

## Todd & Lindsay Review Comments

### Redline Plans - page 1

Comment- Need to show entire 19 acres.

Answer- *We will provide the free cut plan which shows wetlands for entire 19 acres.*

Comment- Have wetland report prepared.

Answer – *This was one of John Ianni's last projects before he retired. He was willing to go back out to verify the wetland flags (which he did) and endorse the plans. However, he is retired and has firmly told us he would not prepare a report or attend any meetings. This was the same situation we were in for the application across the street and was discussed with the commission. To require a wetland report now would involve finding a new soil scientist. Let's discuss.*

Comment- Why is a portion of the remaining land to the east of lots 1 & 2 not included in those lots?

Answer – *That portion needs to be included in the remaining land in order to satisfy the required ratio of units per acre for the development that is proposed for the remaining land. That portion of the remaining land is planned to be designated as open space in that development.*

### Redline Plans - Page 2

Comment – Add topo at street.

Answer – *Added to plans.*

Comment – Are there any improvements that might be incorporated to improve stormwater quality?

Answer – *Assume note is asking about improvements within the R.O.W.? The culvert has been re-located out of the state R.O.W.. Cannot think of any additional improvements given the space constraints to wetlands.*

Comment – Add Sightlines.

Answer – *We have met on site with CDOT and will comply with CDOT sightline requirements. A note has been added that driveway will meet the CDOT standards and is subject to CDOT approval.*

Comment – Plan is busy, move items to detail page.

Answer – *Plans have been revised to address this.*

Comment – Larger scale plan.

Answer – *Plans now include a 30-scale drawing.*

Comment – Have wetland scientist comment as to what direction wetlands continue in after WF#1.

Answer – *As discussed above, the further employment of John Ianni is questionable. It also may not be legal to have any soil scientist enter a neighbor's property to do physical borings. Todd's estimation of the wetland boundary seems reasonable and we also have the certainty of knowing where the wetlands exist, up to the stone wall along the Bay property line.*

*The U.R.A.s depicted on lots 1 and 3 are based upon the field located flagging. The distance between these U.R.A.'s, parallel to the Bay property line, is approximately 300' and this area on Lots 2 & 3 is the only area where the actual U.R.A. is unknown. In this 300' gap we've made some changes to Lot 1 to relocate the stormwater chambers and the grading associated with them in order to increase the distance from the property line. The footing drains on both Lot 2 and 3 have also been pulled farther back. With these revisions the limit of the area of disturbance is now no closer than 50' +/- to the property line. We know that the actual wetland boundary is not the wall or property line so 50' +/- is the "worst case" scenario. Although the actual distance from the area of disturbance to the wetland boundary will be unknown, we do know that it will exceed 50' and that amount of separation, with proper E&S and stabilization should be acceptable without further investigation by a soil scientist.*

### Redline Plans - Page 3

Comment – Add existing and proposed topo and culvert inverts.

Answer – *Added to plan.*

Comment – Driveway is lower than infiltration trench.

Answer – *Elevations have been revised and contours adjusted on the plans.*

Comment – Does infiltration trench overflow to swale?

Answer – *The infiltration trench is expected to overtop along its length and function as a level spreader. The swale is not intended to be the outlet for the trench.*

Comment – Concerning the runoff path from the outlet.

Answer – *The runoff from the swale is not meant to cross the drive, rather it should exit into the vegetated buffer area behind the house on Lot 3. The grading has been revised on the plan.*

Comment - Depict septic tanks, sewer lines and walkout basement notes.

Answer – *Added to plans.*

Comment – Lot 2 turnout?

*The driveway extension to serve lot 3 will act as a turn out for Lot 2. A 2-car garage is anticipated which will provide 4 parking spaces.*

Comment – Consider a culvert under Lot 2 Driveway.

Answer – *The grading has been revised to direct more water into yards before lot 2 driveway and to create a gutter at intersection of Lot 2 driveway and common drive.*

Comment – Will stone walls need to be salvaged?

Answer – *Yes, see note on page 4.*

Comment – Consider moving footing drain on Lot 2.

Answer – *Footing drain has been pulled back.*

Comment – Why isn't the septic system on Lot 1 farther away from U.R.A.?

Answer – *To establish that a lot is buildable, Section 4.04.04 of the zoning regulations requires a minimum buildable area of 25,000 sq ft. and the house and septic need to be shown to fit within this area. Slopes in excess of 20% cannot be included in the minimum building area. The 20% slopes are shown on page 2 and the location of the 20% slopes results in the septic being depicted where it is.*

Comment – Why is drive to Lot 1 gravel when the others are paved?

Answer – *The common drive needs to be paved but the drives to Lots 1, 2 & 3 do not need to be paved. However, given the short length of Lot 2 and the grade to Lot 3 approaching 10% they seem more likely to be paved than not. The relatively gentle grade of the Lot 1 drive makes gravel a feasible option. Although none of the drives need to be paved, for the purpose of the stormwater calculations having the two drives paved and leaving one drive gravel seemed reasonable. The Stormwater Guidelines stress the application of L.I.D. and advocates directing driveway runoff in a sheet flow to adjacent impervious areas (disconnection). In the event the driveway to Lot 1 is eventually paved the area adjacent to the driveway is long enough and wide enough to accept the runoff and would not require a structural BMP. Disconnected impervious areas are not included in the WQV calculation so the paving of lot 1 would not impact those comps either way.*

Comment – Proposed contour 556 is missing by the turnout for Lot 1 resulting in a grade of 25%+-.

Answer – *Contour 556 has been inserted and the proposed grades revised.*

**Narrative for the Implementation of E & S and Stormwater Management Measures**  
**Proposed 3.86 Acre – 3 Lot Subdivision on Route 44 – *REVISED 7-21-2025***

**Project Overview:** This narrative is intended to describe the erosion and sediment control methods and the stormwater management measures to be used during the construction of a 3 lot residential subdivision and its associated buildings and driveways. Soil erosion and sediment controls will be provided to control impacts during construction and shall be in conformance with the methods outlined in the *2024 Connecticut Guidelines for Erosion and Sediment Control Manual*. The stormwater management measures are planned to mitigate the increase in impervious areas resulting from the proposed construction and will provide collection, treatment and infiltration of the first 1.3” of rainfall (Water Quality Volume – WQV) in a manner consistent with the *2024 Connecticut Stormwater Quality Manual*.

**Existing Conditions:** The property that is the subject of this application is a 3.86-acre parcel of wooded land located on the southerly side of route 44 (Boston Turnpike), west of the intersection of Route 44 and Richmond Road. The property has approximately 526 feet of road frontage. An area of wetlands runs parallel to the frontage for a distance of approximately 375 feet, starting from the northeasterly property corner. An area of steep slope, exceeding 20%, constrains access to the property along the northwesterly frontage for a distance of approximately 100 feet. Located between the eastern edge of the steep slope area and the westerly end of the wetland area is an approximately 50-foot-wide section of frontage that contains upland soils and moderate slopes. This area is favorable for the construction of a driveway as this location will avoid wetland soils and minimize clearing and grading.

The soils in the area of the proposed building sites and storm water infiltration measures are identified by the United States Department of Agriculture (USDA) Natural Resources Conservation Services (NRCS) as Canton and Charlton fine sandy loam and Sutton fine sandy loam. Per the USDA, the NRCS Hydrologic Soil Group rating for within this area of the site is class B. The wetland soils on site are identified as Ridgebury, Leicester, and Whitman which have a Hydrologic Soil rating of class D. A copy of the USDA NRCS Hydrologic Soil Group Map is included for reference.

Deep hole tests were conducted on site by Bushnell Associates and observed by the Eastern Highlands Health District for the purpose of determining the suitability of the soil for use with septic systems. The results of these tests are included on page 2 of the plans and a review of these findings show the soils to be “fine sandy loam” consistent with the NRSC Soils map.

The property is not located in a Flood Hazard Zone Zone A per National Flood Insurance Rate Map Community Panel Number 090110 0010D June 11, 1982.

**Proposed Scope of Work:** In order to provide access to the buildable portion of this property and to avoid an adverse impact to the wetland area, a single, common driveway is proposed between the area of steep slope and the wetland. The proposed common driveway will be approximately 210’ in length, constructed with a 12’ wide paved travel way with 4’ wide gravel shoulders. The common portion of the driveway will terminate at a paved parking area serving a proposed building on lot 2. Construction of the common driveway will require activity in the Upland Review Area (URA) with a total area of disturbance of 8,446 Sq. Ft. or .19 acres.

A private 12-foot-wide driveway will continue from the end of the common driveway for an additional 90 feet to service a proposed building on lot 3. For the purposes of determining the stormwater management measures needed, a conservative assumption is made that the private drive and parking area for lot 3 will be paved. Although pavement is not required, the relatively short distance and moderate grade makes it likely that this area will be paved at the time of construction.

The private driveway to lot 1 intersects the common driveway at the approximate midpoint of the common driveway. Given the relatively gentle grade of this drive and its 150-foot length it is assumed to not be paved for this analysis.

Finish grading associated with the construction of the septic system on lot 1 will add an additional 1,290 Sq. Ft. of URA disturbance bringing the total area of disturbance in the wetland URA to 9,736 Sq. Ft. or .22 acres.

The impervious area of each of the proposed buildings is 1,560 Sq. Ft.. It should be noted that the building size used for this application is subject change. Prior to the issuance of a zoning or building permit for construction another detailed site plan will be required which will ensure that the stormwater measures proposed at the time of construction are adequate for any change in building size. A note is included on page 3 of the plans stating this requirement. The impervious roof areas of the three proposed 1,560 S.F. buildings total 4,680 S.F..

The total impervious area of the paved common drive, the paved drive to lot 3 and the paved parking areas is 5,342 Sq. Ft.. Together the total impervious area of the pavement and building roofs proposed for the **3.86**-acre site is 10,022 S.F.. For the purpose of stormwater management an additional proposed paved area of 497 S.F. located between the end of the common driveway and the edge of Route 44 is also taken into consideration for a total of 10,519 S.F. of impervious surface being created from the development of this subdivision.

**Proposed Erosion and Sediment Control Measures:** To minimize the potential of erosion the sequence of construction will be phased to keep the area of land disturbance to a minimum. Prior to the start of any construction perimeter silt fencing and an anti-tracking pad shall be installed as depicted on the plans and maintained during construction. The construction of the common driveway shall be substantially complete, including the installation of a gravel surface, and stabilized prior to any excavation of the building sites. Water bars will be installed as needed and maintained to prevent erosion of the gravel surface. The paving of the common drive will occur after it is determined that the pavement will not be damaged by construction activities. A schedule of construction is included on page 2 of the plans. As noted above, site plans will be required for the development of each individual lot, prior to house construction, and these plans may contain additional or revised erosion controls specific to the individual lot conditions and designs.

**Proposed Stormwater Management Measures:** The addition of impervious areas resulting from the buildings and driveways will be addressed in several ways. The runoff from the total impervious area of the paved drives and parking will be divided and directed into pervious areas of the site for retention, treatment and infiltration. The division of the various areas of impervious pavement is depicted on page 3 of the plans.

4,129 S.F. of runoff from a portion of the common driveway and all of the driveway for lot 3 is intended to be directed as sheet flow to the grassed areas adjacent and down gradient to the drives. In addition to the grassed areas there are also abundant wooded areas to the rear of the lots which meet the requirements of The Manual for Qualifying Pervious Areas (QPAs). As sufficient area for QPAs exist, this 4,129 S.F. of pavement is considered to be a disconnected impervious area. The specific areas of the QPAs will be established upon the preparation of the site plans for construction. A note is included on page 3 of the plans stating this requirement.

The runoff from the upper portion of the paved common drive will be directed over a vegetated filter strip to a stone filled infiltration trench for retention and infiltration. The remainder of the paved common drive is the section nearest to Route 44 and includes the proposed pavement within the CT D.O.T. right of way. This section of the driveway will be graded with a center crown to divert the stormwater into the adjacent pervious receiving areas on either side of the driveway (simple disconnection).

The runoff from each of the 1,560 Sq. Ft. building roofs will be retained and infiltrated on each lot through the use of infiltration chambers.

In order to properly size the stormwater measures, the WQV for the site must first be determined. In accordance with The Manual the disconnected impervious areas are subtracted from the total impervious area before applying the following equation (**APPENDIX A**).

$$\frac{\text{WATER QUALITY VOLUME}}{\text{WQV} = (\text{P})(\text{R})(\text{A}) / 12}$$

WHERE:

$P = 1.3''$  (90<sup>TH</sup> PERCENTILE RAIN EVENT)

$R = 0.05 + 0.009 \times I$

$I =$  POST DEVELOPMENT % OF IMPERVIOUS AREA

$A =$  POST DEVELOPMENT TOTAL DRAINAGE AREA

The total impervious area of the pavement and building roofs proposed for the 3.86 acre site is 10,519 S.F.. Subtracting the 4,129 S.F. of disconnected area of pavement, *as directed by the Manual*, leaves a total of 5,763 S.F..

The resulting value of  $I = (5,763 \text{ S.F.}/168,142) \times (100) = 3.4\%$ .

The resulting calculations are:

$$R = 0.05 + .009 (3.4\%) = .08$$

$$WQV = (1.3 \text{ inches})(.08)(168,142 \text{ S.F.})/12 = 1,457 \text{ cubic feet.}$$

Thus the  $WQV = 1,457$  cubic feet. The Manual requires 100% of the WQV be retained and infiltrated on site.

Infiltration chambers are provided for the roof area runoff and are sized to retain and infiltrate 100% of the first 1.3 inches of rainfall for the building roof areas. The chamber size is determined as follows: The building footprint of 26' x 60' = 1,560 S.F.. 1,560 S.F x 1.3'' = 169 C.F. (rounded). Four Cultec 100 HD infiltration chambers, in stone, provide 170 C.F. of storage and are proposed on the plans for each lot. Details of the specified Cultec units are attached for reference. In total the Cultec chambers provide 510 C.F. of retention and infiltration.

An infiltration trench is proposed to be located down gradient and parallel to the driveway to collect and infiltrate the runoff from the upper 1,086 S.F. of impervious driveway surface. The infiltration trench is to be 76 feet in length by 6 feet wide and, *as depicted in the Manual, (Appendix A)*, filled with a base layer of 15'' of 1/4 crushed, washed stone and a 3'' top layer of 3/8'' pea stone. The stone will be wrapped with filter fabric along the sides and trench bottom and the top of the stone surface will be set 12 inches below the surrounding ground with side slopes of 3:1. This configuration will provide both static storage within the stone trench and ponded storage in the swale above the stone. The longitudinal slope of the trench will be level along both the top and bottom slope for the entire length with a maximum ponded depth of 12 inches. In larger storm events the trench will overflow along its length with the top of the trench acting as a level spreader to allow for a dissipated flow to filter down through the vegetated URA before entering the wetlands.

To determine the storage capacity of the infiltration trench The Manual provides the following equation (*Appendix B*):

$$V = (A * D_{\text{ponding}}) + (L * W * D_{\text{stone}} * N_{\text{stone}})$$

WHERE:

$V =$  STATIC STORAGE VOLUME (C.F.)

$A =$  AVERAGE AREA BETWEEN MAXIMUM PONDING DEPTH AND THE TRENCH SURFACE (S.F.)

$D_{\text{ponding}} =$  MAXIMUM PONDING DEPTH (FEET)

$L =$  LENGTH (FEET)

$W =$  WIDTH (FEET)

D<sub>stone</sub> = DEPTH OF STONE (FEET)

N<sub>stone</sub> = POROSITY OF STONE (USE DEFAULT VALUE OF 0.4)

For the proposed infiltration trench:

L = 76', W = 6', A (with 3:1 side slopes) = 684, D<sub>ponding</sub> = 1', D<sub>stone</sub> = 1.5', N<sub>stone</sub> = .4

$$(684 * 1) + (76 * 6 * 1.5 * .4) = 958 \text{ C.F.}$$

Having determined the volume of the infiltration trench it is also necessary to confirm that the bottom of the trench is large enough so that the system will completely drain within 48 hours. The Manual provides the following equation to calculate the drain time using the static method. The static method uses a default infiltration rate based on the NRCS Hydrologic Soil Group rating for underlying soils, in this case, Class B Fine Sandy Loam. The default infiltration rate is .52 inches per hour (*Appendix C*).

$$T_d = \frac{V}{K * A} * 12 \text{ inches/foot}$$

WHERE:

T<sub>d</sub> = DRAIN TIME (HOURS)

V = DESIGN INFILTRATION VOLUME OR STATIC STORAGE VOLUME

K = DESIGN INFILTRATION RATE (INCHES PER HOUR)

A = AVERAGE SURFACE AREA OF INFILTRATION SYSTEM (SQUARE FEET)

For the proposed infiltration trench: V = 958 K = .52 A = 684

$$\frac{958}{.52 * 684} = 2.69 * 12 = 32.28 \text{ Hours}$$

A grassed swale will be created along the up-gradient edge of the common drive to facilitate the transition from the required driveway grade to the existing ground. As the driveway will cross slope away from the upper driveway edge and the existing ground generally slopes parallel to the drive, the swale will collect little surface drainage. The swale will *direct any collected runoff to the rear of Lot 3* where the dissipated flow will filter across the vegetated URA and likely infiltrate into the soil before entering the wetlands.

**Summary:** The entire Water Quality Volume of 1,457 cubic feet will be retained and infiltrated on-site. 510 C.F. will be treated using Cultec infiltrators and 958 C.F. will be retained in an infiltration trench. The total stormwater retained and infiltrated on site is 1,468 C.F.

In addition to the above measures a conservation easement is proposed to extend *a minimum of 25'* around the perimeter of the majority of the wetlands. To prevent possible conflicts with future maintenance of the driveway a small area of the most westerly portion of the wetlands would not be included in the easement. However, this excluded area would still remain subject to the inland wetland regulations and if future activities are ever proposed they would be subject to review and approval by the Agency or its Agent.

Construction notes, details and maintenance requirements are included on page 3 of the plans.

## Water Quality Volume

### Updated Water Quality Volume

The Water Quality Volume (WQV) concept is based on the "first flush" principle, which assumes that most pollutants in stormwater runoff are conveyed in the initial portion of a storm event. As such, the WQV is the volume of runoff generated by the water quality storm. The water quality storm is defined as the 90th percentile rainfall event (accounting for 90 percent of all 24-hour storms on an average annual basis). The runoff volume associated with the 90th percentile rainfall depth roughly corresponds to the volume of runoff that is infiltrated in a natural condition and thus should be managed on-site to restore and maintain pre-development hydrology for duration, rate, and volume of stormwater flows.<sup>46</sup>

Prior to this update, the water quality storm was defined as the 1-inch storm. This version of the Manual replaces the previous 1-inch water quality storm with an updated 90th percentile rainfall depth of 1.3 inches. Specifically, this represents the average of 90th percentile rainfall depths calculated for several locations throughout Connecticut using daily precipitation observations over an approximately 40-year period of record (1980-2021) and the procedure cited in EPA technical guidance (see [Appendix G](#) for further information).

### Water Quality Volume Calculation

As described above, the WQV is a key factor in determining the Required Retention Volume and any additional treatment requirements. The WQV is the volume of stormwater runoff from a given storm event that must be retained and/or treated to remove most of the post-development stormwater pollutant load on an average annual basis and to help maintain pre-development site hydrology in terms of duration, rate, and volume of stormwater flows including groundwater recharge. The WQV is calculated using the following equation:

$$WQV = \frac{(P)(R)(A)}{12}$$

where:

*WQV* = water quality volume (cubic feet)

*P* = 1.3 inches (90<sup>th</sup> percentile rainfall event)

*R* = volumetric runoff coefficient = 0.05+0.009(*I*)

*I* = post- development impervious area (percent) after application of non-structural LID site planning and design strategies and before application of structural stormwater BMPs

*A* = post-development total drainage area of site or design point (square feet)

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<sup>46</sup> USEPA. Section 438 Technical Guidance December 2009. Technical Guidance on Implementing the Stormwater Runoff Requirements for Federal Projects under Section 438 of the Energy Independence and Security Act. EPA 841-B-09-001. December 2009. [www.epa.gov/owow/nps/lid/section438](http://www.epa.gov/owow/nps/lid/section438).

- For the WQV calculation, impervious area ( $I$ ) should be measured from the post-development site plan and includes all directly connected impervious surfaces (DCIA as defined in this Manual) within boundaries of the site or for the drainage area of the each design point.
- Impervious areas that drain as sheet flow onto and over an adjacent pervious area that, due to its size, slope, vegetation, and underlying soil characteristics, meets the criteria for "simple disconnection criteria for "impervious area (simple) disconnection" can be subtracted from the post development impervious area term in the WQV equation. This provides further incentive to use simple disconnection and other non-structural LID site planning and design strategies to reduce the need for and size of structural stormwater BMPs to meet the retention and treatment performance criterion.

### Water Quality Flow

The Water Quality Flow (WQF) is the peak flow rate associated with the water quality storm or WQV, as described above. Although most of the structural stormwater BMPs in this Manual should be sized based on a design volume (Required Retention Volume and any additional treatment volume), some BMPs such as grass channels and proprietary treatment/pre-treatment BMPs should be designed based on peak flow rate. In this approach, the stormwater BMP (including inlet structure) must have a flow rate capacity equal to or greater than the design WQF in order to prevent bypass and treat the associated design WQV for the site. Flow diversion structures (also called flow splitters) are typically used to bypass flows in excess of the design WQF for off-line stormwater BMPs.

The design WQF is calculated based on the design WQV for the site using a modified NRCS Runoff Curve Number for small storm events. The procedure is based on the approach described in Claytor and Schueler, 1996.<sup>47</sup> The [Inlet and Outlet Controls](#) section of [Chapter 13 - Structural Stormwater BMP Design Guidance](#) provides design guidance for flow diversion structures.

### Demonstrating Compliance with Standard 1

Stormwater management systems should be designed to achieve the average annual pollutant load reductions from directly connected impervious area for sediment (Total Suspended Solids) and nutrients (Total Phosphorus and Total Nitrogen) shown in [Table 4.3](#).

Achieving these minimum required load reductions for sediment and nutrients is assumed to provide adequate reductions of other stormwater pollutants including floatable materials. However, it is important to note that if the full retention goal (i.e., Required Retention Volume) is

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<sup>47</sup> Claytor, R.A. and T. R. Schueler. 1996. Design of Stormwater Filtering Systems. Center for Watershed Protection, Silver Spring, Maryland.

- Use roadside vegetated open channels or swales as an alternative to traditional curb and gutter drainage (i.e., curbing, catch basins, and pipes) in low or medium density developments and where roadside erosion is not a concern (typically slopes of less than 8 percent).
- Use swales on one side of the road where roads with a cross slope are allowed. Otherwise, use a crowned road cross section and swales on both sides of the road.
- Completely eliminate curbing to promote sheet flow to roadside swales or use curb openings to convey gutter flow to roadside swales.
- For roads with grades generally greater than 8%, use catch basins and curb/gutter drainage, with catch basin outlets connected to roadside swales or other structural stormwater BMPs within the road right-of-way.

### Driveways

- Grade driveways to adjacent open space and lawn areas (simple disconnection), rain gardens, or water quality swales to retain and infiltrate runoff on the lot and prevent driveway runoff from reaching the road.
- Consider use of driveway infiltration trenches, which are stone-filled trenches along the edge of a driveway to collect water from the driveway, allowing it to soak into the ground and reducing erosion along the edge of the driveway.
- Consider use of permeable surfaces such as porous asphalt, porous concrete, permeable concrete pavers, grass pavers, plastic turf reinforcing grids, and geocells (cellular confinement systems).

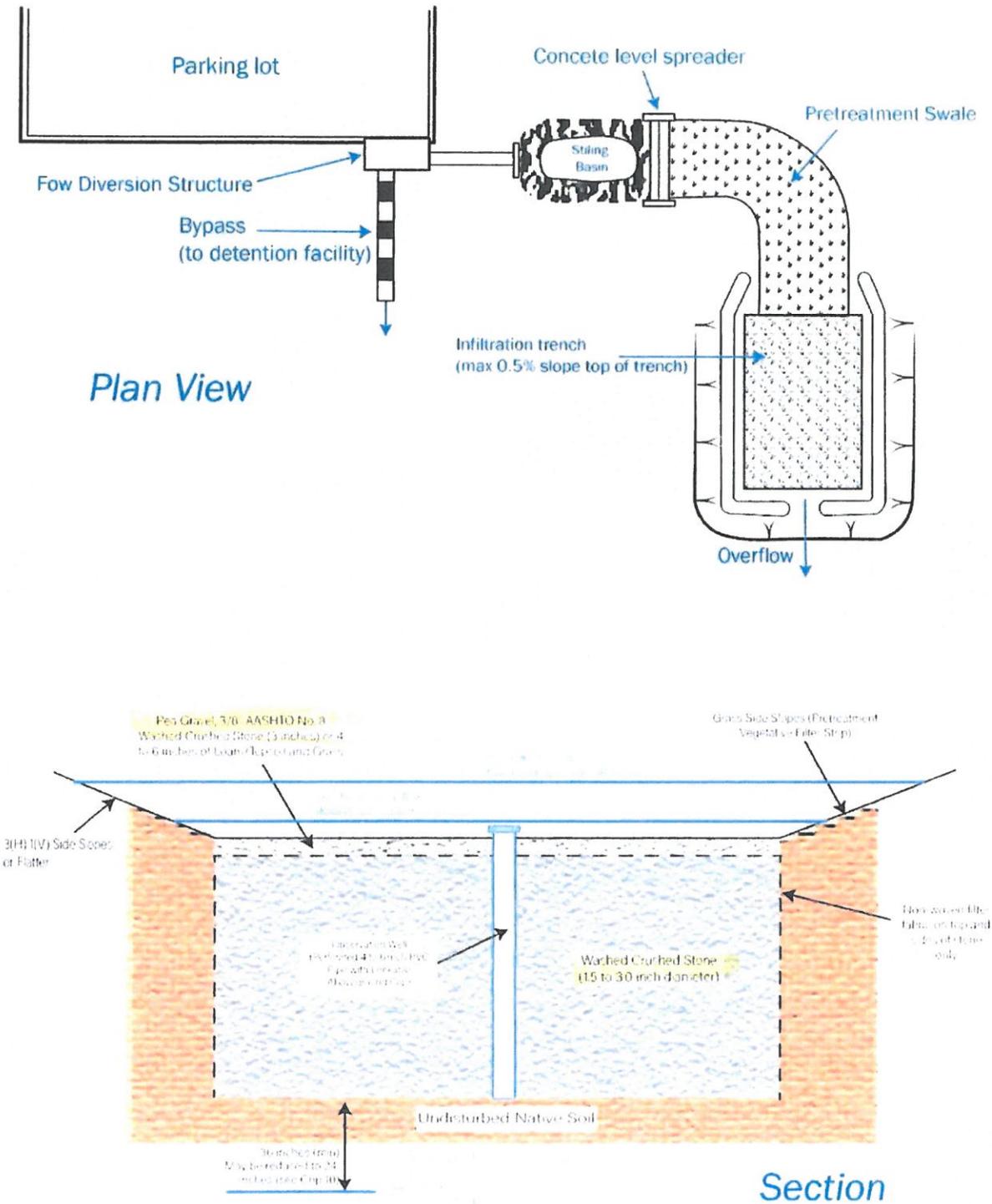
### Roofs

- Direct roof downspouts to pervious vegetated areas (simple disconnection), dry wells or other small-scale infiltration systems (i.e., rain gardens), or to rain barrels for non-potable reuse such as lawn, landscape, or garden watering.

### Lawns

- Use low-maintenance LID landscaping techniques to minimize lawn area and maintenance needs (e.g., irrigation, fertilizers, and pesticides).
- Use diverse selection of native vegetation species.
- Create shade by maintaining existing tree canopy and preserving natural/wild areas.
- Maintain pre-development flow path lengths in natural drainage patterns.

Figure 13-7. Infiltration Trench Schematic 1



**BMP Performance Curve Category**

**Stormwater BMP Type**  
**Connecticut Stormwater Quality Manual**

**Static Storage Volume Equation\***

**Infiltration Trench**

**Infiltration Trench**

Static Storage Volume = ponding water storage volume and void space volume of stone

$$V = (A * D_{ponding}) + (L * W * D_{stone} * n_{stone})$$

$V$  = static storage volume (cubic feet)

$A$  = average area between maximum ponding depth and the trench surface (square feet)

$D_{ponding}$  = maximum ponding depth (feet)

$L$  = length (feet)

$W$  = width (feet)

$D_{stone}$  = depth of stone (feet)

$n_{stone}$  = porosity of stone (use default value of 0.4). Other porosity values may be used as determined from testing of the proposed materials.

**Dry Well**

**Infiltrating Catch Basin**

**Underground Infiltration System (Chambers)**

Static Storage Volume = water storage volume of storage structures and void space volume of stone underlying and surrounding the storage structures

**Permeable Pavement (no underdrain)**

Static Storage Volume = void space volume of choker course (stone), filter course (sand), and stone reservoir

$$V = L * W * (D_{stone} * n_{stone} + D_{sand} * n_{sand})$$

$V$  = static storage volume (cubic feet)

$L$  = length (feet)

$W$  = width (feet)

$D_{stone}$  = depth of stone courses (feet)

$D_{sand}$  = depth of sand filter course (feet)

$n_{stone}$  = porosity of stone courses (use default value of 0.4)

$n_{sand}$  = porosity of sand filter course (use default value of 0.3)

**Table 10- 2 Default (Rawls) Infiltration Rates for Use as Design Infiltration Rates with Static Method Sizing**

USDA Soil Textural Class <sup>1</sup>	Hydrologic Soil Group	Default Infiltration Rate (Inches/hour)
Sand	A	8.27
Loamy Sand	A	2.41
Sandy Loam	A	1.02
Loam	B	0.52
Silt Loam	B	0.27
Sandy Clay Loam	C	50% of Slowest Field Measured Infiltration Rate Determined from Field Infiltration Testing
Clay Loam	D	50% of Slowest Field Measured Infiltration Rate Determined from Field Infiltration Testing
Silty Clay Loam	D	50% of Slowest Field Measured Infiltration Rate Determined from Field Infiltration Testing
Sandy Clay	D	50% of Slowest Field Measured Infiltration Rate Determined from Field Infiltration Testing
Silty Clay	D	50% of Slowest Field Measured Infiltration Rate Determined from Field Infiltration Testing
Clay	D	50% of Slowest Field Measured Infiltration Rate Determined from Field Infiltration Testing

Source: The infiltration rates shown in this table are saturated hydraulic conductivities for uncompacted soils adapted from Rawls, Brakensiek, and Saxton (1982).<sup>72</sup>

Notes:

<sup>1</sup> Soil textural class as determined from field soil evaluation described in [Soil Evaluation Guidance](#).

<sup>72</sup> Rawls, W. I., D. L. Brakensiek, and K. E. Saxton. 1982. Soil water characteristics. Transactions of the American Society of Agricultural Engineers, 25(5):1316-1328.