans shall be prepared by a Connecticut licensed professional Landscape Architect at a minimum scale of one inch to 20 feet (1" = 20'), showing the relationship of existing and proposed plantings to site grading and topography, structures, driveways, parking areas and drainage features. As a condition of Commission approval, applicants shall provide all labor, materials, equipment and warranties required for all trees, shrubs, groundcover and perennials, as shown on approved plans, as specified herein.

7.3 QUALITY ASSURANCE AND SUBMITTALS.

7.3.1 Manufacturer's and Nursery Product Data. Applicants shall submit all material specifications and installation instructions. Provision of this information does not preclude the right of the Town to reject such materials and plantings.

- .1 Fertilizer, peat and compost.
- .2 Nursery certification for all plant materials indicating names of plants in accordance with the American Joint Committee on Horticultural Nomenclature.
- .3 Nursery certification for plants indicating conformance with ANSI Z60.1 for quality and size.

7.3.2 Installer's Qualifications. Engaged firm must provide evidence to indicate successful documented experience in installation of work specified herein.

7.4 SUBDIVISION STREET TREES.

7.4.1 Street trees shall be planted on both sides of any subdivision street to be dedicated to the Town. Trees shall be spaced approximately fifty (50) feet apart subject to variations made necessary by driveways, street corners and sidewalks, or due to interference with sewers, utility poles or overhead wires. Trees shall be located a minimum of ten (10) feet from the curb line. Trees to be

planted shall be 2" in caliper or larger and shall have a minimum height of eight (8) feet. Species of tree shall be subject to approval of the Planning and Zoning Commission. Existing trees along the street which conform to these requirements may be substituted for new trees.

7.4.2 Recommended Street Trees (to be planted in random order):

- .1 ACER CAMPESTRE – Hedge Maple
- .2 ACER RUBRUM – Red Maple
- .3 ACER SACCHARUM – Sugar Maple
- .4 FRAXINUS PENNSYLVANICA “NEWPORT” – Newport Green Ash
- .5 LANCEOLATA NEWPORT – Newport Ash
- .6 PLATANUS X ACERIFOLIA “BLOODGOOD” – London Plane Tree
- .7 QUERCUS RUBRA – Northern Red Oak
- .8 TILIA CORDATA GREENSPIRE – Green Linden

7.5 PLANTINGS.

- 7.5.1 Landscape planting shall conform to the varieties and numbers specified in the plant schedule shown on approved plans. Substitutions may be made only when a plant is not obtainable and the Public Works Director authorizes a change, in which case the nearest equivalent obtainable size or variety of plant having the same essential characteristics shall be used.
- 7.5.2 All plantings and groundcovers shall be well-branched and well-formed, sound, vigorous, healthy stock free from disease, sun-scale, windburn, abrasion and harmful insects or insect eggs and have healthy, normal and unbroken root balls.
- 7.5.3 The minimum acceptable sizes of all plants, measured before pruning and with branches in normal position, shall conform to the measurements indicated on approved site plans. Measurements shall be the average width, height, or caliper of the plant for the species as specified in ANSI Z60.
- 7.5.4 Plantings shall be grown under climatic conditions similar to those in the locality of the project.
- 7.5.5 Planting Season. Planting shall be accomplished between the following dates: March 15 to June 15 for spring planting and September 1 to November 15 for fall planting. Planting will take place only when the ground is not frozen or snow covered and when planting operations do not interfere with other construction operations. If special conditions exist that warrant a change in the above planting dates or conditions, a written request shall be submitted to the Public Works Director stating such rationale.
- 7.5.6 Layout. Stake out plant material locations on the project site as depicted on approved plans, subject to adjustments due to field conditions.

7.5.7 Excavation for Planting. Check grades and elevations prior to excavating for plant pits and beds to ensure that the area conforms to the lines and grades shown on approved site plans. To verify location of underground utilities, the contractor shall notify "Call Before You Dig" (800-922-4455) at least 48 hours prior to start of excavation.

7.6 PLANT MAINTENANCE.

7.6.1 Plant maintenance consists of two distinct parts: 1) Maintenance during installation, and 2) Maintenance during the guarantee period. Final acceptance of all work and materials may occur only at the end of the plant maintenance periods herein specified.

7.6.2 Contractor Warrantee.

- .1 The Contractor shall maintain the plants until completion of the project and as necessary during the guarantee period.
- .2 Water plants as necessary to maintain required amount of moisture within each root zone.
- .3 Prune, spray, stake and perform all other operations necessary to maintain plants in a healthy, attractive growing condition.
- .4 Inspect plants at least once per week during the installation period and perform needed maintenance promptly.

7.7 EARTH MATERIALS.

7.7.1 Topsoil shall be in accordance with requirements of "Disturbed Area Landscaping" below.

7.7.2 Peat shall consist of partially decomposed vegetable matter of natural fresh water occurrence. It shall be brown, clean and low in content of mineral and woody mineral, mildly acidic, shredded, and free from weedy grasses, sedges or rushes.

7.7.3 Mulch.

- .1 Provide 100 percent double shredded bark mulch free from wood chips and other foreign matter.
- .2 Size: one half (½) inch to three (3) inches, finely shredded.
- .3 Color: uniformly brown, or uniformly black.

7.8 DISTURBED AREA LANDSCAPING.

7.8.1 All disturbed areas not covered by buildings, driveways, roadways, etc. shall be graded and stabilized as follows:

- .1 Place minimum of four (4) inches of topsoil in all areas.
 - .2 Apply limestone and fertilizer in accordance with soil pH test recommendations.
 - .3 Seeding should take place between April 1 and June 15, or September 15 and October 30. Apply recommended seed mixture at recommended rate.
 - .4 Apply straw or hay mulch on all seeded areas at a rate of 80 LBS/1000 SF with 75 – 90 percent coverage.
- 7.8.2 Areas disturbed by construction shall be seeded with: Futura 2000 (Chas C. Hart Co.), containing the following varieties of perennial rye grasses: Fiesta II, Blazer II, Dasher II, and Express. A seeding rate of five (5) to seven (7) pounds per acre recommended.
- 7.8.3 Recommended seed mixture for slopes that will not be mowed: 0.45 LBS Creeping Red Fescue, 0.05 Pounds Redtop, 35 Pounds Crown Vetch with a rate of 0.85 Pounds/1000 square feet.
- 7.8.4 Graded areas steeper than 3:1 shall be seeded with 0.45 Pounds Creeping Red Fescue, 0.05 Pounds Redtop, 35 Pounds Crown Vetch with a rate of 0.85 Pounds/1000 square feet, or Town approved equal, and stabilized with jute netting.
- 7.8.5 When all areas are stabilized, remove all erosion and sediment control devices and dispose of all accumulated sediments.

SECTION 8 ROADWAY LIGHTING

8.1 PURPOSE.

This Section provides guidance on the erection, design and placement of roadway light fixtures and luminaries that:

- 8.1.1 Permit reasonable uses of roadway lighting for nighttime safety, utility, security, and enjoyment while preserving the ambiance of the night.
- 8.1.2 Curtail and reverse any degradation of the nighttime visual environment and the night sky.
- 8.1.3 Minimize glare and obtrusive light by limiting roadway lighting that is misdirected, excessive, or unnecessary; and
- 8.1.4 Conserve energy and resources to the greatest extent possible.

8.2 FULL CUTOFF LIGHTING.

Roadway lighting shall be designed and installed to be full cutoff, emitting no light above the horizontal plane of the luminaire. In residential areas or commercial developments proximal to residences, lights shall be shielded such that the lamp itself or the lamp image is not directly visible outside the property perimeter.

8.2 LIGHTING LOCATION.

- 8.2.1 Roadway lighting should be used in new subdivision streets at intersections, along sharp curves, near road hazards, at pedestrian crossings, and at the end of cul-de-sacs.
- 8.2.2 Parking lot lighting should be used at driveway entrances and exits, at pedestrian crossings, loading areas, and at points necessary to illuminate parking lot geometry.
- 8.2.3 Pole sizes, luminaire type and size and footing sizes shall be provided as depicted in Section 12 of these Standards.

SECTION 9 ROADWAY RESTORATION & MAINTENANCE AND PROTECTION OF TRAFFIC

9.1 PURPOSE.

This Section establishes a uniform standard for restoration of Town roadways associated with utility installation and for maintenance and protection of traffic during construction. When situations arise that may not have been specifically addressed herein, they shall be evaluated and approved on a case by case basis by the Public Works Director.

9.2 PERMITS.

No person, firm, partnership, corporation, association or other entity shall conduct work or make improvements of any kind within a Town owned right-of-way or public land, including but not limited to clearing, excavating, grading, paving or installation of any utility lines until an Excavation Permit has been obtained from the Director of Public Works or his authorized representative at least 72 hours prior to the commencement of any work.

9.2.1 An Excavation Permit is required for but not limited to the following:

1. Any work performed in the Town right-of-way.
2. New or modified driveway construction.
3. Underground utility work in the Town right-of-way (electrical, sewer, water, gas, drainage, etc.)
4. Planting or installing anything within the Town right-of-way.
5. Any other activity deemed by the Director of Public Works or authorized representative which will affect the Town right-of-way.

9.3 MATERIALS.

9.3.1 Surface. Bituminous concrete surface course shall conform to Article M.04 of Standard Specifications, CT DOT Form 816 for surface course, and binder course, Class 1 & 2.

9.3.2 Base. Gravel base shall conform to requirements of Subarticle M.05.01-1, M.05.01-2, M.05.01-3 of CT DOT Form 816.

9.4 CONSTRUCTION METHODS.

9.4.1 Excavation.

- .1 The contractor shall at all times take all proper precautions to safeguard any and all underground utility lines or appurtenances encountered in the excavation and shall properly maintain such installations so as to provide uninterrupted service of the same. It is the contractor's responsibility to ensure that all excavations are braced and sheeted as required to conform to applicable State and federal safety regulations.
- .2 All excess material removed from a Town owned right-of-way or public land shall remain the property of the Town of Stonington and at the option of the Public Works Director, shall be removed and disposed of at a location within the Town that he designates. If the Director of Public Works determines that any such excess material is not needed by the Town, the applicant shall be responsible for disposing of the excess material in a lawful manner.

9.4.2 Restoring Excavations:

All excavations shall be backfilled with bank-run gravel approved by the Director of Public Works. Material excavated during the course of construction may be used for backfill only with permission of the Director of Public Works or his authorized representative. No muck, peat, clay, frozen earth, topsoil, stones over 6" in any dimension or other deleterious material shall be placed in the excavation. All backfilling must be done in properly compacted layers not exceeding twelve (12) inches in depth after compaction.

9.4.3 Restoration of Paved Surfaces.

- .1 All pavement restorations shall strictly conform to the latest Town Excavation Permit requirements. See Standard detail Drawing SK-1 for additional information.
- .2 Paved surfaces compromised by utility installations that run perpendicular to the traveled way and do not exceed 50% of the pavement width shall be restored in strict accordance with Standard Detail Drawings U-1 & U-2.
- .3 Paved surfaces compromised by utility installations that run perpendicular to the traveled way and exceed 50% of the pavement width shall be restored in strict accordance with Standard Detail Drawings U-3 & U-4.

- .4 Paved surfaces compromised by utility installations that run parallel with the traveled way shall be restored in strict accordance with Standard Detail Drawings U-5 & U-6.
- .5 Paved surfaces compromised by multiple utility installations that run perpendicular to the traveled way and are spaced less than 100 feet apart shall be restored in strict accordance with Standard Detail Drawings D-5, U-7 or U-8.
- .6 If the proposed work includes excavation of a roadway that has been resurfaced within the past five (5) years, regardless if the new utility runs parallel or perpendicular to the traveled way, then the method of roadway restoration shall be in strict accordance with Standard Details U-3 & U-5.

9.4.4 Inspection.

All construction work covered by an Excavation Permit shall be subject to the inspection and approval of the Director of Public Works or his authorized representative. It is the responsibility of the applicant to notify the Director of Public Works at least 72 hours prior to conducting any work. Any work that is not found to be in conformance with the requirements of this permit shall be reconstructed as required to conform.

9.4.5 Disturbance of Monuments.

Excavations shall be conducted such that no disturbance of road right-of-way monumentation occurs. In the event of accidental disturbance of a monument, the owner/contractor shall be responsible for retaining and paying for the services of a land surveyor licensed by the State of Connecticut to reset the monument and to provide a Letter of Certification to the Public Works Director.

9.5 MAINTENANCE AND PROTECTION OF TRAFFIC.

- 9.5.1 The contractor shall at all times maintain pedestrian and vehicular traffic access to businesses, residences, and intersecting streets.
- 9.5.2 It is the responsibility of the Contractor to provide, erect, and maintain suitably lighted barricades, construction signs, warning lights, traffic controls, etc., as dictated by the latest addition of the Manual of Uniform Traffic Control Devices, and as directed by the Public Works Director to keep people and vehicles from excavations and obstacles. The Contractor may also be required to employ traffic persons and take other reasonable precautions as needed to prevent damage or injury to persons, vehicles, or other property, and to minimize the inconvenience and danger to the public. The Contractor shall contact the Stonington Police Department to inquire if police officers or certified flagmen are required to provide adequate traffic control. The Contractor shall also provide access at all times to fire hydrants, manholes, gate boxes, or other utilities. The

Contractor shall occupy traveled ways to the smallest space compatible with efficient and safe performance of the contemplated work.

- 9.5.3 It is the responsibility of the Contractor to contact the Public Works Director and relevant public utilities to coordinate any work contemplated in the public street or highway. Should the Contractor neglect to set out and maintain barricades, signs and lights as required, the Town may without notice, furnish and install such items. The cost thereof shall be borne by the Contractor and may be deducted from any posted performance bond.
- 9.5.4 Excavations shall only be permitted on one half of the traveled portion of a street, so as to allow the safe passage of vehicular traffic on the remaining half. Under no circumstances shall an excavation or opening be made across the width of the entire street, or in such a manner as to prohibit the safe passage of vehicular traffic.

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CHAPTER 10 SOIL EROSION & SEDIMENT CONTROL

10.1 PURPOSE.

Plans for soil erosion and sediment control shall be prepared in accordance with principles contained herein and as outlined in the *Connecticut Guidelines for Soil Erosion and Sediment Control*, as amended. These plans shall result in a development that minimizes erosion and sedimentation during construction, is stabilized and protected from erosion when completed, and does not cause off-site erosion and/or sedimentation. Alternative Best Management Practices (BMPs) that promote surface water and groundwater quality are encouraged.

10.2 PLAN PREPARATION AND CERTIFICATION.

All erosion and sediment control plans shall be prepared either by a professional engineer, a licensed landscape architect, or a Soil and Water Conservation Society certified erosion and sediment control specialist. Site construction shall not begin prior to receiving soil erosion and sediment control plan approval, and those control measures scheduled for installation prior to start of work are installed and functional.

10.3 EROSION AND SEDIMENT CONTROL BOND.

An erosion and sedimentation control bond in an amount equal to the estimated costs for installing and maintaining appropriate erosion and sediment control measures may be established by the Planning and Zoning Commission as a condition of site development plan or subdivision approval, pursuant to Article 8.6 of the Zoning Regulations or Section 6.5 of the Subdivision Regulations. The posting of such bond does not, however, relieve the developer of any requirements of this Chapter.

10.4 CONSTRUCTION SCHEDULE.

The developer shall submit a written construction schedule to the Public Works Director prior to commencement of any earth-disturbing activity necessitating installation of erosion and sediment control measures required under this Chapter. Large tracts (10 acres or more) shall be developed in workable units on which all grading and stabilization can be completed within one construction season so that large areas are not left exposed during heavy runoff periods.

10.5 PLAN CONTENTS.

The erosion and sediment control plan shall include sufficient information about the proposed activities to ensure compliance with the *Connecticut Guidelines for Soil Erosion and Sediment Control*, as amended, and with the requirements herein. It shall at a minimum contain:

- 10.5.1 Written description of the sequence of proposed land disturbing activities and types of soil erosion and sedimentation control measures to be installed before, during, and post construction, accompanied by proposed start and completion dates. Supporting documentation, such as maps depicting the drainage area, soil type, and existing site conditions shall be provided as required. This description shall include:
- .1 The sequence of grading and construction activities.
 - .2 The sequence for installation and/or application of soil erosion and sediment control measures.
 - .3 The sequence for final stabilization of the development site.
 - .4 Any other information deemed necessary and appropriate by the applicant or requested by the Public Works Director.
- 10.5.2 Construction drawings illustrating in detail all land disturbing activity, including existing and proposed contours, cuts and fills, drainage features, and vegetation; limits of clearing and grading; location and type of soil erosion and sediment control and stormwater management measures; construction entrances with track pads; measures to protect off-site down-gradient catch basins or water courses potentially impacted by the construction activity; erosion control measures for stock piles and borrow areas; location of contractor construction waste; and the sequence and staging of land disturbing and site stabilization activities.
- 10.5.3 Written installation and/or application procedures for proposed soil erosion and sediment control measures.
- 10.5.4 A written operations and maintenance program for proposed soil erosion and sediment control measures, including the name, address and 24 hr/day – 7 days/week telephone number of the person or entity responsible for maintaining approved sediment and erosion control measures.

10.6 MAINTENANCE OF EROSION AND SEDIMENT CONTROL MEASURES.

- 10.6.1 Maintenance of all required erosion and sediment control measures shall be the responsibility of the developer. All such devices shall be maintained in good condition and working order on a continuing basis, with any breached or degraded control measures repaired immediately.
- 10.6.2 Town officials may conduct inspections at any time it is deemed necessary to assure proper compliance with the approved erosion and sediment control

plan. Additional control measures may be required by the Town if measures contained in the approved plan fail to control erosion and sedimentation.

- 10.6.3 If at any stage during construction it is determined that erosion and sediment control measures are in disrepair or are failing to perform as installed, the Public Works Director may provide written notice to the developer, setting forth the nature of required corrections. Should corrective measures not be completed within five (5) days after the date of such notice, the Town shall have the right to take whatever actions it deems necessary to correct the erosion and sediment control problem, including E&S bond revocation in an amount equal to the cost of remediation.

10.7 DUST CONTROL.

- 10.7.1 The Contractor is responsible for performing the necessary work to keep the job site and roads dust free to minimize possible safety hazards and inconvenience to the public. Failure to do so may result in the Town hiring a firm to complete the necessary work and the cost thereof shall be borne by the Contractor and may be deducted from the performance bond.
- 10.7.2 Sweeping. The Contractor shall have operable equipment capable of efficiently sweeping up dust-producing materials from paved surfaces. This equipment shall include suitable provisions for the application of water ahead of sweeping brooms.
- 10.7.3 Calcium Chloride. This shall be applied only at the locations, at such times and in the amount as directed by the Public Works Director. It shall be spread in such a manner that a uniform distribution is attained over the entire area.

10.8 FINAL INSPECTION.

The developer shall notify the Public Works Director when all permanent grading, drainage, erosion and sediment control measures, and ground cover planting has been completed in conformance with approved plans, specifications, and conditions. The Public Works Director or his designee shall then make a final inspection of the site. If, at such time, it is determined that installed measures will permanently control erosion and sedimentation, the developer may request a release of any performance bond established to ensure compliance with this Chapter.

SECTION 11 ADMINISTRATION & INSPECTION

11.1 PRECONSTRUCTION MEETING.

11.1.1 After all required approvals have been obtained, the developer is responsible for contacting the Town before beginning work so that a pre-construction meeting can be scheduled. No work can occur prior to this meeting without written approval of the Town. The Town will schedule the date, time and location of the preconstruction meeting. The following individuals should typically be in attendance at this meeting: the project leader (developer), representatives from the major contractors performing work on the project, the Public Works Director, Planning Director and/or Town Planner, Town Engineer, Zoning Enforcement Officer, Highway Supervisor, and the WPCA Director (if sanitary sewers are proposed on the project). The developer shall submit one written copy of a tentative schedule at this meeting showing target completion dates for the various phases of work. The Town will review and discuss the project schedule, erosion and sedimentation controls that are planned for the project, phasing (if approved in the original application by the Commission), bonding requirements, and any design issues specific to this project.

11.1.2.1 Additionally, at this meeting, the developer shall submit a list with the following names, addresses, and phone numbers (office, cellular and fax):

- .1 Project Leader (Main Contact – 24 hour / 7 days per week).
- .2 Project Engineer (must be a CT licensed Professional Engineer).
- .3 Contractor's superintendent.
- .4 Contractor's foremen (for various phases of work).

11.2 MATERIAL SUBMITTALS, SAMPLES AND TESTING REQUIREMENTS.

11.2.1 Submittal Information. The following information on materials shall be submitted to the Town:

- .1 Name and address of pipe manufacturer.
- .2 Name and address of precast concrete structure manufacturer.
- .3 Name and address of bituminous concrete paving firm.
- .4 Name and address of ready mix concrete plant.
- .5 Laboratory test results for road base material.
- .6 Laboratory test results for road sub-base material.
- .7 Name and address bituminous concrete plant.

The developer shall submit samples and certified laboratory reports to the inspector documenting conformance of proposed construction materials with the specifications contained in these Standards. The developer shall not be

permitted to place, or to have delivered to the project site, any materials for which approvals have not been granted in writing by the Town. Any written approvals granted by the Town on the basis of certified laboratory reports shall be conditional upon the tested sample being representative of all such materials utilized for construction. The Town shall reserve the right at any time during the course of construction, for whatever reason, to have additional materials testing conducted. Should the results of such testing find that the materials do not conform to specifications, then such materials shall be removed and replaced with conforming materials at the applicant's expense. The applicant is responsible for the cost of all material testing requested in these Standards.

11.2.2 Required Samples. Samples and/or certified laboratory reports shall be submitted for the following materials:

- .1 Rolled Granular Base -- sieve analysis for conformance with CT DOT Form 816 - Section M.02.06 Grading A.
- .2 Processed Aggregate Base -- sieve analysis for conformance with CT DOT Form 816 - Section M.05.01.

11.2.3 Test Report Requirements. Prior to submission to the Town for review, all test reports shall be reviewed and approved by, and bear the seal of a Connecticut registered professional engineer. Each report shall include all test results, an accurate location map showing where each test and sample were taken, the time and date of each sample and the test and the name of the technician performing the tests and/or collecting the samples. In addition, the test results shall state if the identified material being tested meets or does not meet all the requirements of the Town and CT DOT's Form 816 as amended.

11.2.4 Test Procedures.

A sieve analysis is required to determine the gradation of the material for comparison with the minimum specifications and requirements of the Town. Samples for this test will be taken initially from the source of the material and again during placement at the frequency requested by the Public Works Director. Initial results for this test shall be submitted to the Town for approval prior to placement of any materials for which this test is required.

11.2.5 Testing procedures for newly installed sanitary sewers are contained in Section 6.7 of these Standards.

11.3 INSPECTIONS.

11.3.1 General. All roadway improvements shall require periodic inspections by the Town as they are being constructed or installed in order to reasonably

monitor compliance with all of the requirements of these Standards. The developer shall take every reasonable measure to facilitate such inspections. The failure of the developer to notify the Town in advance (typically 24 hours minimum) may result in the Town not approving the work performed, with possible delay of a bond release or other complications as stated herein. It is the developer's sole responsibility to ensure that all construction shall conform to requirements of these Standards. The developer's Project Leader will be the main contact for the Town, and shall be fully authorized to give and receive communications to or from the Town. All notices, orders or other communications delivered to or served upon the Project Leader by the Town shall be deemed to have been delivered or served upon the developer. Likewise, all notices or other communications received from him shall be deemed to have been received from the developer.

- 11.3.2 Access to Site. The Town, or its duly authorized agent(s) shall have free access to the construction work at all times and shall be authorized to take material samples, cores and other tests as deemed necessary to determine compliance with these Standards.
- 11.3.3 Required Inspections. The following is a general outline of key construction stages requiring inspections by the Town. The Project Leader shall contact the Town and shall not proceed with further stages of work until receiving approval from the Town to do so. At the Town's discretion, the Project Leader may be notified of additional required inspections. Unannounced spot inspections may be made by the Town at anytime. It is the contractor's sole responsibility to schedule and coordinate all required inspections with the Public Works Director. At a minimum, 24 hours advance notification shall be required for the following inspections:
- .1 Limits of Clearing. Before any trees are cut down.
 - .2 Sediment and Erosion Control Measures. After cutting of trees and brush, and installation of sediment and erosion control measures, but prior to any stumping and/or grading. Erosion control measures are inspected throughout the project on a regular basis, especially after rainstorms.
 - .3 Roadbed Prepared for Cut and Fill. After stumping and stripping of topsoil and organic material from earth cut and fill areas, but prior to the placement of any fill material.
 - .4 Road Subgrade. After earth cuts and fills and the formation of the road subgrade. Proof rolling of the subgrade must be observed by the Town after installation of all utilities to be located below the subgrade and prior to the placement of any gravel subbase materials.

- .5 Storm Drainage and Sanitary Sewer. After the installation of pipe, underdrains and structures, but prior to backfilling.
 - .6 Gravel Subbase. After the placement of gravel subbase, but prior to placement of the process aggregate base.
 - .7 Curb Layout.
 - .8 Processed Aggregate Base. After the placement of processed aggregate base, but prior to paving of the bituminous concrete binder course.
 - .9 Binder Installation.
 - .10 Top Course Installation.
 - .11 Concrete Sidewalk Installation.
 - .12 Final Inspection. The Project Leader shall notify the Public Works Director in writing when the project is ready for final inspection. This inspection will involve a walkthrough of the entire improvement area. At the Director's discretion, the final inspection may also include core samples to be marked out by the Town and taken by a Town approved contractor. The cost of core samples is to be paid for by the developer.
 - .1 Core samples shall be of a standard size and type and be located no more than 500 feet apart over the entire length of road. In addition to examining the depth of bituminous concrete, base, and subbase tests shall be performed on the samples to determine the quality of materials.
 - .2 If results indicate an insufficient depth or quality of gravel base and/or bituminous concrete surface, additional samples may be required by the Town in the vicinity of each questionable sample area to determine the extent of the substandard condition and to insure that the Town shall not be prejudiced by an arbitrary test result. Should additional samples indicate unacceptable variances from the specifications set forth in these Standards, the developer shall be required to take appropriate corrective measures for the length of road which the Town determines to be unacceptable on the basis of the core samples.
- 11.3.4 Tying into the Town Drainage System. When any new development ties into the Town's existing drainage system, the developer is required to give a

minimum of 24 hours advance notification so that the Town can be present for the tie-in.

11.4 "AS-BUILT" RECORD DRAWINGS.

Prior to the release of the remaining amount of a Performance Bond, the applicant shall submit "As-Built" plans to the Public Works Director which include the following:

- 11.4.1 Actual locations of all roadway, utility and drainage improvements within the public right-of-way, easements, right-of-way, and rights on neighboring properties.
- 11.4.2 Sanitary sewers shall be on a separate sheet that contains the sanitary sewer as built information only. The sanitary sewer As-Builts shall be prepared in accordance with Section 6.9 of these Standards.
- 11.4.3 As-Built plans must be original plans; marked up construction plans will not be acceptable. The survey information shall meet the standards of an A-2 level of accuracy and be signed and sealed by a registered land surveyor or professional engineer.
- 11.4.4 The applicant is to provide to the Town one set of all plans and maps prepared on 24" x 36" sheets and a **digital copy**, in a form acceptable to the Public Works Director.
- 11.4.5 All easements, road right-of-ways and/or open space to be deeded to the Town shall have a written legal description prepared based on as-built survey data.

11.5 DIGITAL SUBMISSION REQUIREMENTS.

- 11.5.1 Electronic Submittal Procedure. The developer/owner of any project receiving Planning and Zoning Commission approval shall submit the final approved plans in electronic format to the Department of Planning for incorporation into the Town's GIS system, properly geo-referenced to the CT State Plane Coordinate System.
 - .1 Features that require electronic submittal:
 - .1 Primary single and-multifamily residential structures.
 - .2 Commercial and industrial structures.
 - .3 Structural additions to existing buildings.
 - .2 Exclusions to electronic submittal requirement:
 - .1 Non-residential structural additions less than ten (10) percent of the existing building (not to exceed 500 square feet).
 - .2 Ancillary residential structures such as decks, pools and sheds.
 - .3 Additions to single to two-family residences.

- 11.5.2 The coordinate information contained in the digital drawings or record plans shall be delivered in the Connecticut State Plane coordinate system using the NAD83 horizontal datum and NAVD88 vertical datum using US Survey feet as units. These data shall be produced in real coordinate space with an insertion point of (0,0).
- 11.5.3 Digital Conversion Data Fee. In the event that the developer/owner is unable to provide a digital submission to the Town at the time of final permit approval a charge of \$50.00 per each 24" x 36" plan sheet and \$25.00 for each 18" x 24" or smaller plan sheet will be applied to the submitter's permit fees for conversion costs.
- 11.5.4 As-Built Electronic Submittals. Upon completion of the project, the developer shall also submit the as-built/record drawings in electronic form to the Department of Planning as appropriate. These plans shall be in conformance with these Technical Standards.
- 11.5.5 Electronic Submittal Requirements. Data shall be produced in real coordinate space with an insertion point of (0,0). Line work for these features shall be continuous and should contain topological consistency with other lines i.e. lines shall not be broken by label text or connected to other lines by marker pins.
- 11.5.6 Feature Groups
- .1 Lines Property Lines
 - .2 Property Dimensions
 - .3 Easements and Rights-of-way
 - .4 Easement Dimensions
 - .5 Survey Monumentation
 - .6 Road Edge of Pavement/Curb Lines
 - .7 Bridge
 - .8 Parking Lots
 - .9 Residential Principle Commercial/Industrial/Apartment/Condominiums
 - .10 Commercial/Industrial/Apartment Condominium Building Additions
 - .11 Utility and Street Light Poles
 - .12 Retaining Walls
 - .13 Fences
 - .14 Guide rails
 - .16 Paths
 - .17 Traffic Control Signals
 - .18 Railroads
 - .19 Road Center Line
 - .20 Street Names
 - .21 Street Striping

- .22 Aprons
- .23 Sidewalks
- .24 Street Trees
- .23 Contours
- .24 Tree Lines
- .25 Wetlands
- .26 Watercourses
- .27 Storm Drainage Structures
- .28 Storm Drainage Pipes
- .29 Sanitary Sewer Structures
- .30 Sanitary Sewer Pipes
- .31 Water Distribution Structures
- .32 Water Services
- .33 Water Distribution Pipes

11.6 TOWN ROAD ACCEPTANCE PROCEDURE.

- 11.6.1 When a developer is ready to have a new road accepted by the Town, he/she should review a copy of the most current Roadway Acceptance Checklist (see Appendix C) to make sure that he/she will be able to provide the appropriate documents to the Town in a timely fashion.
- 11.6.2 When the developer is ready to begin the process of road acceptance, the developer must send a letter to the First Selectman's Office (152 Elm Street, Stonington, CT 06378) requesting that the Board of Selectman vote to accept the proposed road into the Town's roadway system. The developer should provide as many of the documents that are included in the checklist at this time to help expedite the process.
- 11.6.3 A copy of the request letter sent to the First Selectman's office should be sent to the Director of Public Works. Once the letter is received by the DPW Director, the Director will then begin to prepare a notebook with the attached checklist and will then start to fill in the items on the checklist that are pertinent. Once the DPW Director has signed off on the applicable requirements, he/she will then forward the notebook to the WPCA Director for his/her approval. Once the WPCA Director has signed off on the applicable requirements, he/she will then forward the notebook to the Planning Director for his/her approval. Each Director will eventually sign off that the roadway is ready to be reviewed by the Planning and Zoning Commission for an 8-24 review. Once all Department Directors sign off the developer should then contact the Planning Department and request that this item be added to the next Planning and Zoning Commission agenda for consideration under an 8-24 review.
- 11.6.4 The developer shall submit to the Planning Department all necessary documents (i.e. warranty deeds, mylars, conveyance tax forms, etc.) so that

the Planning Department can forward these documents to the Town Attorney for approval. Once the Town Attorney approves these documents, the Planning Department will forward these documents to the Town Clerk's office for the determination of a filing fee. Once the filing fee has been established the developer will submit the filing fee to the Town. The Town will hold onto to this filing fee until the roadway is formally accepted by the Town and all required documentation has been approved by the Town Attorney.

- 11.6.5 If the Planning and Zoning Commission approves the 8-24 review, the DPW Director will then recommend to the Board of Selectman that the BOS approve the acceptance of the roadway as a Town owned roadway.
- 11.6.6 If the Board of Selectman votes to accept the roadway as a Town owned road, the First Selectman will sign and date the bottom of the checklist. The date of signature by the First Selectman will be the date at which time the roadway officially becomes a Town owned roadway. From this point on the Town will be responsible for all street lights, stormwater drainage, sanitary sewer (if applicable) and all road maintenance including snow plowing and removal. *Prior to this date of signature, all of these above referenced items are still the sole responsibility of the developer.*
- 11.6.7 Upon signature of the First Selectman, the DPW Director will notify the Town Clerk that all required documentation is acceptable for filing. The Town Clerk will then officially file the documents and sign off on the road way acceptance checklist.
- 11.6.7 The DPW director will retain the roadway notebook containing all of the pertinent documents in his/her office for future reference.

The process of getting a roadway approved by the Town can take three months to a year depending on how efficient the developer is at submitting all of the required documentation to the Town for review and approval. It is strongly recommended that the developer review the roadway acceptance checklist and make every effort to provide the Town with the required documentation to expedite the roadway acceptance process.

SECTION 12 STANDARD DETAIL DRAWINGS

Detail drawings contained herein shall be considered a part of this Technical Standard. Any deviation requires approval of the Public Works Director. These items may be used on plans prepared for work in the Town of Stonington, and may be incorporated as standard detail drawings on site plan or subdivision applications submitted to the Stonington Planning and Zoning Commission.

	12.1 Stormwater Drainage		
	.1	Type "C" Catch Basin	D-1
	.2	Type "C-L" Catch Basin	D-2
	.3	Double Catch Basin Type "C"	D-3
	.4	Double Catch Basin Type "C-L"	D-4
	.5	Type "C" Apron / Leakoff	D-5
	.6	Typical Under Drain	D-6
	.7	Typical Trench	D-7
	.8	Curtain Drain	D-8
	.9	Rip-Rap Outlet Splash Pad	D-9
	.10	Drainage Manhole	D-10
.11	Drainage Manhole Frame & Cover	D-11	

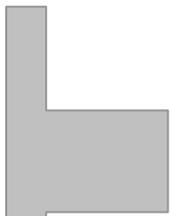
	12.2 Driveways		
	.1	Bituminous Concrete Driveway	DR-1
	.2	Residential Driveway with Gutter line	DR-2
	.3	Residential Driveway with Surface Drainage	DR-3
	.4	Concrete Driveway Apron w/ Sidewalk at Road	DR-4
.5	Concrete Driveway Apron w/ Sidewalk at Snow Shelf	DR-5	

	12.3 Erosion & Sedimentation Control		
	.1	Silt Fence	ES-1
	.2	Anti-Tacking Pad	ES-2
	.3	Hay-Bale/Silt Fence Erosion Protection	ES-3
	.4	Dewatering Structure	ES-4
.5	Haybale Check Dam	ES-5	

	12.4 Landscaping		
	.1	Metal Beam Rail	G-1
	.2	Metal Beam Rail End Anchorage	G-2
	.3	Loam & Seed Cross Section	L-1
	.4	Shrub Planting	L-2
.5	Tree Planting	L-3	

12.5

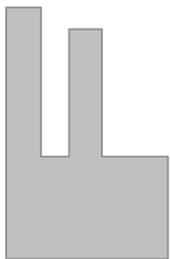
Roadways



- .1 Typical Street Cross Section Layout With Curbing R-1
- .2 Typical Street Cross Section Layout Surface Drainage R-2
- .3 Improvements to Existing Street R-3
- .4 Typical Street Cross Section for Matching Pavements R-4
- .5 Permanent Cul-De-Sac R-5
- .6 Temporary Cul-De-Sac R-6

12.6

Sanitary Sewers



- .1 Sanitary Sewer Trench S-1
- .2 Sanitary Sewer Lateral Trench S-2
- .3 Sewer Manhole S-3
- .4 Sanitary Drop Manhole - Outside S-4
- .5 Precast Sewer Chimney S-5
- .6 Gravity Sewer Lateral Connection S-6
- .7 Force Main Connection Into Manhole S-7
- .8 Impervious Check Dam S-8

12.7

Sidewalks & Curbing



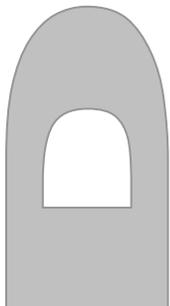
- .1 Curbing Installation at Bituminous Concrete Drives SW-1
- .2 Bituminous Concrete Lip Curbing SW-2
- .3 Concrete Sidewalk with Monolithic Curbing SW-3
- .4 Concrete Sidewalk with Reinforcing SW-4
- .5 Curb Ramp SW-5
- .6 Cornered Curb Ramp SW-6
- .7 Concrete Curb SW-7
- .8 Extruded Concrete Curb SW-8

12.8

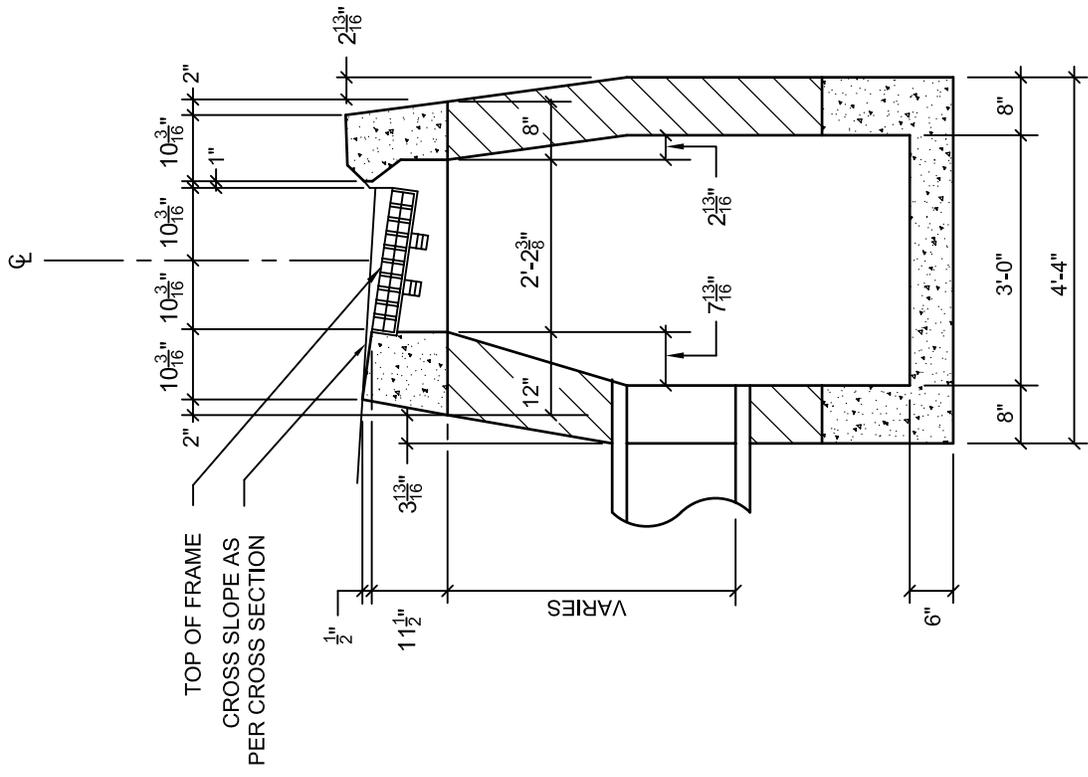
Pavement Repair Associated with Utility Installation



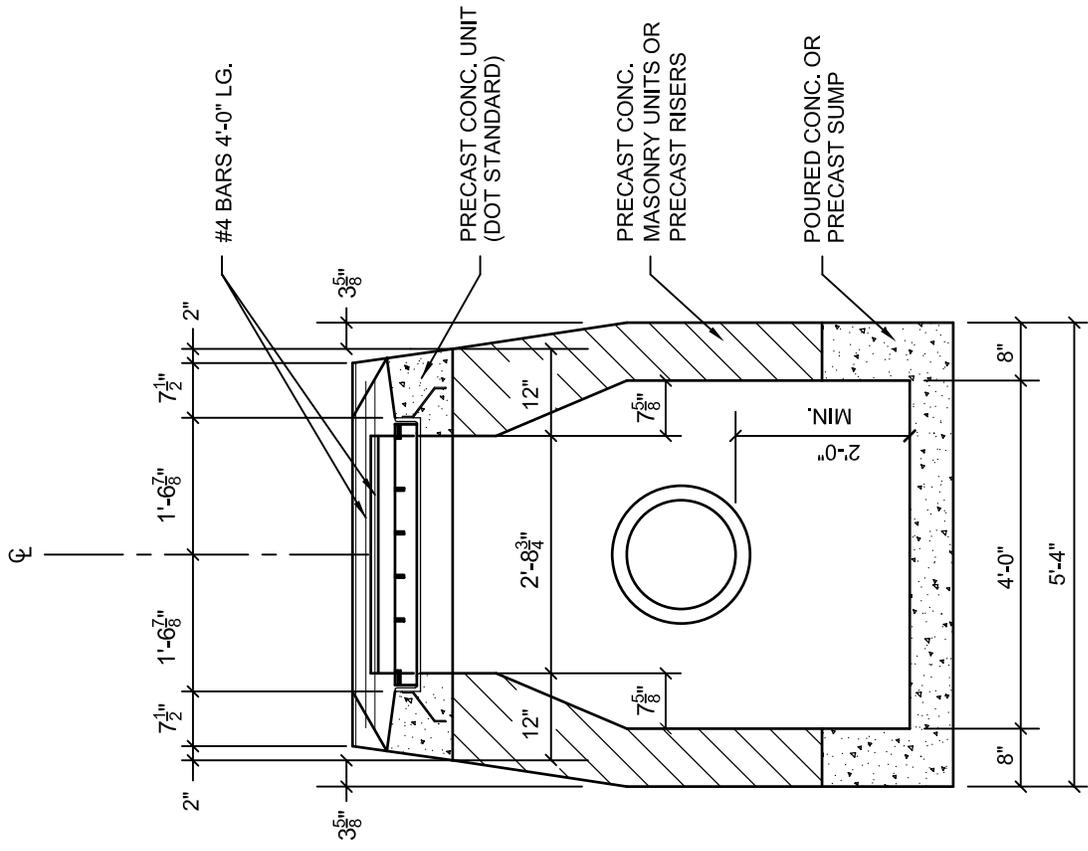
- .1 Pavement Restoration Index Plan SK-1
- .2 Temporary Pavement Restoration for Perpendicular Utility Crossings Less Than 50% of the Pavement Width U-1
- .3 Permanent Pavement Restoration for Perpendicular Utility Crossings Less Than 50% of the Pavement Width U-2
- .4 Temporary Pavement Restoration for Perpendicular Utility Crossings Exceeding 50% of the Pavement Width U-3



- .5 Permanent Pavement Restoration for Perpendicular Utility Crossings Exceeding 50% of the Pavement Width U-4
- .6 Temporary Pavement Restoration for Utility Installations That Run Parallel With the Traveled Way U-5
- .7 Permanent Pavement Restoration for Utility Installations That Run Parallel With the Traveled Way U-6
- .8 Permanent Pavement Restoration for Multiple Utility Crossings Spaced Less Than 200' Apart U-7 & U-8



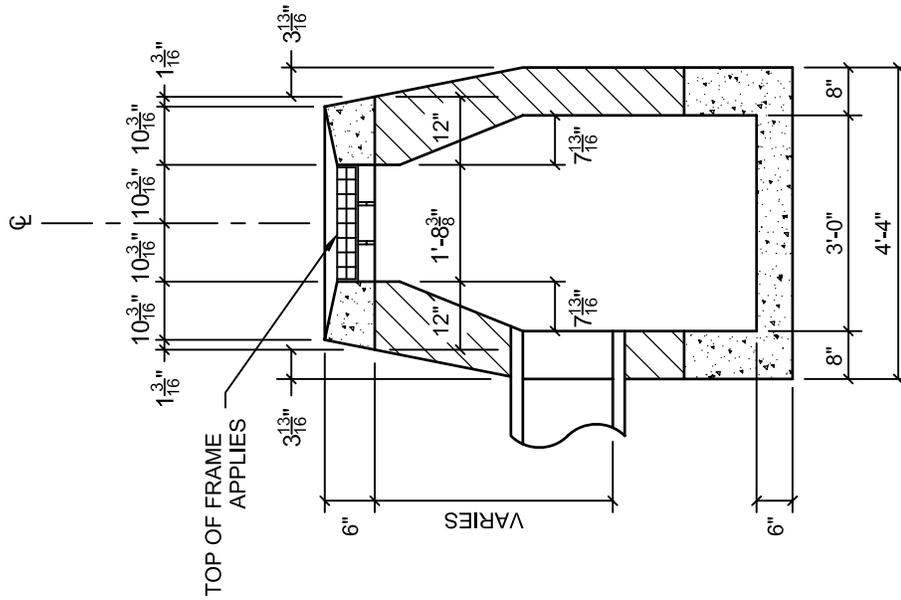
SIDE ELEVATION



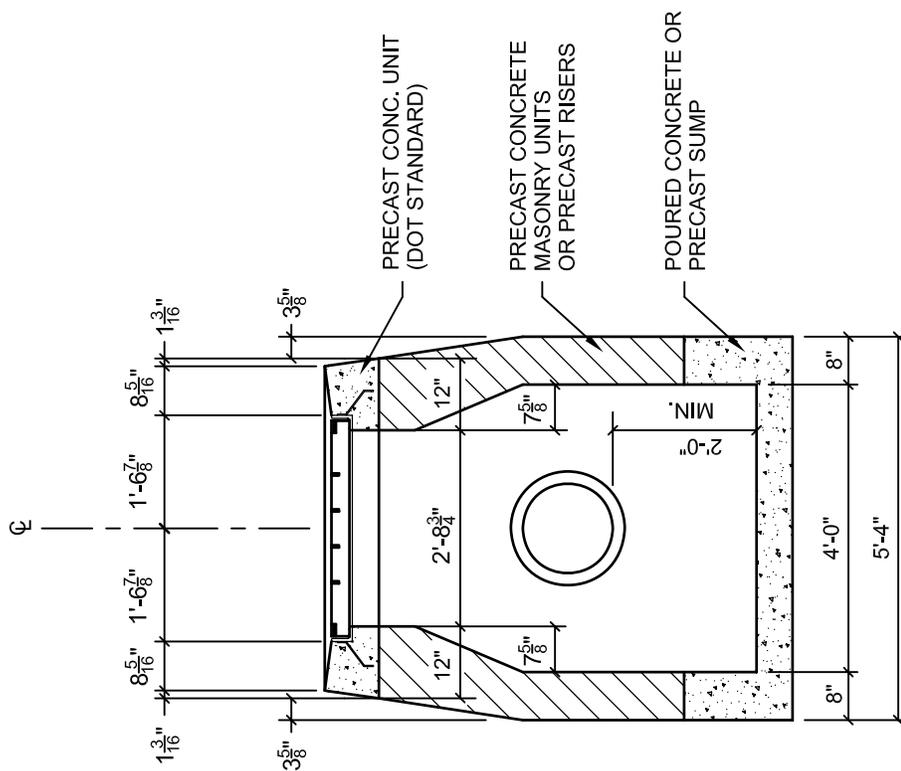
FRONT ELEVATION

NOT TO SCALE

TOWN OF STONINGTON TECHNICAL STANDARDS	TYPE "C" CATCH BASIN	DATE: MARCH 21, 2011
		REVISED:
		DETAIL NUMBER: D-1



SIDE ELEVATION



FRONT ELEVATION

NOT TO SCALE

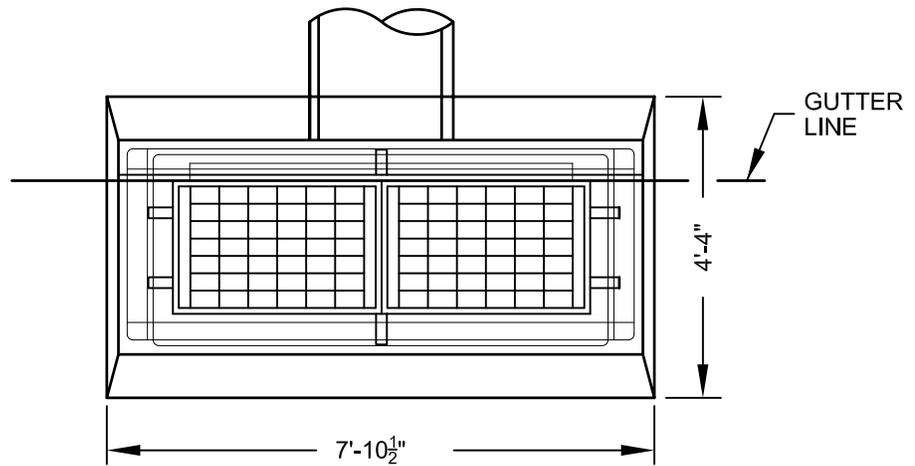
TOWN OF STONINGTON
TECHNICAL
STANDARDS

TYPE "C-L" CATCH BASIN

DATE: MARCH 21, 2011

REVISED:

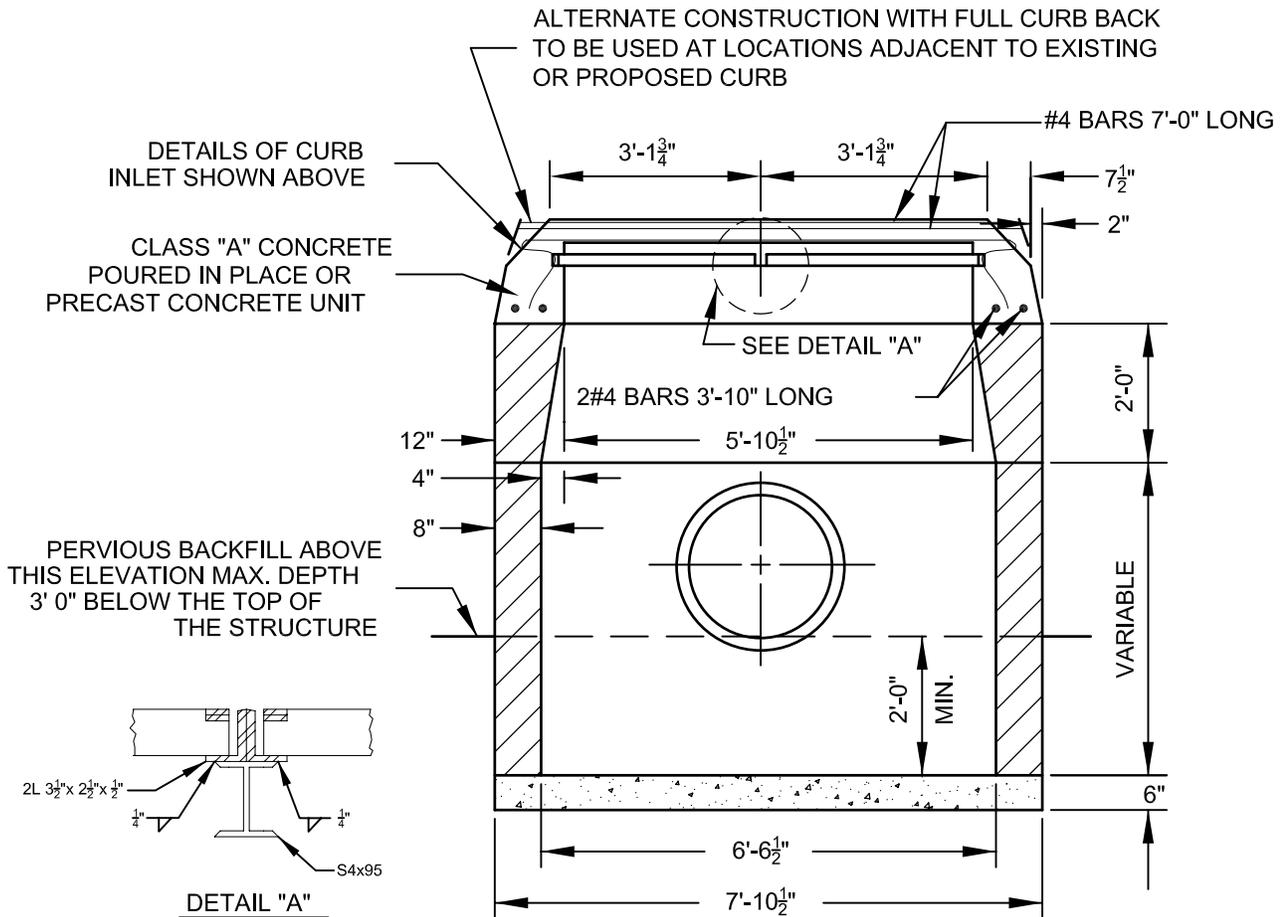
DETAIL NUMBER: D-2



PLAN

NOTE:

WHEN CATCH BASIN IS SET IN CONCRETE PAVEMENT THE 1/2" SLOPE ON THE TOP SURFACE SHALL BE CHANGED TO MATCH ADJOINING PAVEMENT

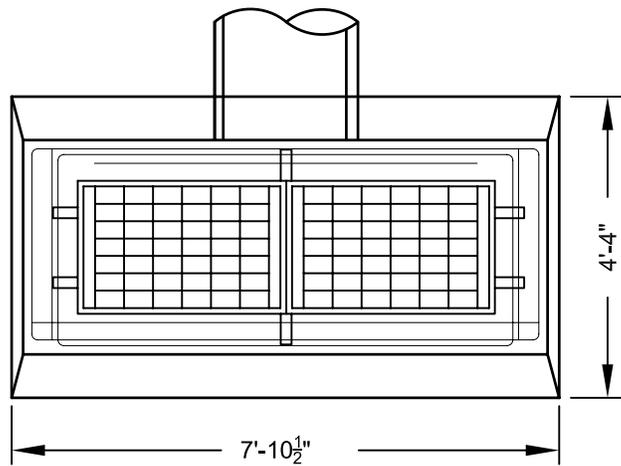


NOTE: TYPE "C" CATCH BASIN DOUBLE GRATE-TYPE 2

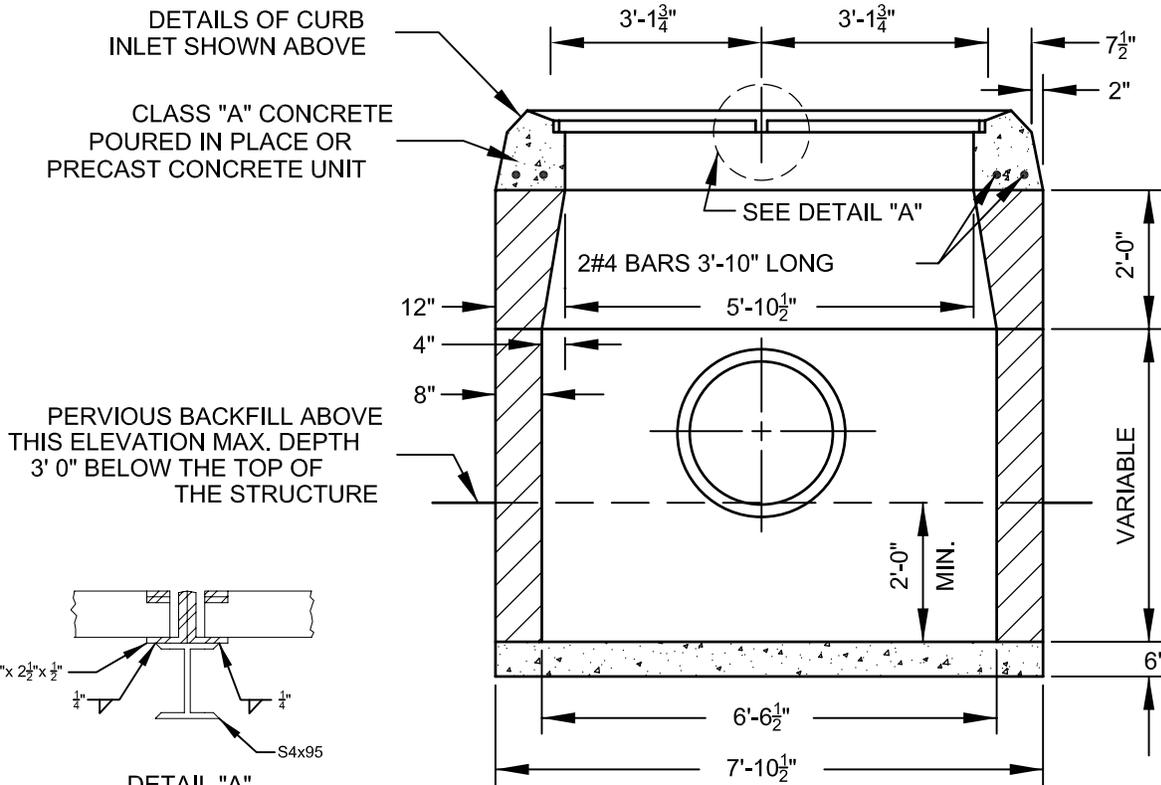
CROSS SECTION

NOT TO SCALE

TOWN OF STONINGTON TECHNICAL STANDARDS	DOUBLE CATCH BASIN TYPE "C"	DATE: MARCH 21, 2011
		REVISED:
		DETAIL NUMBER: D-3



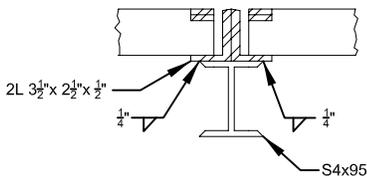
PLAN



DETAILS OF CURB
INLET SHOWN ABOVE

CLASS "A" CONCRETE
POURED IN PLACE OR
PRECAST CONCRETE UNIT

PERVIOUS BACKFILL ABOVE
THIS ELEVATION MAX. DEPTH
3' 0" BELOW THE TOP OF
THE STRUCTURE



DETAIL "A"

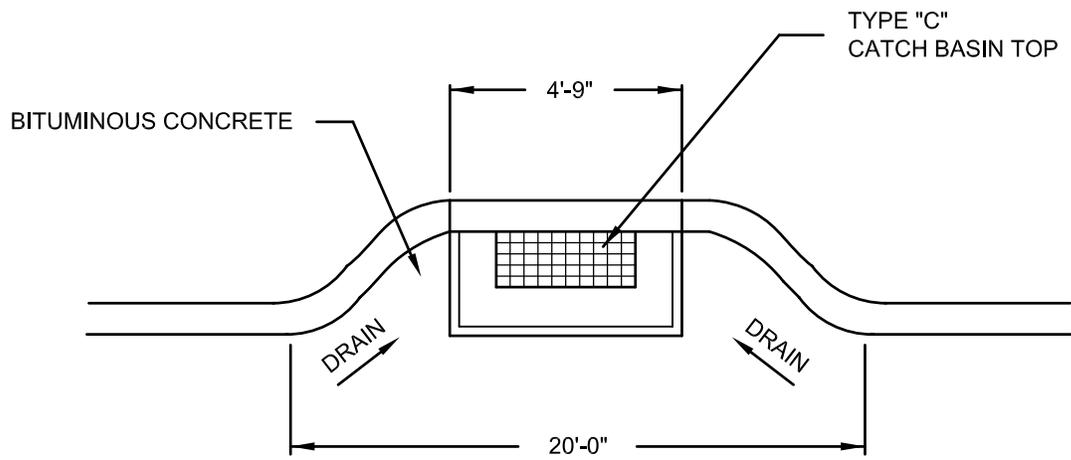
NOTES:

1. CATCH BASIN GRATES TO BE TYPE 507-K (GALVANIZED)

CROSS SECTION

NOT TO SCALE

TOWN OF STONINGTON TECHNICAL STANDARDS	DOUBLE CATCH BASIN - TYPE "CL"	DATE: MARCH 21, 2011
		REVISED:
		DETAIL NUMBER: D-4



NOT TO SCALE

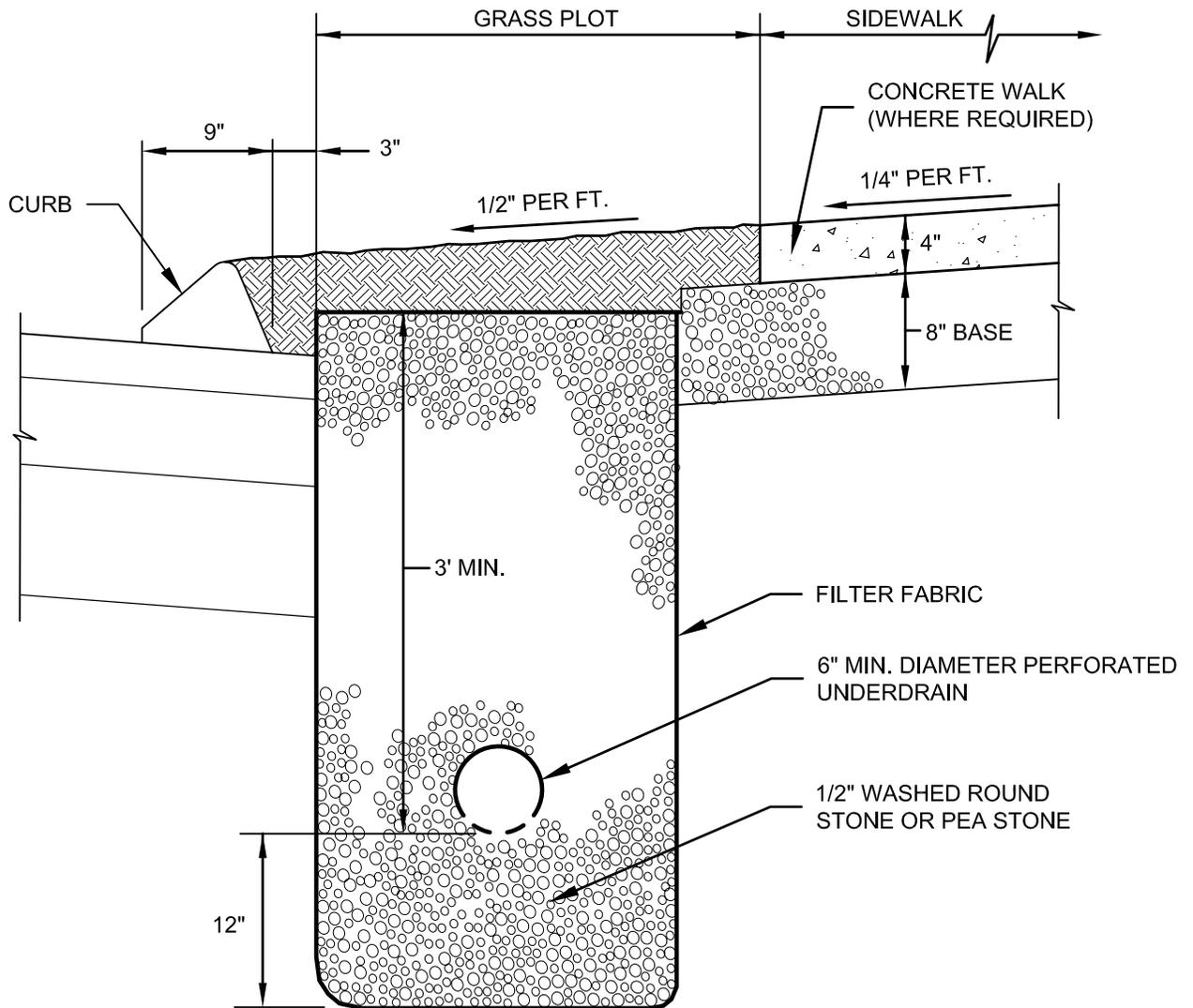
TOWN OF STONINGTON
TECHNICAL
STANDARDS

TYPE "C" CATCH BASIN
APRON/LEAKOFF

DATE: MARCH 21, 2011

REVISED:

DETAIL
NUMBER: D-5



NOT TO SCALE

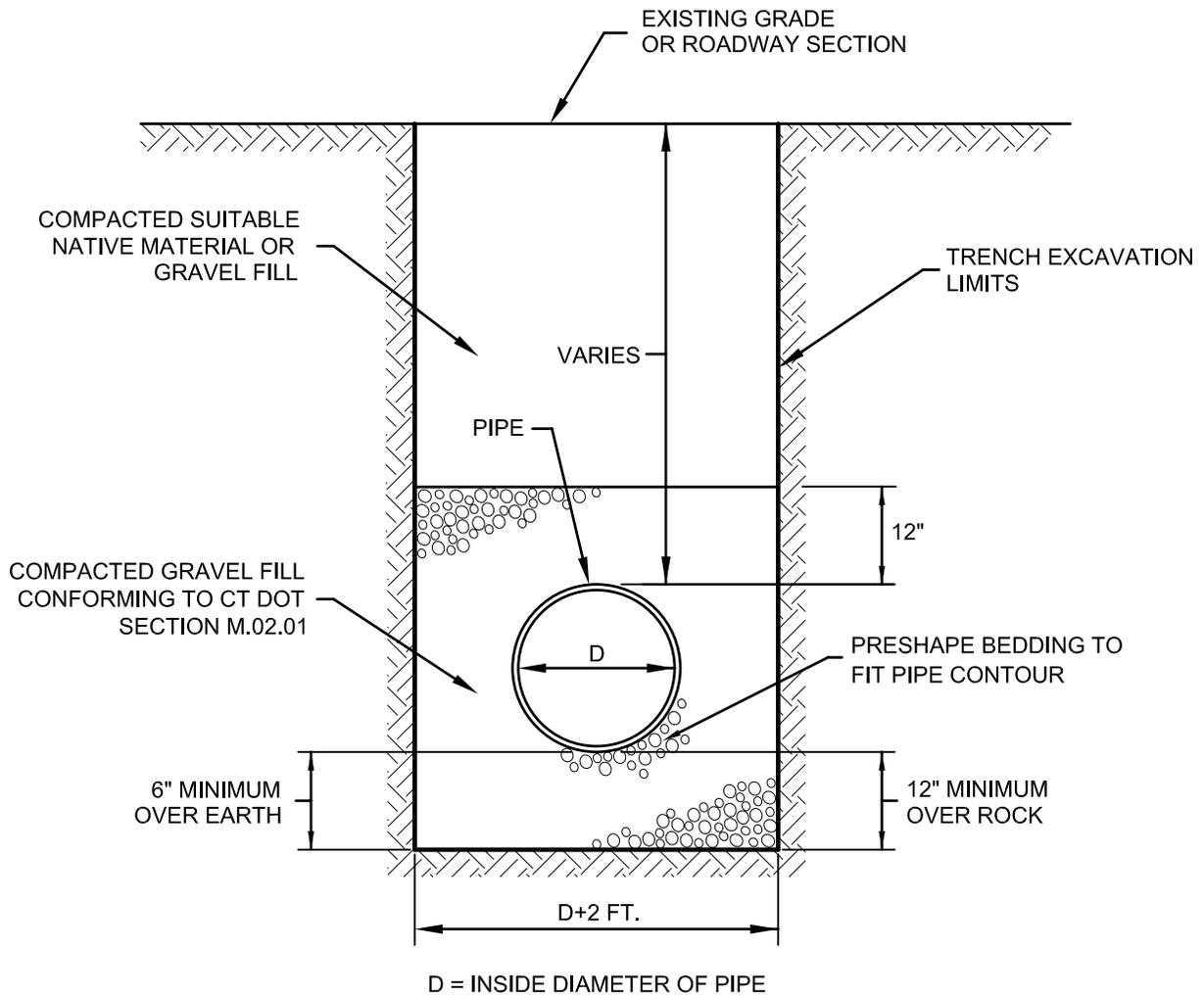
TOWN OF STONINGTON
TECHNICAL
STANDARDS

TYPICAL UNDERDRAIN

DATE: MARCH 21, 2011

REVISED:

DETAIL NUMBER: D-6



NOT TO SCALE

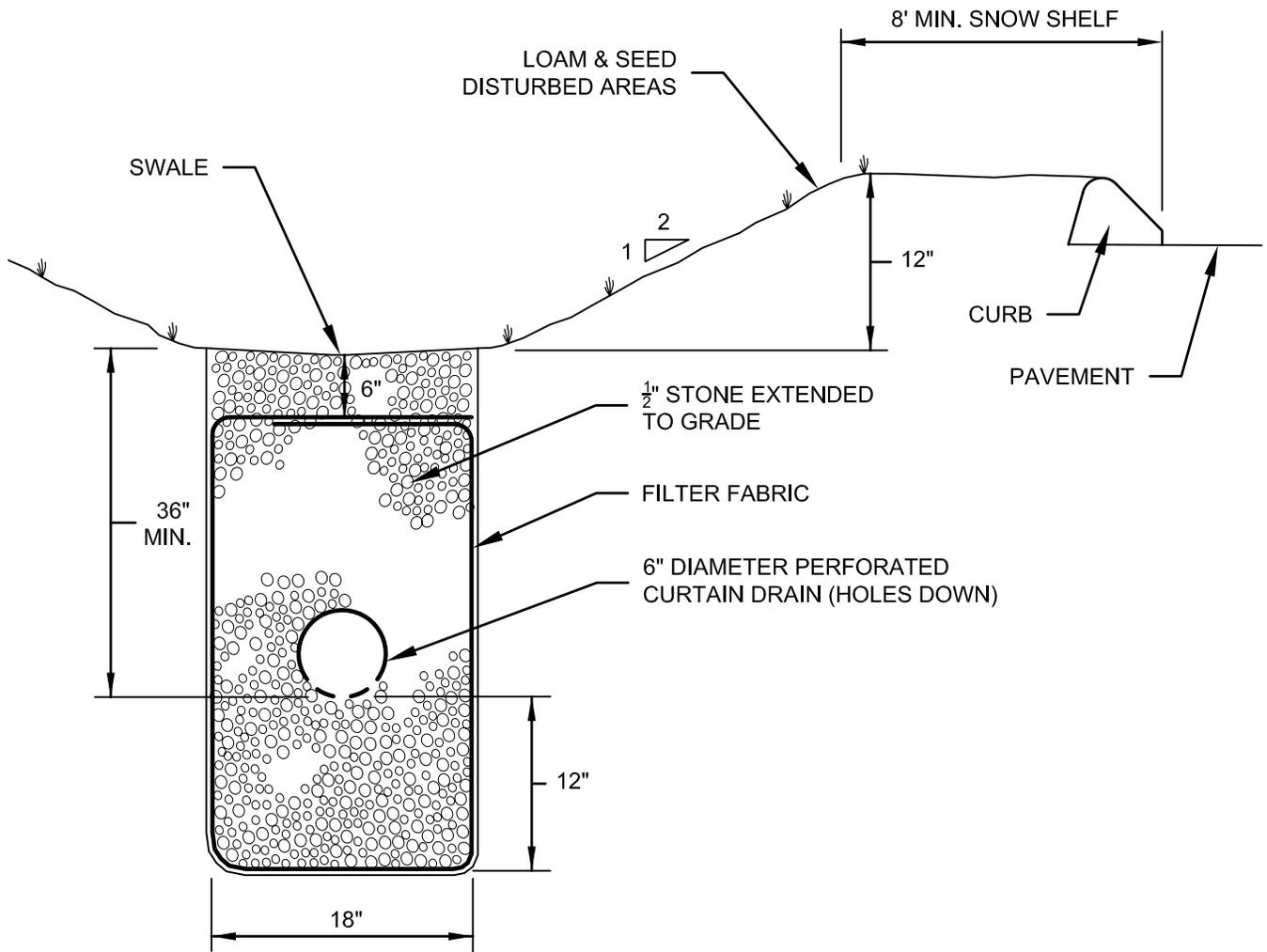
TOWN OF STONINGTON
TECHNICAL
STANDARDS

TYPICAL TRENCH

DATE: MARCH 21, 2011

REVISED:

DETAIL NUMBER: D-7



NOT TO SCALE

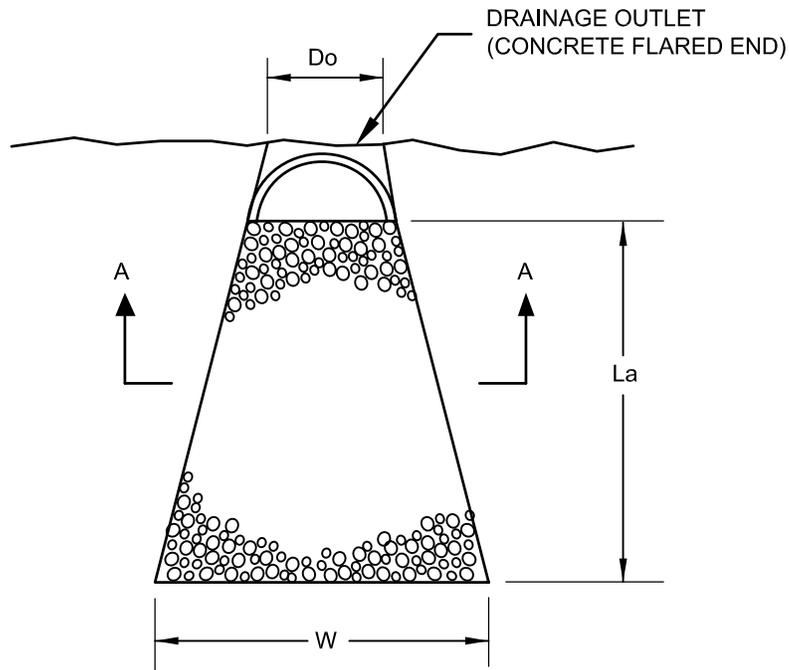
TOWN OF STONINGTON
TECHNICAL
STANDARDS

CURTAIN DRAIN

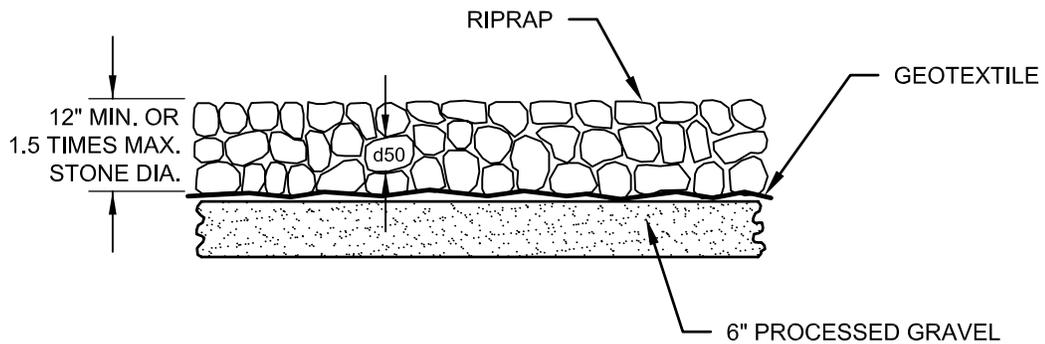
DATE: MARCH 21, 2011

REVISED:

DETAIL NUMBER: D-8



PLAN



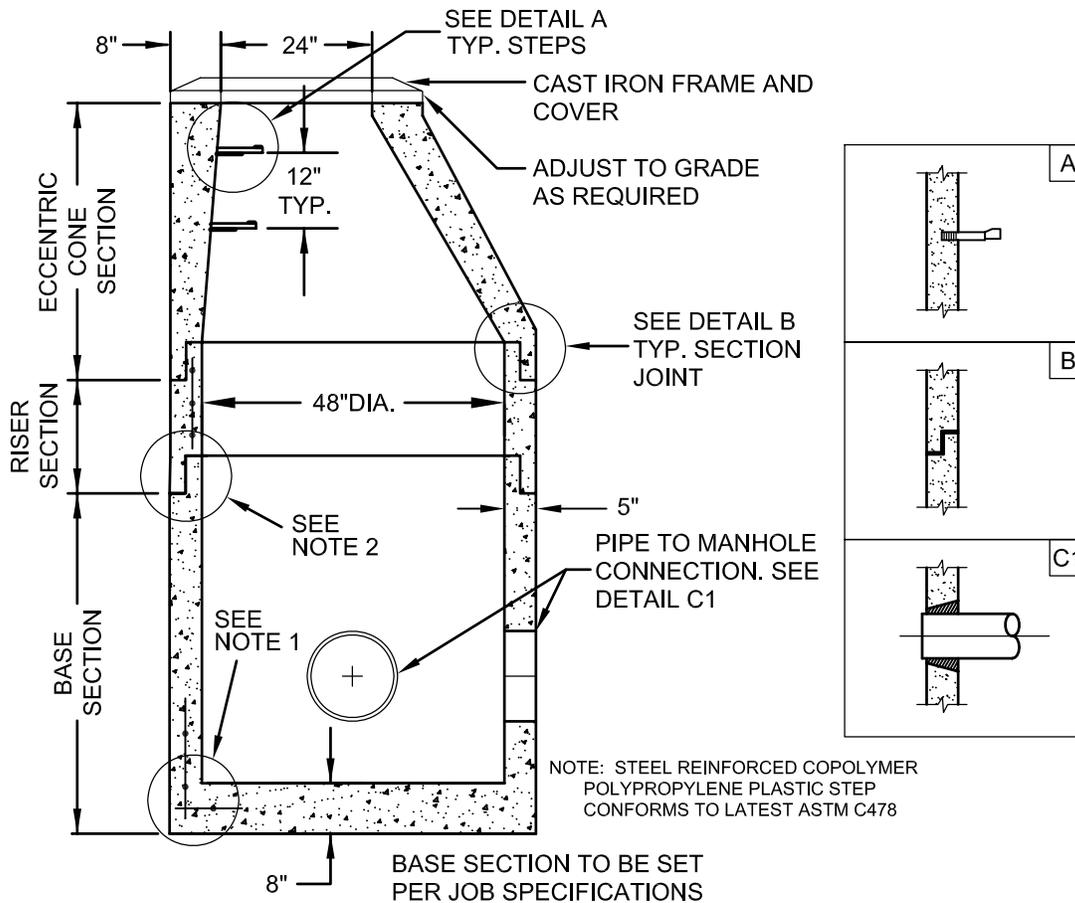
SECTION A-A

NOTES:

1. ALL SIZES SHOWN La , W , Do AND $d50$ SHALL BE CALCULATED USING CONNECTICUT GUIDELINES FOR SOIL EROSION & SEDIMENT CONTROL.
2. FILTER FABRIC SHALL BE MIRAFI 500X, EXXON GTF200, AMOCO 2199 OR APPROVED EQUAL.
3. RIP RAP PROTECTION SHALL BE PLACED AT ALL DRAINAGE INLETS AND OUTLETS.
4. RIP RAP STONE SHALL MEET THE REQUIREMENTS OF CONNECTICUT DOT STANDARD SPECIFICATION FORM 816 SECTION: M.12.02.

NOT TO SCALE

TOWN OF STONINGTON TECHNICAL STANDARDS	RIP-RAP OUTLET SPLASH PAD	DATE: MARCH 21, 2011
		REVISED:
		DETAIL NUMBER: D-9

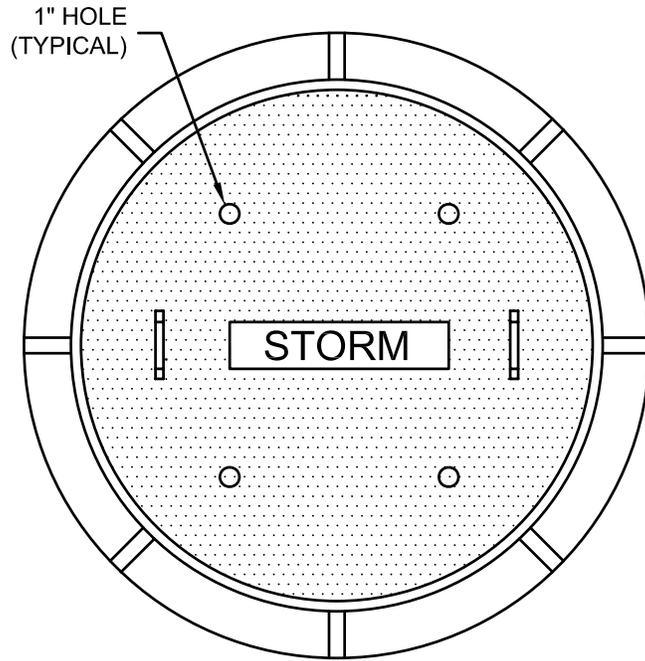


GENERAL NOTES:

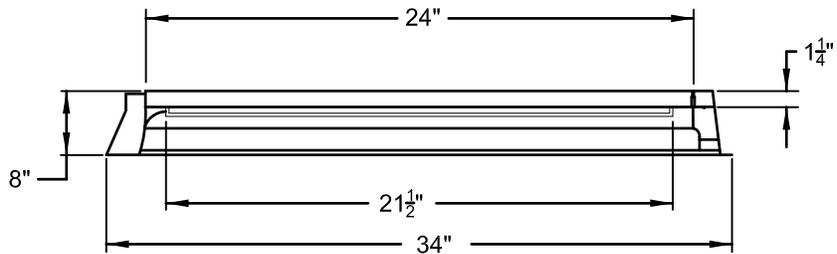
1. Reinforced Steel Conforms to latest ASTM A185 spec. 0.15 sq.in. (both ways) base bottom
2. Reinforced Steel Conforms to latest ASTM A185 spec. 0.12 sq.in./lineal ft.
3. Concrete Compressive strength - 4000 PSI minimum.
4. Manhole Design Specifications conform to latest ASTM C478 Spec. for "Precast Reinforced Concrete Manhole Sections"

NOT TO SCALE

TOWN OF STONINGTON TECHNICAL STANDARDS	DRAINAGE MANHOLE	DATE: MARCH 21, 2011
		REVISED:
		DETAIL NUMBER: D-10



PLAN VIEW



SECTION

NOT TO SCALE

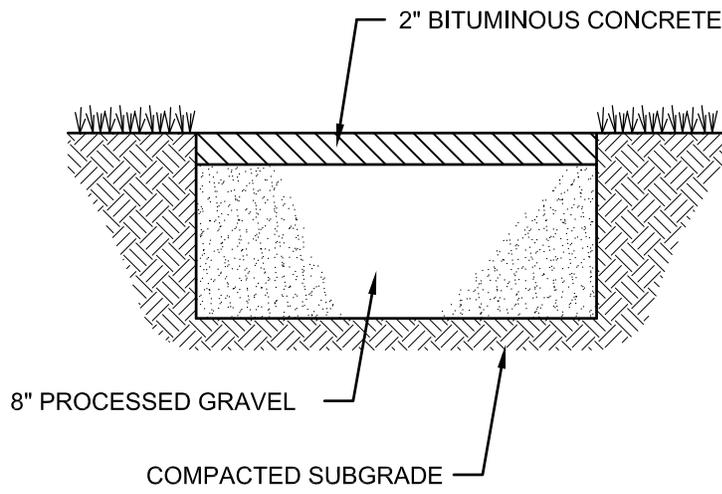
TOWN OF STONINGTON
TECHNICAL
STANDARDS

DRAINAGE MANHOLE
FRAME & COVER

DATE: MARCH 21, 2011

REVISED:

DETAIL NUMBER: D-11



NOT TO SCALE

TOWN OF STONINGTON
TECHNICAL
STANDARDS

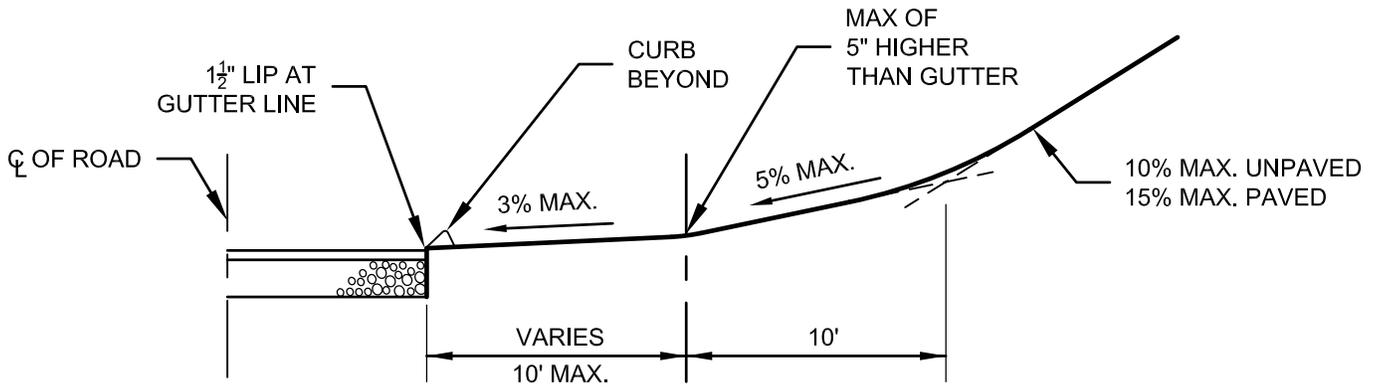
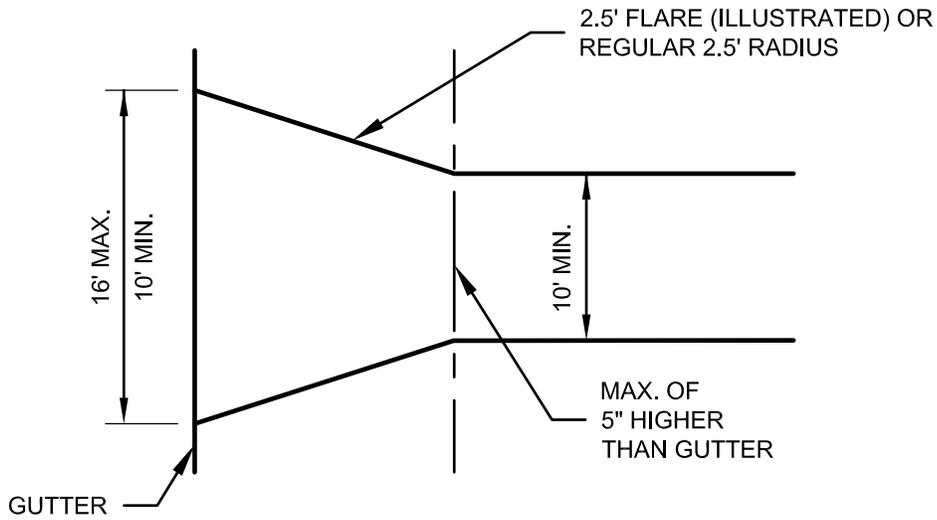
BITUMINOUS CONCRETE
DRIVEWAY

DATE: MARCH 21, 2011

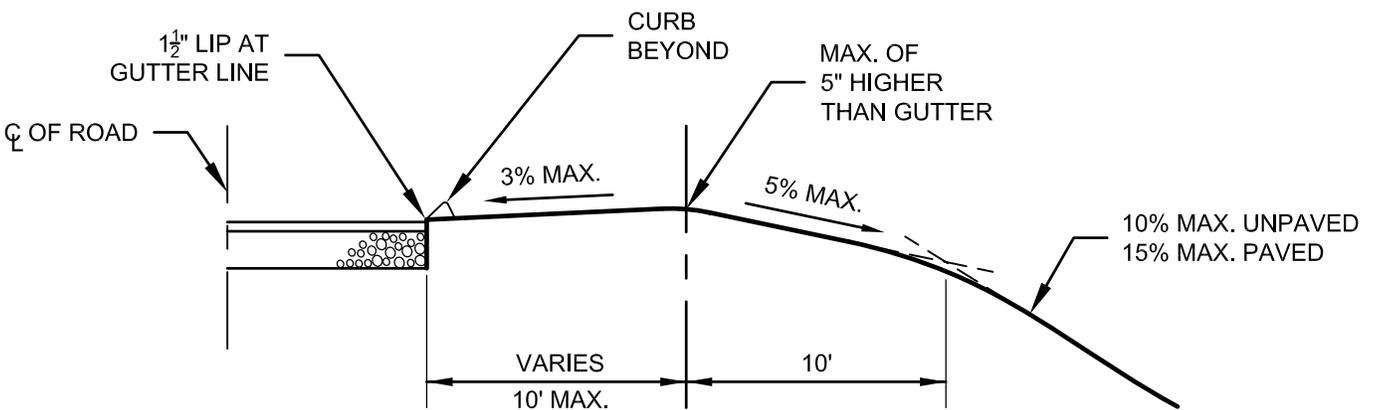
REVISED:

DETAIL NUMBER: DR-1

NOTE:
 BELOW DETAILS SHALL BE USED WHERE A
 STORM DRAINAGE SYSTEM IN THE ROAD EXISTS



SAG CURVE IN DRIVE

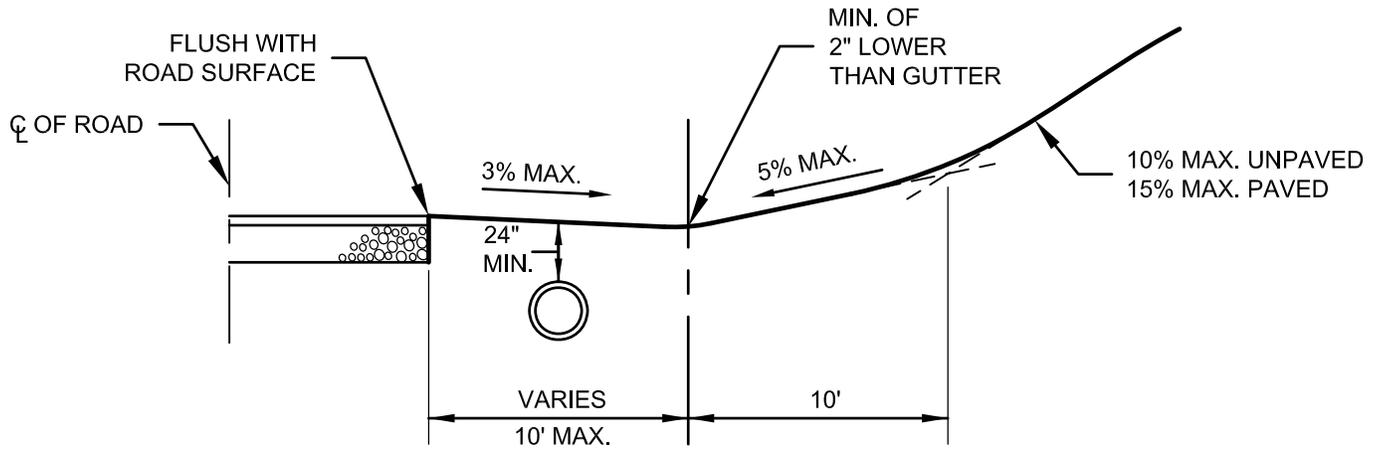
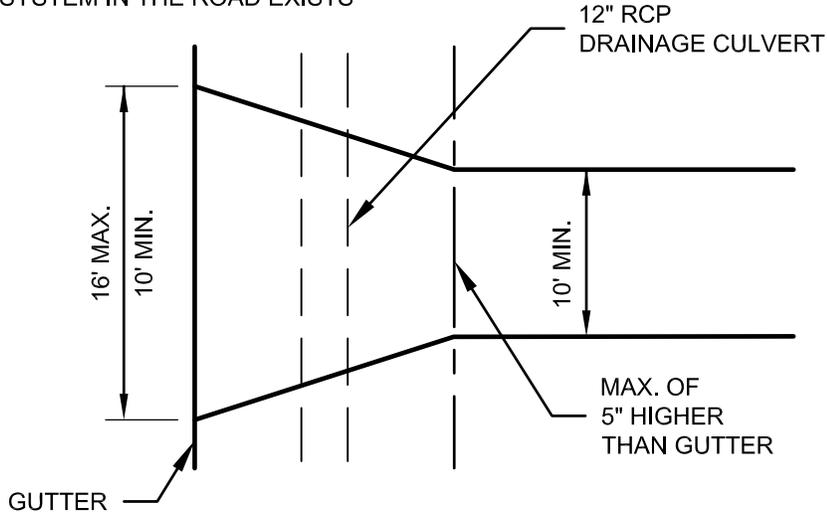


CREST CURVE IN DRIVE

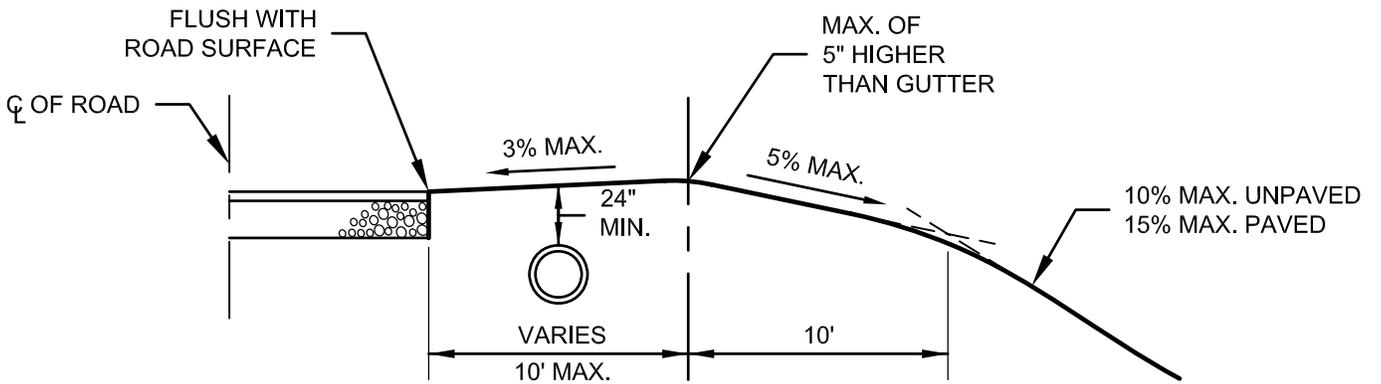
NOT TO SCALE

TOWN OF STONINGTON TECHNICAL STANDARDS	RESIDENTIAL DRIVEWAY WITH GUTTER LINE	DATE: MARCH 21, 2011
		REVISED:
		DETAIL NUMBER: DR-2

NOTE:
 BELOW DETAILS SHALL BE USED WHERE A
 STORM DRAINAGE SYSTEM IN THE ROAD EXISTS



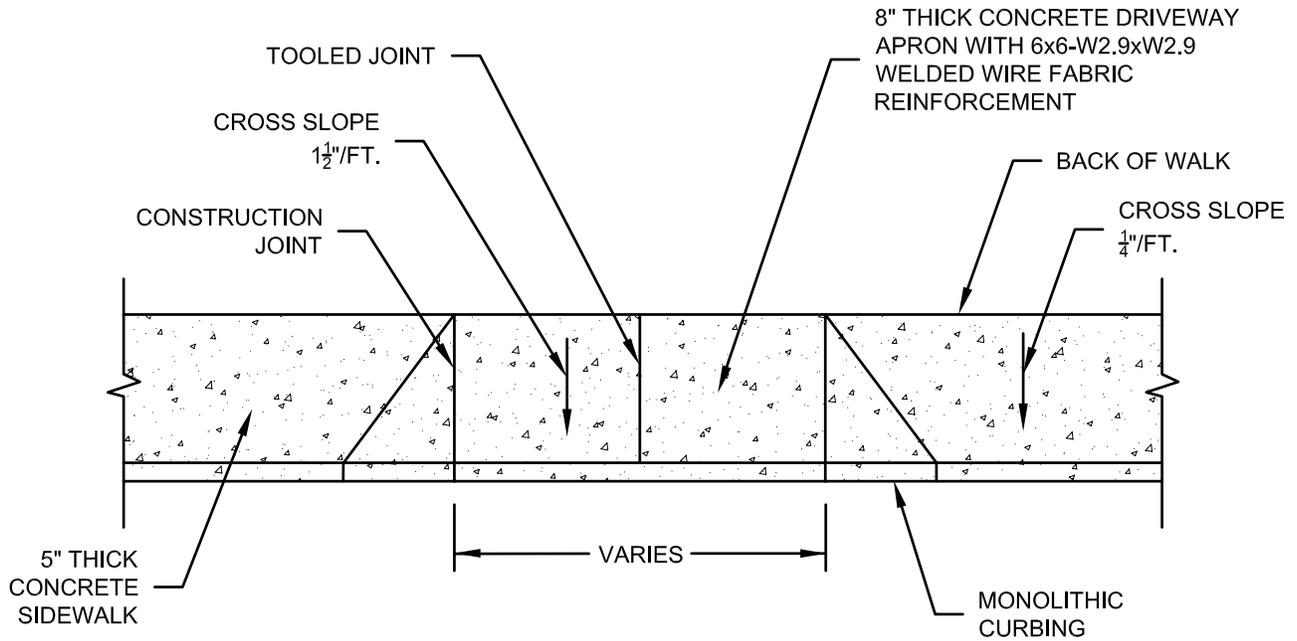
SAG CURVE IN DRIVE



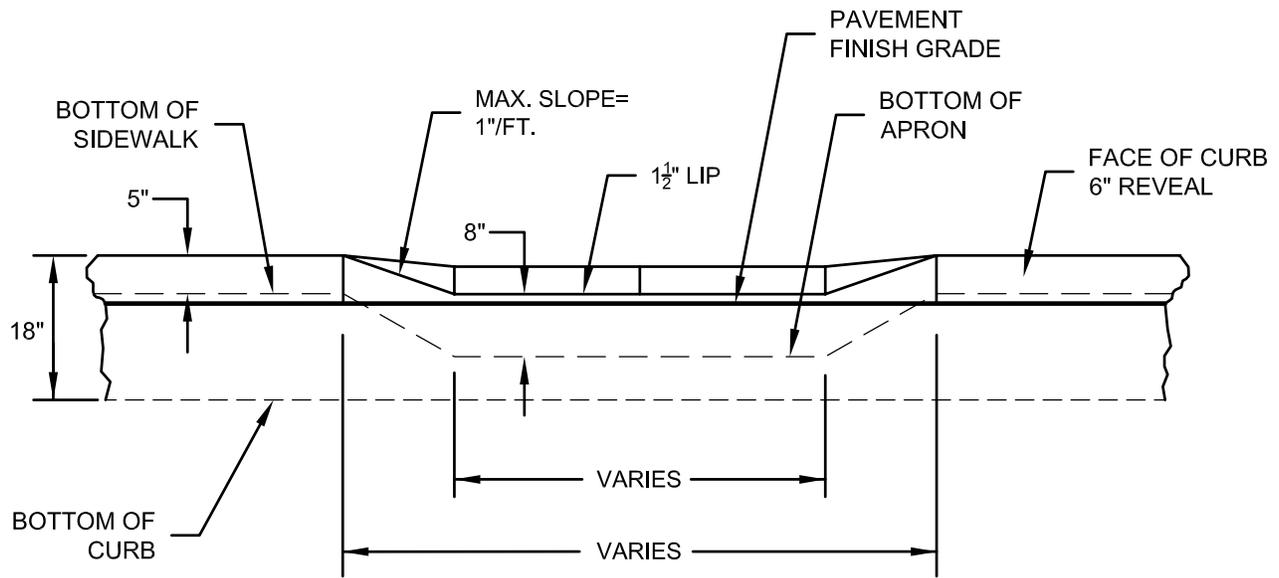
CREST CURVE IN DRIVE

NOT TO SCALE

TOWN OF STONINGTON TECHNICAL STANDARDS	RESIDENTIAL DRIVEWAY WITH SURFACE DRAINAGE	DATE: MARCH 21, 2011
		REVISED:
		DETAIL NUMBER: DR-3



PLAN



CROSS SECTION

NOTES:

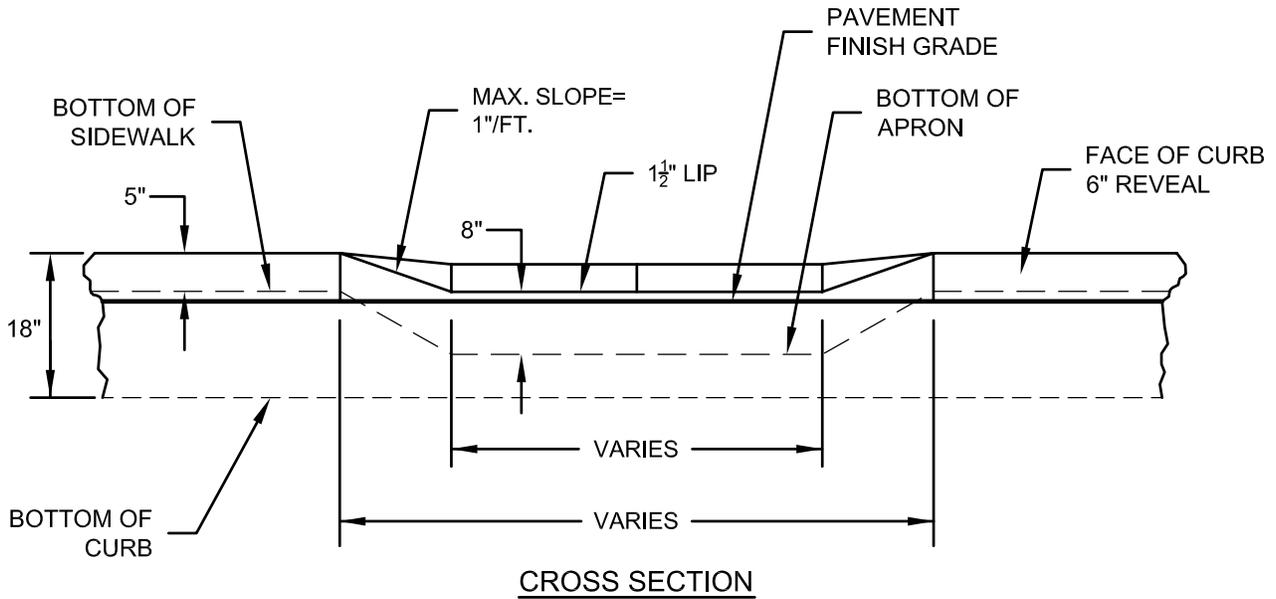
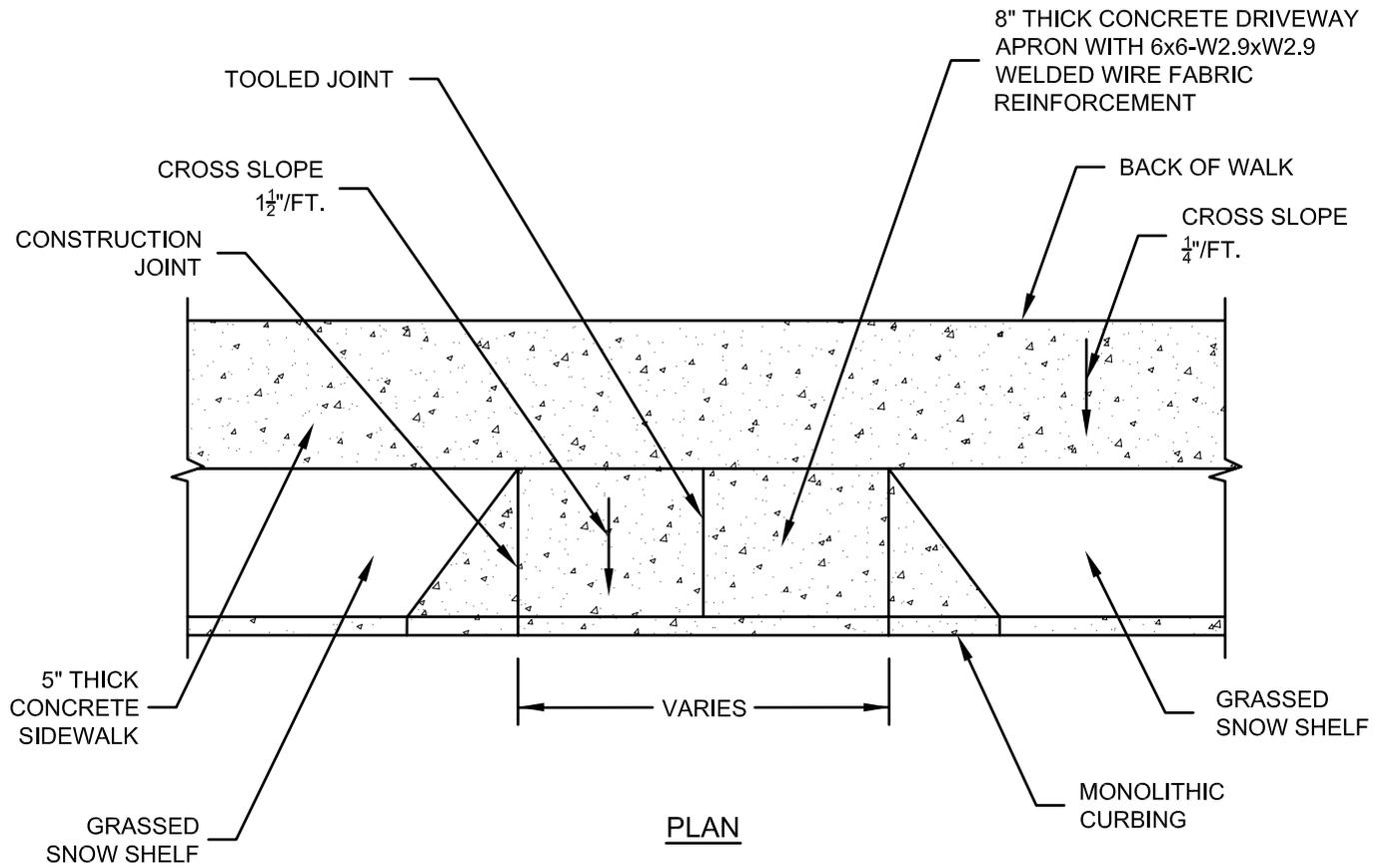
RESIDENTIAL DRIVEWAYS: 10' MINIMUM
16' MAXIMUM

COMMERCIAL DRIVEWAYS: 12' MINIMUM FOR ALL PROPOSED LOCATION

WIDER WIDTH WILL NEED APPROVAL FROM THE PUBLIC WORKS DIRECTOR

NOT TO SCALE

TOWN OF STONINGTON TECHNICAL STANDARDS	CONCRETE DRIVEWAY APRON W/ SIDEWALK AT ROADWAY	DATE: MARCH 21, 2011
		REVISED:
		DETAIL NUMBER: DR-4



NOTES:

RESIDENTIAL DRIVEWAYS: 10' MINIMUM
16' MAXIMUM

COMMERCIAL DRIVEWAYS: 12' MINIMUM FOR ALL PROPOSED LOCATION

WIDER WIDTH WILL NEED APPROVAL FROM THE PUBLIC WORKS DIRECTOR

NOT TO SCALE

TOWN OF STONINGTON
TECHNICAL
STANDARDS

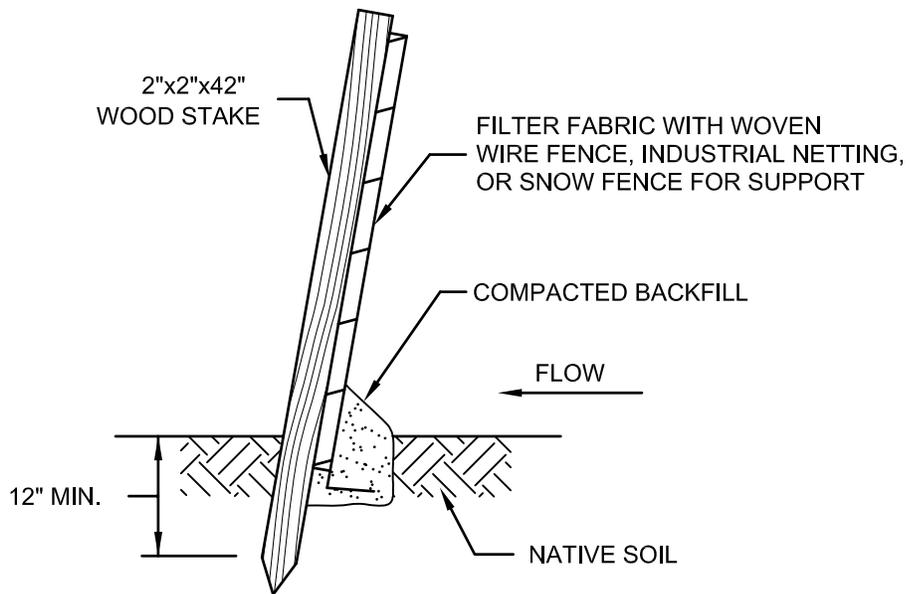
CONCRETE DRIVEWAY APRON
W/ SIDEWALK AT SNOW SHELF

DATE: MARCH 21, 2011

REVISED:

DETAIL
NUMBER:

DR-5



NOT TO SCALE

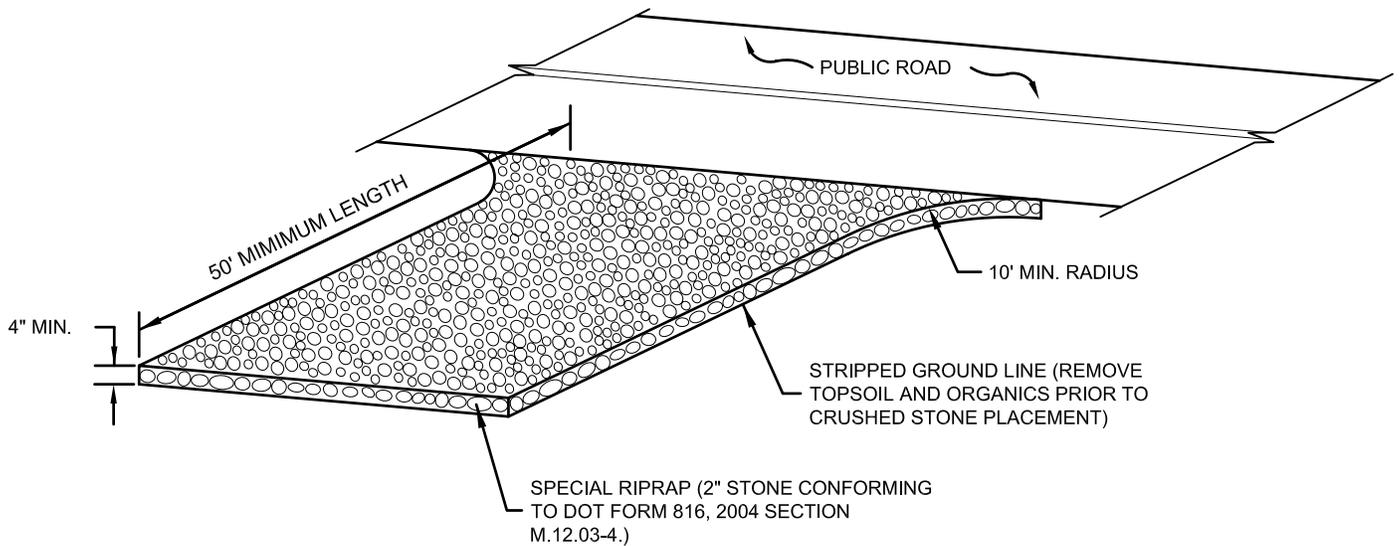
TOWN OF STONINGTON
TECHNICAL
STANDARDS

SILT FENCE

DATE: MARCH 21, 2011

REVISED:

DETAIL
NUMBER: ES-1



NOT TO SCALE

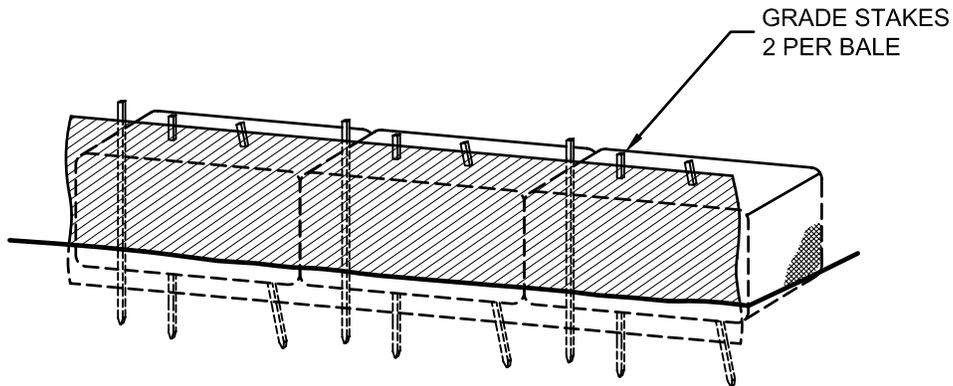
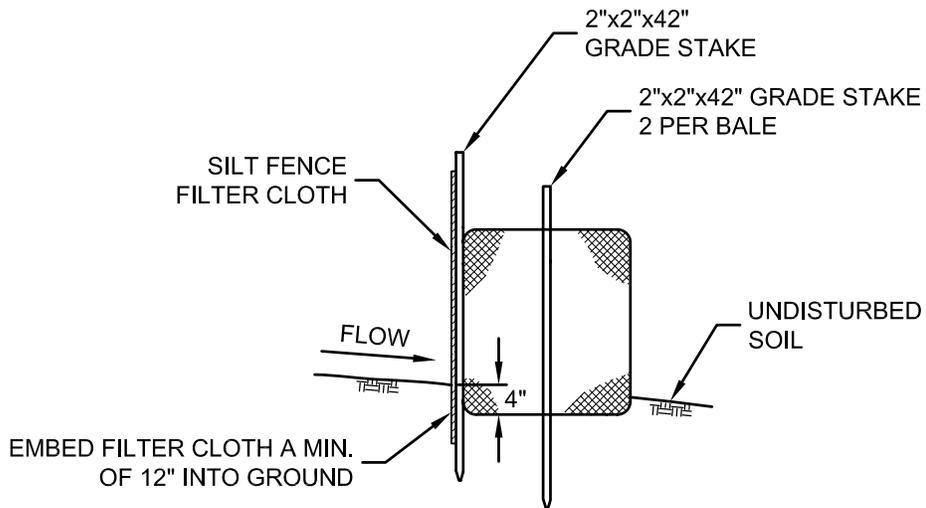
TOWN OF STONINGTON
TECHNICAL
STANDARDS

ANTI-TRACKING PAD

DATE: MARCH 21, 2011

REVISED:

DETAIL NUMBER: ES-2



CONSTRUCTION NOTES:

1. SILT FENCE FILTER CLOTH TO BE SECURELY FASTENED TO GRADE STAKE WITH STAPLES, 6" ON CENTER.
2. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN ONE ANOTHER THEY SHALL OVERLAP BY 6" AND BE FOLDED.
3. BALES SHALL BE PLACED IN A ROW WITH ENDS TIGHTLY ABUTTING THE ADJACENT BALES.

NOT TO SCALE

TOWN OF STONINGTON
TECHNICAL
STANDARDS

HAY-BALE & SILT FENCE
EROSION PROTECTION

DATE: MARCH 21, 2011

REVISED:

DETAIL
NUMBER:

ES-3

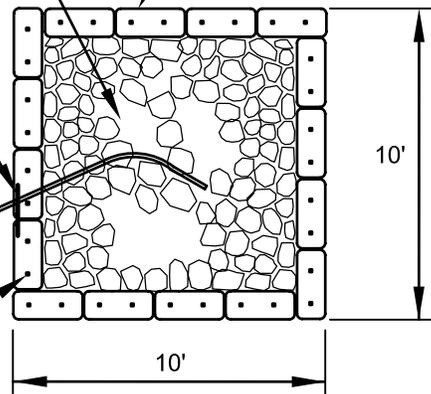
COVER ENTIRE INSIDE AREA WITH
ONE LAYER OF MODIFIED RIPRAP
CT DOT SECTION M.12.02

ONE ROW OF HAY BALES, EMBEDDED
AND STAKED IN ACCORDANCE WITH
CONNECTICUT GUIDELINES FOR SOIL
EROSION & SEDIMENT CONTROL

SUPPORT
DEWATERING HOSE
ON HAY BALE

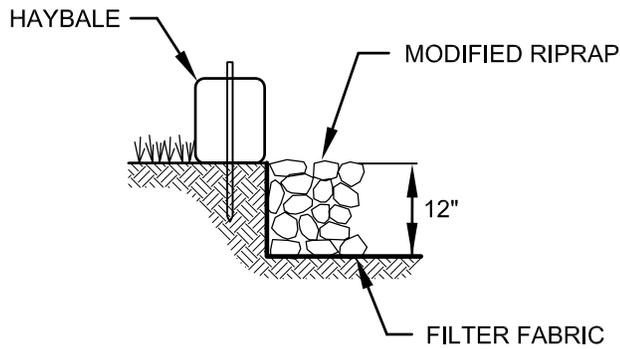
DISCHARGE HOSE FROM
DEWATERING PUMP

WOOD STAKES
2 PER BALE



OVERFLOW
DISCHARGE

PLAN



CROSS SECTION

NOT TO SCALE

TOWN OF STONINGTON
TECHNICAL
STANDARDS

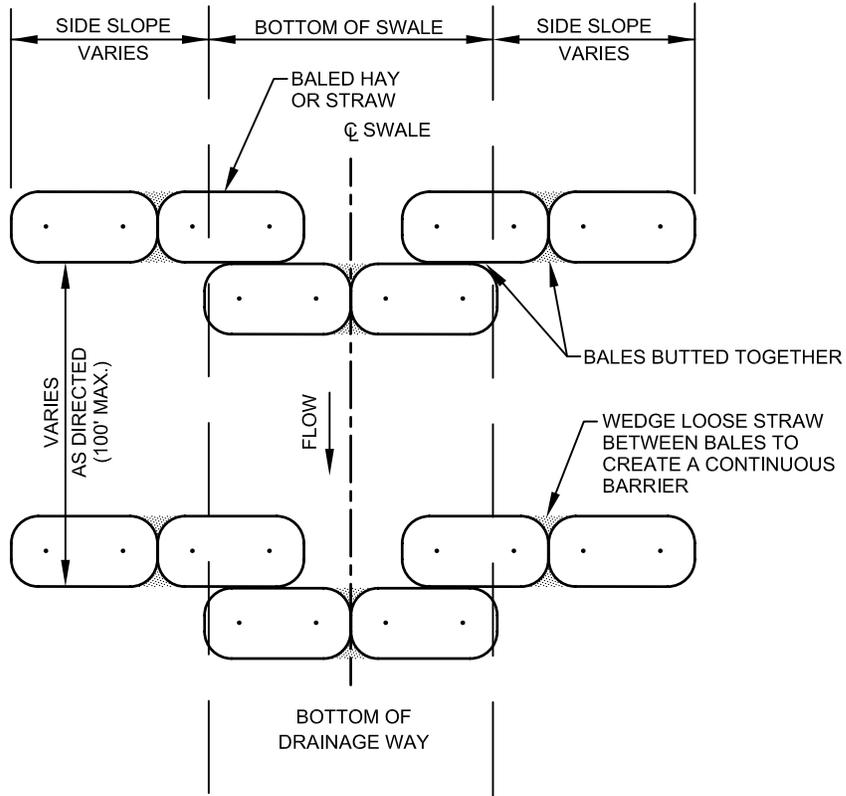
DEWATERING STRUCTURE

DATE: MARCH 21, 2011

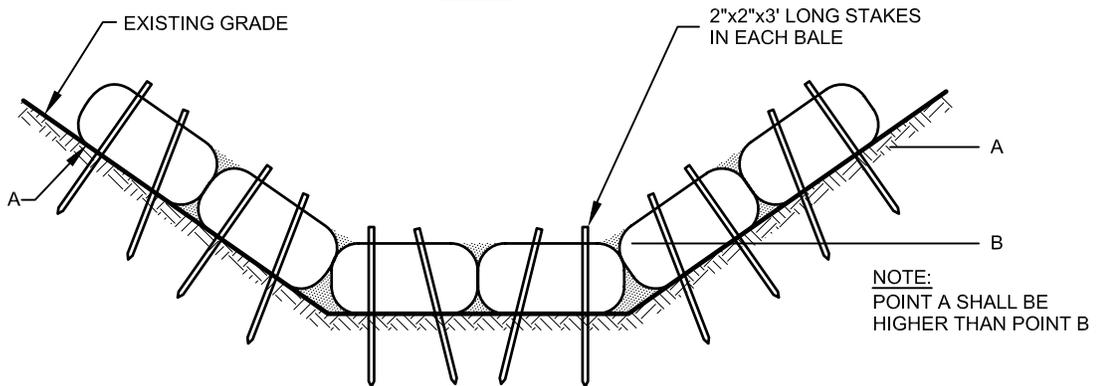
REVISED:

DETAIL
NUMBER:

ES-4



PLAN

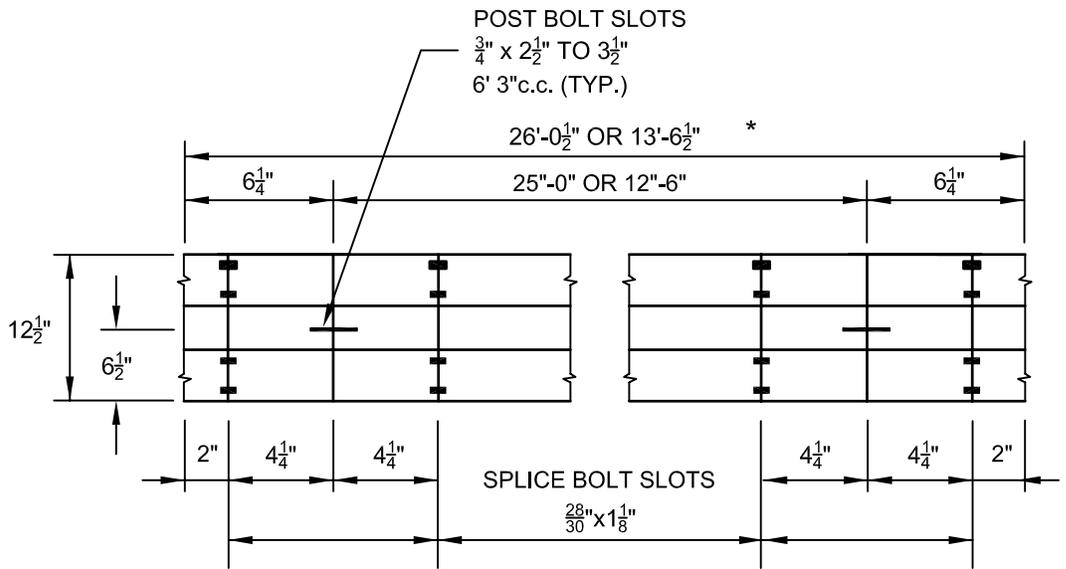


NOTE:
 ANCHOR EACH BALE WITH AT LEAST 2 STAKES, DRIVING THE FIRST STAKE IN EACH BALE TOWARD THE PREVIOUSLY LAID BALE TO FORCE THE BALES TOGETHER. STAKES MUST BE DRIVEN A MINIMUM OF 18" INTO THE GROUND

CROSS SECTION

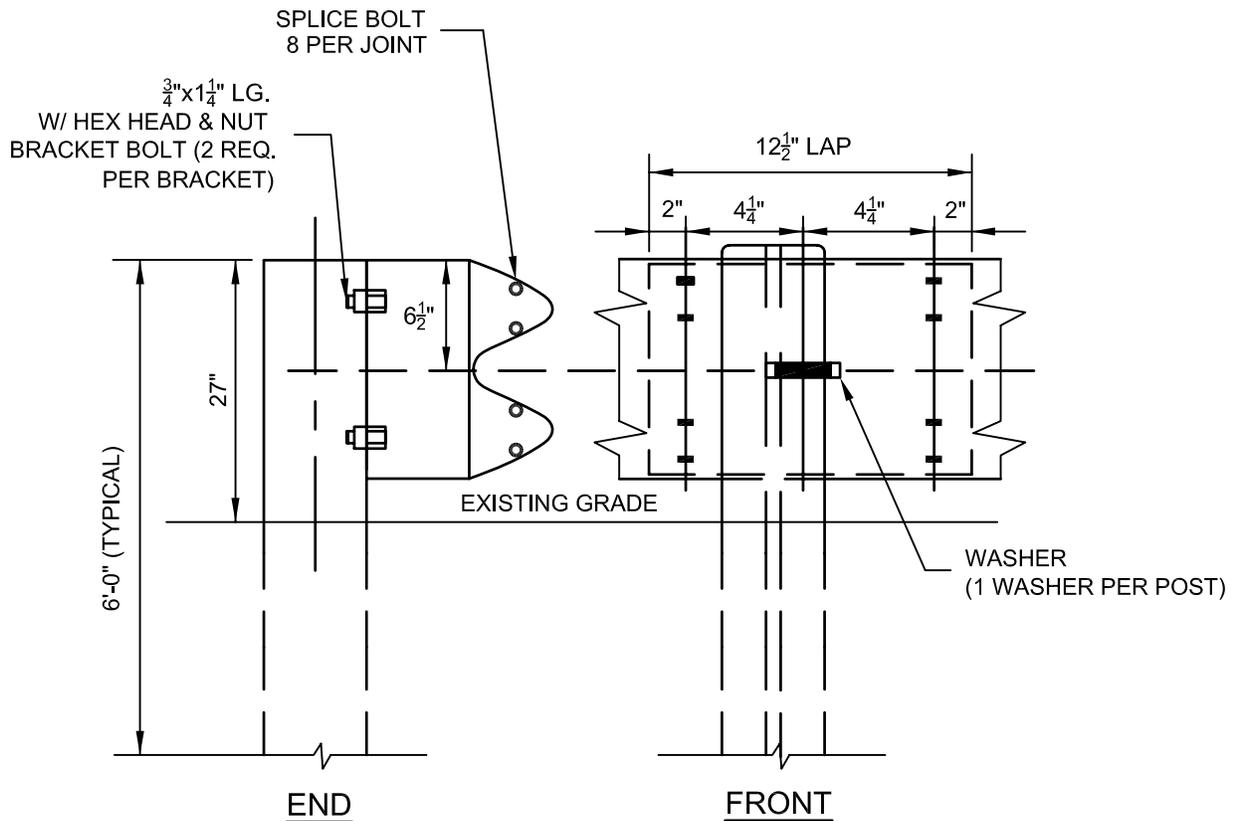
NOT TO SCALE

TOWN OF STONINGTON TECHNICAL STANDARDS	HAYBALE CHECK DAM	DATE: MARCH 21, 2011
		REVISED:
		DETAIL NUMBER: ES-5



TYPICAL RAIL ELEMENT
 CLASS A (12 GA.)

* AT THE OPTION OF THE CONTRACTOR



SYMMETRICAL ABOUT
 CENTER LINE FOR MEDIAN
 BARRIER INSTALLATION

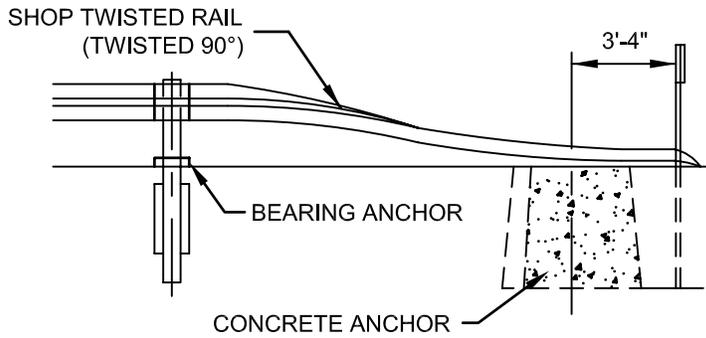
INSTALLATION TO BE IN ACCORDANCE WITH THE
 REQUIREMENTS OF CT. D.O.T.

NOTE:

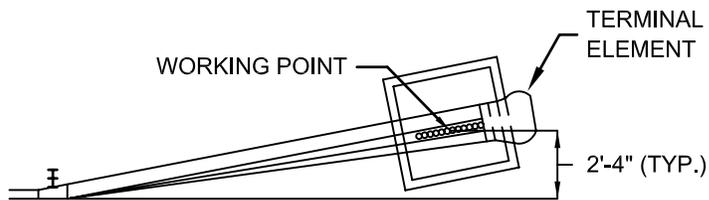
METAL BEAM RAIL TO BE RB-350
 IN ACCORDANCE W/CT DOT STANDARDS

NOT TO SCALE

TOWN OF STONINGTON TECHNICAL STANDARDS	METAL BEAM RAIL	DATE: MARCH 21, 2011
		REVISED:
		DETAIL NUMBER: G-1



ELEVATION



PLAN

NOTE:
 END ANCHORAGE TO BE COMPATIBLE WITH RB-350
 PER CT DOT STANDARDS

NOT TO SCALE

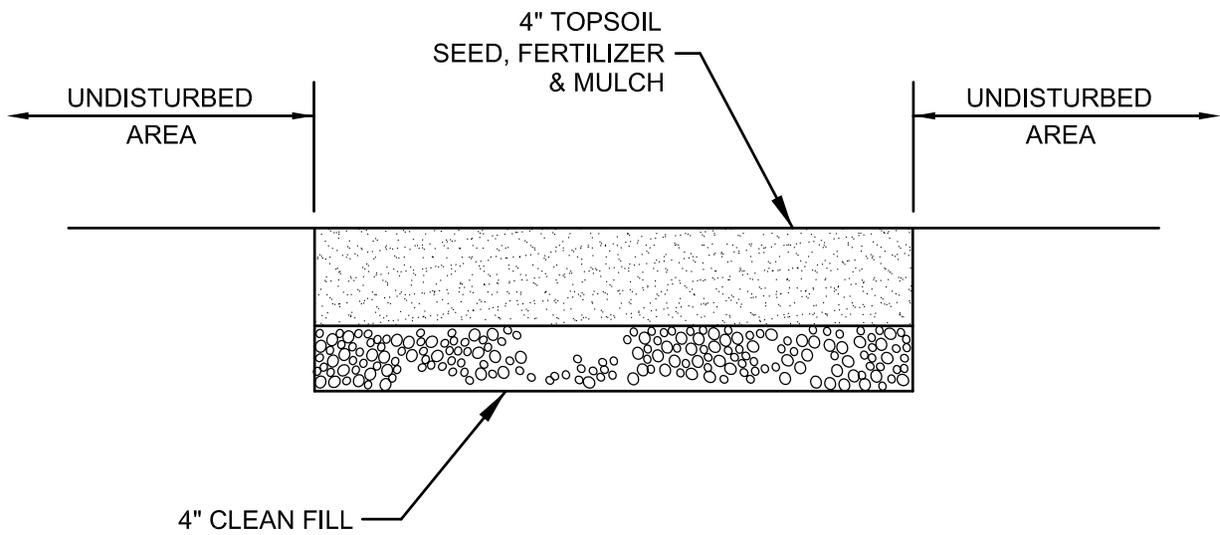
TOWN OF STONINGTON
 TECHNICAL
 STANDARDS

METAL BEAM RAIL
 END ANCHORAGE

DATE: MARCH 21, 2011

REVISED:

DETAIL NUMBER: G-2



NOT TO SCALE

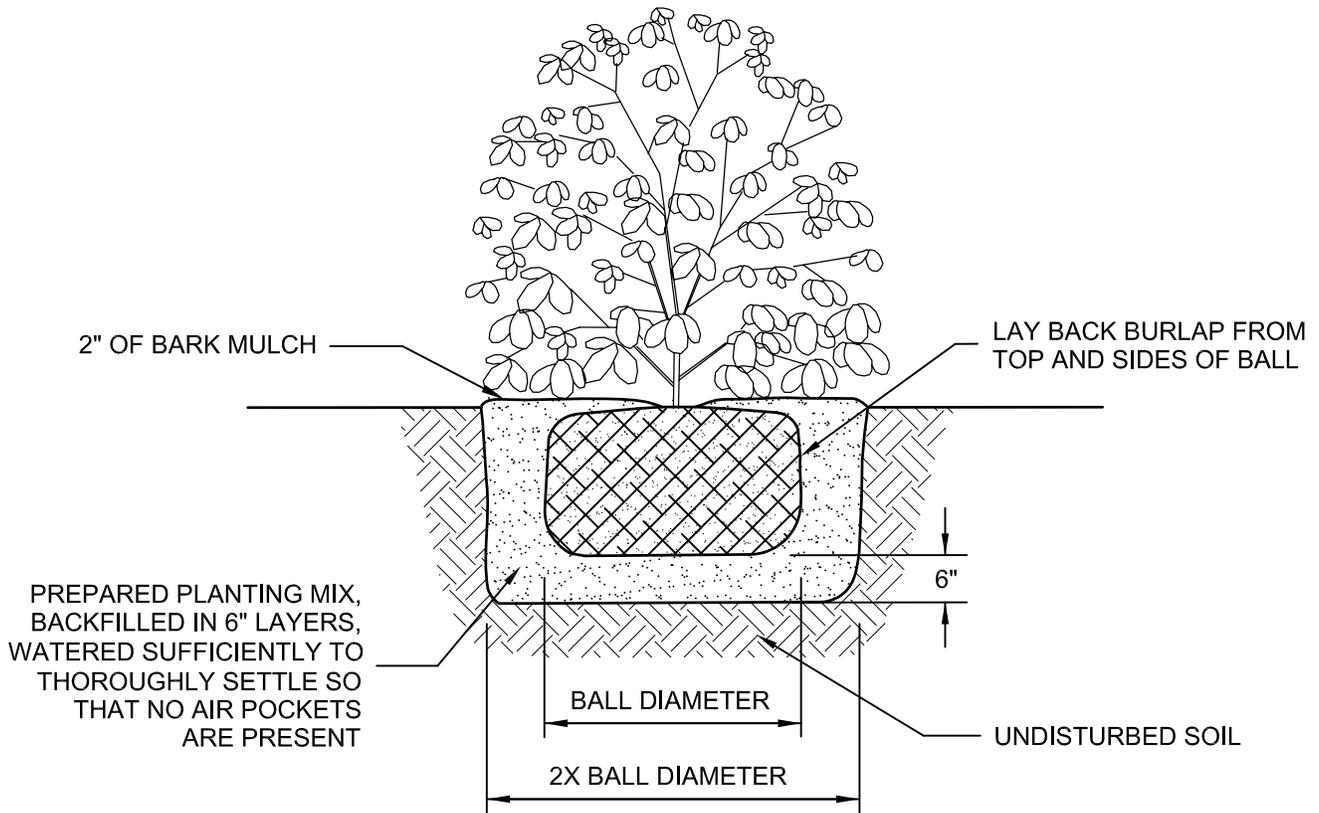
TOWN OF STONINGTON
TECHNICAL
STANDARDS

LOAM & SEED CROSS-SECTION

DATE: MARCH 21, 2011

REVISED:

DETAIL NUMBER: L-1



NOT TO SCALE

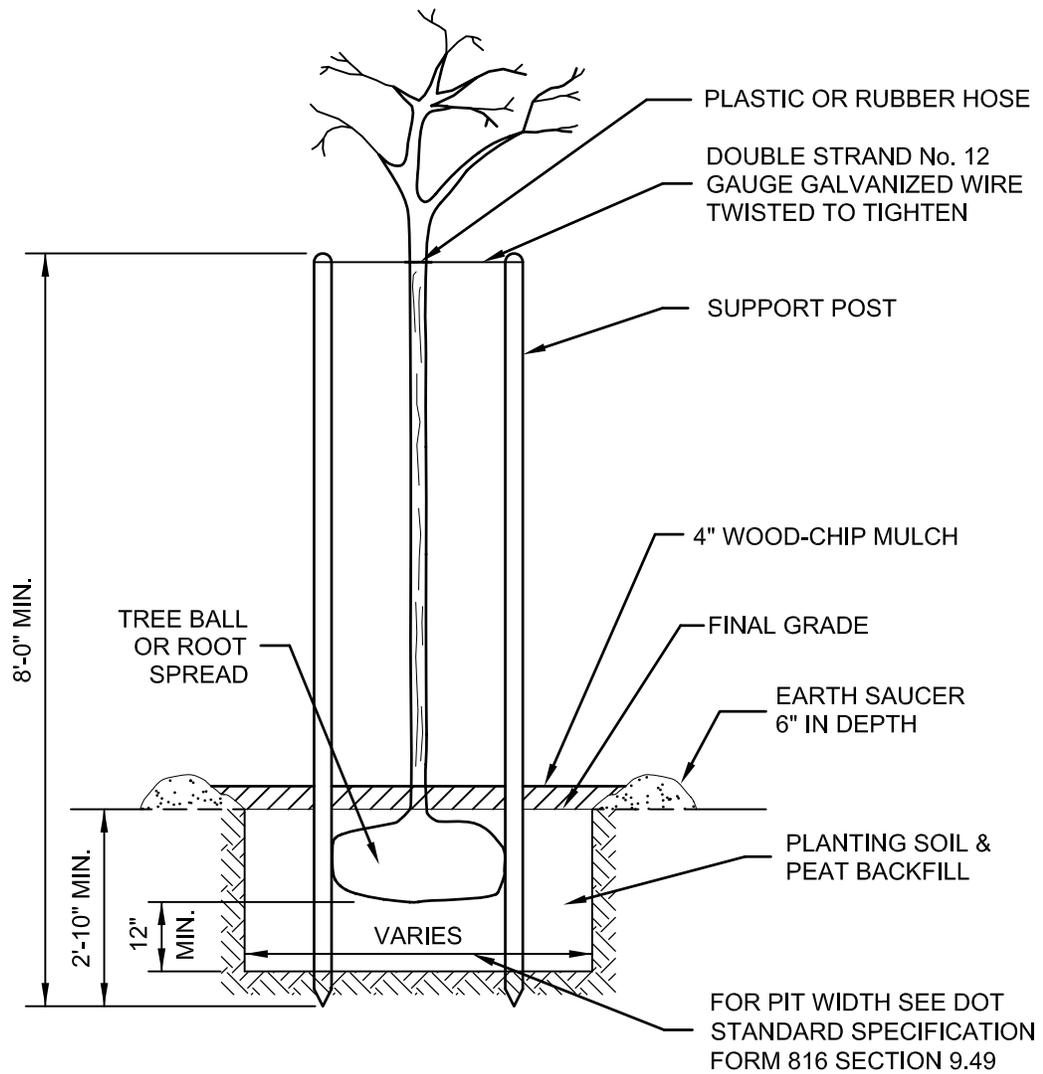
TOWN OF STONINGTON
TECHNICAL
STANDARDS

SHRUB PLANTING

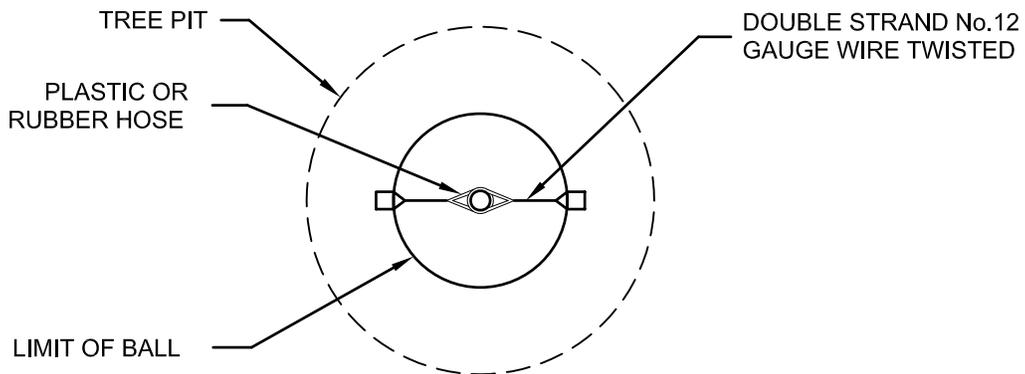
DATE: MARCH 21, 2011

REVISED:

DETAIL NUMBER: L-2



SECTION



PLAN

NOT TO SCALE

TOWN OF STONINGTON
TECHNICAL
STANDARDS

TREE PLANTING

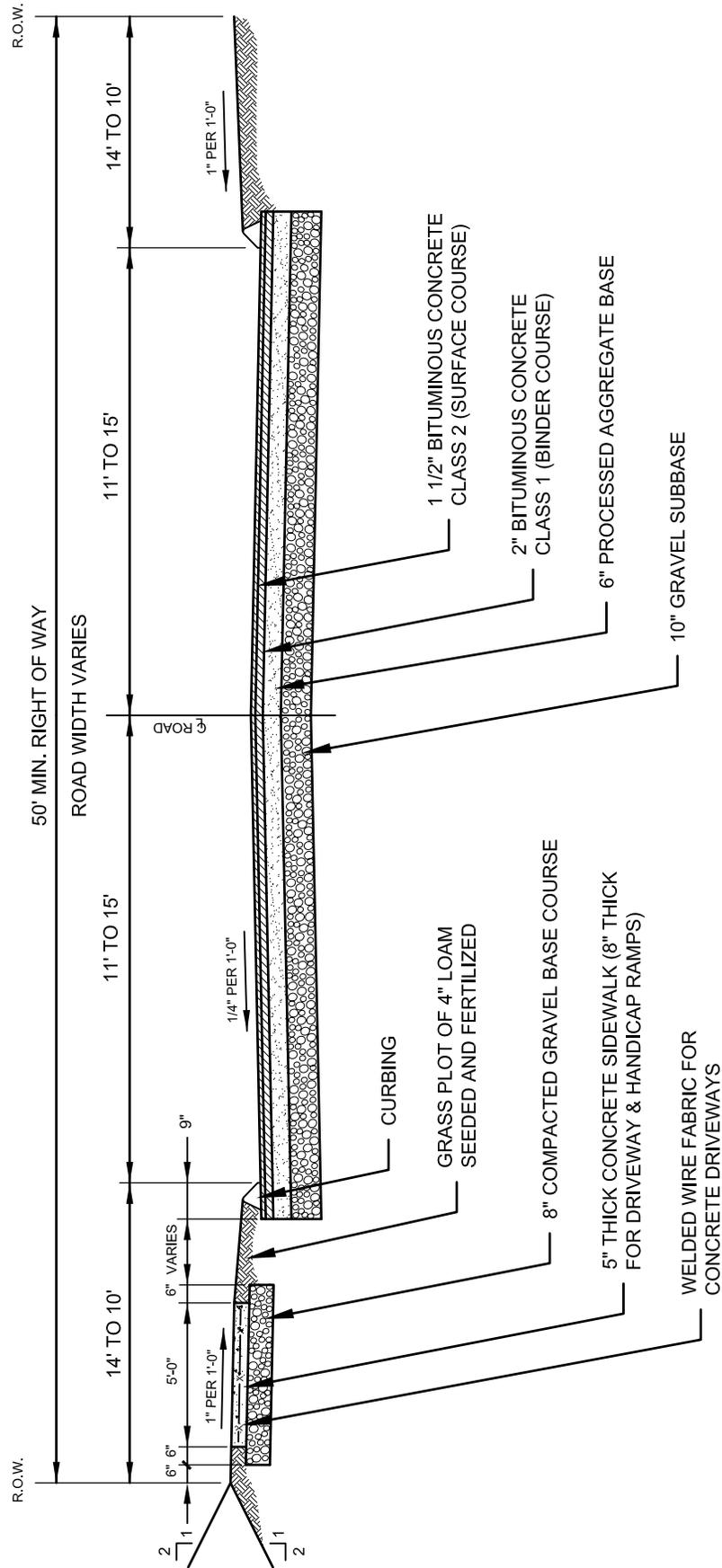
DATE: MARCH 21, 2011

REVISED:

DETAIL NUMBER: L-3

NOTES:

1. ALL MATERIAL THICKNESS ARE FOR COMPACTED DEPTH.
2. IF BINDER COURSE IS LEFT AS TOP COURSE FOR AN EXTENDED PERIOD, A TACK COAT OF BITUMINOUS MATERIAL SHALL BE APPLIED BEFORE LAYING THE TOP COURSE.

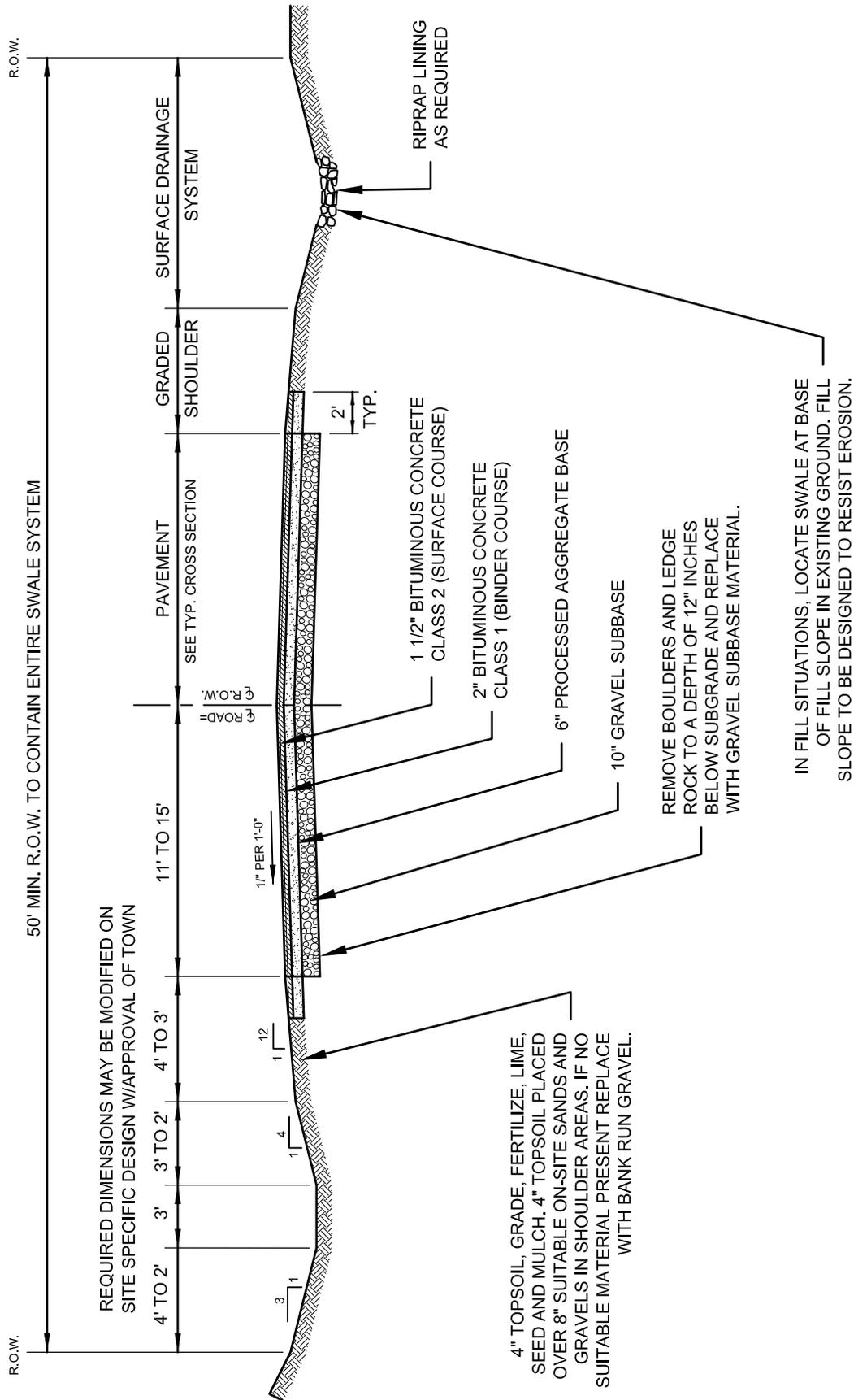


NOT TO SCALE

TOWN OF STONINGTON
TECHNICAL
STANDARDS

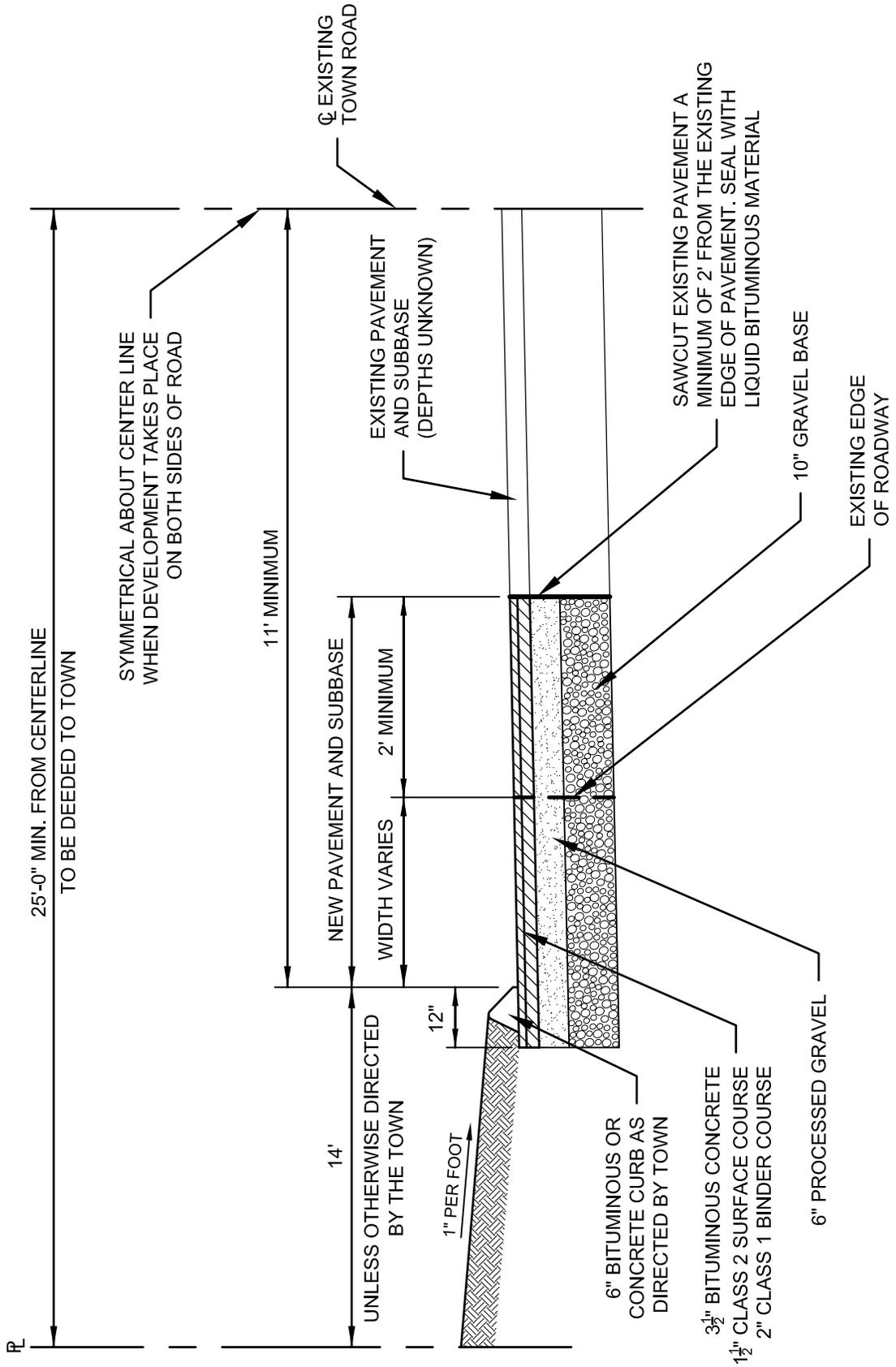
TYPICAL STREET
CROSS SECTION LAYOUT
CURBING

DATE:	MARCH 21, 2011
REVISED:	
DETAIL NUMBER:	R-1



NOT TO SCALE

TOWN OF STONINGTON TECHNICAL STANDARDS	TYPICAL STREET CROSS SECTION LAYOUT SURFACE DRAINAGE		DATE: MARCH 21, 2011
			REVISID:
		DETAIL NUMBER: R-2	



NOT TO SCALE

TOWN OF STONINGTON
 TECHNICAL
 STANDARDS

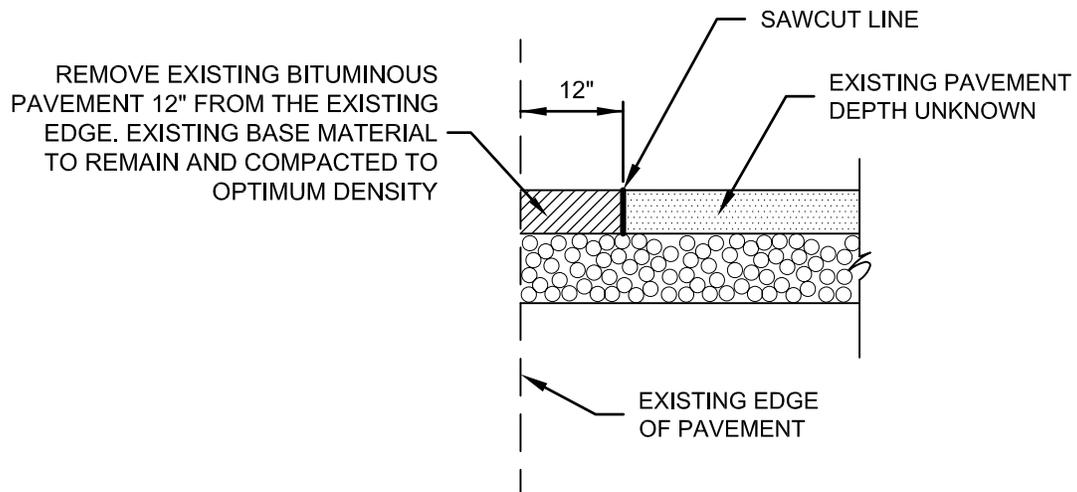
IMPROVEMENT TO
 EXISTING STREET

DATE: MARCH 21, 2011

REVISED:

DETAIL
 NUMBER:

R-3



NOTES:

1. SAW CUT PAVEMENT WITH POWER DRIVEN SAW 12" FROM THE EXISTING EDGE. SAW CUT TO BE PERPENDICULAR TO THE EXISTING SURFACE.
2. REMOVE ENTIRE WIDTH OF PAVEMENT.
3. CLEAN JOINT WITH COMPRESSED AIR HAVING A MINIMUM RATED CAPACITY OF 90 PSI.
4. APPLY TACK COAT TO THE SAW CUT EDGE AND MATCH THIS EDGE WITH THE PROPOSED EDGE.

NOT TO SCALE

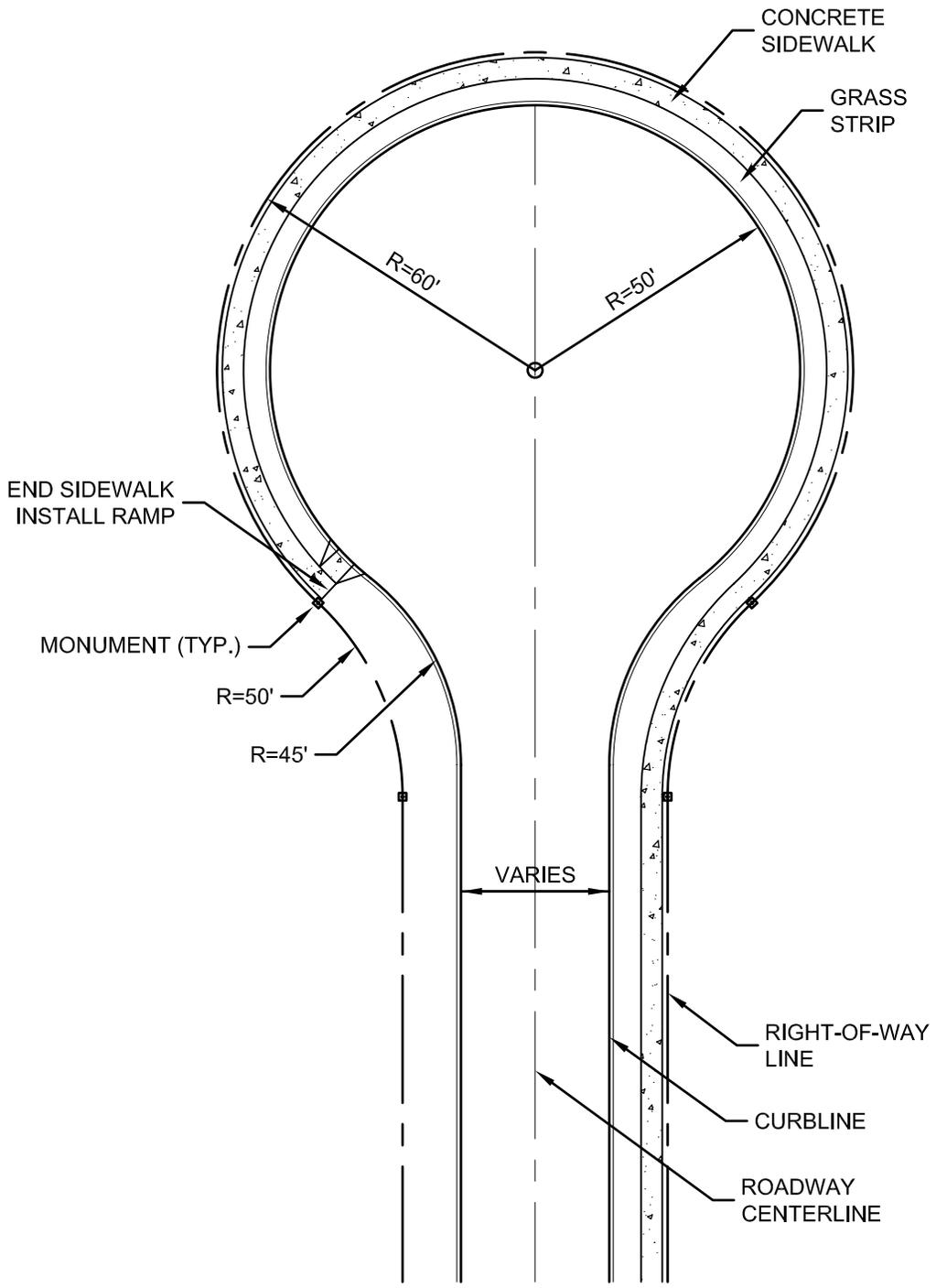
TOWN OF STONINGTON
TECHNICAL
STANDARDS

TYPICAL SECTION FOR
MATCHING PROPOSED PAVEMENT
TO EXISTING PAVEMENT

DATE: MARCH 21, 2011

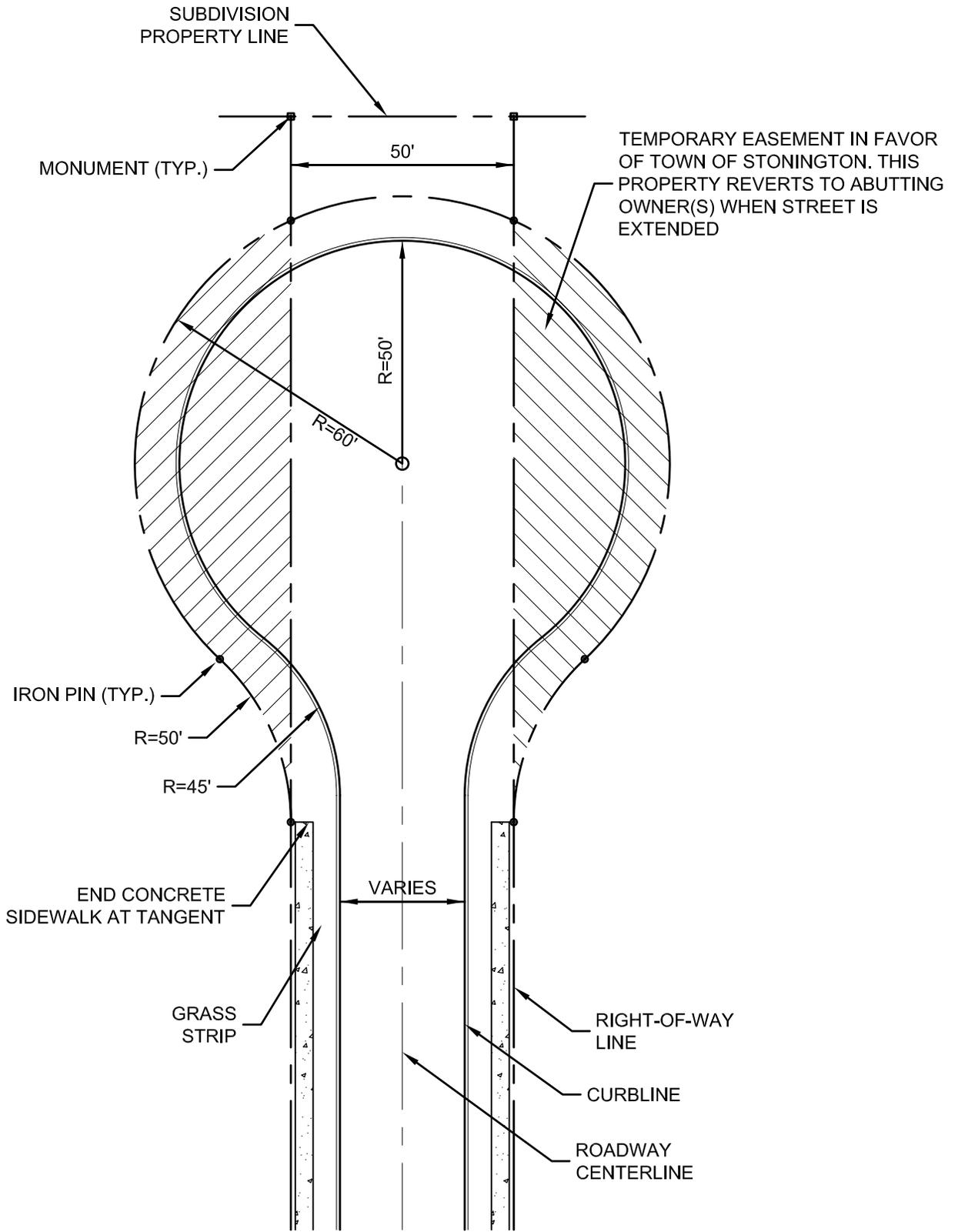
REVISED:

DETAIL NUMBER: R-4



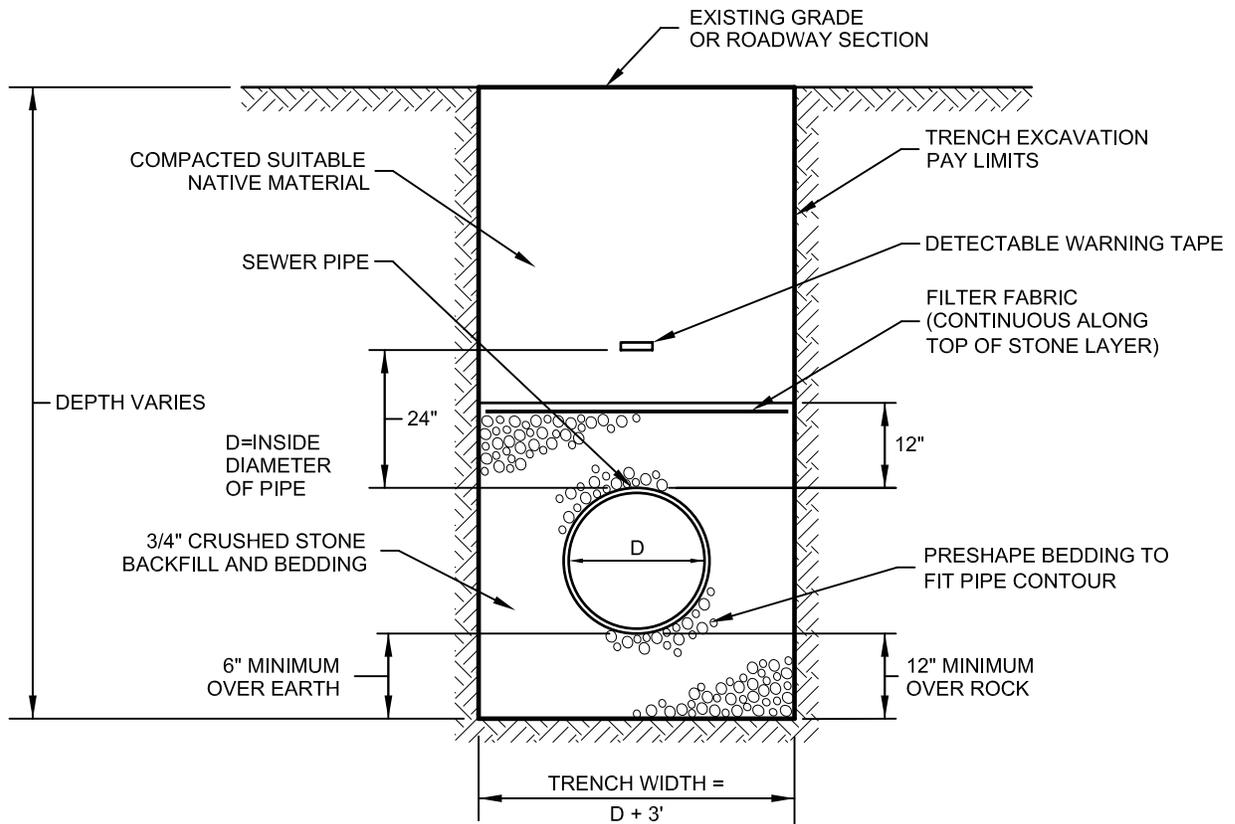
NOT TO SCALE

TOWN OF STONINGTON TECHNICAL STANDARDS	PERMANENT CUL-DE-SAC	DATE: MARCH 21, 2011
		REVISED:
		DETAIL NUMBER: R-5



NOT TO SCALE

TOWN OF STONINGTON TECHNICAL STANDARDS	TEMPORARY CUL-DE-SAC	DATE: MARCH 21, 2011
		REVISED:
		DETAIL NUMBER: R-6



NOT TO SCALE

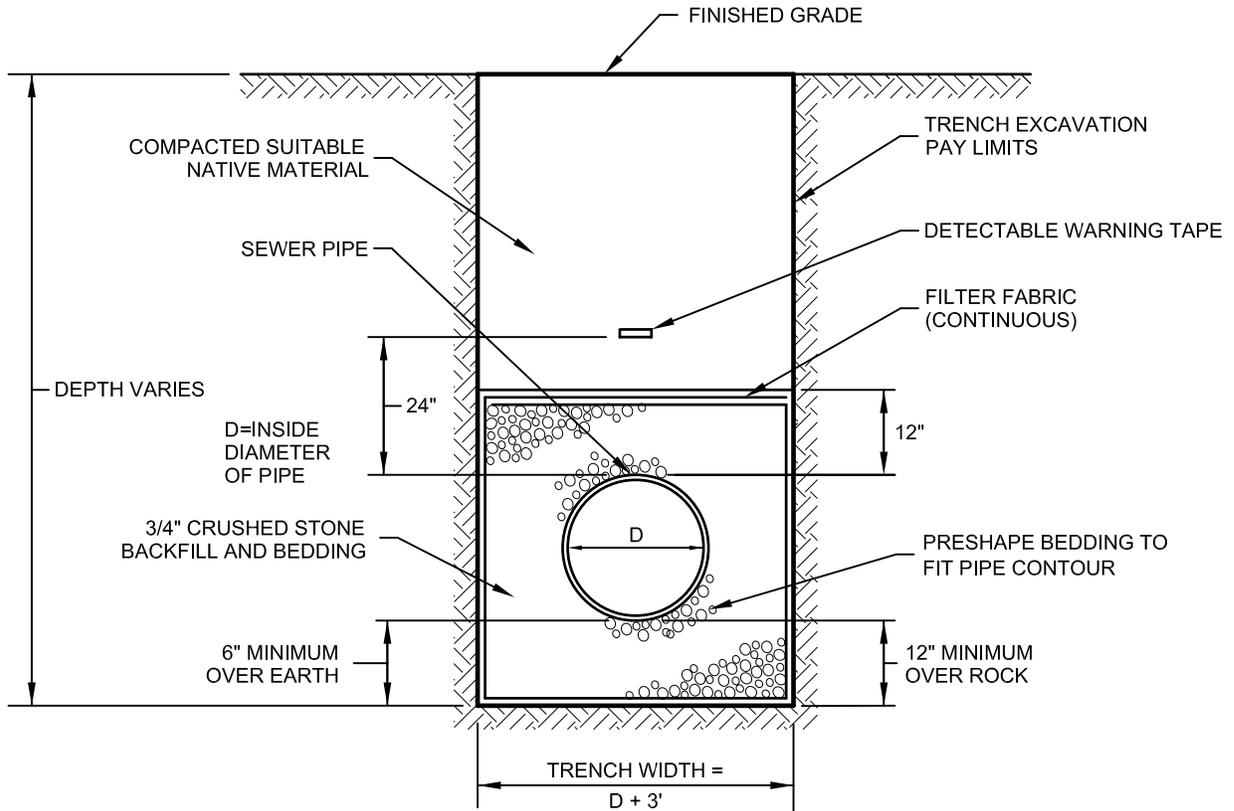
TOWN OF STONINGTON
TECHNICAL
STANDARDS

SANITARY SEWER
TRENCH

DATE: MARCH 21, 2011

REVISED:

DETAIL NUMBER: S-1



NOT TO SCALE

TOWN OF STONINGTON
TECHNICAL
STANDARDS

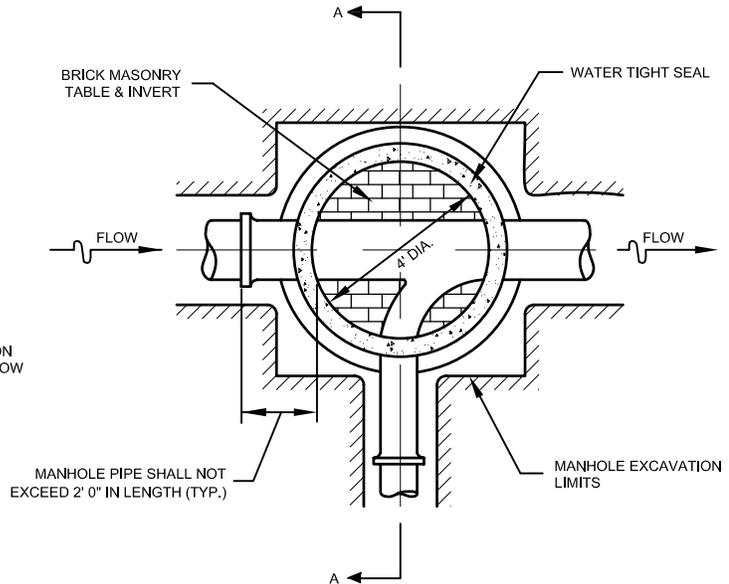
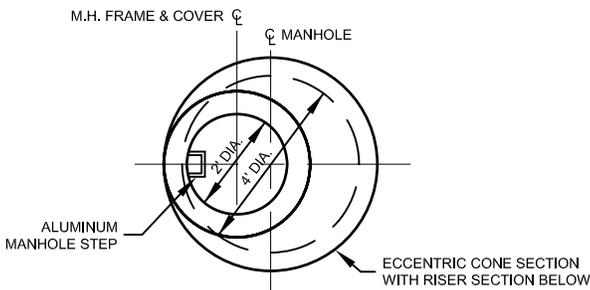
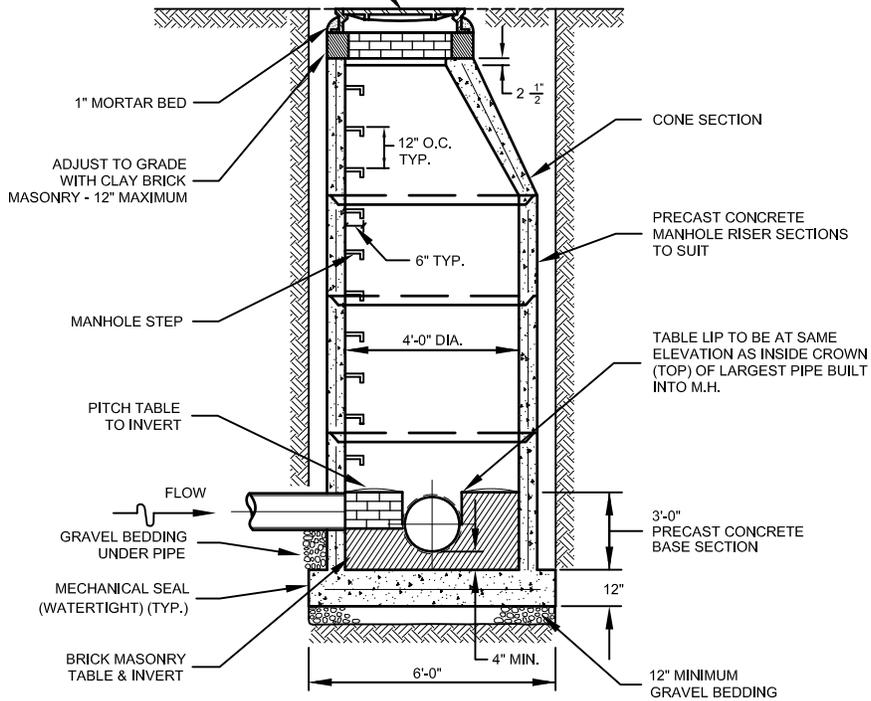
SANITARY SEWER LATERAL
TRENCH

DATE: MARCH 21, 2011

REVISED:

DETAIL NUMBER: S-2

FRAME AND COVER SHALL BE CAST IRON
LeBARON FOUNDRY MODEL No. LA268 OR LBW288 (USE
IN FLOOD ZONES), 24" DIAMETER OPENING WITH 2 VENT
HOLES AND 2 LIFT HOLES

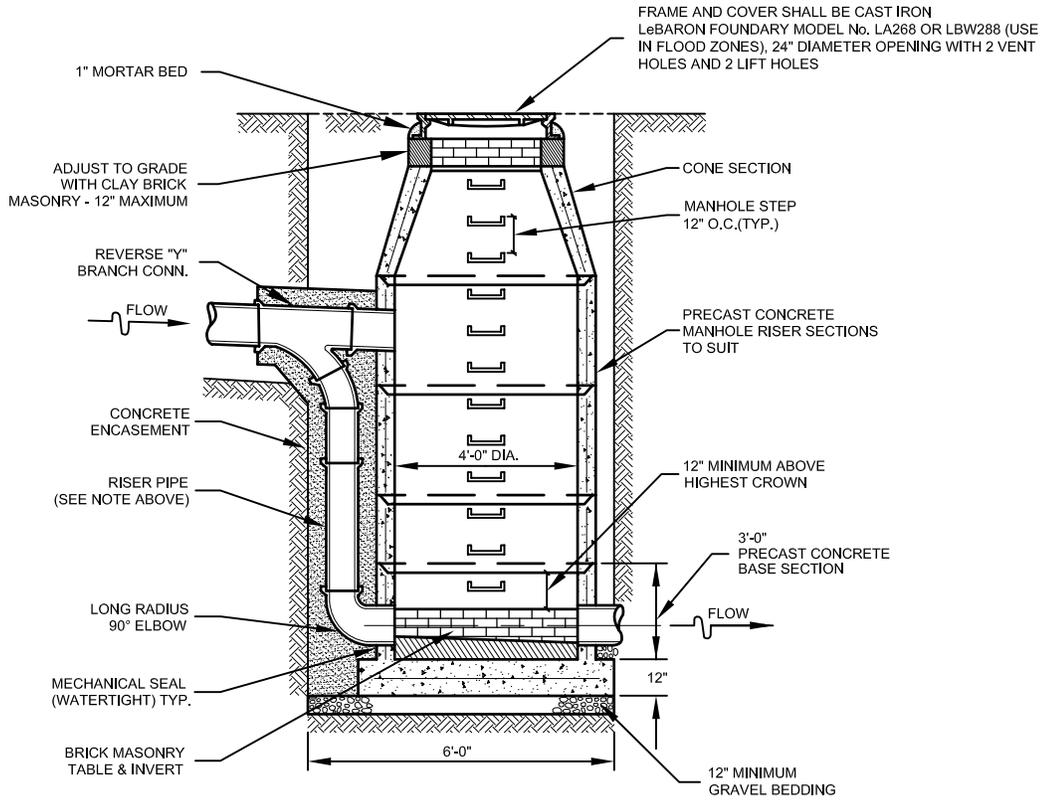


MANHOLE NOTES

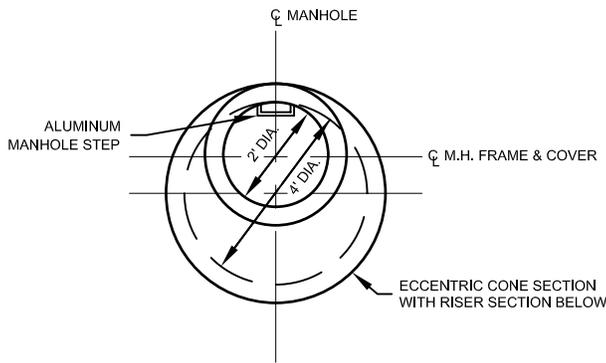
1. ALL PIPES SHALL BE CUT FLUSH WITH INSIDE WALL OF STRUCTURE.
2. CONTRACTOR SHALL MORTAR IN LIFTING HOLES.
3. MANHOLE COVERS SHALL HAVE THE WORDS "SEWER" CAST INTO THE CENTER IN 3" LETTERS.
4. THE OUTSIDE OF MANHOLE STRUCTURES SHALL BE PAINTED WITH 2 COATS OF BITUMINOUS MATERIAL.

NOT TO SCALE

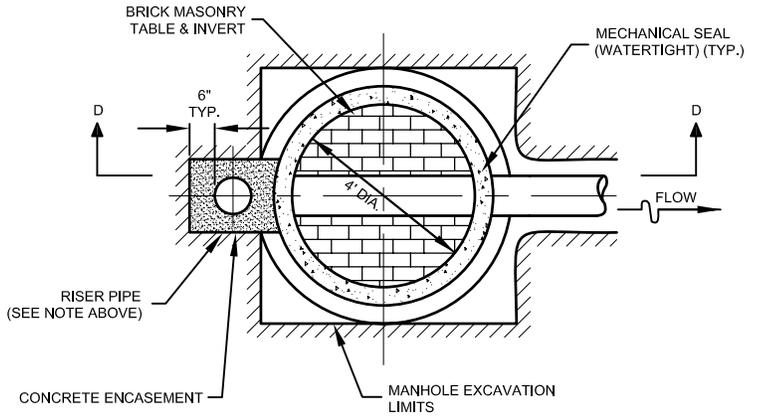
TOWN OF STONINGTON TECHNICAL STANDARDS	SEWER MANHOLE	DATE: MARCH 21, 2011
		REVISED:
		DETAIL NUMBER: S-3



SECTION



PLAN-CONE SECTION



PLAN - INVERT TABLE

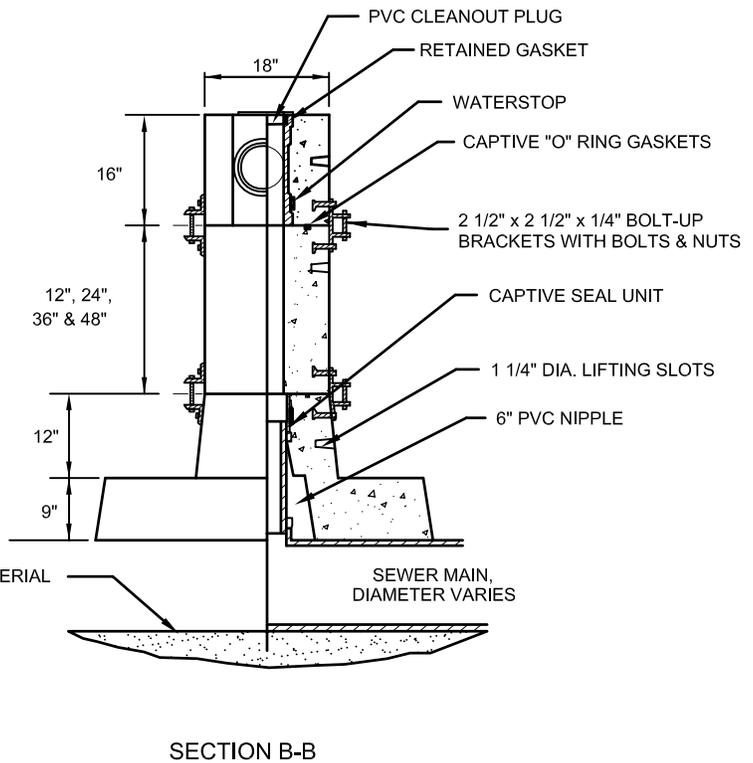
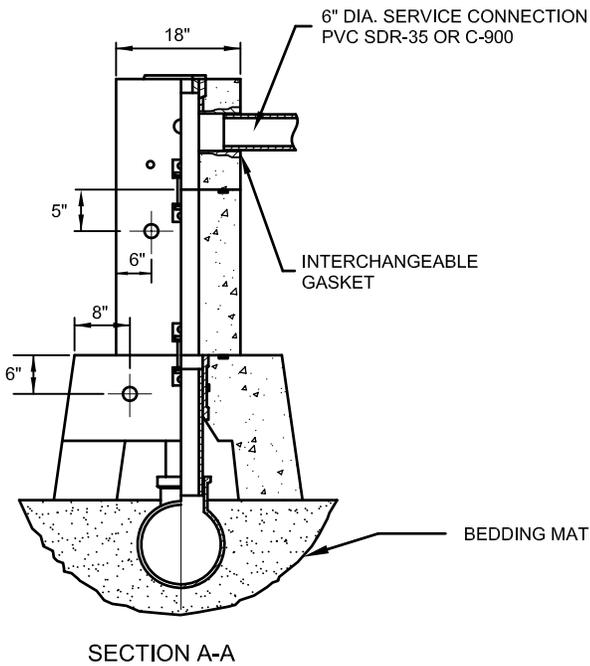
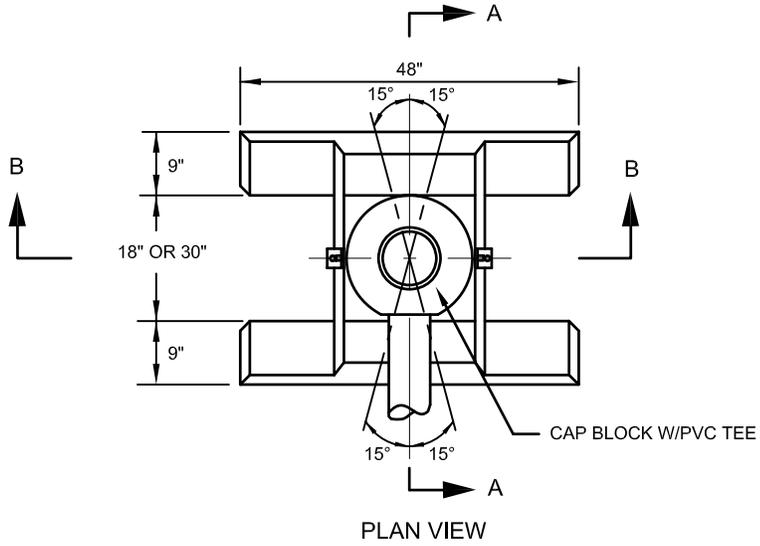
NOTE:
 USE 8" RISER PIPE & BENDS FOR INCOMING SEWER OF 12" OR LESS. FOR INCOMING SEWER LARGER THAN 12" THE RISER PIPE & BENDS SHALL BE 10".

NOT TO SCALE

TOWN OF STONINGTON TECHNICAL STANDARDS	SANITARY DROP MANHOLE (OUTSIDE)	DATE: MARCH 21, 2011
		REVISED:
		DETAIL NUMBER: S-4

DESIGN AND DIMENSIONAL INFORMATION

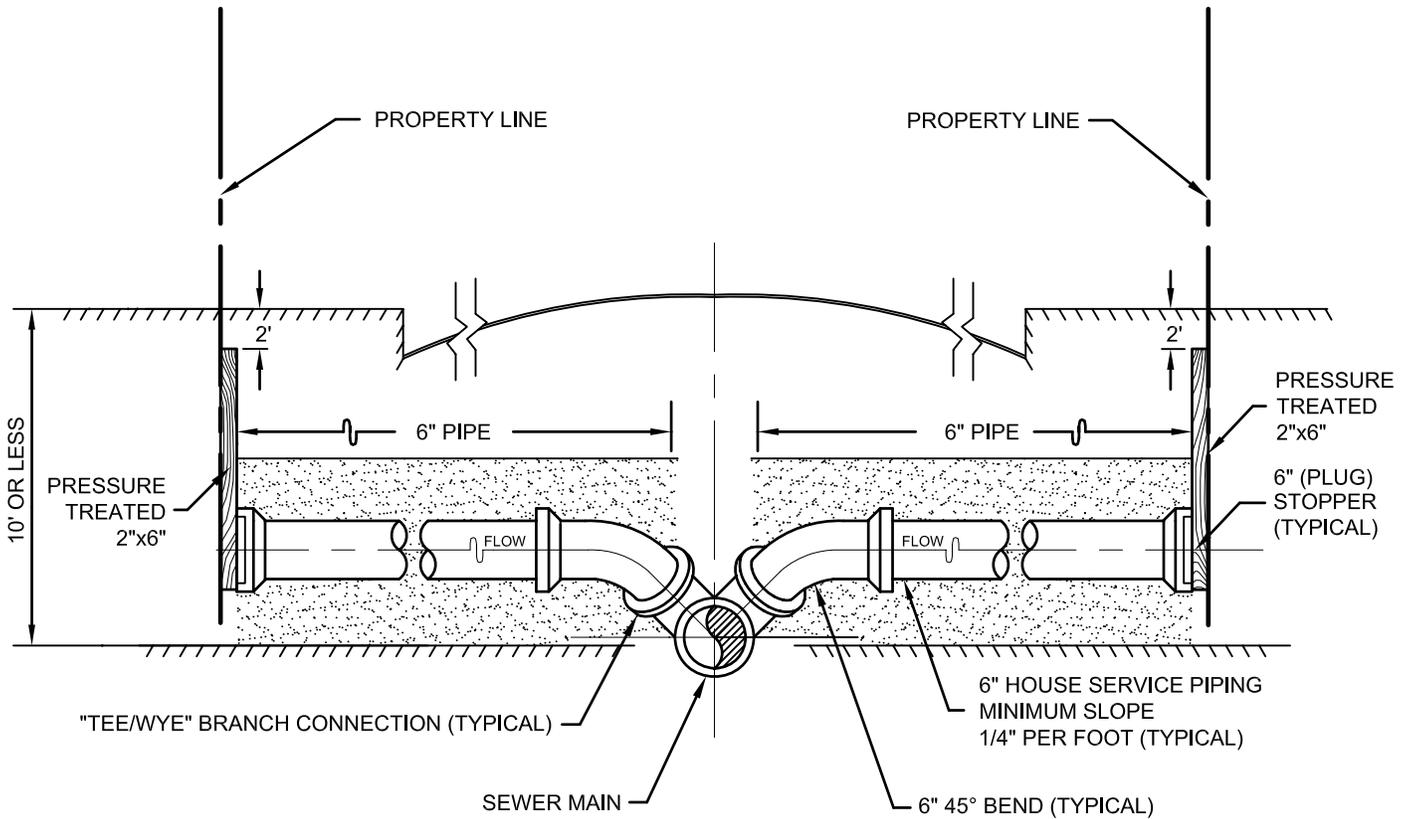
- 1) CONCRETE STRENGTH 5,000 PSI @ 28 DAYS. DENSITY 150 PCF.
- 2) CEMENT PER ASTM C150-81.
- 3) REINFORCING PER ASTM A615.
- 4) PVC FITTINGS PER ASTM D3034.



*** CHIMNEYS TO BE USED AT A DEPTH OF 10' OR MORE**

NOT TO SCALE

<p>TOWN OF STONINGTON TECHNICAL STANDARDS</p>	<p>PRECAST SEWER CHIMNEY</p>	DATE: MARCH 21, 2011
		REVISED:
		DETAIL NUMBER: S-5



NOT TO SCALE

TOWN OF STONINGTON
TECHNICAL
STANDARDS

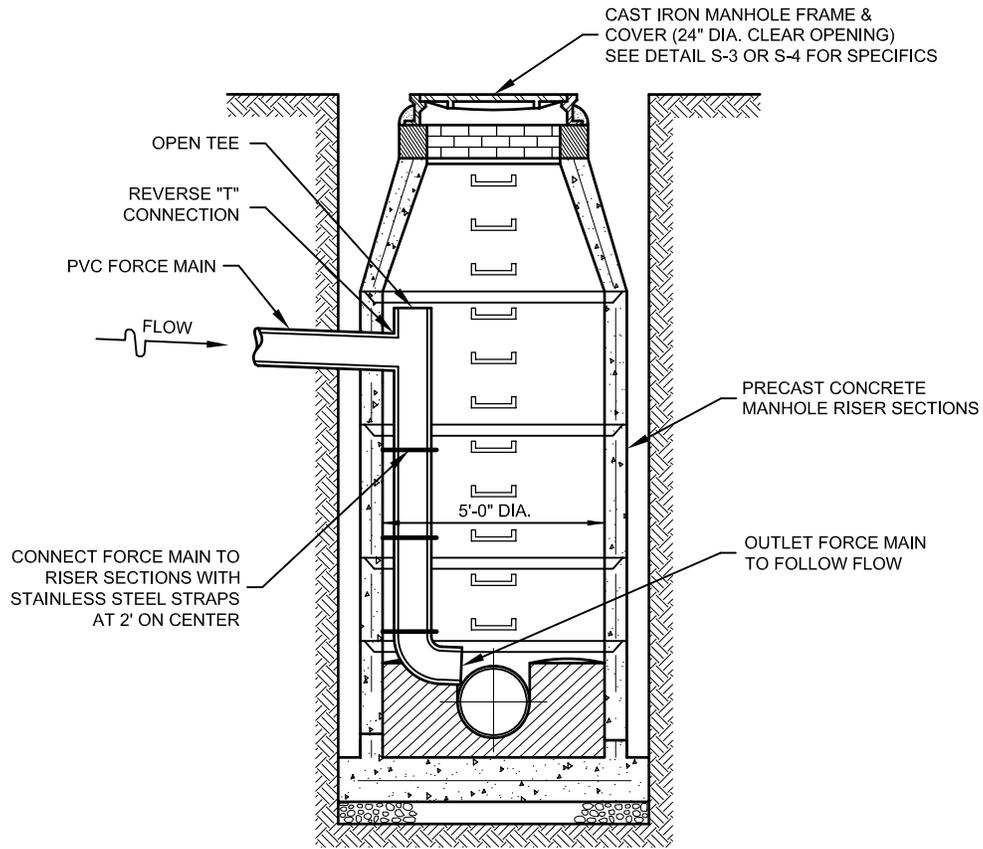
GRAVITY SEWER LATERAL
CONNECTION

DATE: MARCH 21, 2011

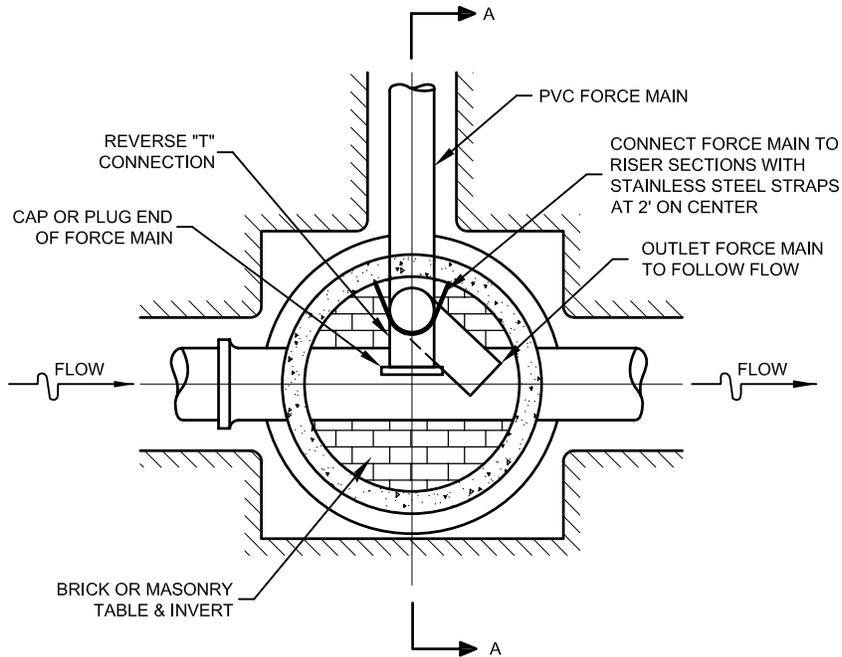
REVISED:

DETAIL
NUMBER:

S-6



SECTION



PLAN - INVERT TABLE

NOT TO SCALE

TOWN OF STONINGTON
TECHNICAL
STANDARDS

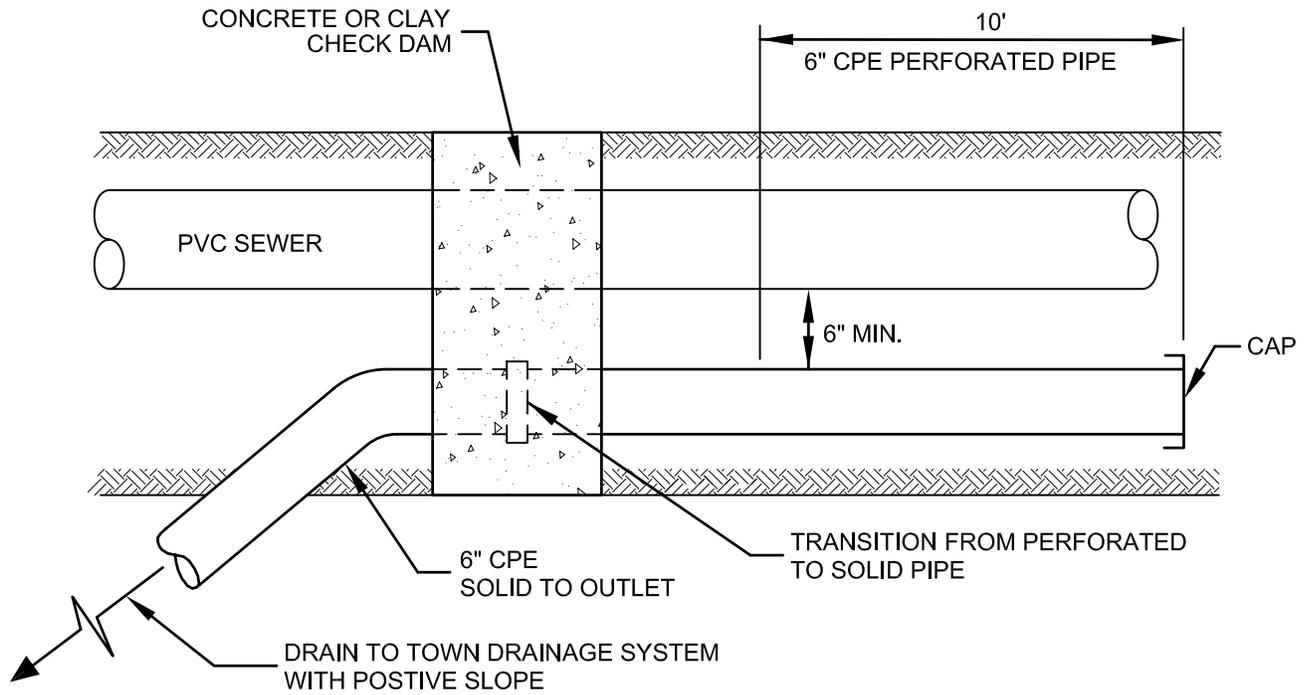
FORCE MAIN CONNECTION
INTO MANHOLE

DATE: MARCH 21, 2011

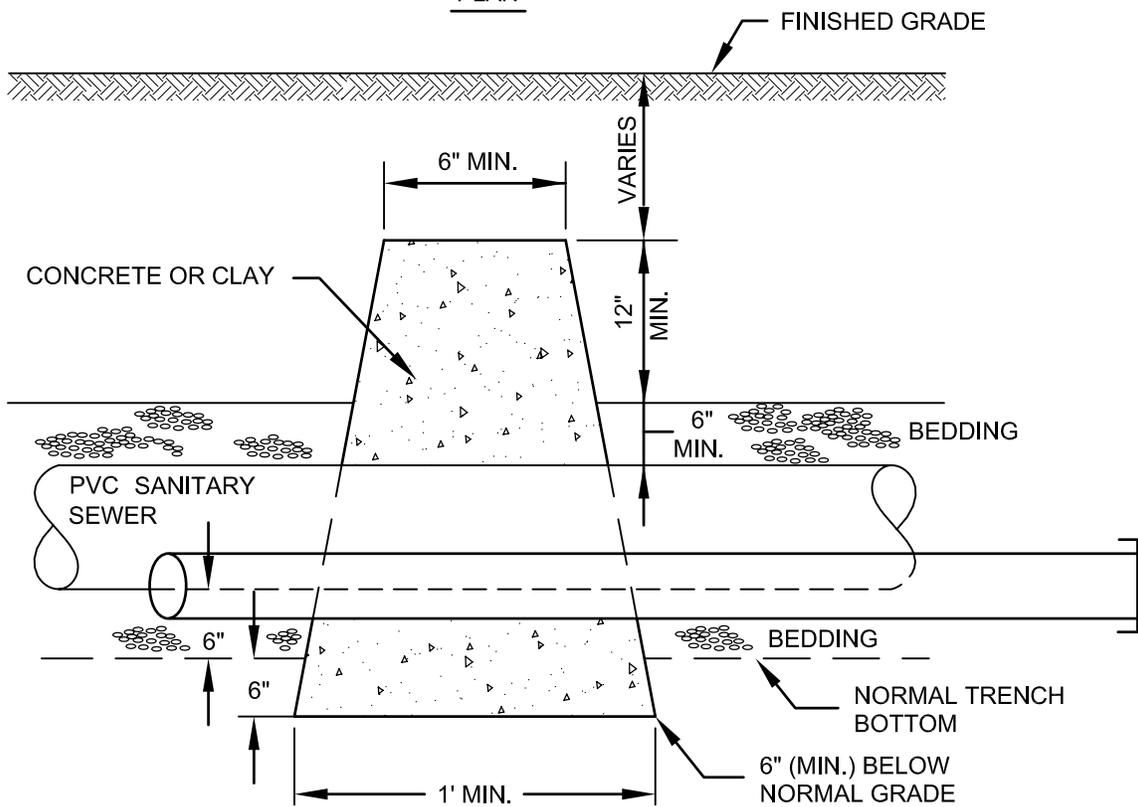
REVISED:

DETAIL
NUMBER:

S-7



PLAN

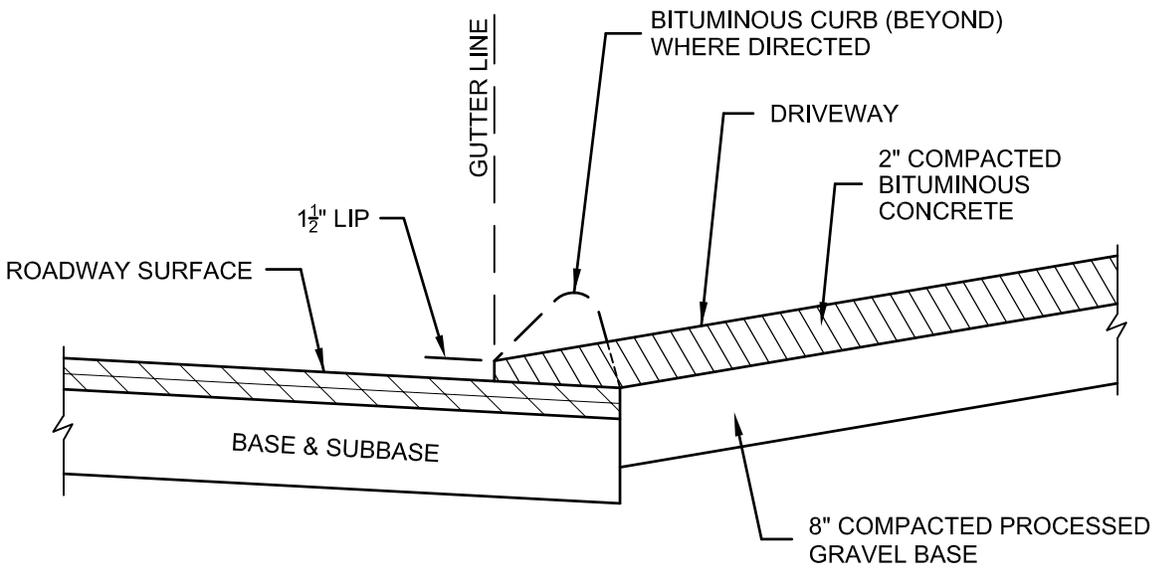


SECTION

NOTE: CHECK DAM/CONCRETE SHALL EXTEND TO THE FULL WIDTH OF THE TRENCH

NOT TO SCALE

TOWN OF STONINGTON TECHNICAL STANDARDS	IMPERVIOUS CHECK DAM	DATE: MARCH 21, 2011
		REVISED:
		DETAIL NUMBER: S-8



NOT TO SCALE

TOWN OF STONINGTON
TECHNICAL
STANDARDS

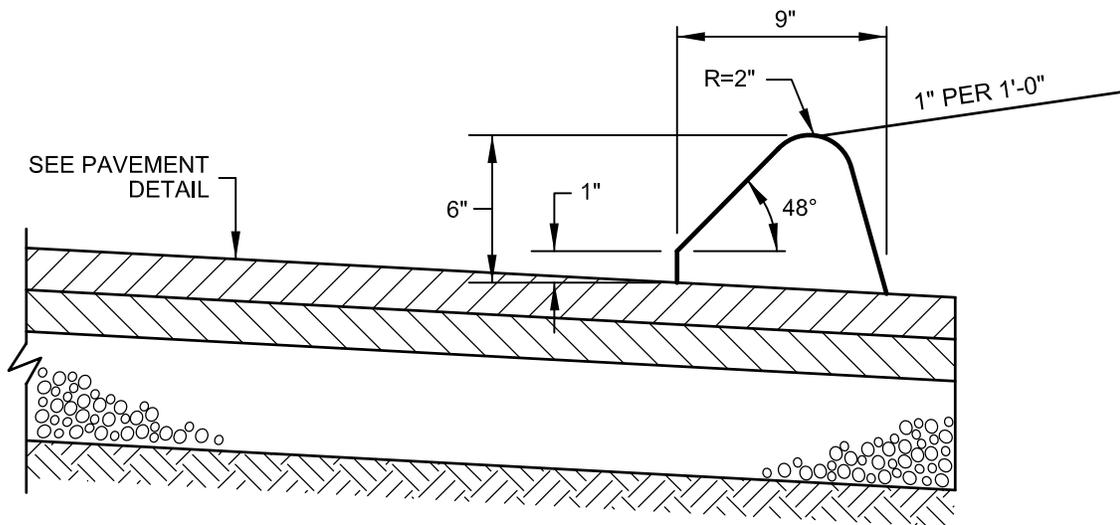
CURBING INSTALLATION AT
BITUMINOUS CONCRETE DRIVES

DATE: MARCH 21, 2011

REVISED:

DETAIL
NUMBER:

SW-1



NOT TO SCALE

TOWN OF STONINGTON
TECHNICAL
STANDARDS

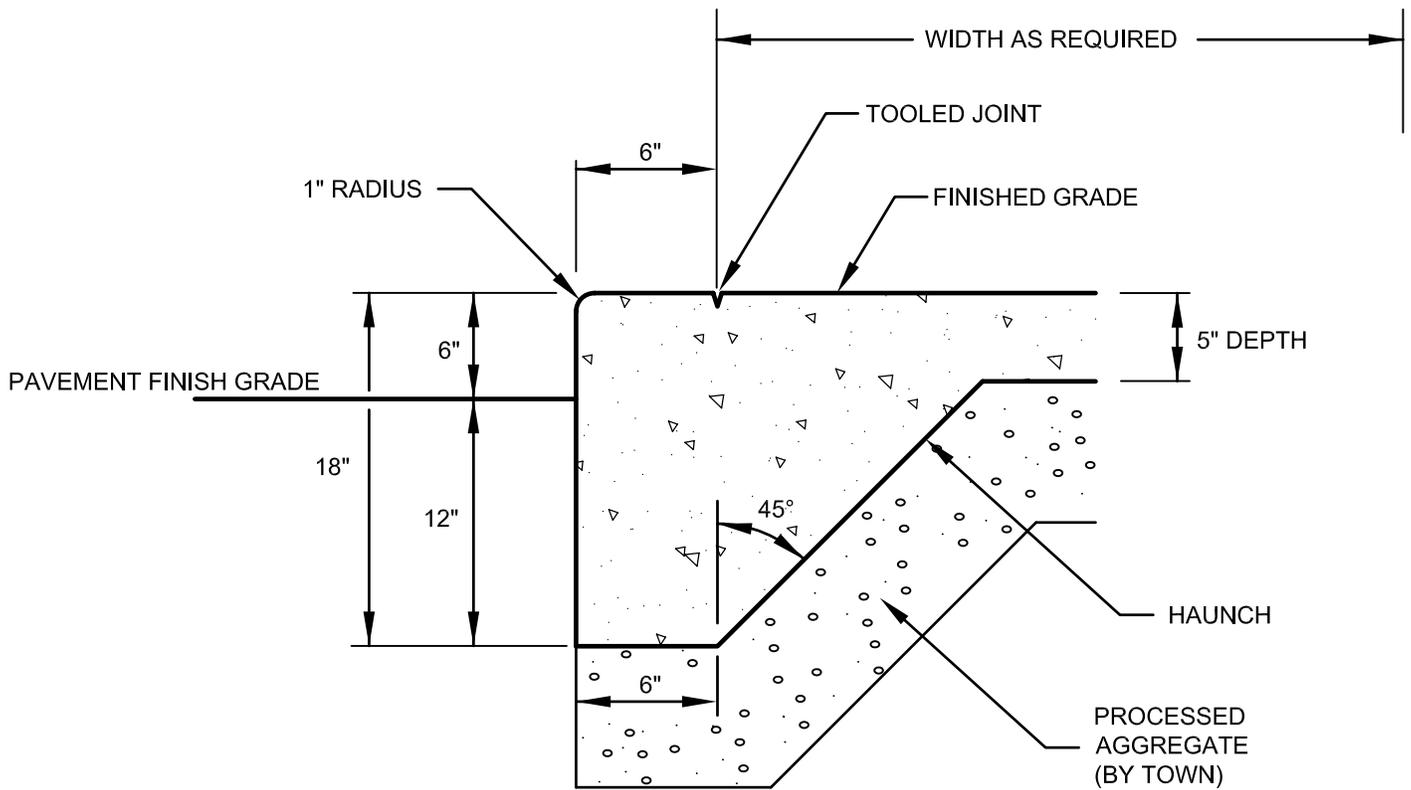
BITUMINOUS CONCRETE
LIP CURBING

DATE: MARCH 21, 2011

REVISED:

DETAIL
NUMBER:

SW-2



NOT TO SCALE

TOWN OF STONINGTON
TECHNICAL
STANDARDS

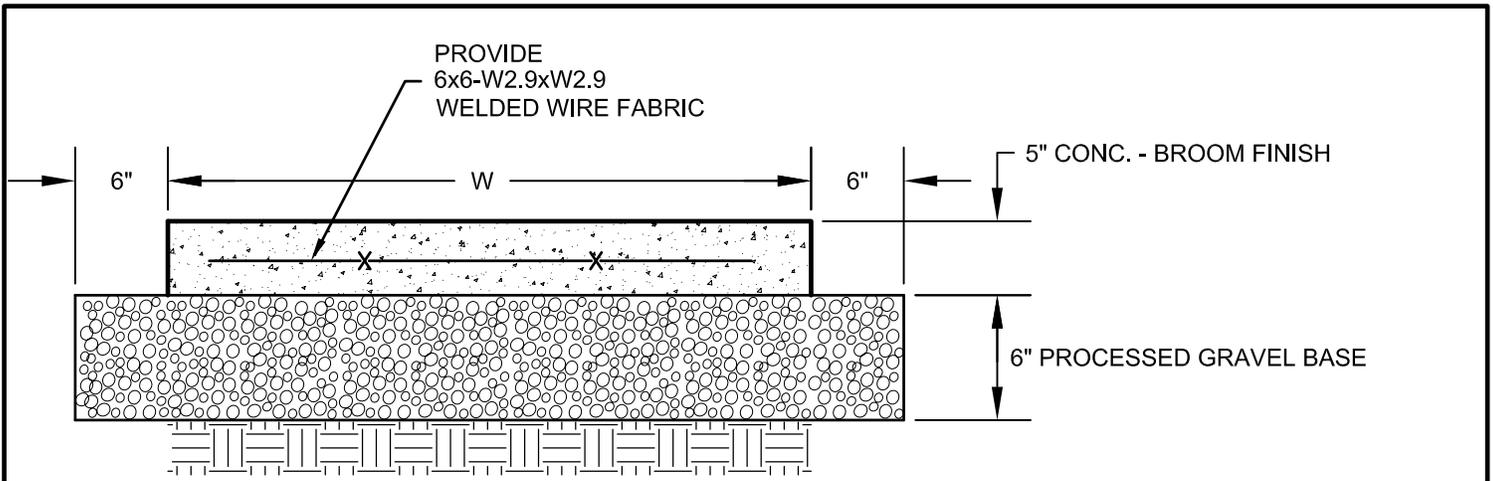
CONCRETE SIDEWALK
WITH CURBING

DATE: MARCH 21, 2011

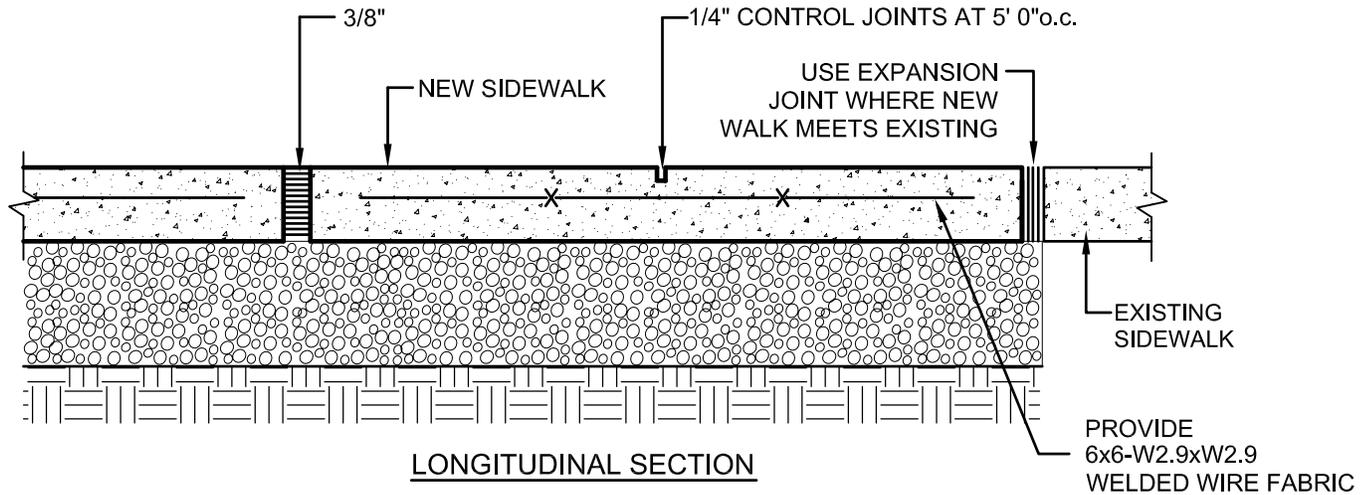
REVISED:

DETAIL
NUMBER:

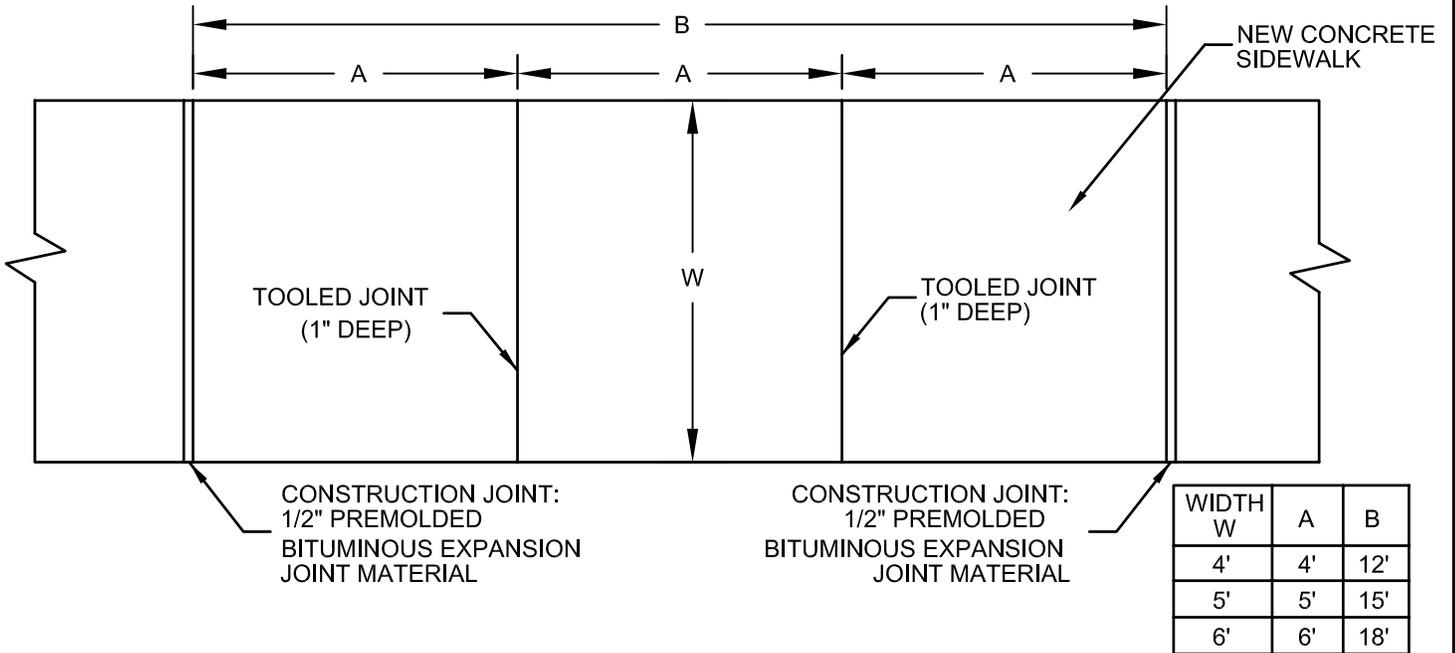
SW-3



CROSS SECTION

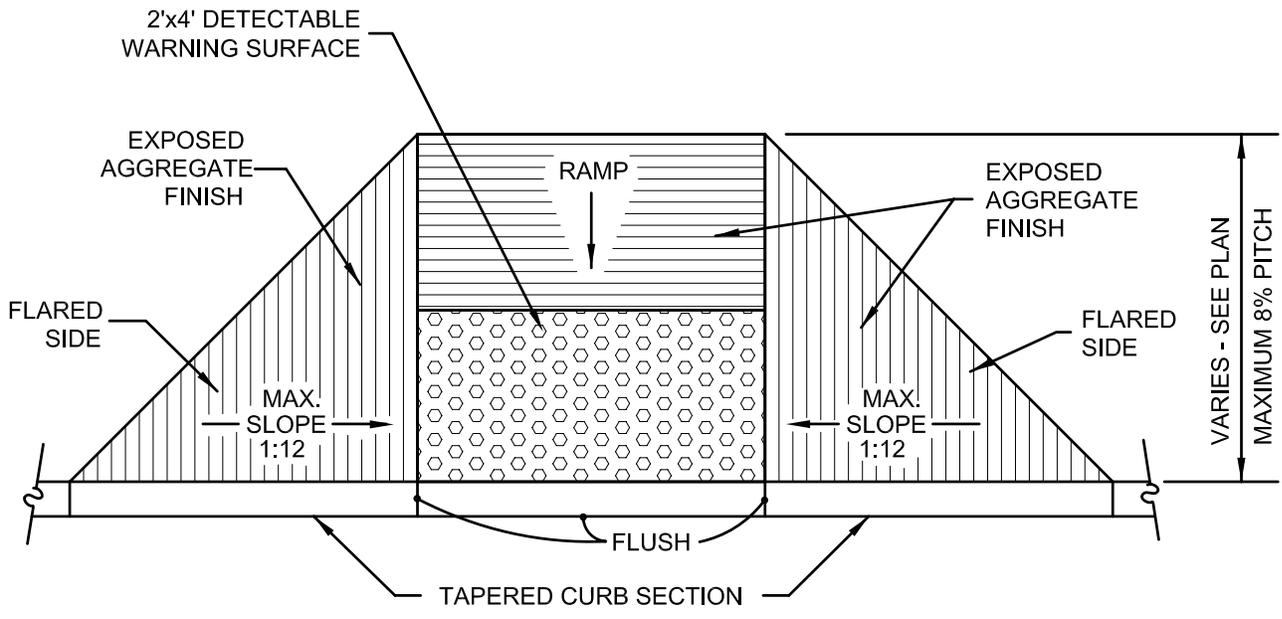
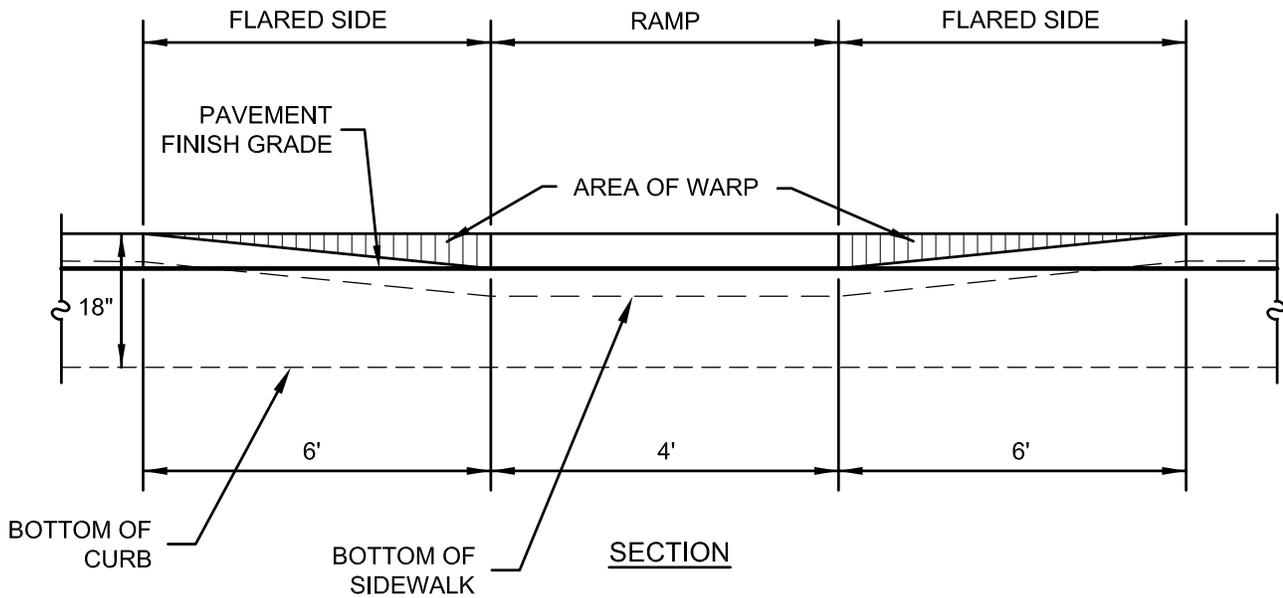


LONGITUDINAL SECTION



NOT TO SCALE

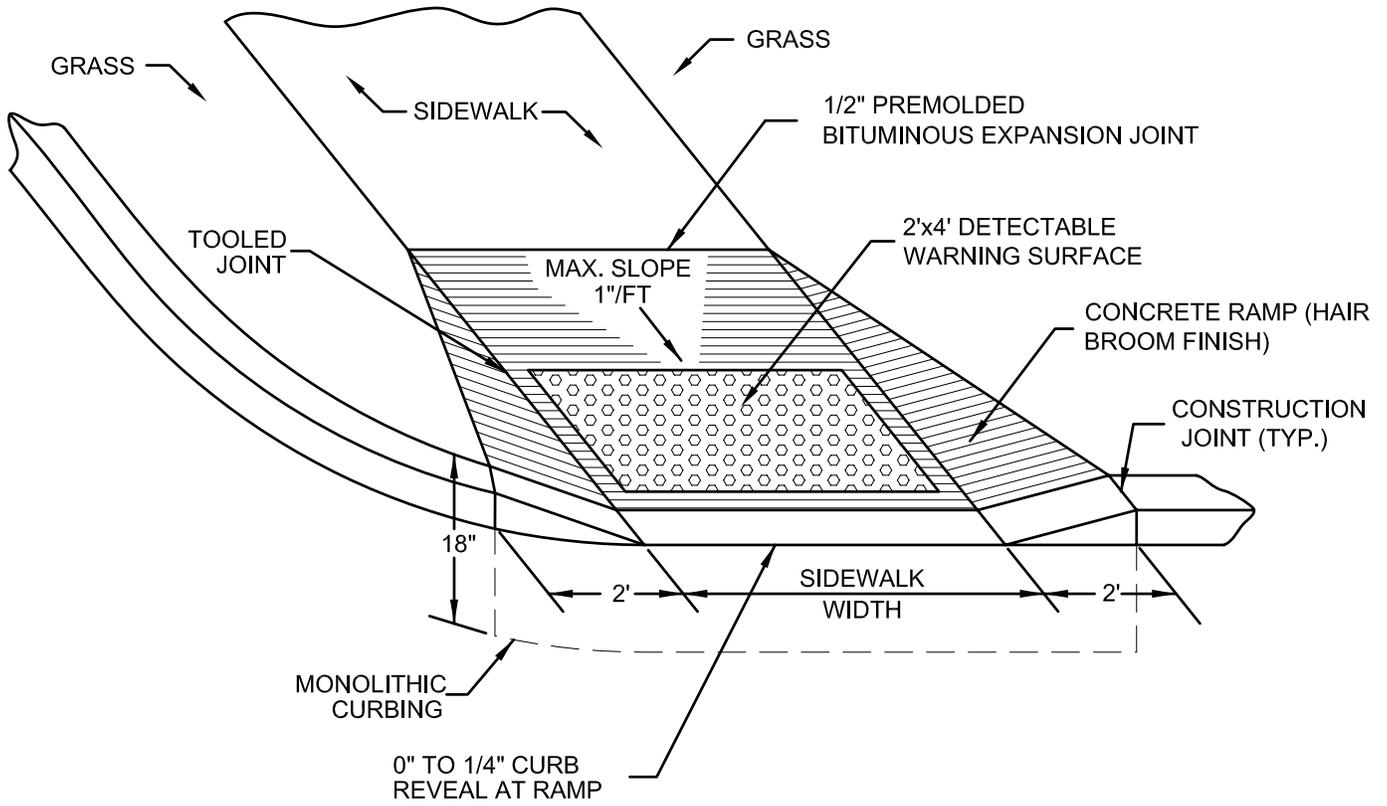
TOWN OF STONINGTON TECHNICAL STANDARDS	CONCRETE SIDEWALK WITH REINFORCEMENT	DATE: MARCH 21, 2011
		REVISED:
		DETAIL NUMBER: SW-4



NOTE:
 ALL CONCRETE CURB RAMPS TO PROVIDE A DETECTABLE WARNING TEXTURE AS REQUIRED BY SECTION 4.27 OF ANSI A117.1-1986.

NOT TO SCALE

TOWN OF STONINGTON TECHNICAL STANDARDS	CURB RAMP	DATE: MARCH 21, 2011
		REVISD:
		DETAIL NUMBER: SW-5



NOTE:

ALL CONCRETE CURB RAMPS TO PROVIDE A DETECTABLE WARNING TEXTURE AS REQUIRED BY SECTION 4.27 OF ANSI A117.1-1986.

NOT TO SCALE

TOWN OF STONINGTON
TECHNICAL
STANDARDS

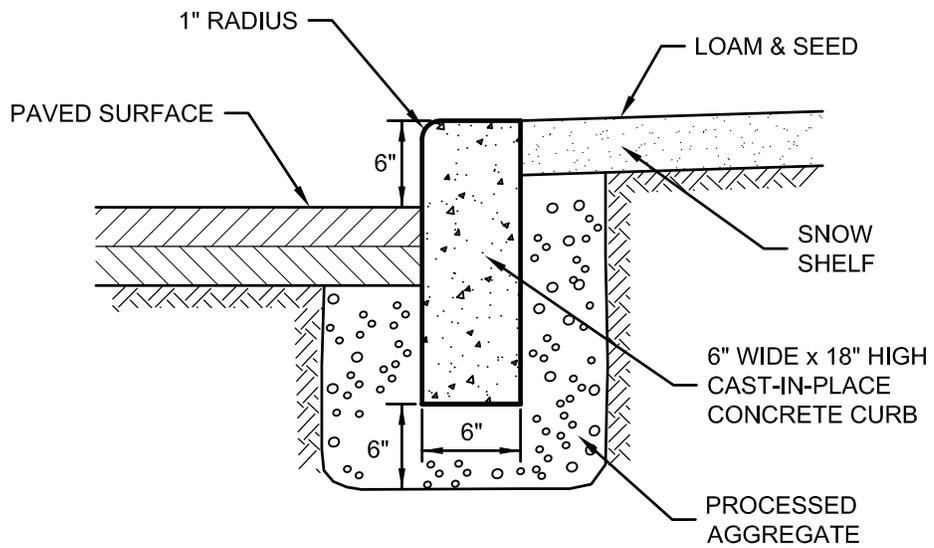
CORNERED CURB RAMP

DATE: MARCH 21, 2011

REVISED:

DETAIL
NUMBER:

SW-6



NOT TO SCALE

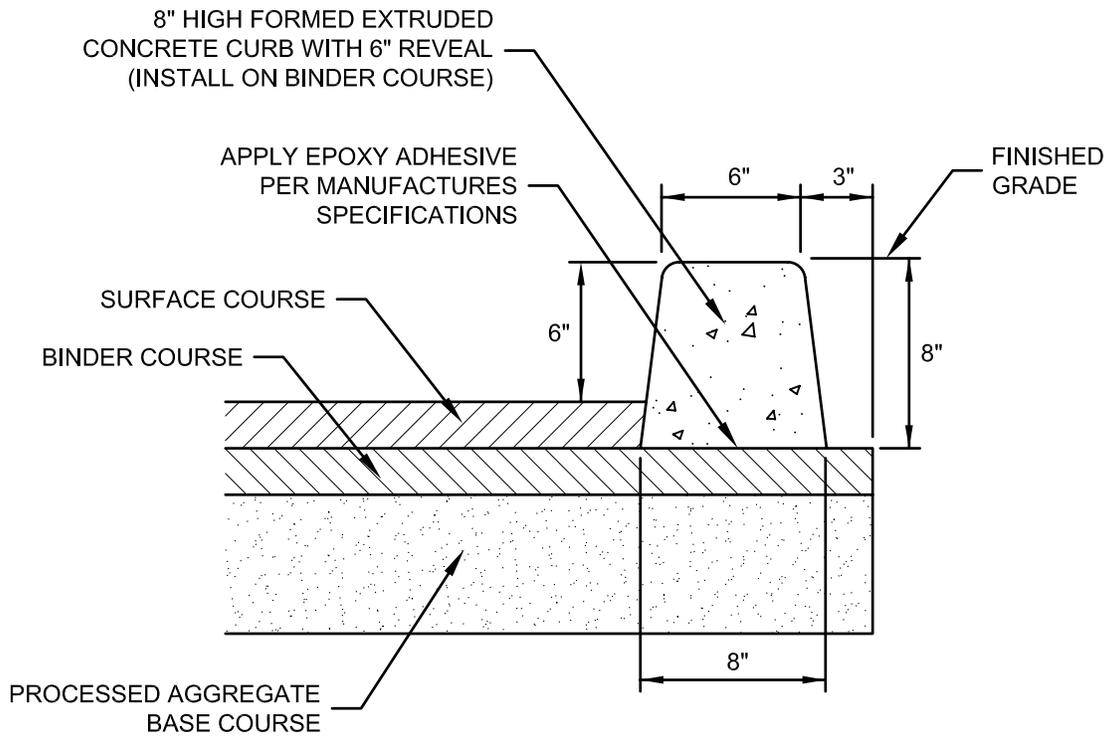
TOWN OF STONINGTON
TECHNICAL
STANDARDS

CONCRETE CURB

DATE: MARCH 21, 2011

REVISED:

DETAIL NUMBER: SW-7

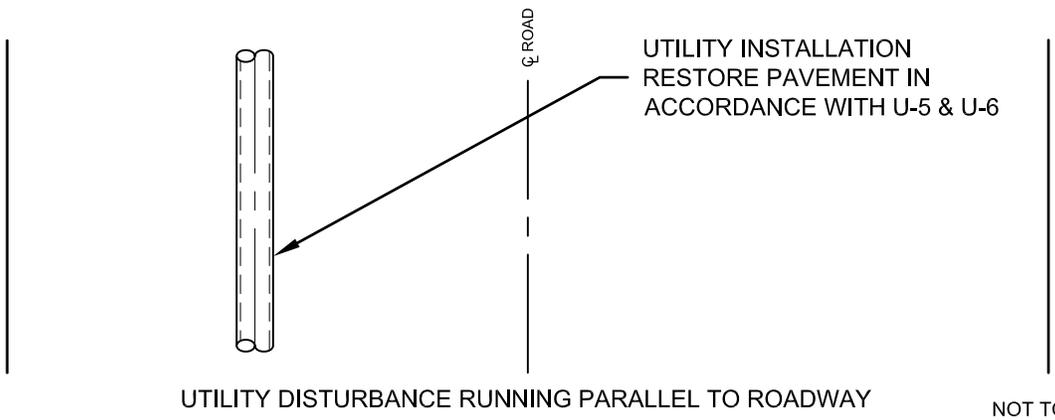
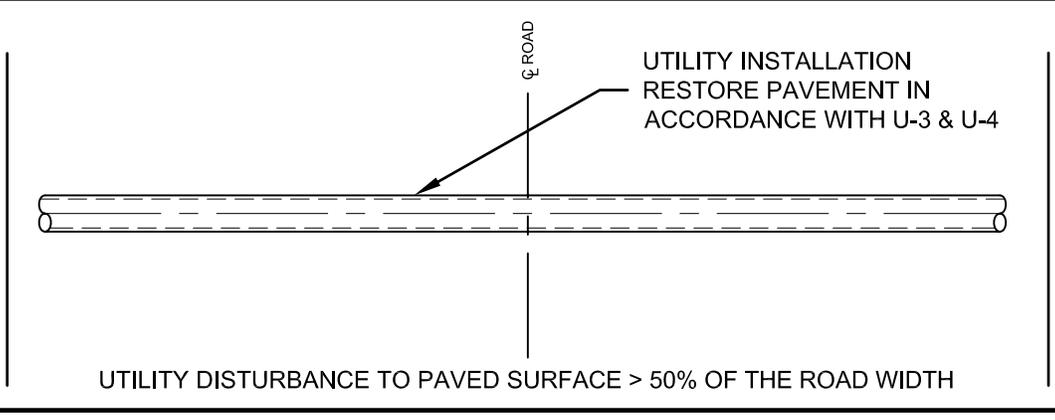
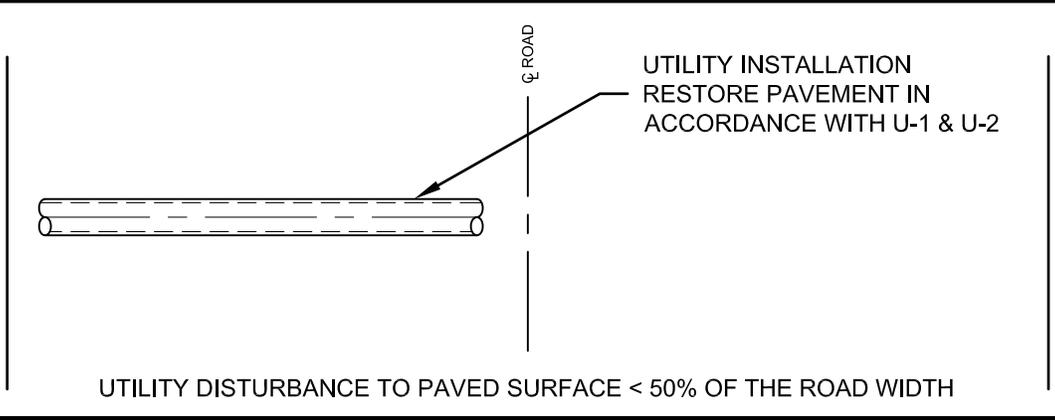
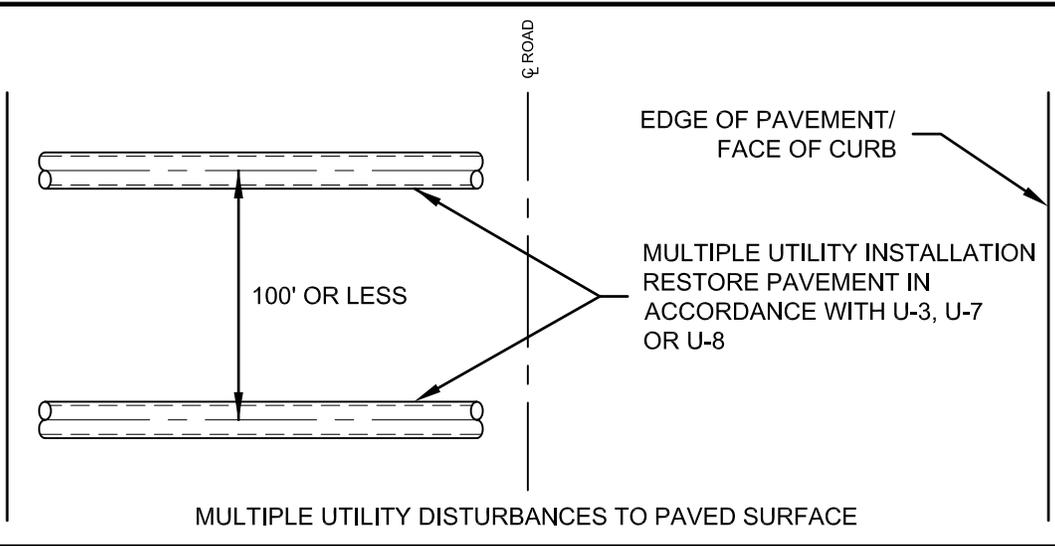


NOTE:

CONTROL JOINTS TO BE PLACED 6' ON CENTER. FULL DEPTH SAWED EXPANSION JOINTS TO BE PLACED 30' ON CENTER AND AT ALL CURB RADII, CATCH BASINS AND OTHER STRUCTURES.

NOT TO SCALE

TOWN OF STONINGTON TECHNICAL STANDARDS	EXTRUDED CONCRETE CURB	DATE: MARCH 21, 2011
		REVISD:
		DETAIL NUMBER: SW-8

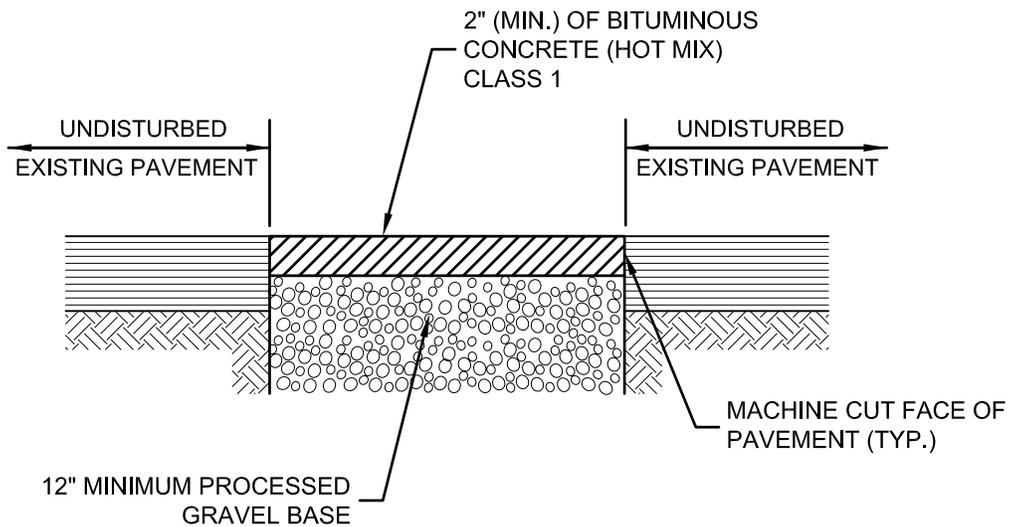


NOT TO SCALE

TOWN OF STONINGTON
TECHNICAL
STANDARDS

PAVEMENT RESTORATION
INDEX PLAN

DATE: MARCH 21, 2011
REVISED:
DETAIL NUMBER: SK-1



NOTE:
 TEMPORARY PAVEMENT TO REMAIN IN PLACE A MINIMUM OF 12 WEEKS PRIOR TO PERMANENT PAVEMENT RESTORATION

NOT TO SCALE

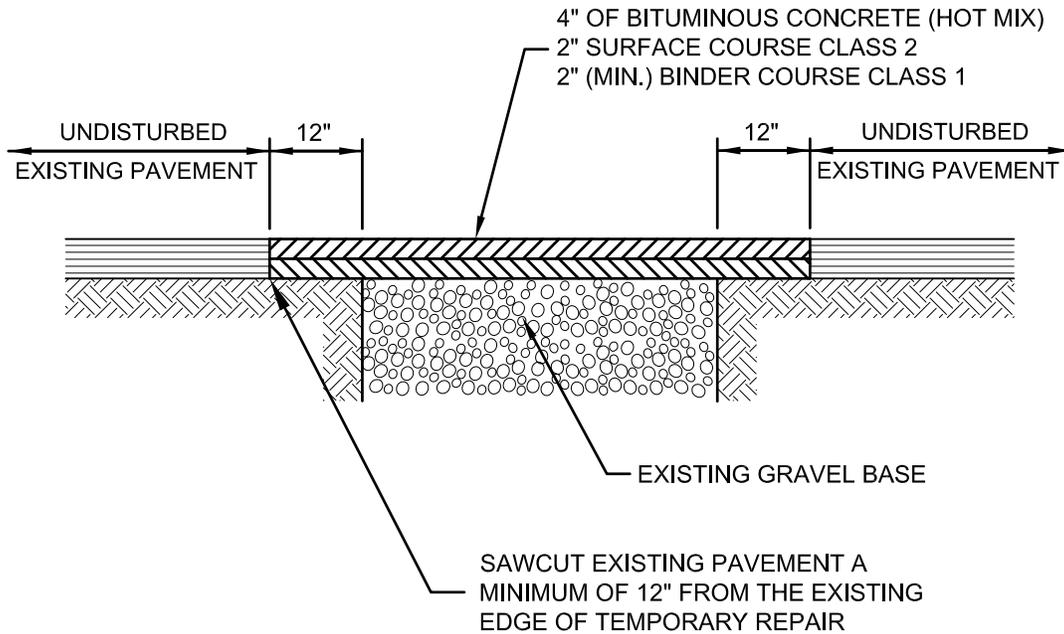
TOWN OF STONINGTON
 TECHNICAL
 STANDARDS

TEMPORARY PAVEMENT
 RESTORATION FOR PERPENDICULAR
 UTILITY CROSSINGS LESS THAN
 50% OF THE PAVEMENT WIDTH

DATE: MARCH 21, 2011

REVISED:

DETAIL NUMBER: U-1



NOTES:

1. ALL VERTICAL EDGES OF REMAINING PAVEMENT SHALL BE PAINTED WITH A LIGHT COAT OF ASPHALT EMULSION.
2. AFTER FINAL PAVEMENT JOINTS SHALL BE SEALED WITH 85/100 ASPHALT OR APPROVED EQUAL.

NOT TO SCALE

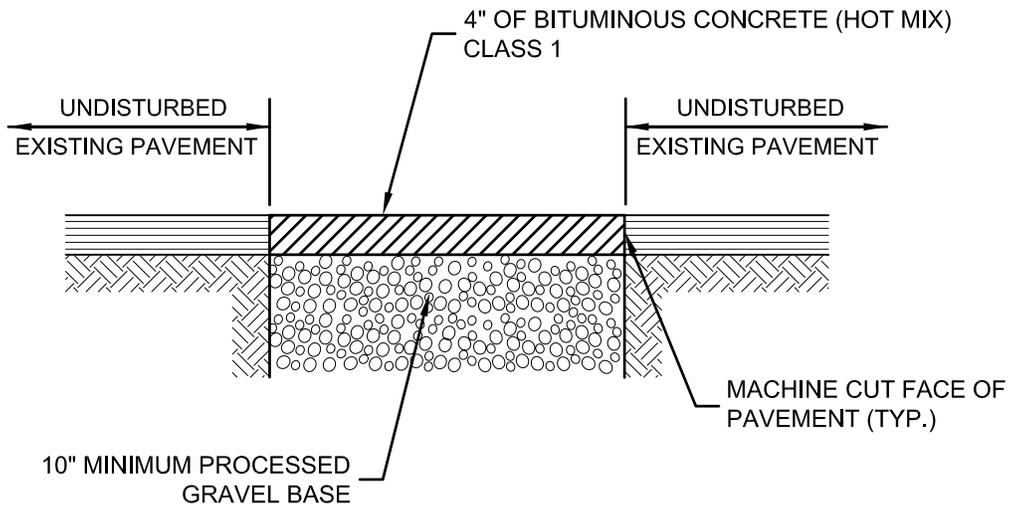
TOWN OF STONINGTON
TECHNICAL
STANDARDS

PERMANENT PAVEMENT
RESTORATION FOR PERPENDICULAR
UTILITY CROSSINGS LESS THAN
50% OF THE PAVEMENT WIDTH

DATE: MARCH 21, 2011

REVISED:

DETAIL NUMBER: U-2



NOTE:
 TEMPORARY PAVEMENT TO REMAIN IN
 PLACE A MINIMUM OF 12 WEEKS PRIOR TO
 PERMANENT PAVEMENT RESTORATION

NOT TO SCALE

TOWN OF STONINGTON
 TECHNICAL
 STANDARDS

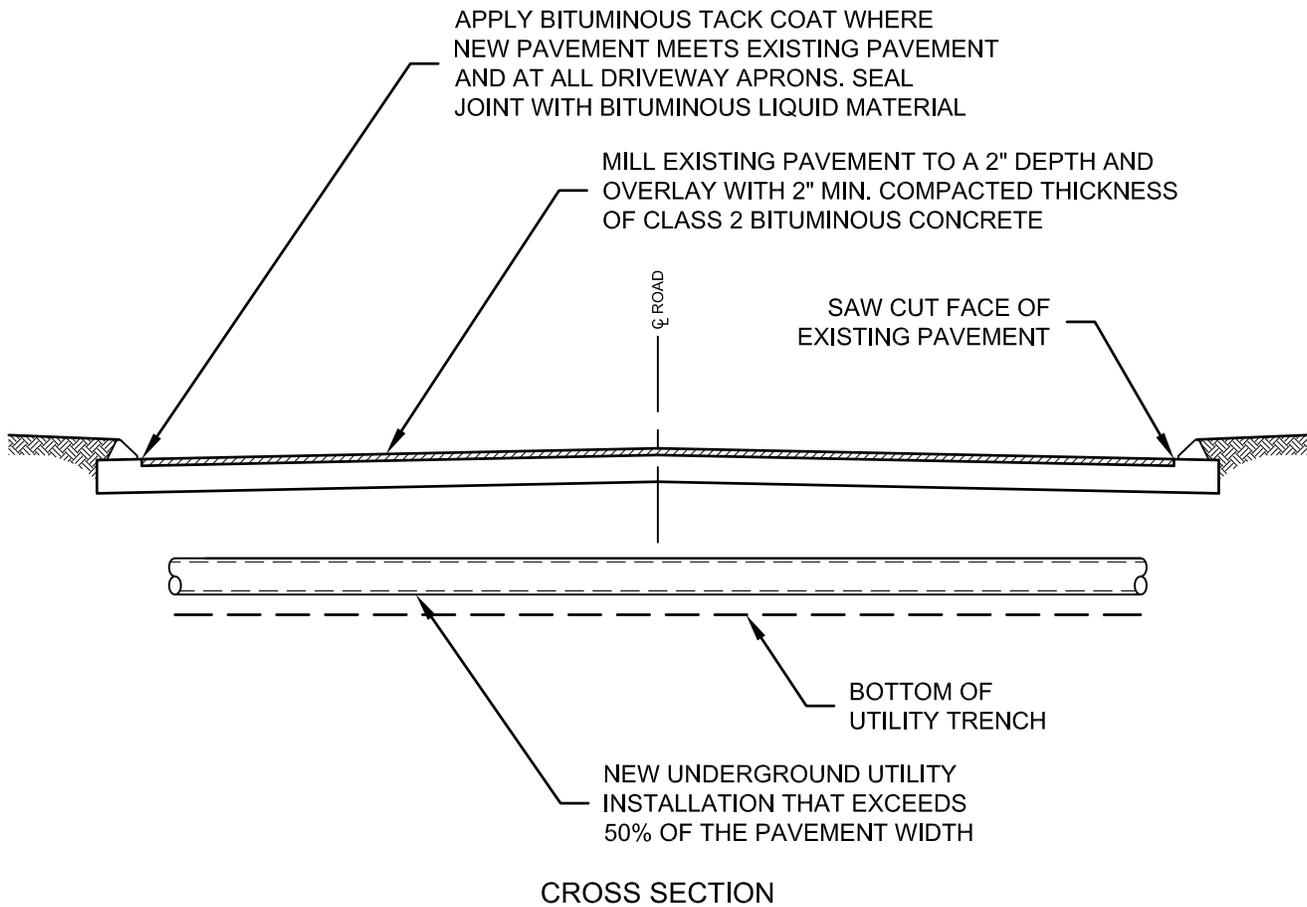
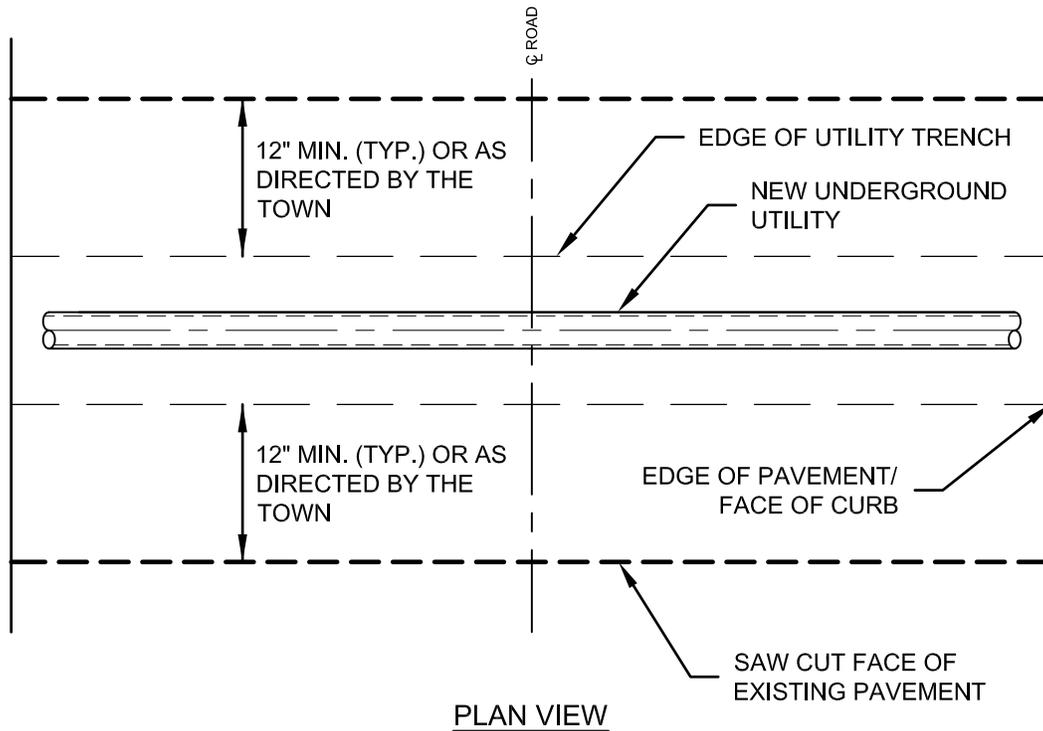
TEMPORARY PAVEMENT
 RESTORATION FOR PERPENDICULAR
 UTILITY CROSSINGS EXCEEDING
 50% OF THE PAVEMENT WIDTH

DATE: MARCH 21, 2011

REVISED:

DETAIL
 NUMBER:

U-3



NOT TO SCALE

TOWN OF STONINGTON
TECHNICAL
STANDARDS

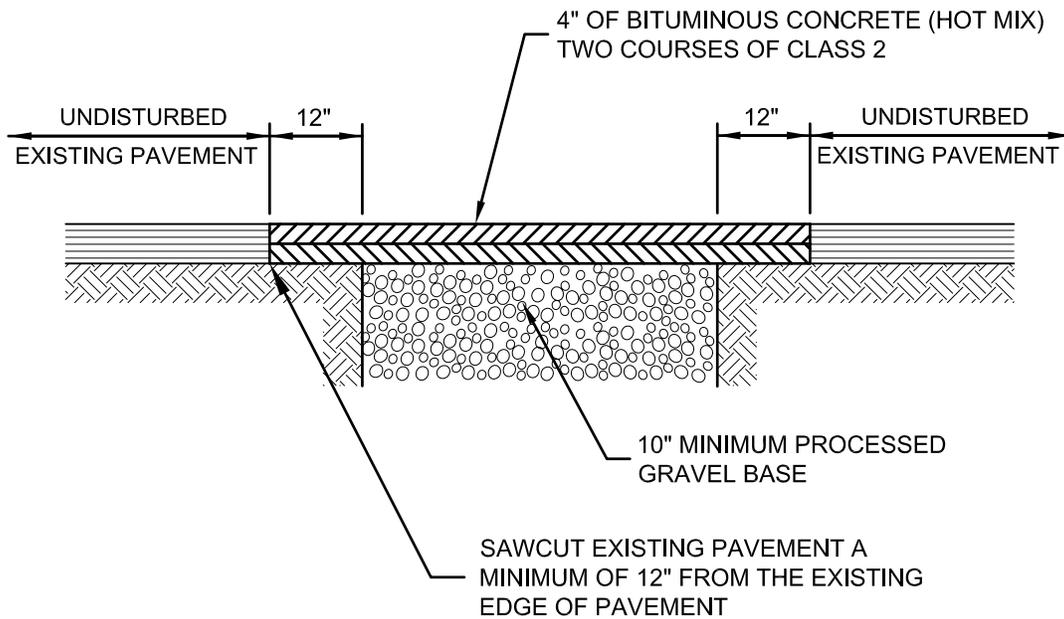
PERMANENT PAVEMENT RESTORATION FOR
PERPENDICULAR UTILITY CROSSINGS
EXCEEDING 50% OF THE PAVEMENT WIDTH

DATE: MARCH 21, 2011

REVISED:

DETAIL
NUMBER:

U-4

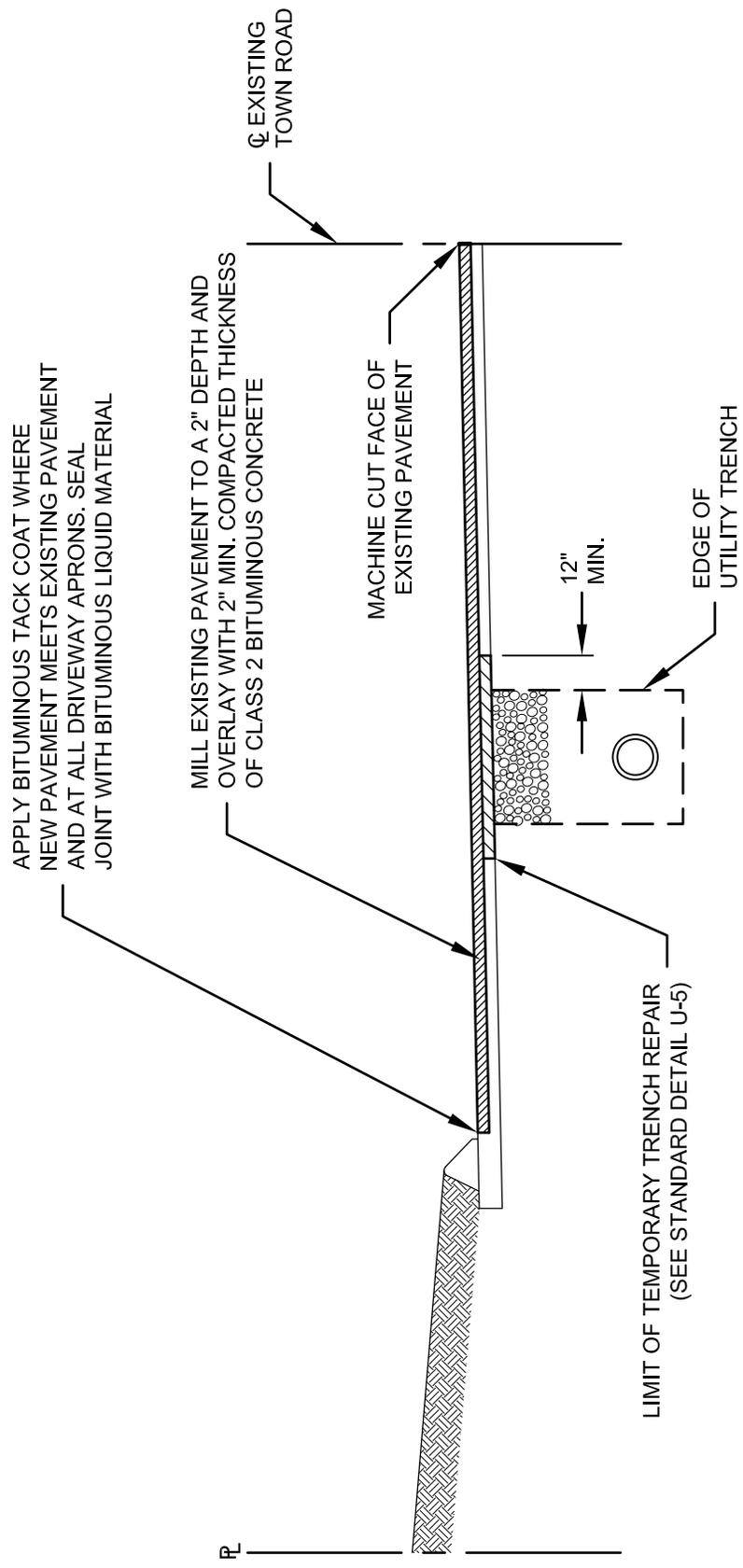


NOTES:

1. ALL VERTICAL EDGES OF REMAINING PAVEMENT SHALL BE PAINTED WITH A LIGHT COAT OF ASPHALT EMULSION.
2. AFTER PAVEMENT INSTALATION JOINTS SHALL BE SEALED WITH 85/100 ASPHALT OR APPROVED EQUAL.

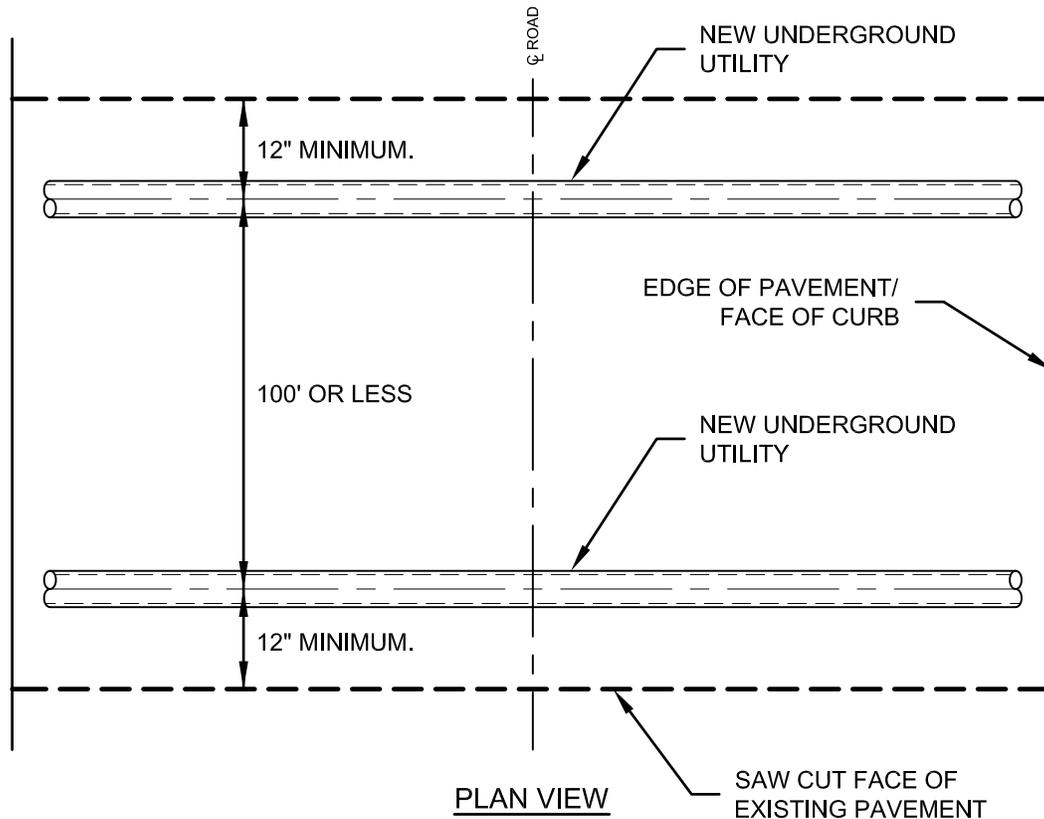
NOT TO SCALE

TOWN OF STONINGTON TECHNICAL STANDARDS	TEMPORARY PAVEMENT RESTORATION FOR UTILITY INSTALLATIONS THAT RUN PARALLEL WITH THE TRAVELED WAY	DATE: MARCH 21, 2011
		REVISED:
		DETAIL NUMBER: U-5

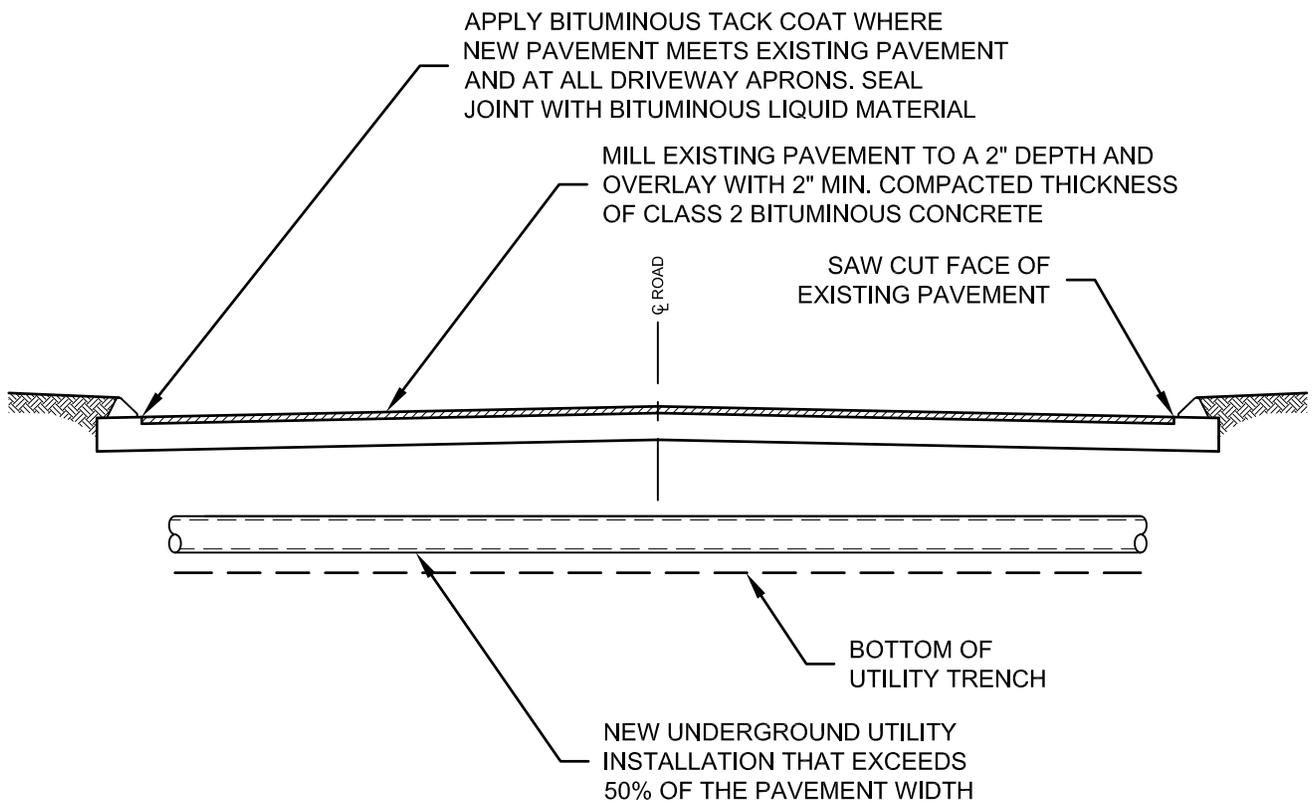


NOT TO SCALE

<p>TOWN OF STONINGTON TECHNICAL STANDARDS</p>	<p>PERMANENT PAVEMENT RESTORATION FOR UTILITY INSTALLATIONS THAT RUN PARALLEL WITH THE TRAVELED WAY</p>	DATE: MARCH 21, 2011
		REVISED:
		DETAIL NUMBER: U-6



PLAN VIEW



CROSS SECTION

NOT TO SCALE

TOWN OF STONINGTON
TECHNICAL
STANDARDS

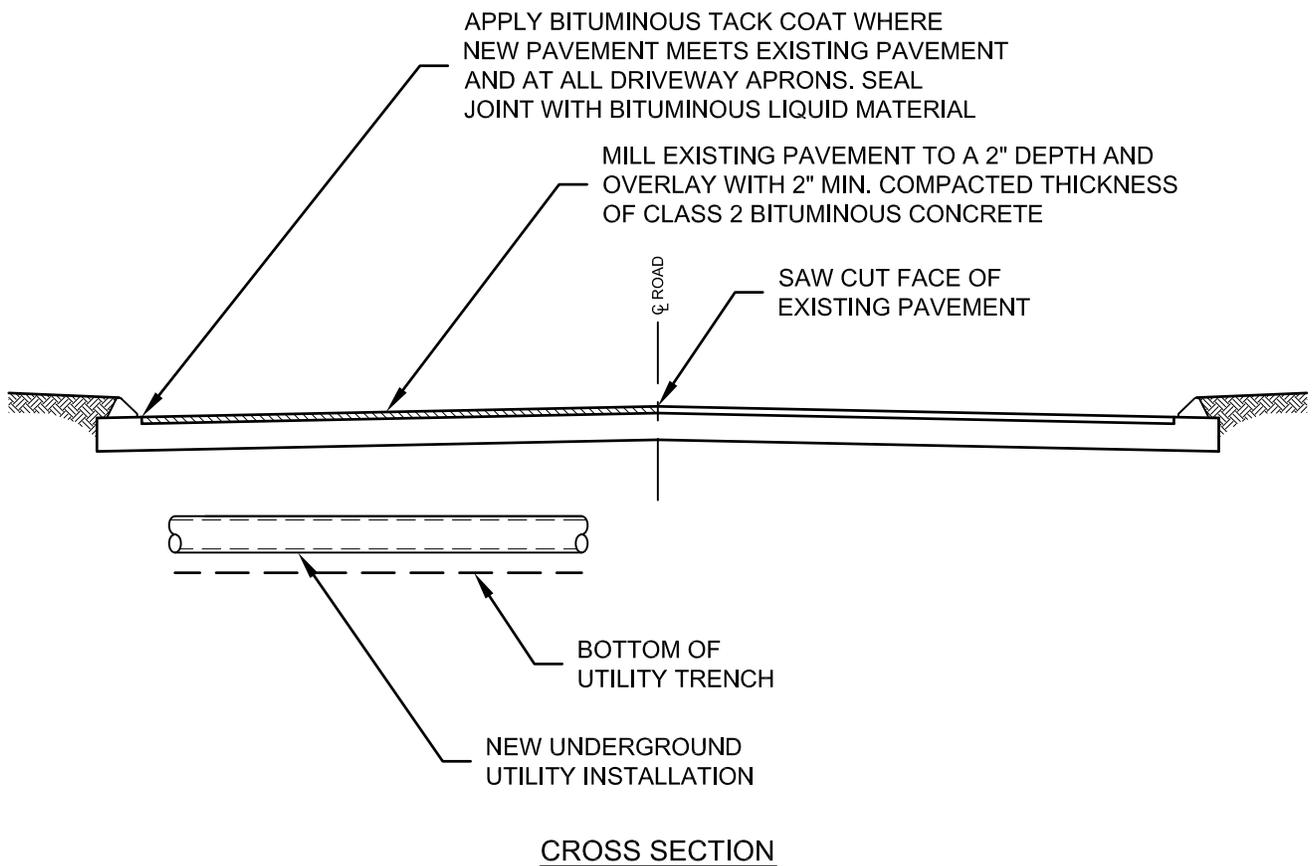
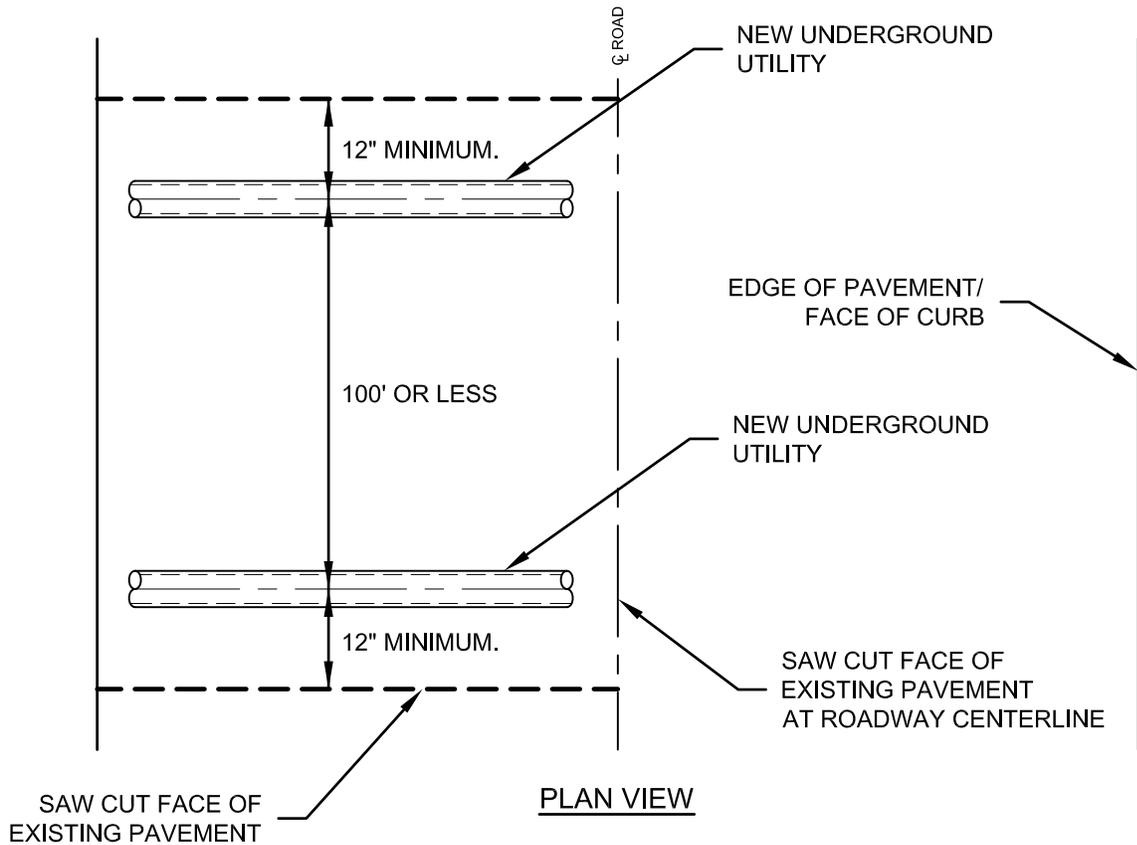
PERMANENT PAVEMENT RESTORATION FOR
MULTIPLE UTILITY CROSSINGS
SPACED LESS THAN 100' APART

DATE: MARCH 21, 2011

REVISED:

DETAIL
NUMBER:

U-7



NOT TO SCALE

TOWN OF STONINGTON TECHNICAL STANDARDS	PERMANENT PAVEMENT RESTORATION FOR MULTIPLE UTILITY CROSSINGS SPACED LESS THAN 100' APART	DATE: MARCH 21, 2011
		REVISED:
		DETAIL NUMBER: U-8

APPENDIX A

Road Classifications from Plan of Conservation and Development

DRAFT

Address Vehicular Transportation Needs

An efficient transportation system that safely combines private automobiles, pedestrians, bicycles, paratransit and mass transit can contribute significantly to overall quality of life by meeting the transportation needs of all residents, regardless of age or ability.

Access Management

Direct access to arterials should be restricted, requiring shared driveways, interconnected parking lots, access roads and similar measures to reduce curb cuts and maximize the movement of through traffic. Acceleration/Deceleration lanes could also be required at access points to facilitate the efficient flow of traffic.

Major connector and major feeder roads can provide both direct and indirect access to adjacent land but access management measures should be encouraged.

Minor feeder and residential access roads should provide direct access.

Relate Road Design to Desired Land Use

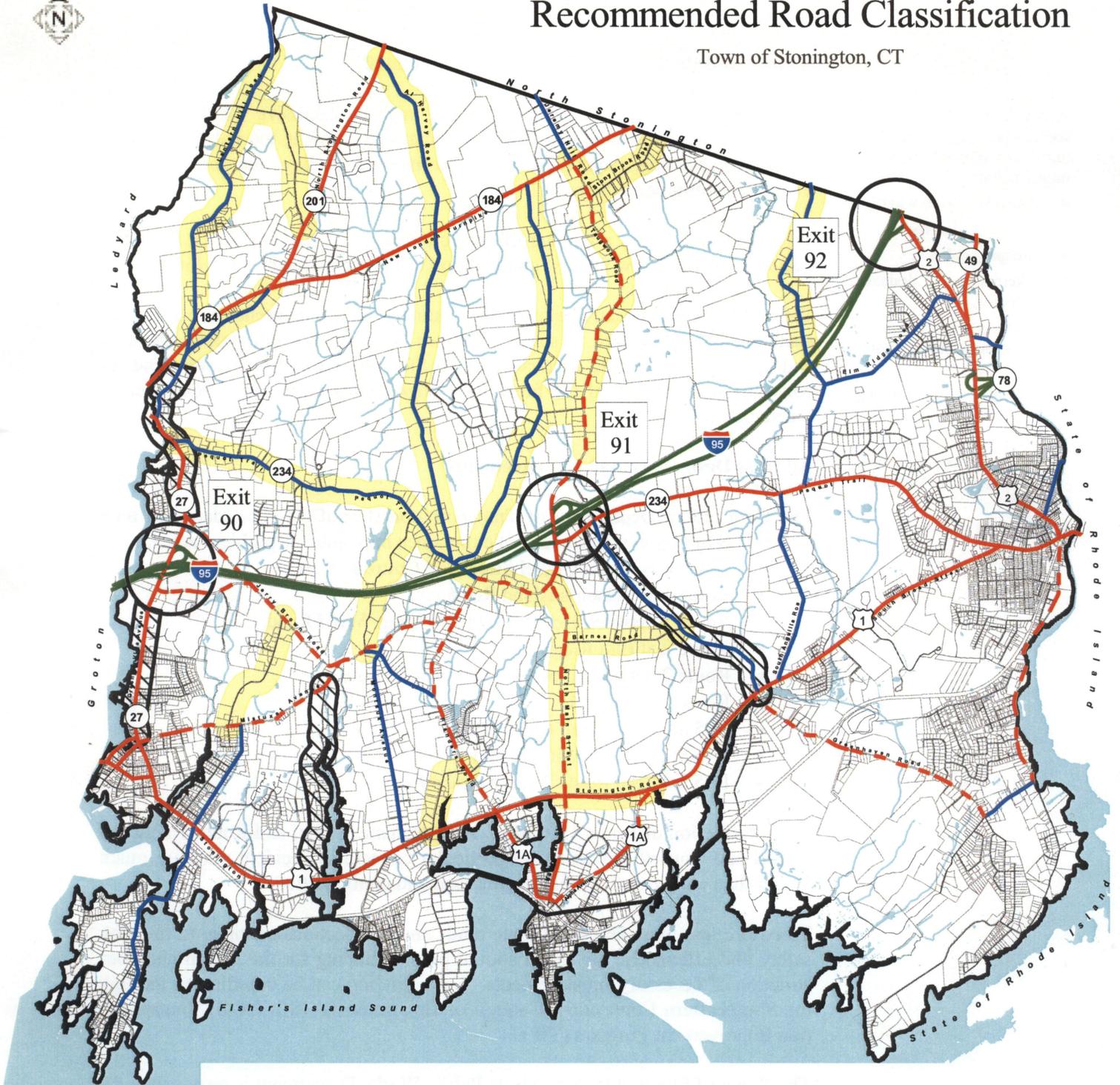
Road classifications are important for matching the design of roads to their location, adjacent land uses and function. Recommended road classifications are outlined in the table below and illustrated on the facing page.

Recommended Road Classifications		
Limited Access	<ul style="list-style-type: none"> • Interstate 95 	<ul style="list-style-type: none"> • Route 78
Arterials	<ul style="list-style-type: none"> • Route 1 • Route 1A • Route 2 • Route 27 • Route 49 	<ul style="list-style-type: none"> • Route 78 • Route 184 • Route 201 • Pequot Trail from N. Main Street to Route 1
Major Connectors (Collector Road)	<ul style="list-style-type: none"> • Coogan Boulevard • Flanders Road • Greenhaven Road • Holmes Street • Jerry Brown Road • Mechanic Street • Mistuxet Avenue 	<ul style="list-style-type: none"> • Pellegrino Road • North Main Street • Pequot Trail from Flanders Road to N. Main Street • River Road • Taugwonk Road • Willow Street
Major Feeder Roads (Collector Road)	<ul style="list-style-type: none"> • Al Harvey Road • Deans Mill Road from Mistuxet Avenue to Flanders Road • Elm Ridge Road • Farmholme Road • Hewitt Road • Jeremy Hill Road • Main Street 	<ul style="list-style-type: none"> • Mary Hall Road • Pequot Trail from Route 27 to Flanders Road • N. Anguilla Road • N. Stonington Road • S. Anguilla Road • Stillman Avenue • Wheeler Road • White Rock Avenue
Minor Feeder Roads (Local Streets)	<ul style="list-style-type: none"> • Boulder Avenue • Old North Road 	<ul style="list-style-type: none"> • All remaining roads except non-through street serving 15 homes or less.
Residential Access (Local Streets)		<ul style="list-style-type: none"> • Non-through street serving 15 homes or less.



Recommended Road Classification

Town of Stonington, CT



Legend

-  Expressway
-  Arterial
-  Major Connector
-  Major Feeder
-  Minor Feeder and Residential Access

-  Scenic Road
-  Proposed Scenic Roads
-  Stonington Borough

0 4000 Feet



Planimetrics

31 Ledge Drive, Avon, CT 06001 860-637-5263

APPENDIX B

Sidewalk Strategy from Plan of Conservation and Development

DRAFT

Address Pedestrian and Bicycle Circulation

While sidewalks are not always necessary in suburban and rural areas, there are instances where residents and visitors could benefit from sidewalks and trails that allow them to safely walk or cycle between the villages, the Borough and other activity nodes such as the areas around Exits 90 and 92, the Stonington High School/Recreation Park campus at Spellman Drive, or the grocery stores located just outside of Mystic and Pawcatuck.

Where residential densities permit, pedestrian access should be provided within walking distance of schools, parks and playgrounds. Sidewalks should be incorporated into all new development proposals and Town road improvement projects in these areas.

Sidewalks strictly for pedestrians should be at least five feet wide. Improved trails for both bikes and pedestrians should be at least eight feet wide. Bicycles can also be safely accommodated on major roads through the use of wide shoulders, bicycle friendly catch basin grates and even dedicated bike lanes.

All major road construction projects should be required to consider bicycle accommodations during the design phase and incorporate them where possible and within fiscal reason. The Planning and Zoning Commission should also consider requiring bicycle racks where appropriate during the site plan approval process.

Pedestrian / Bicycle Transportation Strategies

1. Connect villages, Borough and other activity nodes with sidewalks or trails.
2. Require sidewalks as part of all development proposals and road improvement projects within walking distance of schools parks and playgrounds
3. Consider bicycle accommodations in all road improvement and site development projects.

Bicycle Shop in Mystic

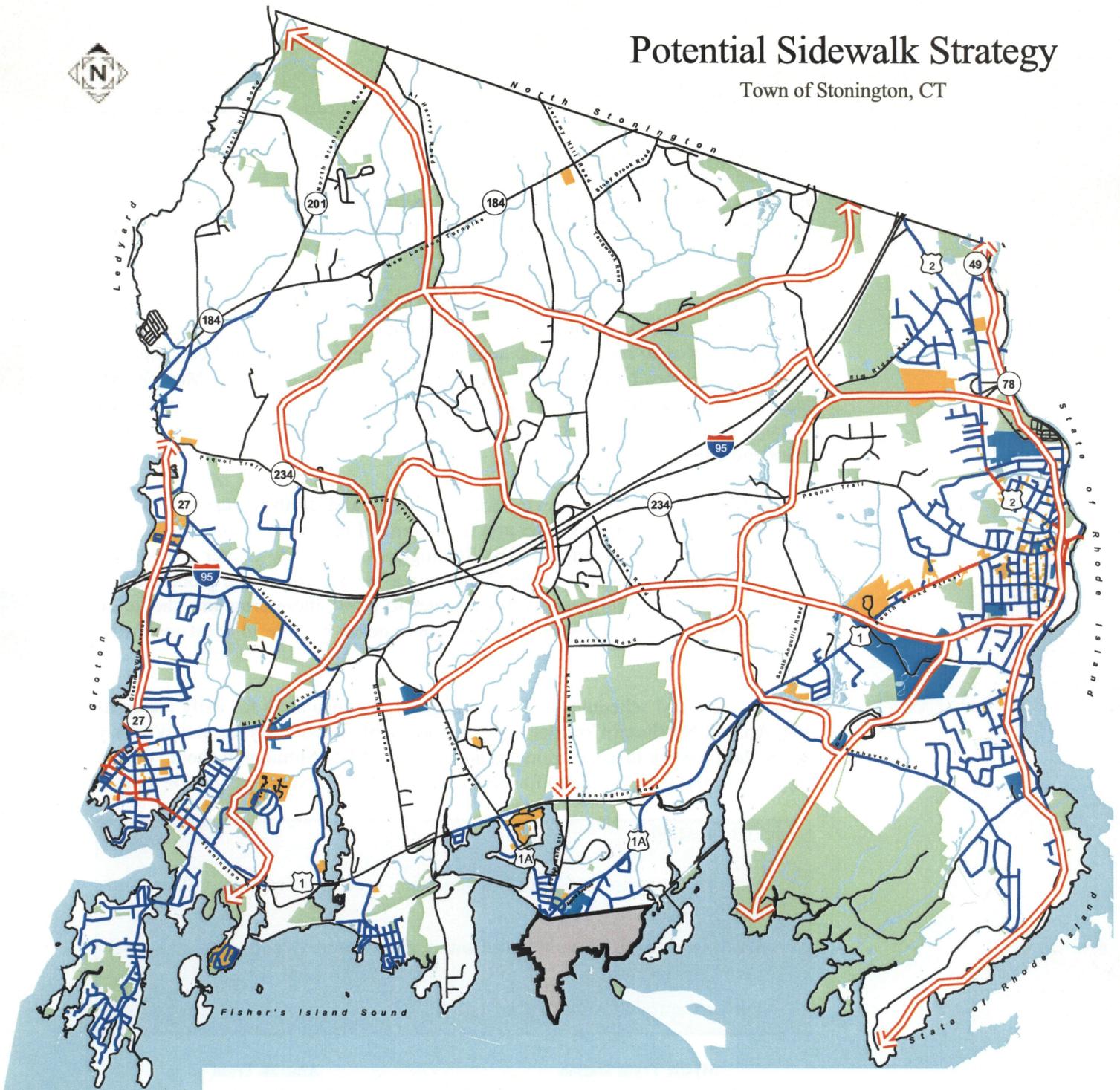


Consider Bicycle Accommodations



Potential Sidewalk Strategy

Town of Stonington, CT



Legend

-  Eight Foot Sidewalks
-  Five Foot Sidewalks
-  Possible Greenway Connections
-  Open Space
-  Community Facility
-  Multi-Family Development
-  Stonington Borough

0 4000 Feet

APPENDIX C

Roadway Acceptance Checklist

DRAFT

TOWN OF STONINGTON

ROADWAY ACCEPTANCE CHECKLIST

Proposed Roads to be Accepted by the Town of Stonington

Length (in miles)

Road

Item	Responsibility	Sign Off	Date	Comments
<input type="checkbox"/> Has roadway monumentation been installed	Public Works			
<input type="checkbox"/> Has roadway inspection fees been released?	Public Works			
<input type="checkbox"/> Have proposed roads passed DPW inspection?	Public Works			
<input type="checkbox"/> Has As-Built Drawings of Road been submitted?	Public Works			
<input type="checkbox"/> Have Drainage Easements been submitted? (if applicable)	Public Works			
<input type="checkbox"/> Have Sewer Easements been submitted? (if applicable)	WPCA			
<input type="checkbox"/> Has sewer system been completed to the satisfaction of WPCA	WPCA			
<input type="checkbox"/> Has Warranty Deed been provided to P&Z?	P&Z			
<input type="checkbox"/> Has Certificate of Title been provided to P&Z?	P&Z			
<input type="checkbox"/> Has CT RE Convey. Tax Forms been provided to Town?	P&Z			
<input type="checkbox"/> Has Town Attorney reviewed all necessary documents?	P&Z			
<input type="checkbox"/> Has Open Space been dedicated to the proper entity?	P&Z			
<input type="checkbox"/> Has applicant met all P&Z stipulations	P&Z			
<input type="checkbox"/> Has mylars been reviewed and ready for filing ?	P&Z			
<input type="checkbox"/> Has P&Z performance bond been released?	P&Z			
<input type="checkbox"/> Has P&Z maint. bond been secured? Amt _____	P&Z			

Based on all of the above items being completed, we recommend that the Planning & Zoning Commission approve the 8-24 review and that Board of Selectman accept the above referenced roads into the Town's road system

Joseph J. Bragaw, PE Director of Public Works	Harold Storrs Director of the Water Pollution Control Authority
Has an 8-24 review been approved by the P&Z Comm?	P&Z Meeting Date for 8-24 Approval
The road has been approved by the Board of Selectman	Has warranty deed, mylars, Convey Tax, & any other documents been filed with the Town Clerk Cost for filing _____
Edward Haberek, Jr. First Selectman	Town Clerk _____ Date _____
BOS Meeting Date for Town Road Approval	Town Clerk Approval

APPENDIX D

Public Storm Drainage Connection Policy

DRAFT

TOWN OF STONINGTON
PUBLIC WORKS DEPARTMENT
PUBLIC STORM DRAINAGE CONNECTION POLICY

<u>Table of Contents</u>	<u>Page No(s)</u>
Section 1 Policy Statement	1
Section 2 Purpose of the Policy	2
Section 3 Application Process	2
Section 4 Eligibility Criteria	3-4
Section 5 Required Documentation	5-6
Section 6 Fee Schedule	6
Section 7 Treatment of Existing Private Drainage Connections and/or Over Land Private Drains	7-8
Section 8 Permit Duration	8
Section 9 Enforcement	8
Section 10 Appeals	8

Section 1 - Policy Statement

It is the policy of the Town of Stonington to prohibit private drainage connections to the Town's storm drainage infrastructure. However, it is recognized that there may arise a public interest or a hardship situation where such a connection may be warranted. This policy is meant to set forth the conditions under which a private drainage connection may be allowed. It is not the intent of this policy to promote private drainage connections to the Town's storm drainage system. Rather, it is meant to provide relief to those property owners who are threatened with damage to property by excess on-site storm water or high groundwater levels. It is incumbent upon the applicant to prove to the Town that the need to connect exists, and that no reasonable alternate means of disposal exists.

For purposes of this policy, the term “**private drainage connection**” refers to the permanent underground installation and/or physical connection of a private drainage system to a Town drainage structure and/or Town drainage pipe. Said private drainage connection includes, but is not limited to any sump pumps, footing drains, curtain drains, and/or other systems installed as a means to convey storm and/or ground water from a location within a parcel to the Town's drainage system. As portions of the system are located within, or convey storm and/or groundwater into the Town right-of-way, the system is under the jurisdiction of the Town's Public Works Department, and a Public Storm Drainage Connection Permit shall be obtained from the Town for their use.

This policy will also regulate the use of flexible or rigid drainage pipes, installed above the ground surface and whether installed within the Town right-of-way or on private property, serve to convey storm and/or ground water onto or into the Town right-of-way without a direct connection to a Town drainage structure. For the purposes of this policy, those drainage pipes will be referred to as “**over land private drains**”. As storm and/or groundwater is conveyed via these over land private drains onto or into the Town right-of-way, thereby bringing their use under the jurisdiction of the Town's Public Works Department, a Public Storm Drainage Connection Permit shall be obtained from the Town for their use. This policy is not meant to prohibit or restrict the use of over land private drains, but to set forth guidelines under which they are to be properly authorized.

This policy is applicable to all proposed private connections to the Town's storm drainage system, however there are also provisions in this document for connections that have been in place before this policy was adopted by the Board of Selectman and can meet the grandfather provisions as set forth in this document.

This policy does not supersede any applicable federal, state, or local laws, rules, or ordinances.

Section 2 – Purpose of the Policy

Some of the main purposes for this policy are as follows;

- For the Town to be able to keep track of all of the private connections into the Town's drainage system
- To allow property owners with hardships on their property a means to discharge water away from their properties when they don't have any other means to do so.
- To comply with the conditions of the Town's Municipal Separate Storm Sewer System (MS4) general permit with the Connecticut Department of Environmental Protection with regards to connections to the Town's drainage system.
- To educate property owners with private connections into the Town's drainage system that only uncontaminated storm and/or ground water should be directed into the storm drain system as this water goes untreated into the environment.
- To minimize liability to the Town for damage done to private property from the Town's drainage system backing up into people's homes through unpermitted connections.
- To provide the Town a mechanism to remove connections to the Town's drainage system that are deemed to be a threat to public health and safety.

Section 3 - Application Process

The issuance of a Public Storm Drainage Connection Permit by the Town's Public Works Department shall constitute official approval of a private drainage connection or overland private drain application. The applicant shall submit a Public Storm Drainage Connection Permit Application with all of the supporting documentation as indicated later in this policy to the Town's Public Works Department for consideration. All costs associated with the construction, maintenance and permitting of the private drain connection or the over land private drain shall be the sole responsibility of the applicant as set forth in this policy. It should be noted that other approvals outside of those issued by the Stonington Public Works Department (i.e. wetlands, health, etc.) may be required before construction can commence. It is the responsibility of the applicant to ensure that all necessary permits are obtained prior to the commencement of work.

Section 4 – Eligibility Criteria

Section 4.1 - "Private Drain Connection" Eligibility Criteria

A proposed "Private Drain Connection" must meet the following eligibility criteria:

- The applicant must prove to the Town the need for the connection and that there are no other reasonable means for onsite disposal of the discharge.
- The applicant may be asked to demonstrate that there exists suitable capacity in the drainage system to which the proposed connection will be made.
- If this connection is to be part of a neighborhood drainage system, this has to be

identified as such in the application.

- The drainage structure to which the connection will be made must be part of a closed drainage system that has a positive outfall (no connections to Town drywells unless specifically authorized by the Director of Public Works).
- The Town drainage structure to which the private drain connection is proposed should be located within the frontage of, and on the same side of the public way as the applicant's parcel. If the connection needs to cross over other properties, easements will be needed from those property owners. Copies of the recorded easements must be submitted to the Public Works Department prior to the issuance of the Public Storm Drainage Connection Permit.
- All materials and construction must be acceptable to the Town of Stonington's Public Works Department.
- The applicant must execute the Private Drainage Connection Covenant and record said document with the Town Clerk on the Town's land records. A copy of the recorded covenant must be submitted to the Public Works Department prior to the issuance of the Public Storm Drainage Connection Permit.
- The proposed connection must be used solely for the disposal of storm water runoff or groundwater. Non-conforming uses include, but are not limited to disposal of grey water, black water, solvents, paints, petroleum based products or other contaminants.
- When at all possible, that portion of the connection located within the Town right-of-way must be limited to a single drainage conduit crossing the right-of-way at a 90° angle to minimize the length of conduit within the right-of-way. When the conduit needs to be run for some distance, it should be run outside of the Town's right of way if possible. The remainder of the connection components must be located outside of the Town's right-of-way.
- All work within the Town's right-of-way shall not be backfilled until the Town has had a chance to properly inspect it. Therefore, the Town needs at least 24 hours notice before any work in the right-of-way is to commence.
- The proposed connection must include a backflow preventer installed by a plumber licensed in the State of Connecticut. The backflow preventer is to be located on private property and not on the Town's right of way.

Section 4.2. – "Over Land Private Drain" Eligibility Criteria

A proposed "Over Land Private Drain" must meet the following eligibility criteria:

- The applicant must prove to the Town the need for directing the discharge to the Town's right-of-way and that there are no other reasonable means for onsite disposal of the discharge.
- The applicant may be asked to demonstrate that there exists suitable capacity in the drainage system to which the proposed discharge is being directed too.
- The over land private drain must be placed so that it in no way impedes or obstructs vehicular, pedestrian, bicycle, or other mode of travel normally provided for within the Town's right-of-way.
- Storm and/or ground water conveyed by the over land private drain shall be directed to present no safety hazard and to minimize interference with vehicular, pedestrian, bicycle, or other mode of travel normally provided for within the Town's right-of-way. Safety hazards include, but are not limited to ponding, frozen areas, etc.

- Storm and/or ground water conveyed by the over land private drain shall be directed to minimize erosion or the potential for erosion.
- The proposed over land private drain must be used solely for the disposal of storm water runoff or groundwater. Non-conforming uses include, but are not limited to disposal of grey water, black water, solvents, paints, petroleum based products or otherwise hazardous materials.
- The applicant must execute the Over Land Private Drain Covenant and record said document with the Town Clerk on the land records. A copy of the recorded covenant must be submitted to the Public Works Department prior to the issuance of the Public Storm Drainage Connection Permit.

Section 4.3. - Evaluation of Criteria

- Any subjective judgments concerning eligibility under the criteria shall be made by the Director of Public Works or his/her appointed designee. The Public Works Department reserves the right to deny any application based on the fact that it is not in the best interests of the Town.

Section 5 - Required Documentation

Section 5.1. - "Private Drain Connection" Documentation

To obtain a Public Storm Drainage Connection Permit for a new private drain connection, the applicant shall submit with the application a plan view clearly indicating the extent and nature of the proposed work. The plans should be submitted on 8 ½" x 11" sheets and should have the following information;

- Approximate property boundaries
- Site topography (this can be obtained from the Town's Geographic Information System which is accessible on from the Town's website at www.townofstonington.com)
- A scale on the drawing (1"=20', 1"=40', etc.)
- Length, diameter, slope, material type and location of the proposed private drainage pipe and where it is to be connected to the Town's drainage system.
- Location of all existing and proposed drainage structures clearly labeled within the site, including the Town drainage structure to which the connection is proposed.
- Footprint of all buildings/structures located within the site.
- Model number and location of the proposed backflow preventer to be used.
- If the proposed connection will be hooked up to a sump pump, the sketch shall also indicate the pump manufacturer's name, model number, capacity, and where the pump will be located within the house (i.e. location in the basement).

Section 5.2. - "Over Land Private Drain" Documentation

To obtain a Public Storm Drainage Connection Permit for a new over land private drain, the applicant shall submit with the application a plan view clearly indicating the extent and nature of the proposed work. The plans should be submitted on 8 ½" x 11" sheets and should have the following information;

- Approximate property boundaries
- Site topography (this can be obtained from the Town's Geographic Information System which is accessible on from the Town's website at www.townofstonington.com)
- A scale on the drawing (1"=20', 1"=40', etc.)
- Location of the private drainage pipe and the location that it discharges onto the Town's right-of-way.
- Location of all existing and proposed drainage structures clearly labeled within the site, including the nearest Town drainage structure in which the discharge is being diverted to.
- Footprint of all buildings/structures located within the site.
- Location of any public sidewalk along the frontage of the property
- If the overland private drain will be hooked up to a sump pump, the sketch shall also indicate the pump manufacturer's name, model number, capacity, and where the pump will be located within the house (i.e. location in the basement).

Section 5.3. - Additional Supporting Documentation

At the discretion of the Director of Public Works or his/her appointed-designee, the applicant may also be required to provide the following;

- A letter from a Professional Engineer licensed by the State of Connecticut with his/her opinion relative to impact on the downstream drainage system and/or supporting calculations.
- A field stakeout of the property boundaries along with actual topographic information provided by a Professional Land Surveyor licensed by the State of Connecticut and to show the same on a plan.

Section 6 - Fee Schedule

All costs associated with the design, permitting, construction, and maintenance of the permitted connection shall be the sole responsibility of the applicant. The Town is not required to install any drainage within the Town's right-of-way for the purposes of accommodating a private drain connection and/or an overland private drain.

There is no cost for the Public Storm Drainage Connection permit application.

Section 7 - Treatment of Existing Private Drain Connections and/or Over Land Private Drains

7.1. – Existing Grandfathered Connections/Drains

To the extent that an applicant can provide reasonable proof that an existing private drainage connection/overland private drain was in place prior to this policy being adopted by the Board of Selectman the connection/drain may be considered a grandfathered connection. The property owner of the grandfathered connection need only meet the following conditions;

- Apply for a Public Storm Drainage Connection permit with the Public Works Department for the private drain connection/overland private drain within two years of the date that the Board of Selectman adopts the policy. If the Town finds that a property owner has a private drainage connection or overland private drain and has not applied for a Public Storm Drainage Connection Permit within two years of the date that the Board of Selectman adopts the policy, the Town reserves the right to require the property owner to apply as a new connection permit.
- Execute the appropriate covenant and record said document with the Town Clerk on the land records. A copy of the recorded covenant must be submitted to the Public Works Department prior to the issuance of the Public Storm Drainage Connection Permit.

Any modifications made to a grandfathered private drainage connection/overland private drain within the Town's right-of-way after the adopted date of this policy shall be subject to all of the requirements of a new connection. In addition, nothing in this policy shall be interpreted to prohibit the Town from revoking said permission, thereby rendering the connection/drain an unpermitted connection, if, in the opinion of the Director of Public Works or his/her designee, the grandfathered connection jeopardizes public health, safety, or natural resources.

Section 7.2. – Discovery of an Existing Unpermitted Connection/Drain

If an unpermitted connection/drain is discovered by the Town, the Town will send a "notification" letter to the property owner alerting them to the fact that there is a Public Storm Drainage Connection Policy in Stonington and that they need to comply with the conditions of this policy. The property owner needs to apply for a Public Storm Drainage Connection permit within sixty (60) days of the date of the "notification" letter from the Town. If the Town does not receive a Public Storm Drainage Connection permit application from the property owner within this time period, then the connection/drain will be considered unpermitted.

Section 7.3. – Consequences for an Existing Unpermitted Connection/Drain

If an unpermitted connection/drain is discovered by the Town, and the Town does not receive a Public Storm Drainage Connection permit application from the property owner within the sixty (60) day time period from the "notification" letter, then the Town will send a "removal" letter to the property owner instructing them that they have an unpermitted private connection/drain and that it is their responsibility to remove any portion of the drainage connection/drain located within the Town's right-of-way. Except in the event of a situation that involves a threat to public health, safety, or natural resource, said removal shall be performed within sixty (60) days of the date of the "removal" letter from the Town. An Excavation Permit shall be obtained from the Public Works Department for any work to be done within the Town's right-of-way. If the "removal" period falls within the winter months, the property owner still needs to send in a letter to the Public Works Department notifying the Town as to when the work is scheduled to be done. In the event that the connection/drain is not removed within the sixty (60) days of the "removal" letter and the Town has not received anything in writing from the property owner with regards to the schedule for their work, then the Town may proceed to remove the connection. For situations involving a threat to public health, safety, or natural resource, the Town may proceed with the immediate removal of the connection provided that the Town sends the property owner a letter within seventy-two (72) hours of the actual removal. Any expenses incurred by the Town in conjunction with a

removal shall be back-charged to the owner of the property from which the connection originates.

Section 8 – Permit Duration

A Public Storm Drainage Connection Permit granted for the installation of a “private drain connection” or an “over land private drain” shall be considered to be in full force and effect until a time when, in the opinion of the Director of Public Works or his/her designee, the connection and/or discharge fails to meet the applicable terms and conditions set forth in this policy and in the executed covenant. In the event that the private drain connection or the over land private drain fails to meet said terms and conditions, it shall be considered to be an unpermitted connection/drain, and will revert to the conditions as set forth in Section 7.3 of this policy.

Section 9 - Enforcement

Enforcement of this policy shall reside with the Director of Public Works or his/her designee.

Section 10 - Appeals

If a private drainage connection/over land private drain Public Storm Drainage Connection permit application is denied, the applicant has the right to appeal the decision. Appeals of decisions shall be heard by the Board of Selectman, and the Board’s decision on the matter shall be final. A written request for an appeal of a decision shall be submitted to the attention of the First Selectman within thirty (30) days of the date on the application denial. If a property owner with a grand fathered connection is denied the permit but chooses to appeal the decision, the connection may be kept in place until the appeal process has been exhausted so long as the connection does not jeopardize public health, safety, and/or natural resources.

TOWN OF STONINGTON

PUBLIC WORKS DEPARTMENT

Private Drainage Connection Covenant

_____ (Owner's Name), having an address of _____ in Stonington, CT, has submitted an application dated _____ to the Town of Stonington's Department of Public Works for a Public Storm Drain Connection Permit to authorize connection of a private drainage connection to the Town of Stonington's municipal storm drainage system, as shown on the attached plan entitled " _____ ", dated _____, prepared by _____ (the plan is not necessary for grandfathered connections). The proposed private drainage connection will be located within the right-of-way of _____ (street/road).

As a material inducement to the Department of Public Works to issue such a Public Storm Drain Connection Permit, the undersigned covenants and agrees to the following conditions prior to the issuance of such a Permit.

1. The terms and conditions of this Covenant include not only those contained within the language of this Covenant, but also include by reference the terms and conditions of the Public Storm Drain Connection Permit issued authorizing the connection as well as the terms and conditions set forth by the Town of Stonington's Public Storm Drainage Connection Policy, adopted by the Board of Selectman on _____.
2. The undersigned understands and agrees that the Town of Stonington retains all rights, title and interest in and to the right-of-way area referenced above. To the extent that the activities of the Town of Stonington disturb any of the proposed drainage connection constructed by the undersigned in accordance with the Public Storm Drain Connection Permit, the Town of Stonington shall be obligated solely to replace and restore in kind the disturbed portion of the drainage connection to the condition in which it existed prior to the disturbance, and shall have no obligation to replace or restore other connection material in the right-of-way outside of that portion disturbed by actions of the Town. In the event that the structure to which the proposed connection is made in accordance with the Public Storm Drain Connection Permit is abandoned or relocated, the Town shall not be obligated to extend or modify the existing Town drainage system to provide connection to another structure or the relocated structure. The undersigned releases the Town of Stonington (including all officials, contractors, agents and employees), from and against any claims for losses, costs, damage to personal property, death or personal injuries incurred by or asserted against the Town of Stonington as a result of the exercise by the Town of Stonington of any of its rights within the right-of-way area, except to the extent that the Town of Stonington does not perform its obligations under this paragraph or otherwise acts in a grossly negligent manner.
3. The undersigned agrees that in the event the undersigned fails to comply with the terms and conditions of this covenant, the permit shall be deemed void and of no force and effect, and the drainage connection constructed in accordance with such Permit shall no longer be a validly authorized connection (unpermitted

connection) and shall be removed by the undersigned within sixty (60) days of receipt of written request to do so.

4. The undersigned agrees to allow representatives of the Town of Stonington to enter onto his/her property for the purpose of inspecting the complete drainage connection and ensuring compliance with the terms and conditions of this covenant before, during, and after the connection is installed.
5. The undersigned agrees that the permitted connection/system will be used solely for the disposal of uncontaminated storm water and/or groundwater, and at no time will the permitted connection be used for the disposal of any other material. The Town reserves the right to randomly select a certain number of permitted connections in Town each year so that we can sample the discharge to insure that this provision is strictly adhered to.
6. The undersigned agrees to have a functioning backflow prevention device which is to be located off of the Town's right-of-way. The undersigned further agrees to hold the Town harmless for any water damage to private property resulting from a faulty backflow prevention device. For grandfathered connections, the undersigned is not required to have a backflow prevention device; however, the Town strongly recommends that they have one installed. Even if the property owner of a grandfathered connection chooses not to install a back flow preventer, they still hold the Town harmless for any water damage to private property resulting from water coming from the Town's drainage system.
7. The Town of Stonington bears no responsibility for maintenance of any portion of the connection. Any required maintenance of the connection shall be the sole responsibility of the undersigned. An Excavation Permit and/or Right of Way Permit is required for any digging performed within the Town right-of-way.
8. The undersigned agrees that any modifications made to the connection shall be subject to this covenant and to Town of Stonington's Public Storm Drainage Connection Policy.
9. The Town of Stonington reserves the right to require the permanent removal of the connection if it is deemed by the Director of Public Works to be in the best interest of the Town. The undersigned agrees that he/she will, within sixty (60) days of receipt of written request to do so, remove that portion of the connection located within the Town's right-of-way and permanently seal off any materials used in conjunction with the connection. The removal shall also include the restoration of that portion of the Town's right-of-way disturbed by the removal to the condition of that area prior to the disturbance. The cost for this removal shall be the sole responsibility of the undersigned.
10. The Town of Stonington reserves the right to temporarily or permanently disconnect the previously approved connection from the Town's drainage system without supplying the undersigned with advance notice if, in the opinion of the Director of Public Works or his/her appointed designee, the connection poses an immediate threat to public safety, public health, or natural resource.
11. The undersigned covenants and agrees to indemnify and hold harmless the

Town of Stonington, its agents, servants and employees from any and all liabilities, claims, demands, suits, damages, including damages arising from personal injury or death, losses and causes of action, which may be made against or incurred by the Town of Stonington as a result of any disconnection of the drainage into the Town's drainage system.

- 12. The undersigned covenants and agrees to indemnify and hold harmless the Town of Stonington, its agents, servants and employees from any and all liabilities, claims, demands, suits, damages, including damages arising from personal injury or death, losses and causes of action, which may be made against or incurred by the Town of Stonington as a result of any redirection of the overland private drain.
- 13. The undersigned hereby agrees that he/she will execute an easement in favor of the Town of Stonington, said easement to be recorded on the land records, in order to give the Town all of its rights as outlined in this Covenant, said easement to run with the land and bind the owner, his/her heirs, successors, and assigns.
- 14. In the event that the Town of Stonington has to file suit or commence any action against the undersigned to enforce compliance with this Covenant, the undersigned shall be responsible for all costs, including reasonable attorney's fees, incurred by the Town of Stonington in bringing said suit or action.
- 15. This Covenant executed under seal as of this ____ day of _____, 20____, shall be binding upon the undersigned and its successors and assigns.

Owner's Signature

Date

Owner's Name (Please Print)

NOTARY PUBLIC CERTIFICATION

STATE OF CONNECTICUT :
:s.s.
COUNTY OF NEW LONDON :

On this the ____ day of _____, 20____ before me, _____(owner's name), personally appeared as the owner of _____(address), signer and sealer of the foregoing instrument, who, acknowledged that he/she executed the foregoing instrument as his/her free act and deed.

In witness whereof, I hereunto set my hand and official seal

Notary Public Signature
My Commission expires _____

TOWN OF STONINGTON

PUBLIC WORKS DEPARTMENT



PUBLIC STORM DRAINAGE CONNECTION PERMIT APPLICATION

PERMIT NO. _____

APPLICANT _____

PROPERTY ADDRESS _____

PROPERTY OWNER _____

(if not the same as the applicant)

CONTACT # _____

EMAIL ADDRESS _____

TYPE

Grandfathered Private Drainage Connection

New Private Drainage Connection

Grandfathered Over Land Private Drain

New Over Land Private Drain

Briefly describe the need for the connection and why there are no other reasonable means of onsite disposal for this discharge

PLEASE ANSWER THE FOLLOWING QUESTIONS

Is the proposed connection hooked up to a sump pump/footing drain/other? _____

Are easements needed from other properties to install the connection? (Y/N) _____

If so, has copies of the recorded easements been provided with this application? (Y/N) _____

Is the proposed connection for a single family residence (Y/N) _____

(If not, please provide additional information on the drainage area of the system)

NOTES

- 1) An Excavation or Right of Way Permit still needs to be filled out for any digging in the Town's right-of-way
- 2) Please refer to Section 8 of the Public Storm Drainage Connection Policy for information which discusses the permit duration

Applicant's Signature

Date

The bottom section is to be filled out by the Public Works Department

Check box

Has a sketch been provided pursuant to the Public Storm Drainage Connection Policy

Has a copy of the recorded covenant been provided with this application?

APPROVED

DENIED

CONDITIONS OF APPROVAL

REASONS FOR DENIAL

Director of Public Works or Designee

Date