

## Vermont Wetlands Program Permit Application Database Form

Under Sections 8 and 9  
of the Vermont Wetland Rules



Application Submittal Instructions
<ul style="list-style-type: none"> <li>■ If submitting via US post, include a check in the correct fee amount made payable to the "State of Vermont," and a CD for applications that contain large files (1 MB or greater).  <div style="margin-left: 20px;"> <b>Mail to:</b> Vermont Wetlands Program                      Watershed Management Division                      One National Life Drive, Main 2                      Montpelier, VT 05620-3522                 </div> </li> <li>■ Applications can also be submitted via email to the following address: <a href="mailto:anr.wsmdwetlands@state.vt.us">anr.wsmdwetlands@state.vt.us</a> <ul style="list-style-type: none"> <li>■ If submitting via email, please mail a check in the correct fee amount, made payable to the "State of Vermont," and a copy of the Vermont Wetlands Program Application Database Form (this page) to the address provided above. <b>It is not necessary to mail in a copy of the complete application.</b></li> </ul> </li> </ul>

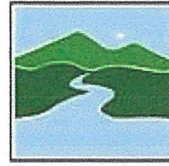
<b>Applicant Name:</b> Gary and Mary Thibault	<b>Application Preparer Name:</b> Oakledge Environmental Services, Inc.
<b>Town where project is located:</b> Hinesburg	<b>County:</b> Chittenden
<b>Span#:</b>	<b>Vermont Wetlands Project (VWP)# if Known:</b> 2016-262
<b>Project Location Description:</b> West side of Baldwin Rd. ~0.2 miles north of Baldwin Rd/Burritt Rd. Jct. in Hinesburg, VT <i>911 street address or direction from nearest intersection</i>	
<b>Brief Project Summary:</b> Construct a seven-lot residential subdivision	
<b>Application Type:</b> <input type="checkbox"/> Individual Permit (multiple wetlands) <input type="checkbox"/> After the Fact Permit <input type="checkbox"/> Wetland Determination <input checked="" type="checkbox"/> Individual Permit (single wetland) <input type="checkbox"/> General Permit Coverage Authorization <input type="checkbox"/> Permit Amendment: VWP Project # _____	
<b>Existing Land Use Type(s):</b> <i>(Check all that apply)</i> <input type="checkbox"/> Residential (single family) <input type="checkbox"/> Residential (subdivision) <input checked="" type="checkbox"/> Undeveloped <input checked="" type="checkbox"/> Agriculture <input type="checkbox"/> Transportation <input type="checkbox"/> Forestry <input type="checkbox"/> Parks/Rec/Trail <input type="checkbox"/> Institutional <input type="checkbox"/> Industrial/Commercial	
<b>Proposed Land Use Type(s):</b> <i>(Check all that apply)</i> <input type="checkbox"/> Residential (single family) <input checked="" type="checkbox"/> Residential (subdivision) <input checked="" type="checkbox"/> Undeveloped <input checked="" type="checkbox"/> Agriculture <input type="checkbox"/> Transportation <input type="checkbox"/> Forestry <input type="checkbox"/> Parks/Rec/Trail <input type="checkbox"/> Institutional <input type="checkbox"/> Industrial/Commercial	
<b>Proposed Impact Type(s):</b> <i>(Check all that apply)</i> <input type="checkbox"/> Buildings <input type="checkbox"/> Utilities <input type="checkbox"/> Parking <input type="checkbox"/> Septic/Well <input type="checkbox"/> Stormwater <input type="checkbox"/> Driveway <input type="checkbox"/> Park/Path <input type="checkbox"/> Agriculture <input type="checkbox"/> Pond <input type="checkbox"/> Lawn <input type="checkbox"/> Dry Hydrant <input type="checkbox"/> Beaver Dam Alteration <input type="checkbox"/> Silviculture <input checked="" type="checkbox"/> Road <input type="checkbox"/> Aesthetics <input type="checkbox"/> No Impact <input type="checkbox"/> Other: _____	
<b>Wetland and Buffer Impact Type:</b> <i>(Check all that apply)</i> <input type="checkbox"/> Dredge <input type="checkbox"/> Drain <input type="checkbox"/> Cut Vegetation <input type="checkbox"/> Stormwater <input type="checkbox"/> Trench/Fill <input checked="" type="checkbox"/> Other: construct section of access road	
<b>Wetland Delineation Date(s):</b> 2012	

Wetland Improvements	Buffer Zone Improvements	Reason for Improvements
Restoration: s.f.	Restoration: s.f.	<input type="checkbox"/> Correction of Violation <input type="checkbox"/> To offset permit impacts <input type="checkbox"/> Voluntary
Creation: s.f.	Creation: s.f.	
Enhancement: s.f.	Enhancement: s.f.	
Conservation: s.f.	Conservation: s.f.	

Wetland Impact Fee Calculations: Round to the nearest square foot. Fees will auto-calculate.			
Total Wetland Impact <small>(minus linear clear, including ATF)</small>	1360 square feet (s.f.)	Wetland Impact Fee: (\$0.75/sf)	\$ 1,020.00
Total Wetland Clearing <small>(qualified linear projects only)</small>	0 square feet (s.f.)	Wetland Clearing Fee: (\$0.25/sf)	\$ 0.00
After The Fact Wetland Impact <small>(to correct a violation)</small>	0 square feet (s.f.)	After the Fact Wetland Fee: (0.75/sf) <small>(Required for after the fact permit applications)</small>	\$ 0.00
Total Buffer Zone Impacts and Calculations: Round to the nearest square foot.			
Total Buffer Zone Impact	5220 square feet (s.f.)	Buffer Impact Fee: (\$0.25/sf)	\$ 1,305.00

Additional Fees		
Agricultural Crop Conversion <small>Check here:</small>	<input type="checkbox"/>	\$ 0.00 <small>(Flat fee of \$200.00)</small>
Minimum Application Fee: (\$50.00) <small>Required when total impact fee is less than \$50.00</small>		\$ 0.00
Administrative Fee:		\$ 240.00
<b>Make Checks Payable to:</b> State of Vermont		<b>Total Check Amount:</b> \$ 2,565.00

**Vermont Individual Wetland  
Permit Application and  
Determination Petition**  
Under Sections 8 and 9  
of the Vermont Wetland Rules



VERMONT DEPARTMENT OF  
ENVIRONMENTAL CONSERVATION  
**WATERSHED  
MANAGEMENT DIVISION**  
WETLANDS PROGRAM

**Applicant Information:** *If the applicant is someone other than the landowner, the landowner information must be included below*

Applicant Name: Gary and Mary Thibault			
Address: 1447 Carpenter Road	City/Town: Charlotte	State: Vermont	Zip: 05445
Phone Number: (802) 373-3950 (Mary) and (802) 363	Email Address: Gary.tbros@gmail.com		

**Applicant Certification:**  
By signing this application you are certifying that all of the information contained within is true, accurate, and complete to the best of your knowledge. Original signature is required.

Applicant Signature: *Gary Thibault & Mary Thibault* Date: 9/2/16

**Landowner Information:** *Landowner must sign the application. If landowner is different from the applicant this section must be filled out*

**Check this box if landowner is the same as the applicant**

Landowner Name:			
Address:	City/Town	State:	Zip:
Phone Number:	Email Address:		

Landowner Easement: *Attach copies of any easements, agreements, or other documents conveying permission, and agreement with the landowner stating who will be responsible for meeting the terms and conditions of the permit. List the attachment for this information in this section. Describe the nature of the agreement or easement in the space provided below:*

**Landowner Certification:**  
By signing this application you are certifying that all the information contained within is true, accurate, and complete to the best of your knowledge. Original signature is required.

Landowner Signature: *Gary Thibault & Mary Thibault* Date: 9/2/16

**Application Preparer Information:** *Consultant, engineer, or other representative that is responsible for filling out the application, if other than the applicant or landowner.*

Application Preparer Name: Jeffrey Severson		Organization/Company: Oakledge Environmental Services, Inc.	
Address: P.O. Box 4065	City/Town: Burlington	State: Vermont	Zip: 05406
Phone Number: (802) 660-8312	Email Address: jeff.severson@burlingtontelecom.net		

**Application Preparer Certification:**  
By signing this application you are certifying that all of the information contained within is true, accurate, and complete to the best of your knowledge. Original signature is required.

Application Preparer Signature: *J. Severson* Date: August 31, 2016

*Handwritten signatures are also accepted*

**1. Location of wetland and project:**  
*Location description should include the road the wetland is located on, the compass direction of the wetland in relation to the road, 911 street address if available, and any other distinguishing features.*

On west side of Baldwin Road, ±0.2 miles south of the junction of Baldwin Road and Burritt Road in Hinesburg, VT 05461

**2. Site visit date(s) and attendees:**  
*A site visit is **required** before the application can be called complete*

<b>2.1 Date of Visit(s) with State District Wetland Ecologist</b>	<b>2.2. List of people present for site visit(s) including Ecologist, landowner, and representatives.</b>
July 21, 2016	Laura Lapierre, Jeffrey Severson

**3. Wetland Classification:**  
*For multiple wetlands fill out the multiple wetlands table for sections 1 and 3 through 1*

**3.1. The wetland is a Class II wetland because :**  
 The wetland meets the presumption of significance

**3.2. Section 4.6 Presumption**  
*If the wetland meets the Section 4.6 Presumption, it does so primarily because:*

a. Wetland is of the same type and threshold size as those mapped on VSWI maps; or greater than 0.5 acres.  
 h. The wetland has been previously designated as a significant wetland  
 <Choose One>

**4. Description of the Entire Wetland:**  
*Answer the following questions regarding the entire wetland, which includes all wetland areas connected to the wetland proposed for impact. Answers may be estimates based on desktop review when the wetland extends past the investigation area (parcel boundary). Specific questions about the wetland in the project area will follow. For multiple wetlands, fill out the multiple wetlands table.*

**4.1. Size of Complex in Acres:**  
*The size of the complex can be obtained from the Wetland Inventory Map for mapped wetlands, or best estimation based on review of aerial photography or site visit. This is not the size of the of the delineated wetland on the subject property unless the entirety of the wetland is represented in the delineation.*

±0.5 acres

**4.2. Vegetation Cover Types Present:**  
*List all wetland types in the wetland or wetland complex and their percent cover.  
 For example: 50 acres of softwood forested swamp; or 30% scrub swamp, 70% emergent wetland*

100 percent wet meadow

**4.3. Landscape Position:**  
*Where is the wetland located on the landscape?  
 For example: Bottom of a basin, edge of a stream, shore of a lake, etc.*

Bottom of a northerly-trending swale

**4.4. Hydrology:**  
*Describe the main source of water for the entire wetland. List any river, stream, lakes, or ponds*

surface runoff and seasonal high water table

**4.4.1. Direction of Flow:**  
*For example: Stream flows from north to south through the wetland complex, or the wetland drains generally to the southwest.*

The wetland drains generally northward.

**4.4.2. Influence of Hydrology on the Entire Wetland:**  
*For example: The river provides floodwater to the wetland in the spring.*

The wetland receives surface runoff from precipitation and snowmelt events.

**4.4.3. Relation of Entire Wetland to the Project Area:**  
*The distance between the project area and any nearby surface waters*

The project is located ±430 feet south of a constructed pond and ±270 f. south of a "blue-line" stream, as shown in the ANR Natural Resources Atlas.



<p><b>4.4.4. Entire Wetland Hydroperiod:</b>  <i>Discuss the frequency and duration of flooding, ponding, and/or soil saturation</i></p>	<input type="checkbox"/>
<p>Wetland soils are seasonally saturated.</p>	
<p><b>4.5. Surrounding Landuse of the Entire Wetland:</b>  <i>For example: Rural residential and forested; Agricultural and undeveloped</i></p>	<input type="checkbox"/>
<p>seasonally mowed field, rural dirt road, and electric transmission line corridor</p>	
<p><b>4.6. Relation of the Entire Wetland to Other Nearby Wetlands:</b>  <i>Provide any information on wetlands or wetland complexes that are close enough to contribute to the overall function of the wetland in question.</i></p>	<input type="checkbox"/>
<p>There are no other wetlands close enough to the entire wetland to contribute to its overall function. The wetland nearest to the entire wetland is a small, isolated wet meadow located in a seasonally mowed field ±670 feet northwest at its closest point.</p>	
<p><b>4.7. Pre-project Cumulative Impacts to the Entire Wetland:</b>  <i>Identify any cumulative ongoing impacts outside of the proposed project that may influence the wetland. Examples include but are not limited to: Wetland encroachments on and off the subject property, land use management in or surrounding the wetland, or development that influences hydrology or water quality. List any past Vermont Wetland Permits or CUD's related to this property.</i></p>	<input type="checkbox"/>
<p>The entire wetland is located in a swale that runs generally northward through a seasonally mowed field. Aerial imagery from some years in the past show prominent, northward-trending, linear rows of tractor tire ruts throughout much of the wetland. Aerial imagery also indicates the wetland was ditched historically to route surface water northward. The wetland was recently extensively disturbed by the construction of an underground natural gas pipeline. The wetland most likely receives some percentage of road runoff from an up-gradient section of Baldwin Road, a rural dirt road that extends north-south on the eastern side of the wetland.</p>	
<p><b>5. Description of Subject Wetland and Buffer:</b>  <i>Subject wetland is defined as the area of wetland in the project vicinity, but not limited to the portion of the wetland to be directly impacted by the project. For the purposes of this application, the subject wetland should encompass any portion of the wetland that could either be directly or indirectly impacted by the project, as defined by chemical, physical, or biological characteristics. This may include the entire wetland area, or wetland area off property. For multiple wetlands, fill out the multiple wetlands table.</i></p>	
<p><b>5.1. Context of Subject Wetland:</b>  <i>Describe where the subject wetland is in the context of the entire wetland described in section 4 above. For example: Upslope, narrow eastern "finger", 400 ft. from open water portion.</i></p>	<input type="checkbox"/>
<p>The subject wetland is located along a narrow northern finger of the entire wetland, ±160 feet south of the point where the wetland finger pinches off entirely.</p>	
<p><b>5.2. Subject Wetland Land Use:</b>  <i>For example: Mowed lawn, old field, naturally vegetated. Describe any previous and ongoing disturbance in the subject wetland.</i></p>	<input type="checkbox"/>
<p>The subject wetland was part of a seasonally mowed field prior to recent and ongoing disturbance. Access road fill material was placed in the subject wetland, and was subsequently removed during the construction of an underground natural gas pipeline. The pipeline construction disturbance includes two tiers of wooden beam construction mats for heavy equipment that are embedded in the wetland soils, and the adjacent wetland where vegetation and topsoils have been removed in preparation of the below-ground pipeline installation.</p>	
<p><b>5.3. Subject Wetland Vegetation:</b>  <i>List dominant wetland vegetation cover type and associated dominant plant species.</i></p>	<input type="checkbox"/>
<p>The subject wetland was formerly characterized by a wet meadow dominated by reed canary grass (<i>Phalaris arundinacea</i>). All of the wetland vegetation had either been removed or was hidden under wooden construction mats, when the subject wetland was visited in the summer of 2016.</p>	
<p><b>5.4. Subject Wetland Soils:</b>  <i>Use the USDA NRCS information where possible and use the ACOE Delineation Manual soil description</i></p>	<input type="checkbox"/>
<p>Subject wetland soils are mapped as Georgia stony loam by the NRCS. Wetland soils have been recently disturbed by compaction from wooden construction mats and fill, and excavation. In the summer of 2016, wetland soils adjacent to the construction mats were excavated to depths ±9-14 inches below the construction mat base and subsequently graded.</p>	
<p><b>5.5. Subject Wetland Hydrology:</b>  <i>Use the description from the ACOE Delineation Manual</i></p>	<input type="checkbox"/>
<p>Hydrologic conditions in the subject wetland consist of seasonal soil saturation resulting from a seasonal high water table.</p>	



**5.6. Buffer Zone:**  
*Describe the buffer zone of the subject wetland (50 foot envelope of land adjacent to wetland boundary).*

**5.6.1. Buffer Land Use:**  
*For example: Mowed shoulder, forested, old field, paved road, and residential lawns, etc. Describe any previous and ongoing disturbance in the buffer zone.*

Much of the buffer zone was part of a seasonally mowed field prior to recent and ongoing disturbance. Access road fill material was recently removed from the subject wetland for the installation of an underground natural gas pipeline, and is currently stockpiled in the wetland buffer.

**5.6.2. Buffer Vegetation:**  
*List the vegetation cover type and dominant plant species.*

The buffer zone was formerly characterized by a seasonally mowed field dominated by plant species such as timothy grass, red clover, sweet vernal grass, cow vetch, and smooth bedstraw.

**5.6.3. Buffer Soils:**  
*Use USDA NRCS information where possible, and the ACOE Delineation Manual soil description.*

Buffer zone soils are mapped as Farmington extremely rocky loam and Georgia stony loam by the NRCS soils.

**6. Entire Wetland Function and Value Summary (as defined in the Vermont Wetland Rules Section 5):**  
*Check which functions are present in the entire wetland*

<input checked="" type="checkbox"/> Flood/Storm Storage	<input type="checkbox"/> RTE Species
<input checked="" type="checkbox"/> Surface & Groundwater Protection	<input type="checkbox"/> Education & Research
<input type="checkbox"/> Fish Habitat	<input type="checkbox"/> Recreation/Economic
<input type="checkbox"/> Wildlife Habitat	<input type="checkbox"/> Open Space/Aesthetics
<input type="checkbox"/> Exemplary Natural Community	<input type="checkbox"/> Erosion Control

**Functions and Values:** *For each function and value:*

- Evaluate the entire wetland and check all that apply. Use Wetland Inventory Maps for offsite areas*
- Evaluate how the wetland in the project area contributes to the function.*
- Explain how the project will not result in adverse impacts to the function.*

*Include any information on specific avoidance and minimization measures.*

*If more than one wetland complex is involved, provide a function and value checklist for each wetland complex. In addition fill out the Multiple Wetlands Table.*

**7. Water Storage for Flood Water and Storm Runoff**

Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function

- Constricted outlet or no outlet and an unconstructed inlet.
- Physical space for floodwater expansion and dense, persistent, emergent vegetation or dense woody vegetation that slows down flood waters or stormwater runoff during peak flows and facilitates water removal by evaporation and transpiration.
- If a stream is present, it's course is sinuous and there is sufficient woody vegetation to intercept surface flows in the portion of the wetland that floods.
- Physical evidence of seasonal flooding or ponding such as water stained leaves, water marks on trees, drift rows, debris deposits, or standing water.
- Hydrologic or hydraulic study indicates wetland attenuates flooding

**If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level. If none of the following apply, the wetland provides this function at a moderate level.**

**Water Storage for Flood Water and Storm Runoff Continued...**

- Check this box if any of the following conditions apply that may indicate the wetland provides this function at a **lower** level.
  - Significant flood storage capacity upstream of the wetland, and the wetland in question provides this function at a negligible level in comparison to upstream storage (unless the upstream storage is temporary such as a beaver impoundment).
  - Wetland is contiguous to a major lake or pond that provides storage benefits independently of the wetland.
  - Wetland's storage capacity is created primarily by recent beaver dams or other temporary structures.
  - Wetland is very small in size, not contiguous to a stream, and not part of a collection of small wetlands in the landscape that provide this function cumulatively.
- Check this box if any of the following conditions apply that may indicate the wetland provides this function at a **higher** level.
  - History of downstream flood damage to public or private property.
  - Any of the following conditions present downstream of the wetland, but upstream of a major lake or pond, could be impacted by loss or reduction of the water storage function.
    - Developed public or private property
    - Stream banks susceptible to scouring and erosion
    - Important habitat for aquatic life
  - The wetland is large in size and naturally vegetated.
  - Any of the following conditions present downstream of the wetland, but upstream of a major lake or pond, could be impacted by a loss or reduction of the water storage function.
    - Developed public or private property.
    - Stream banks susceptible to scouring and erosion.
    - Important habitat for aquatic life.
  - The wetland is large in size and naturally vegetated
  - Any of the following conditions present upstream of the wetland may indicate a large volume of runoff may reach the wetland.
    - A large amount of impervious surface in urbanized areas.
    - Relatively impervious soils.
    - Steep slopes in the adjacent areas.

**7.1 Subject Wetland Contribution to Water Storage:**

*Explain how the subject wetland contributes to the function listed above*

The subject wetland contributes to the water storage function, as it provides a percentage of the water storage capacity of the entire wetland for flood water and storm runoff. However, the significance of the subject wetland for this function is reduced by the combination of the entire wetland's small size, its diminished water storage capacity due to the northward-slope of the swale where the wetland is located, and the absence of a stream.

**7.2 Statement of No Undue Adverse Impact to Water Storage for Flood Water and Storm Runoff:**

*Explain how the proposed project will not result in any undue, adverse impact to this function. Include any avoidance, minimization, and compensation measures relevant to this function.*

Roadbed fill for the wetland crossing will slightly reduce the wetland's water storage capacity, but will not result in an adverse net loss of the site's overall water storage capacity. The stormwater collection and storage system is designed so that post-construction peak flows from the project site will not exceed pre-construction peak flows, and there will be no net increases in runoff volumes leaving the property. The subject wetland comprises a relatively small percentage of the overall water storage capacity at the site, much of which is provided by the wetland buffer and adjacent upland areas within the broad topographic swale shown on Sheets 1 and 2. The project has also been designed to minimize wetland impacts by: 1) locating all project elements out of the wetland and buffer zone apart from a single road crossing, 2) siting the wetland crossing along the narrow northern "finger" of the wetland, and 3) minimizing the roadbed footprint, which contribute to the preservation of the site's water storage capacity.

**8. Surface and Ground Water Protection:**

Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.

- Constricted or no outlets.
- Low water velocity through dense, persistent vegetation.
- Hydroperiod permanently flooded or saturated.
- Wetlands in depositional environments with persistent vegetation wider than 20 feet.
- Wetlands with persistent vegetation comprising a defined delta, island, bar or peninsula.
- Presence of seeps or springs.
- Wetland contains a high amount of microtopography that helps slow and filter surface water.
- Position in the landscape indicates the wetland is a headwaters area.
- Wetland is adjacent to surface waters.
- Wetland recharges a drinking water source.
- Water sampling indicates removal of pollutants or nutrients.
- Water sampling indicates retention of sediments or organic matter.
- Fine mineral soils and alkalinity not low.
- The wetland provides an obvious filter between surface water or ground water and land uses that may contribute point or nonpoint sources of sediments, toxic substances or nutrients to the wetland, such as: steep erodible slopes; row crops; dumps; areas of pesticide, herbicide or fertilizer application; feed lots; parking lots or heavily traveled road; and septic systems.

**If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level. If none of the following apply, the wetland provides this function at a moderate level.**

Check this box if any of the following conditions apply that may indicate the wetland provides function at a **lower** level.

- Presence of dead forest or shrub areas in sufficient amounts to result in diminished nutrient uptake.
- Presence of ditches or channels that confine water and restrict contact of water with vegetation.
- Wetland is very small in size, not contiguous to a stream, and not part of a collection of small wetlands in the landscape that provide this function cumulatively.
- Current use in the wetland results in disturbance that compromises this function.

Check this box if any of the following conditions apply that may indicate the wetland provides function at a **higher** level.

- The wetland is adjacent to a well head or source protection area, and provides ground water recharge.
- The wetland provides flows to Class A surface water. (Check ANR Atlas)
- The wetland contributes to the protection or improvement of water quality of any impaired waters.
- The wetland is large in size and naturally vegetated.



<p><b>8.1. Subject Wetland Contribution to Water Protection:</b>  <i>Explain how the subject wetland contributes to the function listed above.</i></p>	<input type="checkbox"/>
<p>Prior to recent and ongoing disturbance, the subject wetland made a limited contribution to water protection provided by the entire wetland. The contribution of the subject wetland to this function, however, is diminished by a combination of: 1) the relatively small size (1,360 SF) of the subject wetland, 2) the small size (0.5 acres) of the entire wetland, 3) limited water storage capacity due to the northward-slope in the swale where the wetland is located due to the northward-trending slope, 4) historical realignment and straightening of the wetland's outlet, and 5) the absence of a stream.</p>	
<p><b>8.2. Statement of No Undue Adverse Impact to <u>Surface and Ground Water Protection</u>:</b>  <i>Explain how the proposed project will not result in any undue, adverse impact to this function. Include any avoidance, minimization, or compensation measures relevant to this function.</i></p>	<input type="checkbox"/>
<p>The project has been designed to minimize wetland impacts, and will not result in an undue adverse impact to surface and ground water protection. The access road is sited to cross the wetland at a narrow, previously disturbed location where the wetland was historically ditched and straightened along a narrow northern wetland "finger". The stormwater management system is designed to meet the Vermont DEC stormwater management standards for the "Environmentally Sensitive Rural Development Credit", which means the DEC Water Quality and Groundwater Recharge standards will be completely met.</p>	
<p><b>9. Fish Habitat:</b></p>	
<p><input type="checkbox"/> Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Contains woody vegetation that overhangs the banks of a stream or river and provides any of the following: shading that controls summer water temperature; cover including refuges created by overhanging branches or undercut banks; source of terrestrial insects as fish food; or streambank stability.</li> <li><input type="checkbox"/> Provides spawning, nursery, feeding or cover habitat for fish (documented or professionally judged). Common habitat includes deep marsh and shallow marsh associates with lakes and streams, and seasonally flooded wetlands associated with streams and rivers.</li> <li><input type="checkbox"/> Documented or professionally judged spawning habitat for northern pike.</li> <li><input type="checkbox"/> Provides cold spring discharge that lowers the temperature of receiving waters and creates summer habitat for salmonoid species.</li> <li><input type="checkbox"/> The wetland is located along a tributary that does not support fish, but contributes to a larger body of water that does support fish. The tributary supports downstream fish by providing cooler water and food sources.</li> </ul>	
<p><b>9.1. Subject Wetland Contribution to Fish Habitat:</b>  <i>Explain how the subject wetland contributes to the function listed above.</i></p>	<input type="checkbox"/>
<p>The subject wetland is located in a seasonally-mowed field that does not provide fish habitat and does not contribute to this function. No streams, rivers or other surface waters are present.</p>	
<p><b>9.2. Statement of No Undue Adverse Impact to <u>Fish Habitat</u>:</b>  <i>Explain how the proposed project will not result in any undue, adverse impact to this function. Include any avoidance, minimization, or compensation measures relevant to this function.</i></p>	<input type="checkbox"/>
<p>The project will not adversely impact fish habitat as the wetland does not provide this function. The project has been designed to control erosion and the transport of sediments towards down-gradient surface waters.</p>	



**10. Wildlife Habitat**

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
  - Provides resting, feeding staging or roosting habitat to support waterfowl migration, and feeding habitat for wading birds. Good habitats for these species include open water wetlands.
  - Habitat to support one or more breeding pairs or broods of waterfowl including all species of ducks, geese, and swans. Good habitats for these species include open water habitats adjacent shallow marsh, deep marsh, shrub wetland, forested wetland, or naturally vegetated buffer zone.
  - Provides a nest site, a buffer for a nest site or feeding habitat for wading birds including but not limited to: great blue heron, black-crowned night heron, green-backed heron, cattle egret, or snowy egret. Good habitats for these species include open water or deep marsh adjacent to forested wetlands, or standing dead trees.
  - Supports or has the habitat to support one or more breeding pairs of any migratory bird that requires wetland habitat for breeding, nesting, rearing of young, feeding, staging roosting, or migration, including: Virginia rail, common snipe, marsh wren, American bittern, northern water thrush, northern harrier, spruce grouse, Cerulean warbler, and common loon.
  - Supports winter habitat for white-tailed deer. Good habitats for this species include softwood swamps. Evidence of use includes browsing, bark stripping, worn trails, or pellet piles.
  - Provides important feeding habitat for black bear, bobcat, or moose based on an assessment of use. Good habitat for these types of species includes wetlands located in a forested mosaic.
  - Has the habitat to support muskrat, otter, or mink. Good habitats for these species include deep marshes, wetlands adjacent to bodies of water including lakes, ponds, rivers, and streams.
  - Supports an active beaver dam, one or more lodges, or evidence of use in two or more consecutive years by an adult beaver population.
  - Provides the following habitats that support the reproduction of uncommon Vermont amphibian species including:
    - Wood frog, Jefferson salamander, blue-spotted salamander, or spotted salamander. Breeding habitat for these species includes vernal pools and small ponds.
    - Northern dusky salamander and the spring salamander. Habitat for these species includes headwater seeps, springs, and streams.
    - The four-toed salamander, Fowler's toad, western or boreal chorus frog, or other amphibians, found in Vermont of similar significance.
  - Supports or has the habitat to support populations of Vermont amphibian species including, but not limited to, pickerel frog, northern leopard frog, mink frog, and others found in Vermont of similar significance. Good habitat for these types of species include large marsh systems with open water components.
  - Supports or has the habitat to support populations of uncommon Vermont reptile species including: wood turtle, northern map turtle, eastern musk turtle, spotted turtle, spiny softshell, eastern ribbonsnake, northern watersnake, and others found in Vermont of similar significance.
  - Supports or has the habitat to support significant populations of Vermont reptile species, including smooth greensnake, DeKay's brownsnake, or other more common wetland-associated species.
  - Meets four or more of the following conditions indicative of wildlife habitat diversity:
    - Three or more wetland vegetation classes (greater than 1/2 acre) present including but not

**Wildlife Habitat Continued...**

limited to: open water contiguous to, but not necessarily part of, the wetland, deep marsh, shallow marsh, shrub swamp, forested swamp, fen, or bog.

- The dominant vegetation class is one of the following types: deep marsh, shallow marsh, shrub swamp or, forested swamp.
- Located adjacent to a lake, pond, river or stream.
- Fifty percent or more of surrounding habitat type is one or more of the following: forest, agricultural land, old field or open land.
- Emergent or woody vegetation occupies 26 to 75 percent of wetland, the rest is open water.
- One of the following:
  - Hydrologically connected to other wetlands of different dominant classes or open water within 1 mile.
  - Hydrologically connected to other wetlands of same dominant class within 1/2 mile.
  - Within 1/4 mile of other wetlands of different dominant classes or open water, but not hydrologically connected.

Wetland or wetland complex is owned in whole or in part by state or federal government and managed for wildlife and habitat conservation.

Contains evidence that it is used by wetland dependent wildlife species

**If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level. If none of the following apply, the wetland provides this function at a moderate level.**

Check box if any of the following conditions apply that may indicate the wetland provides this function at a **lower** level.

- The wetland is small in size for its type and does not represent fugitive habitat in developed areas (vernal pools and seeps are generally small in size, so this does not apply).
- The surrounding land use is densely developed enough to limit use by wildlife species (with the exception of wetlands with open water habitat). Can be negated by evidence of use.
- The current use in the wetland results in frequent cutting, mowing or other disturbance.
- The wetland hydrology and character is at a drier end of the scale and does not support wetland dependent species.

Check box if any of the following conditions apply that may indicate the wetland provides this function at a **higher** level.

- The wetland is large in size and high in quality.
- The habitat has the potential to support several species based on the assessment above.
- Wetland is associated with an important wildlife corridor.
- The wetland has been identified as a locally important wildlife habitat by an ANR Wildlife Biologist.



<b>10.1. Subject Wetland Contribution to Wildlife Habitat Functions:</b> <i>Explain how the subject wetland contributes to the function listed above.</i>	<input type="checkbox"/>
<p>The subject wetland is part of a ±0.5 acre wet meadow that is not characterized by any features indicative of significant wildlife habitat.</p>	
<b>10.2. Statement of No Undue Adverse Impact to <i>Wildlife Habitat</i>:</b> <i>Explain how the proposed project will not result in any undue, adverse impact to this function. Include any avoidance, minimization, or compensation measures relevant to this function.</i>	<input type="checkbox"/>
<p>The project will not adversely impact wildlife habitat as the wetland does not provide this function at a significant level. The project has been designed to minimize wetland and buffer zone impacts.</p>	
<b>11. Exemplary Wetland Natural Community</b>	
<input type="checkbox"/> Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function. <ul style="list-style-type: none"> <li><input type="checkbox"/> Wetlands that are identified as high quality examples of Vermont's natural community types recognized by the Natural Heritage Information Project of the Vermont Fish and Wildlife Department, including rare types such as dwarf shrub bogs, rich fens, alpine peatlands, red maple-black gum swamps and the more common types including deep bulrush marshes, cattail marshes, northern white cedar swamps, spruce-fir-tamarack swamps, and red maple-black ash seepage swamps are automatically significant for this function</li> </ul> <p><b>The wetland is also likely to be significant if any of the following conditions are met:</b></p> <ul style="list-style-type: none"> <li><input type="checkbox"/> Is an example of a wetland natural community type that has been identified and mapped by, or meets the ranking and mapping standards of, the Natural Heritage Information Project of the Vermont Fish and Wildlife Department.</li> <li><input type="checkbox"/> Contains ecological features that contribute to Vermont's natural heritage, including, but not limited to:             <ul style="list-style-type: none"> <li><input type="checkbox"/> Deep peat accumulation reflecting a long history of wetland formation;</li> <li><input type="checkbox"/> Forested wetlands displaying very old trees and other old growth characteristics;</li> <li><input type="checkbox"/> A wetland natural community that is at the edge of the normal range for that type;</li> <li><input type="checkbox"/> A wetland mosaic containing examples of several to many wetland community types; or</li> <li><input type="checkbox"/> A large wetland complex containing examples of several wetland community types.</li> </ul> </li> </ul> <p><b>List species or communities of concern:</b></p>	
<b>11.1. Subject Wetland Proximity to Exemplary Natural Communities</b>	<input type="checkbox"/>
<p>The subject wetland is part of a ±0.5 acre wet meadow that does not meet the definition of a natural community. Based on a review of the ANR Natural Resources Atlas, the closest Exemplary Wetland Natural Community to the subject wetland is a Wet Clayplain Forest located ±0.5 miles east of the project site.</p>	
<b>11.2. Statement of No Undue Adverse Impact to <i>Exemplary Wetland Natural Community</i>:</b> <i>Explain how the proposed project will not result in any undue, adverse impact to this function. Include any avoidance, minimization, or compensation measures relevant to this function.</i>	<input type="checkbox"/>
<p>The project will not impact any Exemplary Wetland Natural Communities. The wetland crossing is located in a previously disturbed section of a seasonally mowed field that does not meet the definition of a natural community.</p>	

**12. Rare, Threatened, and Endangered Species Habitat:**

Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.

Wetlands that contain one or more species on the federal or state threatened or endangered lists, as well as species that are rare in Vermont, are automatically significant for this function.

**The wetland is also likely to be significant if any of the following apply:**

There is credible documentation that the wetland provides important habitat for any species on the federal or state threatened or endangered species lists;

There is credible documentation that threatened or endangered species have been present in past 10 years;

There is credible documentation that the wetland provides important habitat for any species listed as rare in Vermont (S1 or S2 ranks), state historic (SH rank), or rare to uncommon globally (G1, G2, or G3 ranks) by the Natural Heritage Information Project of the Vermont Fish and Wildlife Department;

There is credible documentation that the wetland provides habitat for multiple uncommon species of plants or animals (S3 rank).

**List name of species and ranking:**

**12.1. Subject Wetland Contribution to RTE Habitat:**   
*Explain how the subject wetland contributes to the function listed above.*

The subject wetland has been completely disturbed and does not contribute to this function. Prior to the recent and ongoing disturbance, the subject wetland was part of a ±0.5 acre wet meadow, and was most likely formerly dominated by reed canary grass, based on observations of the adjacent wet meadow. Based on a review of the ANR Natural Resources Atlas, there are no known examples of RT&E species within or proximal to the subject wetland. The closest mapped RT&E locations to the subject wetland are for a state-rare animal species located ±0.6 miles NNW of the subject wetland, and a state-threatened plant species located ±0.6 miles ESE of the subject wetland.

**12.2 Statement of No Undue Adverse Impact to Rare, Threatened, or Endangered Species Habitat:**   
*Explain how the proposed project will not result in any undue, adverse impact to this function. Include any avoidance, minimization, or compensation measures relevant to this function.*

The project will not impact any known RT&E species. There are no RT&E species records from either the subject wetland or entire wetland. As noted, the closest mapped RT&E species locations are ±0.6 miles from the subject wetland.

<b>13. Education and Research in Natural Sciences:</b>	<input type="checkbox"/>
<input type="checkbox"/> Function is present and likely to be significant: Any of the following characteristics indicate the wetland provides this function. <input type="checkbox"/> Owned by or leased to a public entity dedicated to education or research. <input type="checkbox"/> History of use for education or research. <input type="checkbox"/> Has one or more characteristics making it valuable for education or research.	
<b>13.1. Subject Wetland Education and Research Potential:</b> <i>Explain how the subject wetland contributes to the function listed above.</i>	<input type="checkbox"/>
The subject wetland is part of a ±0.5 acre wet meadow located in a section of a seasonally-mowed field. The wetland has no known current or historical use for education or research, and is not characterized by features that make it valuable for education or research.	
<b>13.2 Statement of No Undue Adverse Impact to Education and Research in Natural Sciences:</b> <i>Explain how the proposed project will not result in any undue, adverse impact to this value. Include any avoidance, minimization, or compensation measures relevant to this value.</i>	<input type="checkbox"/>
The wetland has no identified use for education or research in natural sciences, and the project will not adversely impact any education and research potential the wetland may possess. The project has been designed to minimize wetland impacts, which will be limited to a small, previously-disturbed section of the wetland.	
<b>14. Recreational Value and Economic Benefits:</b>	<input type="checkbox"/>
<input type="checkbox"/> Function is present and likely to be significant: Any of the following characteristics indicate the wetland provides this function. <input type="checkbox"/> Used for, or contributes to, recreational activities. <input type="checkbox"/> Provides economic benefits. <input type="checkbox"/> Provides important habitat for fish or wildlife which can be fished, hunted or trapped under applicable state law. <input type="checkbox"/> Used for harvesting of wild foods.  <b>Comments:</b>	
<b>14.1. Subject Wetland Recreational and Economic Value:</b> <i>Explain how the subject wetland contributes to the value listed above.</i>	<input type="checkbox"/>
The subject wetland is part of a ±0.5 acre wet meadow located in a privately-owned, seasonally-mowed field that is not used for recreation and does not provide any wetland-related economic benefits.	
<b>14.2. Statement of No Undue Adverse Impact to Recreational Value and Economic Benefits:</b> <i>Explain how the proposed project will not result in any undue, adverse impact to this value. Include any avoidance, minimization, or compensation measures relevant to this value.</i>	<input type="checkbox"/>
The wetland is not used for recreation and does not provide any wetland-related economic benefits. The project has been designed to minimize wetland impacts, which will be limited to a 1,360 SF section of previously disturbed wetland where the wetland crossing is located.	



**15. Open Space and Aesthetics:**

Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.

- Can be readily observed by the public; and
  - Possesses special or unique aesthetic qualities; or
  - Has prominence as a distinct feature in the surrounding landscape;
- Has been identified as important open space in a municipal, regional or state plan.

**Comments:**

**15.1. Subject Wetland Aesthetic Value:**   
*Explain how the subject wetland contributes to the value listed above.*

The subject wetland is part of a ±0.5 acre wet meadow that is not significant for open space and aesthetics. While the wetland is located in an open field that can be readily viewed from a public road, it does not stand out visually from the adjacent seasonally-mowed fields. The wetland neither possesses special or unique aesthetic qualities nor has prominence as a distinct feature in the surrounding landscape.

**15.2. Statement of No Undue Adverse Impact to Open Space and Aesthetics:**   
*Explain how the proposed project will not result in any undue, adverse impact to this value. Include any avoidance, minimization, or compensation measures relevant to this value.*

The project will not result in an undue adverse impact to open space and aesthetics, as the wetland does not provide this function at a significant level. The small wet meadow is not a prominent landscape feature and is relatively indistinguishable from the surrounding seasonally-mowed fields at the site.

**16. Erosion Control Through Binding and Stabilizing**

Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.

- Erosive forces such as wave or current energy are present and any of the following are present as well:
  - Dense, persistent vegetation along a shoreline or stream bank that reduces an adjacent erosive force.
  - Good interspersion of persistent emergent vegetation and water along course of water flow.
  - Studies show that wetlands of similar size, vegetation type, and hydrology are important for erosion control.

**What type of erosive forces are present?**

- Lake fetch and waves
- High current velocities:
- Water level influenced by upstream impoundment

**Erosion Control Through Binding and Stabilization Continued...**

If any of the above boxes are checked, the wetland provides this function. Complete the following to determine if the wetland provides this function above or below a moderate level. If none of the following apply, the wetland provides this function at a moderate level.

Check box if any of the following conditions apply that may indicate the wetland provides this function at a lower level.

- The stream is artificially channelized and/or lacks vegetation that contributes to controlling the erosive force.

Check box if any of the following conditions apply that may indicate the wetland provides this function at a higher level.

- The stream contains high sinuosity.
- Has been identified through fluvial geomorphic assessment to be important in maintaining the natural condition of the stream or river corridor.

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**16.1. Subject Wetland Contribution to Erosion Control:**

*Explain how the subject wetland contributes to the function listed above.*

The subject wetland is part of a ±0.5 acre wet meadow that does not significantly contribute to erosion control. There are no significant erosive forces present, and no visible evidence of erosion within the swale where the wetland is located.

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**16.2. Statement of No Undue Adverse Impact to Erosion Control:**

*Explain how the proposed project will not result in any undue, adverse impact to this function. include any avoidance, minimization, or compensation measures relevant to this function.*

The project will not have an undue adverse impact on the the wetland's capacity to provide erosion control. As noted, there are no significant erosive forces present at the site. The 24-inch diameter culvert under the proposed access road has been sized to accommodate projected stormwater flows in the drainage at the wetland crossing location. The project is designed to meet ANR's standards for stormwater management, and will be constructed in accordance with the methods outlined in the Low Risk Site Handbook for Erosion Prevention and Sediment Control.

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**17. Project Description:**

**17.1. Overall Project Purpose:**

*Description of the basic project and why it is needed. Partial projects with no clear purpose will not be accepted.*  
**For example:** six-lot residential subdivision; expansion of an existing commercial building, building a single family residence.

The project consists of a seven-lot residential subdivision.

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**17.2. Description of Project Component Impacting Wetland or Buffer:**

*Explain in general terms which portions of the project will impact wetlands or buffer zones.*  
**For example:** Cross the wetland with a driveway to construct a residential subdivision, upgrade existing road through buffer to improve access, extend a trail system.

Construct a road across a narrow wetland finger and associated buffer to provide access to the residential subdivision.

<b>17.3. Acreage of Parcel(s) or Easements(s):</b> <i>Acreage of subject property.</i>	<input type="checkbox"/>
±70.31 acres	
<b>17.4. Acreage of Project Area:</b> <i>Acreage of area involved in the project.</i>	<input type="checkbox"/>
±0.15 acres	

<b>18. Project Details:</b> <i>Provide details regarding specific impacts to the wetland and buffer zone.</i>	
<b>For multiple wetlands fill out the multiple wetland table.</b>	

<b>18.1. Specific Impacts to Wetland and Buffer Zone Dimensions:</b> <i>List portions of the project that will specifically impact the wetland or buffer zone and their dimensions. For example: driveway crossing with 16' wide fill; installation of buried sewer force main with 5' trench including fill footprint; addition of Stormwater outfall which directs flow to northern portion of wetland</i>	<input type="checkbox"/>
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The main access road for the project will cross a narrow wetland "finger", and a 24-inch diameter culvert will be installed under the road bed. The construction footprint for the road is ±50 feet wide where it crosses the wetland and buffer zone.

<b>18.2. Bridges and Culverts:</b> <i>Culvert circumference, length, placement and shapes, or bridge details. List any stream alteration permits that are required or obtained where perennial streams or rivers are involved.</i>	<input type="checkbox"/>
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A ±60-foot long, 24-inch diameter, HDPE culvert will be installed under the road in the location shown on Sheet 1. The project site does not include a perennial stream, and a Stream Alteration Permit is not required.

<b>18.3. Construction Sequence:</b> <i>Describe any details pertaining to the work planned in the wetland and buffer in terms of sequence or phasing that is relevant. Describe the construction limits of disturbance, how those will be marked, and check to ensure these are shown on the site plans as well.</i>	<input type="checkbox"/>
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The construction and erosion control sequence for the project is outlined on the Erosion Control Details Sheet (Sheet 6). Prior to the start of construction, the contractor will be required to install construction limit barriers to define the limits of disturbance for construction, and sequentially, install a stabilized construction entrance and silt fencing. The construction limit barrier and silt fencing in the vicinity of the wetland and wetland buffer shall be installed in the locations marked as "Silt Fencing Erosion Control" on the Site Plan (Sheet 2), in accordance with the requirements outlined on the Erosion Control Details Sheet (Sheet 6). Silt fencing shall be inspected, at a minimum, at least weekly, and shall be maintained to fulfill the most stringent standards and requirements of the latest editions of the State of Vermont Low Risk Site Handbook for Erosion Prevention and Sediment Control, and the public works specification of the Town of Hinesburg and associated specifications.

<b>18.4. Stormwater Design**</b> <i>List any stormwater permits obtained or applied for. Describe stormwater and/or erosion controls proposed. ** Erosion prevention is <u>required</u> in order to prevent sediment from entering the wetland.</i>	<input type="checkbox"/>
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A Construction General Permit and an Operational Stormwater Permit are required, and have been obtained from the VT DEC. The stormwater management system is designed to completely meet the Vermont Water Quality Standards and DEC Groundwater Recharge standards and qualify for DEC's "Environmentally Sensitive Rural Development Credit". Storm runoff from the road along the will be collected and routed via grass-lined swales to a series of dry ponds with stone rip-rap overflow and dispersal pads, as shown on the Site Plan (Sheet 2). Swales will be stone-lined where gradients exceeds five percent. Stone check dams will be installed in numerous locations in the roadside swales, and catch basins will be armored with stone inlet protection (Sheet 2). Stormwater details are included on the Stormwater Detail (Sheet 3). The project is designed as a Low Risk Project and the contractor will be required to install and maintain erosion controls in accordance with the State of Vermont Low Risk Site Handbook for Erosion Prevention and Sediment Control, latest edition. Locations of erosion prevention and sediment control features are shown on Sheet 2. Erosion control details, descriptions, and requirements are included on the Erosion Control Details (Sheets 8 and 10).

<b>18.5. Permanent Demarcation of Limit of Impacts**</b> <i>Describe any boulders, fencing, signage, or other memorialization that provides permanent on-the-ground boundaries for the limits of disturbance for ongoing uses. **Permanent demarcations are required for projects with ongoing activities in or near wetlands or buffer zones such as houses, yards, woody clearing or parking areas, and needs to be depicted on the site plans.</i>	<input type="checkbox"/>
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Permanent demarcations of the limits of impacts are not proposed, as apart from the use of the proposed road crossing for vehicular access to the site, there will not be any regular ongoing activities associated with the project near the wetland or buffer zone. The stormwater collection and treatment system could potentially require future maintenance, however, any such work would most likely be infrequent and would not impact the wetland or buffer zone.



**19. Wetland and Buffer Zone Impacts:**  
*For multiple wetlands provide narrative overview for each section below, and fill out the Multiple Wetland Tables*

**19.1. Wetland Impacts:**  
*Summarize the square footage of impact in the appropriate category. Add After-the-Fact impacts here too. Round to the nearest square foot*

Permanent Wetland Fill	1360	s.f.
Temporary Wetland Impact	0	s.f.
Other Permanent Wetland Impact <i>(this number includes clearing of woody vegetation, dredging, and does not include fill)</i>	0	s.f.
Total Wetland Impact:	1360	s.f.

*Describe in detail the proposed impact to wetlands*  
**For example:** Fill for road crossing, temporary impacts for trench and fill related to utility installation.

**General narrative required here even for projects with multiple wetlands and impacts**

A compacted fill and gravel road section will be constructed at the wetland crossing in the location shown on the Site Plan (Sheet 2). A 24-inch diameter HDPE culvert will be installed under the road bed in this location. Road construction notes and a typical section of the road are included on Sheet 6.

**19.2. Buffer Zone Impacts:**  
*Summarize the square footage of impact in the appropriate category.*

Temporary Buffer Impact		s.f.
Permanent Buffer Impact	5220	s.f.
Total Buffer Impact:	5220	s.f.

*Describe in detail the proposed impact to buffer zones*  
**For example:** Addition of fill along roadway embankment extending into buffer zone.

**General narrative required here even for projects with multiple wetlands and impacts.**

Compacted fill and gravel road sections will be constructed in the wetland buffer in the locations shown on Sheet 2. Road construction notes and a typical section of the road are included on Sheet 6.

**19.3. Cumulative Impacts:**  
*List any potential cumulative or ongoing, direct and indirect impacts on the functions of the wetland.*   
**For example:** Increased noise from parking lot, vegetation management, inputs from stormwater pond outlet, reduction in flood storage volume from the addition of fill from the project.

The project has been designed to avoid cumulative or ongoing impacts to wetland functions. The stormwater management system is designed to completely meet the Vermont Water Quality Standards and DEC Groundwater Recharge standards, and post-construction peak flows from the site will not exceed pre-construction peak flows.

<b>20. Mitigation Sequence:</b> <i>Before you begin, please read all of Section 20 to respond most appropriately to specific questions. Questions specifically related to Section 9.5b of the Vermont Wetland Rules.</i>
<b>20.1. Avoidance of Wetland Impacts:</b> <span style="float: right;"><input type="checkbox"/></span>
<p><b>20.1.1. Can the activity be located on another site owned or controlled by the applicant, or reasonably available to satisfy the basic project purpose? If not, indicate why. Cite any alternative sites and explain why they were not chosen.</b></p> <p>The wetland crossing cannot be located on another site owned or controlled by the applicant, as it is a necessary component of the approved subdivision at this location. The applicants were completely unaware that the wetland classification had changed to Class Two, until notified by the Vermont Wetlands Program in 2016. The project design was finalized when the wetland at the site was considered a Class Three wetland, and all required state and local permits for the project have been applied for and obtained, apart from the Vermont Wetland Permit.</p>
<p><b>20.1.2. Can the proposed activity be practicably located outside the wetland/buffer zone? If not, indicate why. Explain the alternatives you have explored for avoiding the wetland and buffer onsite, And why they are not feasible.</b></p> <p>There is no practicable access road route that avoids the wetland entirely due to safety considerations for the location of the road entrance on Baldwin Road. The Class Two wetland widens substantially to the south of the wetland crossing and, therefore, shifting the road entrance southward would impact significantly more of the Class Two wetland and buffer zone. There is no northern access road alternative on the property that could be located outside the wetland/buffer zone. The Project Engineer evaluated an alternate location for the road entrance to the north of the wetland crossing that would reduce wetland impacts and increase buffer zone impacts, and determined that such a shift would significantly decrease line-of-site visibility from this location on Baldwin Road, which would unduly compromise vehicular safety.</p>
<b>20.2. Avoidance to the Impact to Functions and Values:</b> <span style="float: right;"><input type="checkbox"/></span>
<p><b>20.2.1. If the proposed activity cannot be practicably located outside the wetland/buffer zone, have all practicable measures been taken to avoid adverse impacts on protected functions?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p>
<p><b>20.2.2. What design alternatives were examined to avoid impacts to wetland function?</b>  <i>For example: Use of matting, relocation of footprint, etc.</i></p> <p>The project has been designed to minimize wetland and buffer zone impacts to the greatest extent practicable, and to avoid adverse impacts to protected wetland functions. The entire wetland contributes to water quality protection, and makes a more limited contribution to water storage for storm runoff. The wetland crossing, however, is sited in a disturbed, narrow section of the wetland that makes a limited contribution to protected functions. The wetland was historically ditched and straightened in this narrow location, most likely to maximize agricultural use of the adjacent fields. Impacts are also offset by the stormwater management system for the project, which is designed to completely meet the Vermont Water Quality Standards and DEC Groundwater Recharge standards, and post-construction peak flows from the site will not exceed pre-construction peak flows.</p>
<p><b>20.2.3. What steps have been taken to minimize the size and scope of the project to avoid impacts to wetland functions and values? Include information on project size reduction and relocation.</b></p> <p>All project components were located outside the wetland and buffer zone, apart from the required. The roadbed footprint in the wetland and buffer zone is dictated by site topography, the necessary 20-foot driving surface width, the road grade, and side slope engineering specifications. The road crossing was sited along the narrowest section of the wetland, that is currently completely disturbed by recent and ongoing construction activities. The road will be built to the minimum specifications under the municipal road standards and requirements for two-way vehicular travel and fire and rescue access.</p>
<p><b>20.2.4. Explain how the proposed project represents the least impact alternative design. Explain why other alternatives, which you described above, were not chosen.</b></p> <p>The proposed project layout represents the design alternative with the least impact. The subject wetland is currently completely disturbed by construction activities, and was historically ditched and straightened. Moving the road to another location would permanently impact either a larger wetland or buffer zone area to the south of the proposed location, or a currently undisturbed wetland/buffer zone area to the north.</p>
<b>20.3. Minimization and Restoration:</b> <span style="float: right;"><input type="checkbox"/></span>
<p><b>20.3.1. If avoidance of adverse effects on protected functions cannot be practically achieved, has the proposed activity been planned to minimize adverse impacts on the protected function?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A</p>
<p><b>20.3.2. What measures will be used during construction and on an ongoing basis to protect the wetland and buffer zone?</b>  <i>For example: Stormwater treatment, signs, fencing, etc.</i></p> <p>Measures to protect the wetland and buffer zone during construction are outlined in the erosion control notes and details, and are included on Sheets EC-1, DT-3, and SP-2. Prior to construction, silt fencing, limits of disturbance fencing, inlet protection devices, and a stabilized construction entrance will be installed in the locations shown on Sheet EC-1. All areas of temporary or permanent disturbance will be stabilized as noted on Sheet EC-1. The stormwater conveyance and retention system will treat most storm runoff from existing and redeveloped impervious areas, as shown on Sheet SW-1, a portion of which currently sheefflows into the wetland untreated.</p>

**Minimization and Restoration Continued...**

20.3.3. Has a plan been developed for the prompt restoration of any adverse impacts on protected functions?  Yes  No  N/A

**Restoration Narrative:**  
*For example: Planting along the stream.*

The project has been designed to avoid undue adverse impacts on protected wetland functions. While the stormwater management system for the project is not a restoration measure in a strict sense, it will significantly contribute to the offset of the minor unavoidable impacts to wetland functions. The stormwater management system is designed to completely meet the Vermont Water Quality Standards and DEC Groundwater Recharge standards, and post-construction peak flows from the site will not exceed pre-construction peak flows.

**Quantification of Restoration:**

Wetland Area (sqft)	Buffer Area (sqft)	Functions/Value s Addressed

**20.4. Compensation:**

*Please refer to Section 9.5c of the Vermont Wetland Rules for compensation, which is required when the project will result in net adverse impact to wetland function. Not all functions are presumed to be compensable. **All projects requiring compensation need prior consultation with the Vermont Wetlands Program.***

*If compensation is proposed please include a summary here. Also list any supporting documents you may have attached to the application including In-Lieu-Fee proposal or detailed compensation plan.*

Compensation is not proposed, as the project will not result in a net adverse impact to wetland functions.

<b>21. Wetland Determination:</b> <i>If the application involves a wetland determination please answer the following. For multiple wetlands provide narrative overview for each section below, and fill out the Multiple Wetland Tables.</i>	<input type="checkbox"/>
<input type="checkbox"/> Wetland is mapped or contiguous to the Vermont Significant Wetland Inventory Map <input type="checkbox"/> Wetland is not mapped on or contiguous to the Vermont Significant Wetland Inventory Map	
<b>21.1. Reason for Petition:</b> <i>Please choose one from the dropdown menu.</i>	<input type="checkbox"/>
<Choose One>	
<b>21.2. Determination Narrative:</b> <i>Please provide any narrative to support the petition for a wetland determination here, including previous decisions by the Secretary or Water Board.</i>	<input type="checkbox"/>

<b>22. Supporting Materials:</b> <b><u>**ADDITIONAL MATERIAL REQUIRED TO CALL APPLICATION COMPLETE</u></b>			
<b>22.1. **Location Map:</b> Provide a location map that is 8 1/2" x 11" and separate from any site plans. The Vermont Natural Resources Atlas is appropriate using USGS topography map base layer, roads, and VSWI wetlands at a minimum.			<input type="checkbox"/>
<b>Date</b>	<b>Title</b>		
September 1, 2016	Project Location Map for Pinecrest		
<b>22.2. **Site Plan(s):</b> List as specified below. Plans must be legible and include wetland delineation and buffer zones, limits of disturbance, erosion controls, building envelopes, and any permanent memorialization.			
<b>Title</b>	<b>Author</b>	<b>Date</b>	<b>Date of Last Revision</b>
Overall Site Plan (Sheet 1)	Krebs & Lansing Consulting Engineers, Inc.	6/2/08	9/2/16
Site Plan (Sheet 2)	Krebs & Lansing Consulting Engineers, Inc.	7/14/08	9/2/16
Road Details (Sheet 6)	Krebs & Lansing Consulting Engineers, Inc.	7/14/08	3/4/09
Stormwater Details (Sheet 7)	Krebs & Lansing Consulting Engineers, Inc.	7/14/08	3/4/09
Erosion Control Details (Sheet 8)	Krebs & Lansing Consulting Engineers, Inc.	7/14/08	3/4/09
Erosion Control Details (Sheet 10)	Krebs & Lansing Consulting Engineers, Inc.	7/14/08	3/4/09
<b>22.3. **U.S. Army Corps of Engineer Wetland Delineation Forms:</b> List attachment names, dates data was collected, cover types sampled, and number of paired plots included.			
<b>Attachment #/Title</b>	<b>Range of Collection Dates</b>	<b>Vegetation Cover Types</b>	<b># of Paired Plots</b>
The wetland delineation for VWP#2016-262 was reviewed and approved by the Vermont Agency of Natural Resources for the Vermont Gas pipeline project on the Thibault property.			
<b>22.4. Other Supporting Documents:</b> Provide any other documentation that supports the application. <b>Examples include but are not limited to:</b> Photographs, easements, agreements, restoration/plan, GIS shapefiles, additional ACOE forms.			
<b>Date</b>	<b>Last Revision</b>	<b>Author</b>	<b>Title</b>



**23. Abutting Landowners**

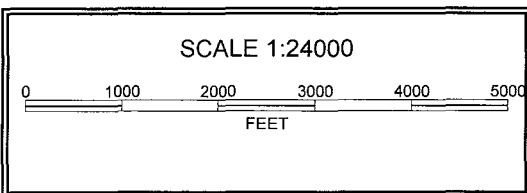
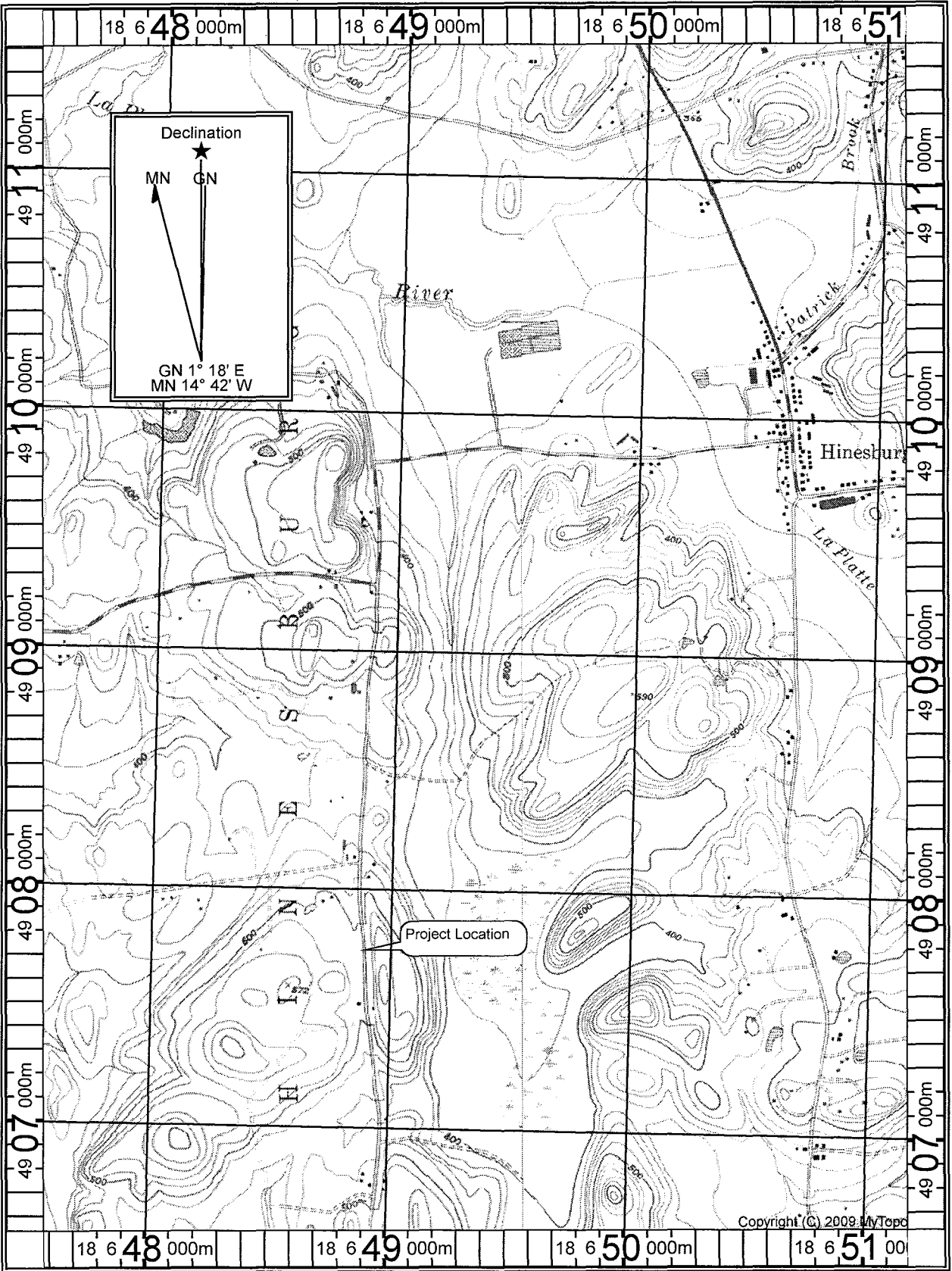
Please provide abutting landowner information so that all persons owning property within, or adjacent to, the affected wetland area of buffer zone can be notified during the public notice period. **Please use additional sheets if necessary.**

**23.1. Abutting Land Owner Information:** Please list as first names first followed by last name

1. Name: Street/Road: City/State/Zip:	Town of Hinesburg 10632 VT Route 116 Hinesburg VT 05461	16. Name: Street/Road: City/State/Zip:	
2. Name: Street/Road: City/State/Zip:		17. Name: Street/Road: City/State/Zip:	
3. Name: Street/Road: City/State/Zip:		18. Name: Street/Road: City/State/Zip:	
4. Name: Street/Road: City/State/Zip:		19. Name: Street/Road: City/State/Zip:	
5. Name: Street/Road: City/State/Zip:		20. Name: Street/Road: City/State/Zip:	
6. Name: Street/Road: City/State/Zip:		21. Name: Street/Road: City/State/Zip:	
7. Name: Street/Road: City/State/Zip:		22. Name: Street/Road: City/State/Zip:	
8. Name: Street/Road: City/State/Zip:		23. Name: Street/Road: City/State/Zip:	
9. Name: Street/Road: City/State/Zip:		24. Name: Street/Road: City/State/Zip:	
10. Name: Street/Road: City/State/Zip:		25. Name: Street/Road: City/State/Zip:	
11. Name: Street/Road: City/State/Zip:		26. Name: Street/Road: City/State/Zip:	
12. Name: Street/Road: City/State/Zip:		27. Name: Street/Road: City/State/Zip:	
13. Name: Street/Road: City/State/Zip:		28. Name: Street/Road: City/State/Zip:	
14. Name: Street/Road: City/State/Zip:		29. Name: Street/Road: City/State/Zip:	
15. Name: Street/Road: City/State/Zip:		30. Name: Street/Road: City/State/Zip:	

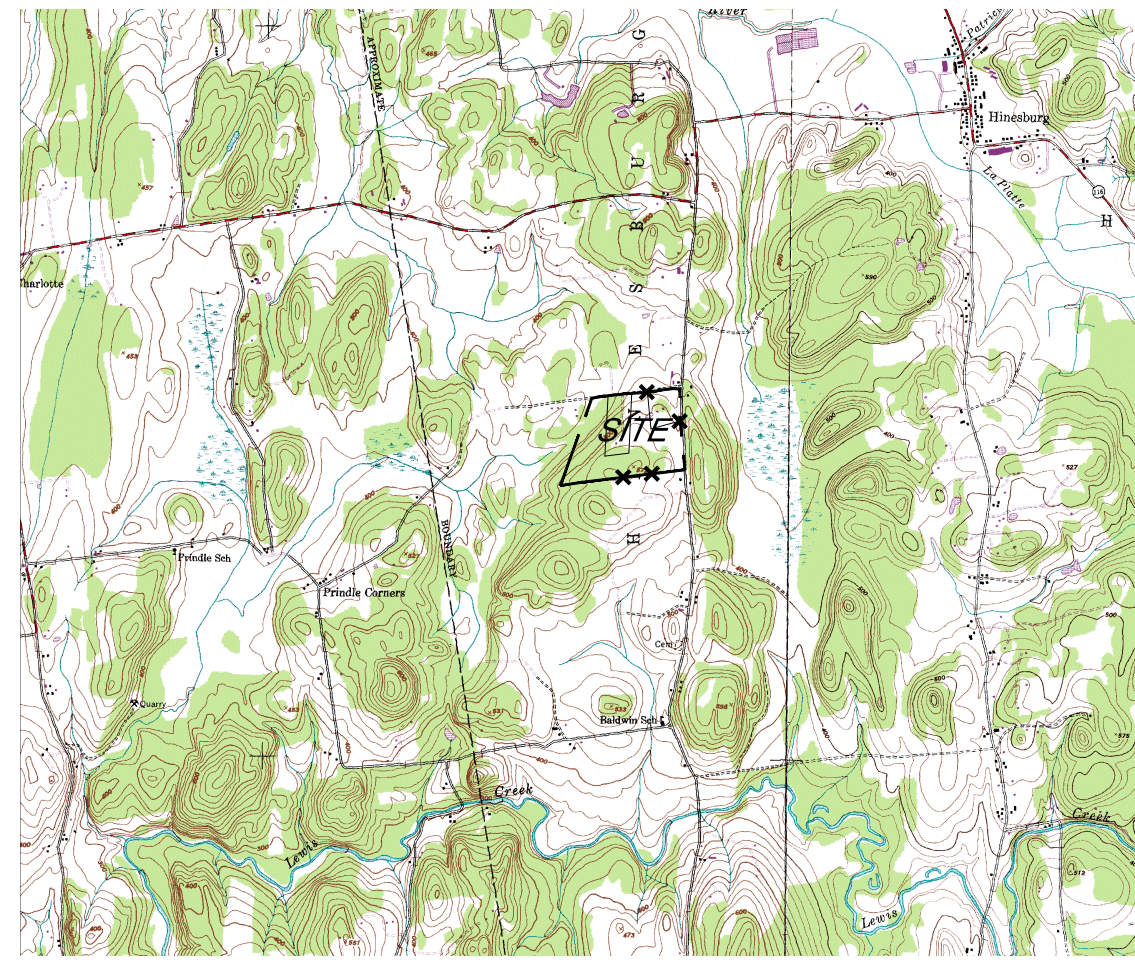
**24. Modified Distribution (Newspaper Notification):** In situations where there is an application within a large wetland or buffer zone that has a large number of landowners, applicants can choose to limit the distribution list with a supplemental newspaper notification. At a minimum the applicant must 1) provide notice to immediate abutters, 2) provide notice to all persons owning property containing the wetland or buffer within 500 ft. of the project area, and 3) shall have the VWP publish notice of the application in a local newspaper generally circulating in the area where the wetland is located. **\*\*The applicant will be billed directly by the newspaper listed. Use of newspaper notification may extend the notice period, depending on when the notice posts in the newspaper\*\***

Name of Newspaper(s)

Project Location Map  
for Pinecrest Ridge  
Vermont Wetland Project  
#2016-262





Location Map  
N.T.S.

Legend

- Survey control point
- Utility pole
- Proposed drilled well
- Property line / right of way
- Edge of Woods
- Easement line
- Building envelope
- Proposed well shield
- Class 3 wetland
- Existing ground contour
- Finish grade contour

BELCHER

FLASH

RUBEN

LAVALLEE

Notes:

1. This plan is in no way a boundary survey. Refer to plan entitled "Pinecrest Ridge Subdivision, Property of Stephen E. & Joanne M. Hoke & Robert D. & Elizabeth R. Quackenbush", prepared by G.E. Bedard, Inc.
2. Elevations and topographic information provided by G.E. Bedard, Inc.
3. The location of underground utilities is not warranted to be exact or complete. Contact DIG SAFE prior to any excavation.
4. The location of the septic tank and pump station/ pre-treatment are shown for illustrative purposes. The exact location will be determined when the house is sited. The tanks shall maintain a minimum of 50' separation from the drilled well, and 10' separation from the building foundation.
5. Exact location of driveway curb cuts to be determined at time of construction.
6. Possible house site are shown for illustrative purposes only. House site must meet all regulatory setback requirements. Refer to Table of Minimum Isolation Distances.
7. This project will use the "Environmentally Sensitive Rural Development Credit" in order to meet State of Vermont Agency of Natural Resources standards regarding stormwater management. As such, lot coverage will be limited to 8%, and at least 25% of the project area will be protected in natural conservation areas.
8. This project will implement the following risk mitigation factors in order to qualify as a "Low Risk" site in terms of erosion prevention and sediment control: 1.) The project will be limited to 2 acres of ground disturbance at any one time; 2.) The project will have a maximum of 7 consecutive days of disturbed earth in any location before temporary or final stabilization is implemented. The site shall be constructed in accordance with the methods outlined in "The Low Risk Site Handbook for Erosion Prevention and Sediment Control".

CARSE

KENNY

HAULENBECK



FOR PERMIT REVIEW



September 2, 2016	Lot 6 and 7 wastewater and well	SWH	9/2/16
August 11, 2016	Class 2 wetlands	SWH	8/11/16
February 20, 2009	building envelopes, hammerhead	SWH	2/20/09
Date revised	Description	Checked	Date

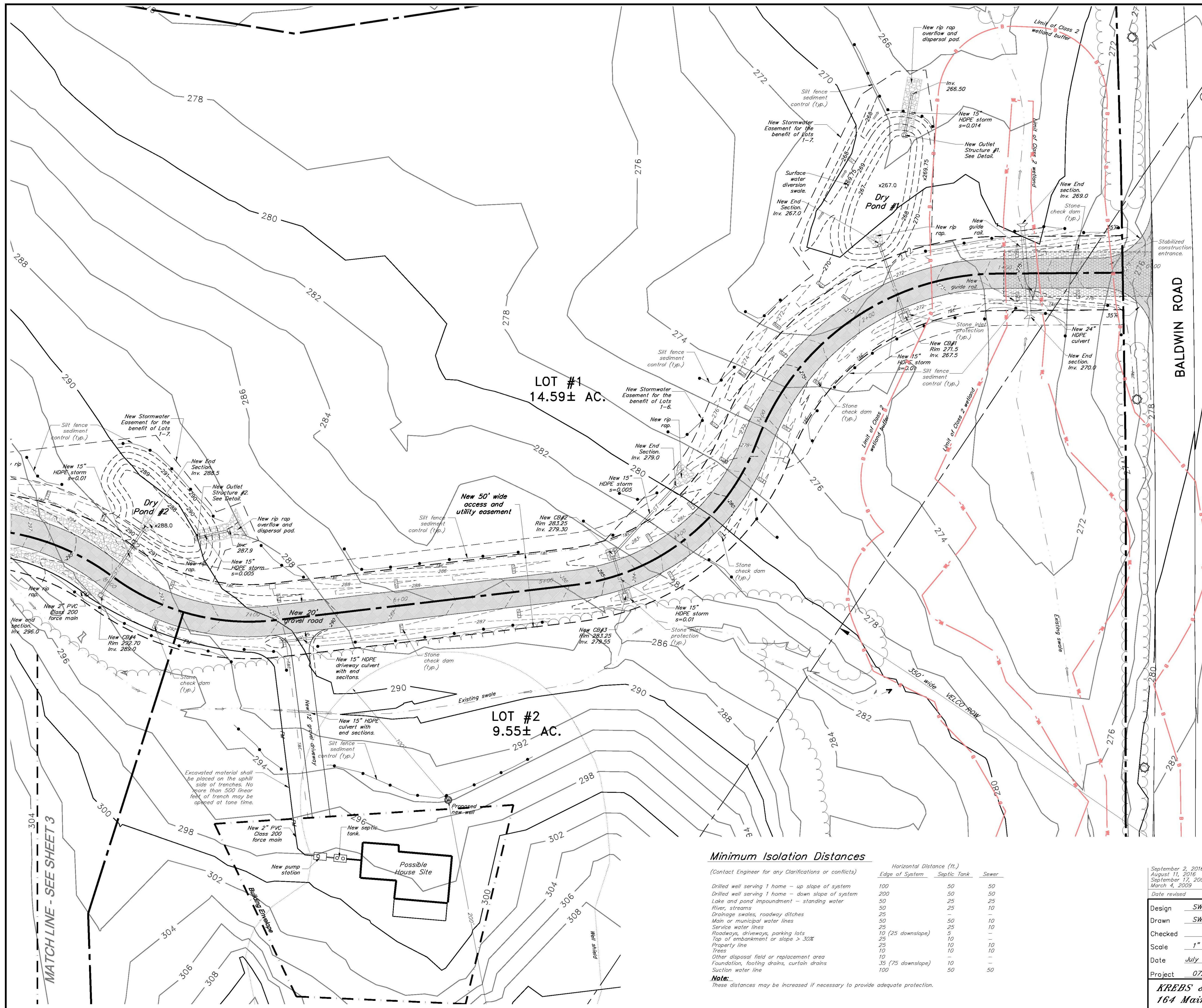
Design	SWH	<b>Overall Site Plan</b>  <b>Pinecrest Ridge</b>
Drawn	SWH	
Checked		
Scale	1" = 100'	
Date	June 2, 2008	



Bar Scale 1" = 100'

Project	07237	Baldwin & Burritt Road	Hinesburg, Vermont
<b>KREBS &amp; LANSING Consulting Engineers, Inc.</b> 164 Main Street, Colchester, Vermont 05446			<b>1</b>



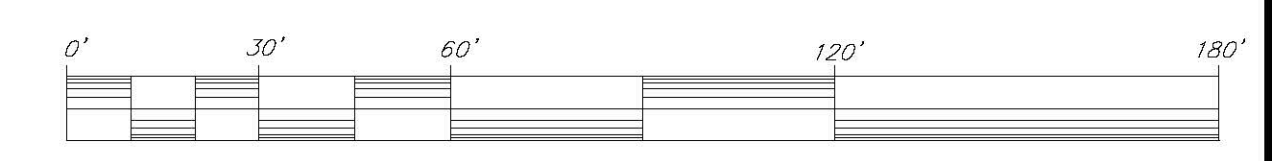


**Legend**

- Existing tree line
- Property line/ right of way
- Proposed easement line
- Proposed building envelope
- Existing ground contour
- Finish grade contour
- Proposed well shield
- Proposed force main
- Proposed Storm Line/catch basin
- Proposed telephone & electric
- Class 3 wetland
- Existing drainage swale
- Proposed private road
- Proposed drilled well
- Silt fence sediment control
- Stabilized construction entrance
- Stone check dams
- Stone inlet protection
- Stone lining/rip rap
- Existing Class 2 Wetland
- Existing Wetland Buffer

**Notes:**

1. This plan is in no way a boundary survey. Refer to plan entitled "Pinecrest Ridge Subdivision, Property of Stephen E. & Joanne M. Hoke & Robert D. & Elizabeth R. Quackenbush", prepared by G.E. Bedard, Inc.
2. Elevations and topographic information provided by G.E. Bedard, Inc.
3. The location of underground utilities is not warranted to be exact or complete. Contact DIG SAFE prior to any excavation.
4. The location of the septic tank and pump station/ pre-treatment are shown for illustrative purposes. The exact location will be determined when the house is sited. The tanks shall maintain a minimum of 50' separation from the drilled well, and 10' separation from the building foundation.
5. Exact location of driveway curb cuts to be determined at time of construction.
6. Possible house site are shown for illustrative purposes only. House site must meet all regulatory setback requirements. Refer to Table of Minimum Isolation Distances.
7. This project will use the "Environmentally Sensitive Rural Development Credit" in order to meet State of Vermont Agency of Natural Resources standards regarding stormwater management. As such, lot coverage will be limited to 8%, and at least 25% of the project area will be protected in natural conservation areas.
8. This project will implement the following risk mitigation factors in order to qualify as a "Low Risk" site in terms of erosion prevention and sediment control: 1.) The project will be limited to 2 acres of ground disturbance at any one time; 2.) The project will have a maximum of 7 consecutive days of disturbed earth in any location before temporary or final stabilization is implemented. The site shall be constructed in accordance with the methods outlined in "The Low Risk Site Handbook for Erosion Prevention and Sediment Control".



BAR SCALE 1" = 30'

**Minimum Isolation Distances**

(Contact Engineer for any Clarifications or conflicts)

	Horizontal Distance (ft.)		Sewer
	Edge of System	Septic Tank	
Drilled well serving 1 home - up slope of system	100	50	50
Drilled well serving 1 home - down slope of system	200	50	50
Lake and pond impoundment - standing water	50	25	25
River, streams	50	25	10
Drainage swales, roadway ditches	25	-	-
Main or municipal water lines	50	50	10
Service water lines	25	25	10
Roadways, driveways, parking lots	10 (25 downslope)	5	-
Top of embankment or slope > 30%	25	10	10
Property line	25	10	10
Trees	10	10	10
Other disposal field or replacement area	10	10	-
Foundation, footing drains, curtain drains	35 (75 downslope)	10	-
Suction water line	100	50	50

**Note:**  
These distances may be increased if necessary to provide adequate protection.

**FOR PERMIT REVIEW**

September 2, 2016	Dry pond relocated out of wetland buffer	swb	9/2/16
August 11, 2016	Class 2 wetlands	swb	8/11/16
September 12, 2009	Final town plans	swb	9/12/09
March 4, 2009	building envelopes, hammerhead, project name	swb	3/4/09
Date revised	Description	Checked	Date

**Site Plan**

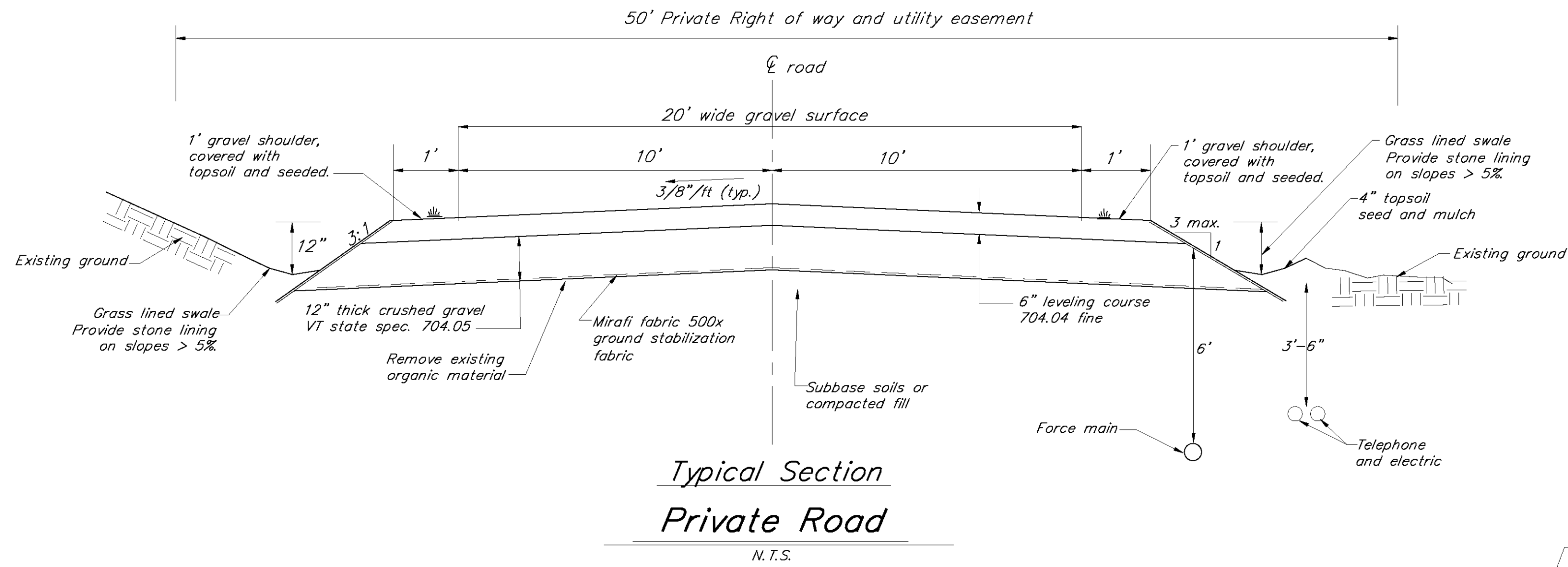
Design **SWH**  
 Drawn **SWH**  
 Checked  
 Scale **1" = 30'**  
 Date **July 14, 2008**

**Pinecrest Ridge**

Project **07237** Baldwin & Burritt Road Hinesburg, Vermont

**KREBS & LANSING Consulting Engineers, Inc.**  
 164 Main Street, Colchester, Vermont 05446

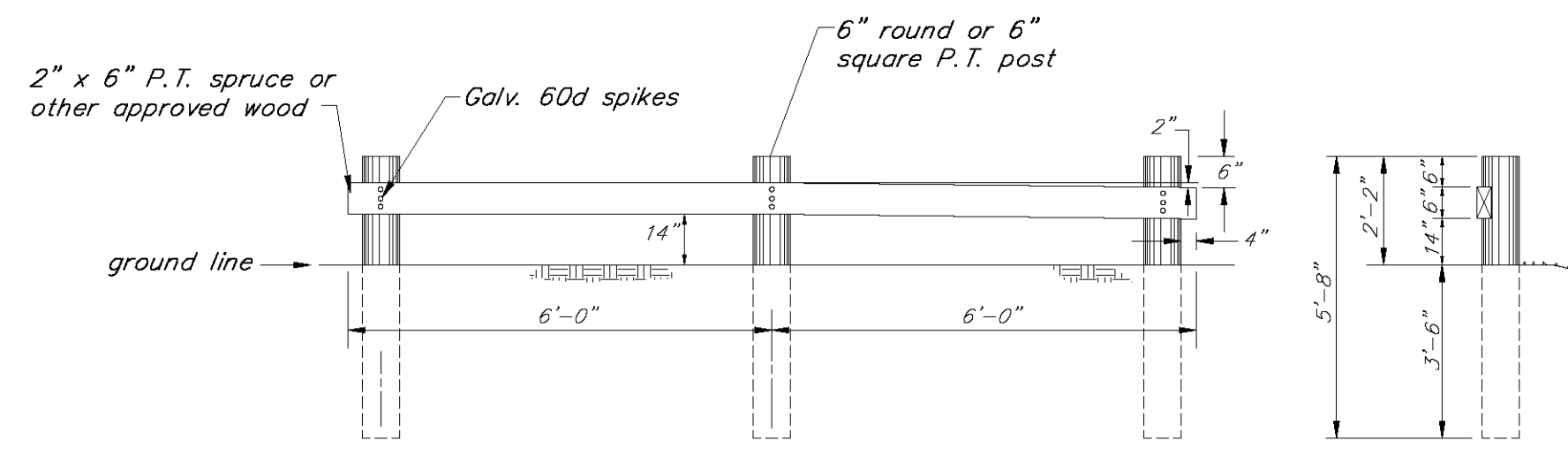




Typical Section  
Private Road  
N.T.S.

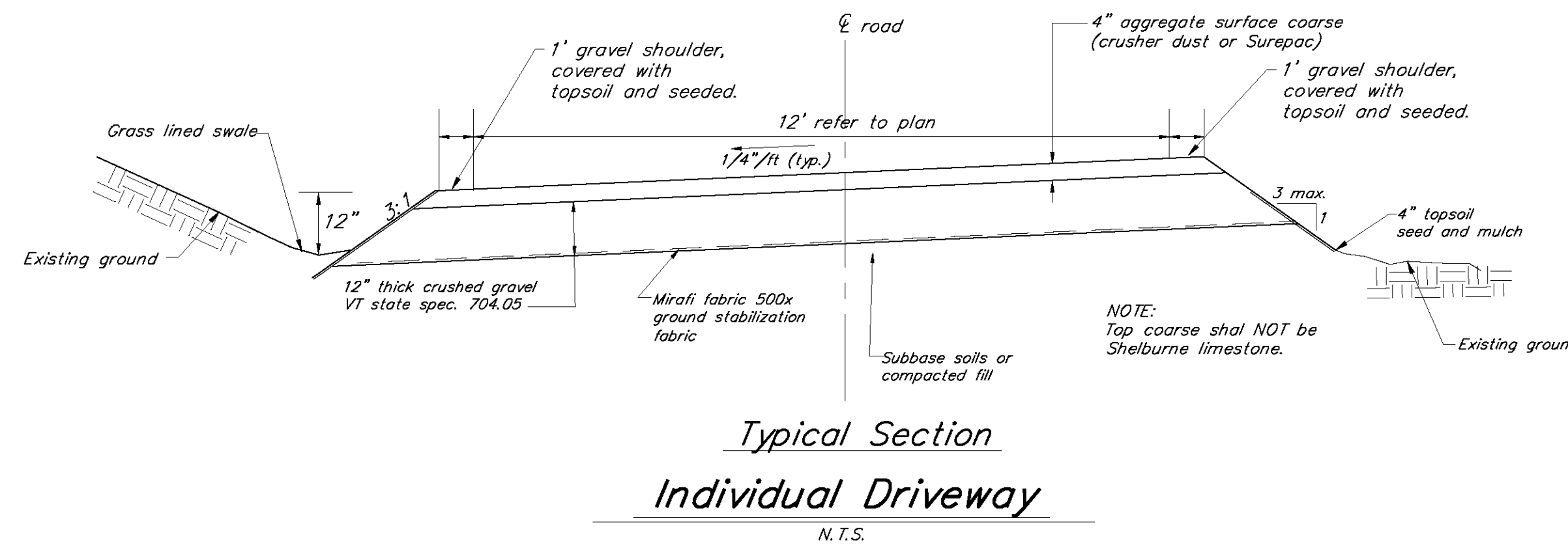
**Road & Driveway Construction Notes**

1. New road shall be constructed to the line and grade shown on the drawings. The road and utility locations shall be detailed unless otherwise shown.
2. Methods for construction of sub-base shall conform to Vt. Highway Specs. (2006), 203.12 "subgrade" in all respects or as determined by the Engineer.
3. Gravel sub-base for pavement shall conform to Vt. Highway Specs. (2006), 704.04.
4. Leveling course shall conform to Vt. Highway Specs. (2006), 704.05 table 704.05A, fine. Shoulders shall conform to section 704.12, Aggregate for Shoulders.
5. Any sub-base or subgrade disturbed by Contractor, or rendered unsuitable by construction machinery shall be removed and replaced with approved granular backfill. Sub-base shall have 95% of maximum compaction density before road construction.
6. The Contractor shall be responsible for all compaction tests for the road, foundations and utility trenches.
7. Fill material for road embankment shall be approved by the Engineer. Fill shall be placed in 6" lifts and wetted and compacted with satisfactory compaction equipment. The Contractor shall perform a compaction test every 100' at the limits of the filling operation at every 12" of lift and shall recompact areas with less than 95% of maximum density, (Standard Proctor).
8. The Contractor shall furnish a loaded 10 wheeled dump truck for proof rolling the subgrade in the presence of the Engineer. The Engineer may request additional subgrade soils to be excavated and additional gravel base if results of proof roll show wheel rutting more than 2" deep, or shoving of the subgrade soil by the trucks wheels.
9. Road in fill sections shall be placed and compacted a minimum of 3 feet above top of any utility to be installed, before trench is excavated for pipe placement. In trenches, and cut sections the Contractor shall provide all necessary sheeting, shoring and bracing to maintain compliance with all OSHA/VOSHIA regulations. Trench compaction tests shall be every 150 feet along the trench at every 12" of lift. Compaction shall be 90% of Standard Proctor outside of the Right of Way and 95% Standard Proctor within the Right of Way limits.

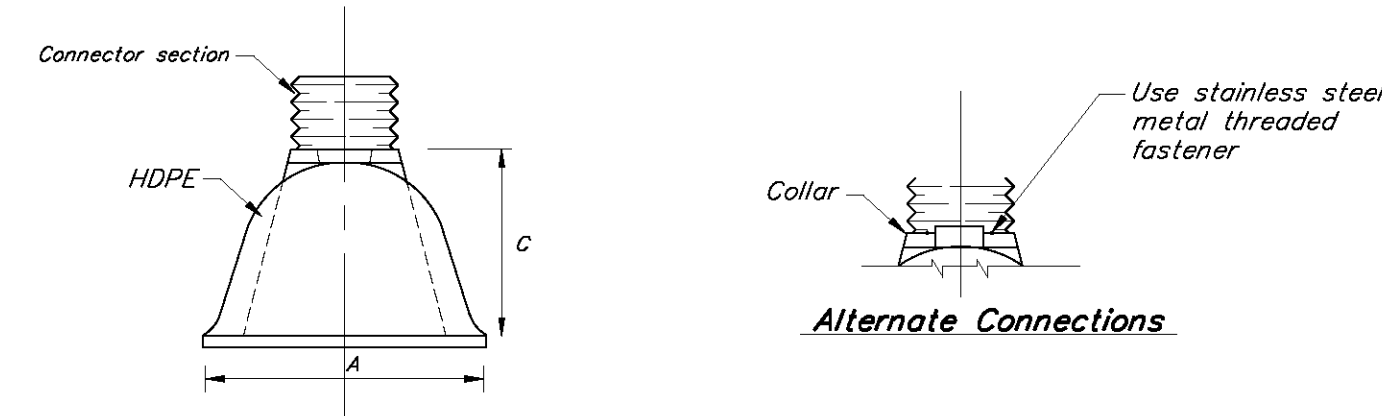


Planks 16" in length to be used whenever possible. Posts 6" square may be used in place of round posts. First and last post of each section to be set back 12" from the general line of the posts, when 4 or more posts are required. All wood members shall be pressure treated.

Guide Rail Detail  
N.T.S.



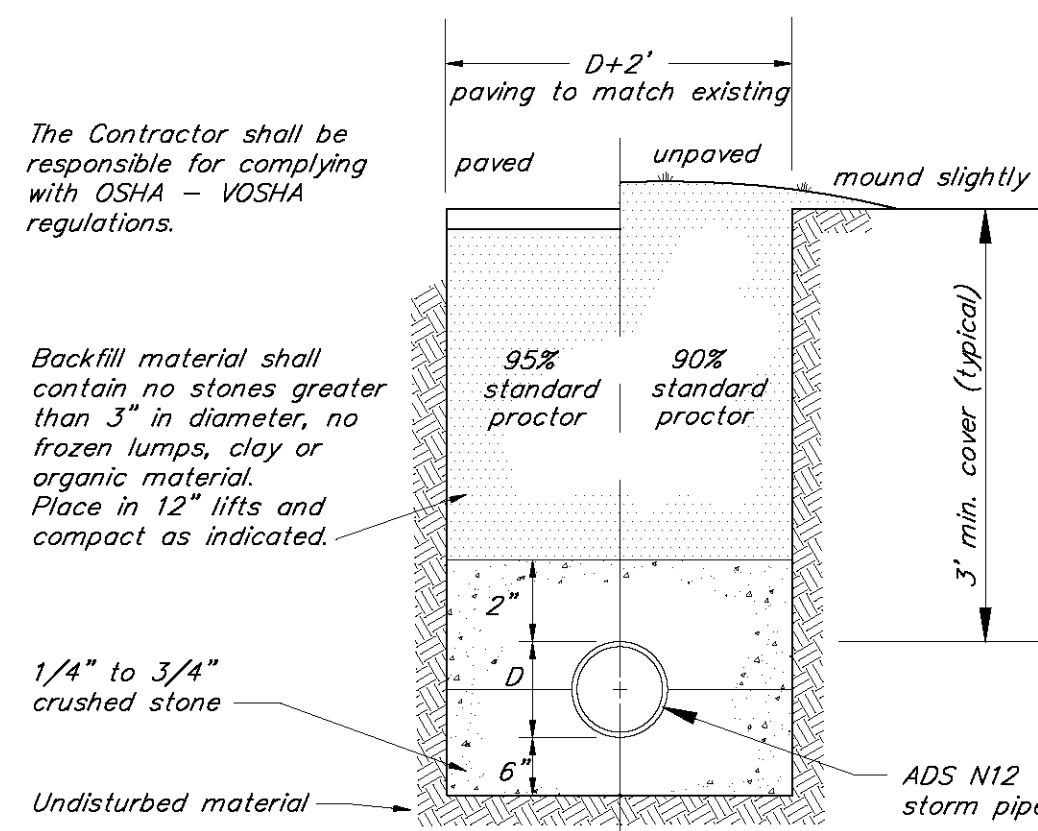
Typical Section  
Individual Driveway  
N.T.S.



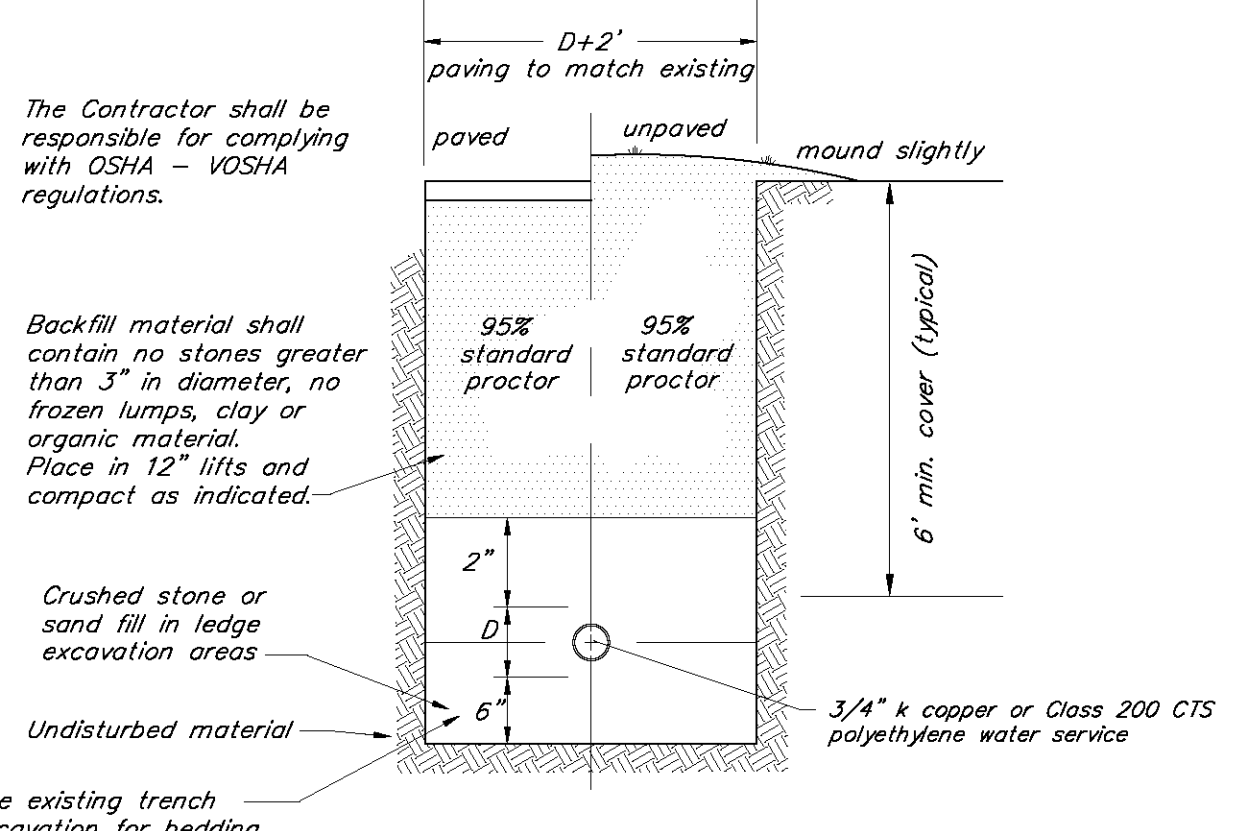
Notes:  
End sections shall be installed in accordance with the manufacturers installation specifications.

Pipe Diameter	Dimensions			
	A	B	C	D
10	4.7	14.5	3.3	6
12	4.2	14.5	3.3	6
15	4.1	19	3.4	6
18	4.9	22	4.3	6
24	5.9	28	4.8	6
30	8.8	36	6.3	6
36	8.8	4.3	66.9	6

HDPE End Section Detail  
N.T.S.



Typical Storm Trench Details  
N.T.S.



Typical Water Trench Details  
N.T.S.

**Construction Notes**

1. The Contractor will be responsible for all construction of storm and sanitary sewer systems as shown on the plans. He will be responsible for all necessary adapters, fittings, etc. to make connections to the existing and proposed utilities. The Contractor shall be responsible for all work shown or implied on the plans and/or referenced in the specifications and permits. The Contractor shall submit for approval by the Engineer all types of materials and products used.

**Separation of Water and /or Sanitary & Storm Mains**

1. No water line shall be closer than ten (10) feet to any sanitary sewer, storm sewer or sanitary manhole, and five (5) feet to any catch basin. Provide minimum of 18" vertical separation between water line and storm/sanitary sewer.

**Testing and Notes**

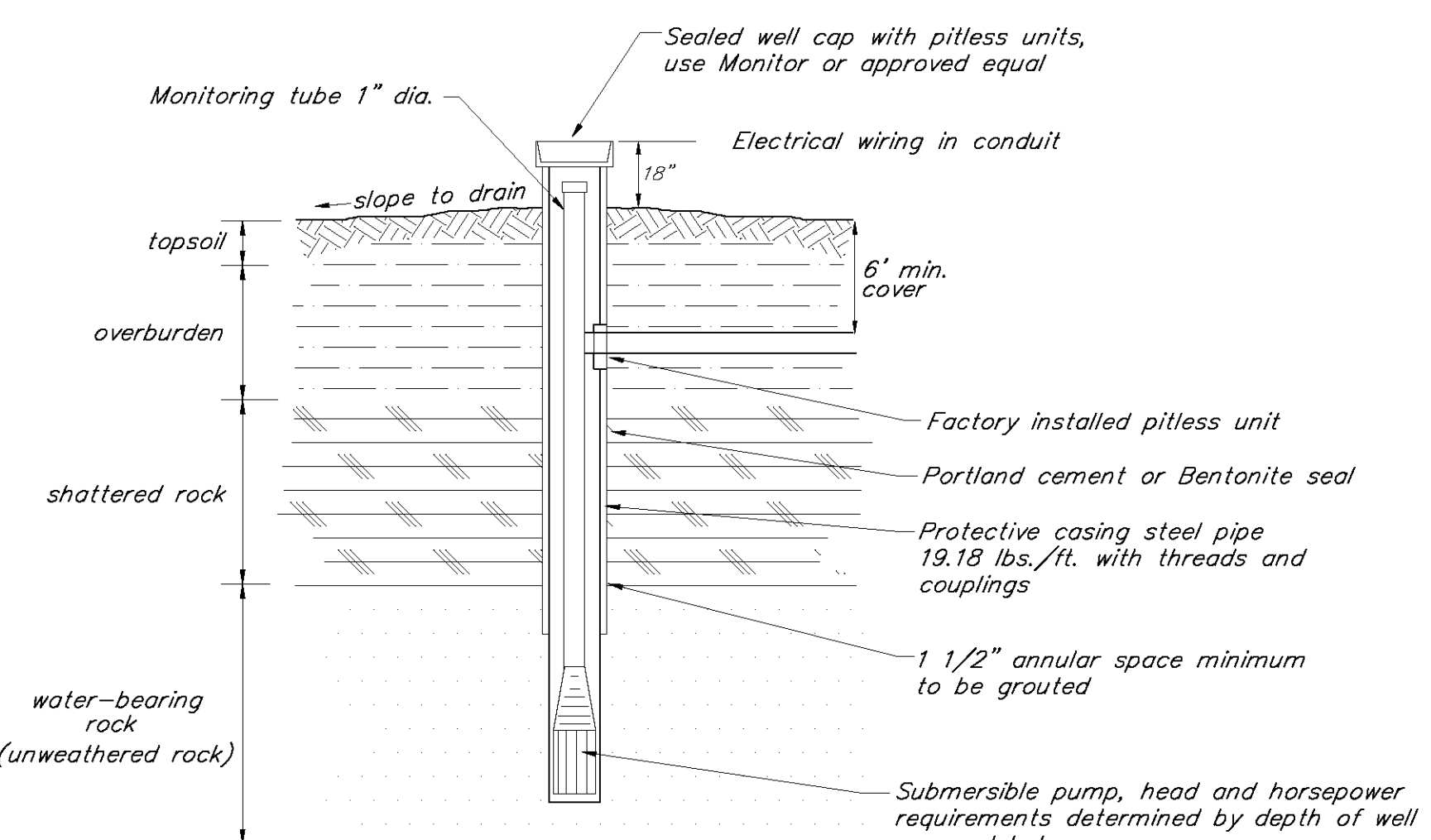
In addition to the above requirements, all water lines and sewer lines and manholes shall be thoroughly tested by the Contractor in accordance with the Environmental Protection Rules - Chapter 1, "Wastewater System and Potable Water Supply Rules", 9/29/07.  
Note: All construction shall be accomplished in accordance with the standards set forth in the latest edition of the public works specification of the Town of Hinesburg and referenced specifications, in the case of conflict, the more stringent specification shall apply as determined by the Engineer.  
Contractor shall keep a log book of at least three swing ties to service locations and any points of deflection or watermain fittings. Books shall be turned over to the Owner upon acceptance of work. Elevations to the top of services shall also be recorded.

**Erosion Control and Construction Sequence**

1. The purposes of erosion control shall be discussed with and approved by the Engineer and the Town Representative prior to any clearing, grubbing, stripping or construction of any kind.
2. All erosion control shall be placed as shown on the drawings or as ordered by the Engineer. All erosion control measures shall be, at a minimum, inspected weekly and maintained to fulfill the intent discussed above. The Contractor shall maintain the erosion control measures until the Engineer is satisfied that permanent ground cover has been established and that further measures are not required.
3. When erosion control measures are deemed no longer necessary, all materials detained including silts and construction debris shall be collected and disposed of in a manner acceptable to the Engineer and the Town Representative.
4. If highly erodible soils are encountered the Contractor may be required to provide jute matting, gabion or rivet mattresses, rip rap or other measures as necessary to prevent erosion. The Contractor shall stockpile hay bales to protect, at a minimum, all work in progress. All exposed embankments shall be topsoiled, seeded and mulched as soon as possible after construction.
5. The Contractor shall use water and/or calcium chloride for dust control. The Contractor shall also sweep all roads as required to maintain dust control.

**Backfill of ADS Storm Pipe**

1. ADS N-12 storm pipe shall conform to AASHTO M294, ASTM D2321 and ASTM D3350. Pipe bedding shall be crushed stone, gravel or sand meeting ASTM D2321 Class I, II or III. Pipe bedding shall not contain stones larger than 1" below the crown of the pipe.
2. Pipe bedding shall be compacted to 95% Standard Proctor. Pipe bedding shall be placed in 6" layers and thoroughly compacted. Special care needs to be taken to ensure 90% compaction and to avoid voids in the haunched area of the pipe.

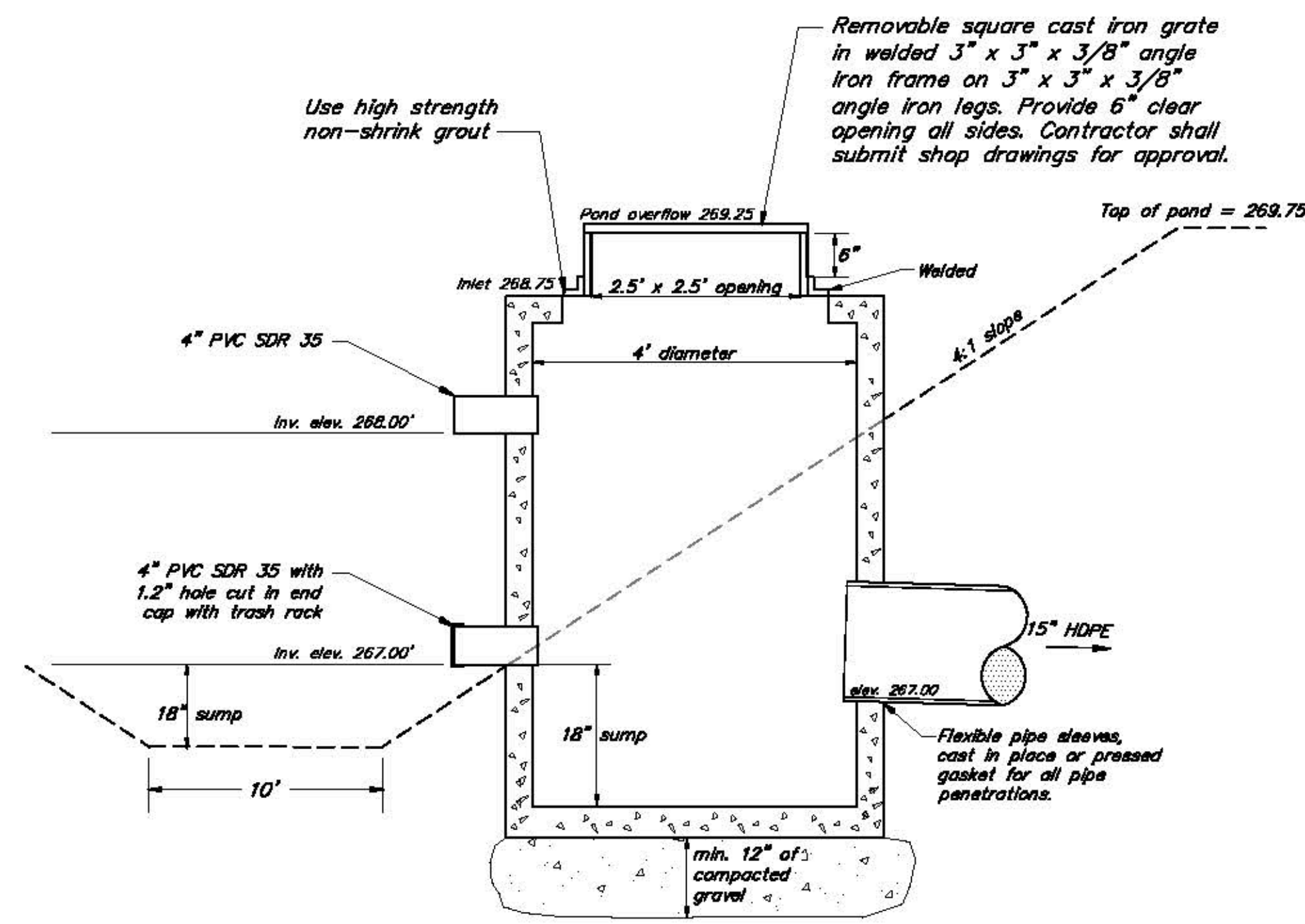


Typical Drilled Well Section  
N.T.S.

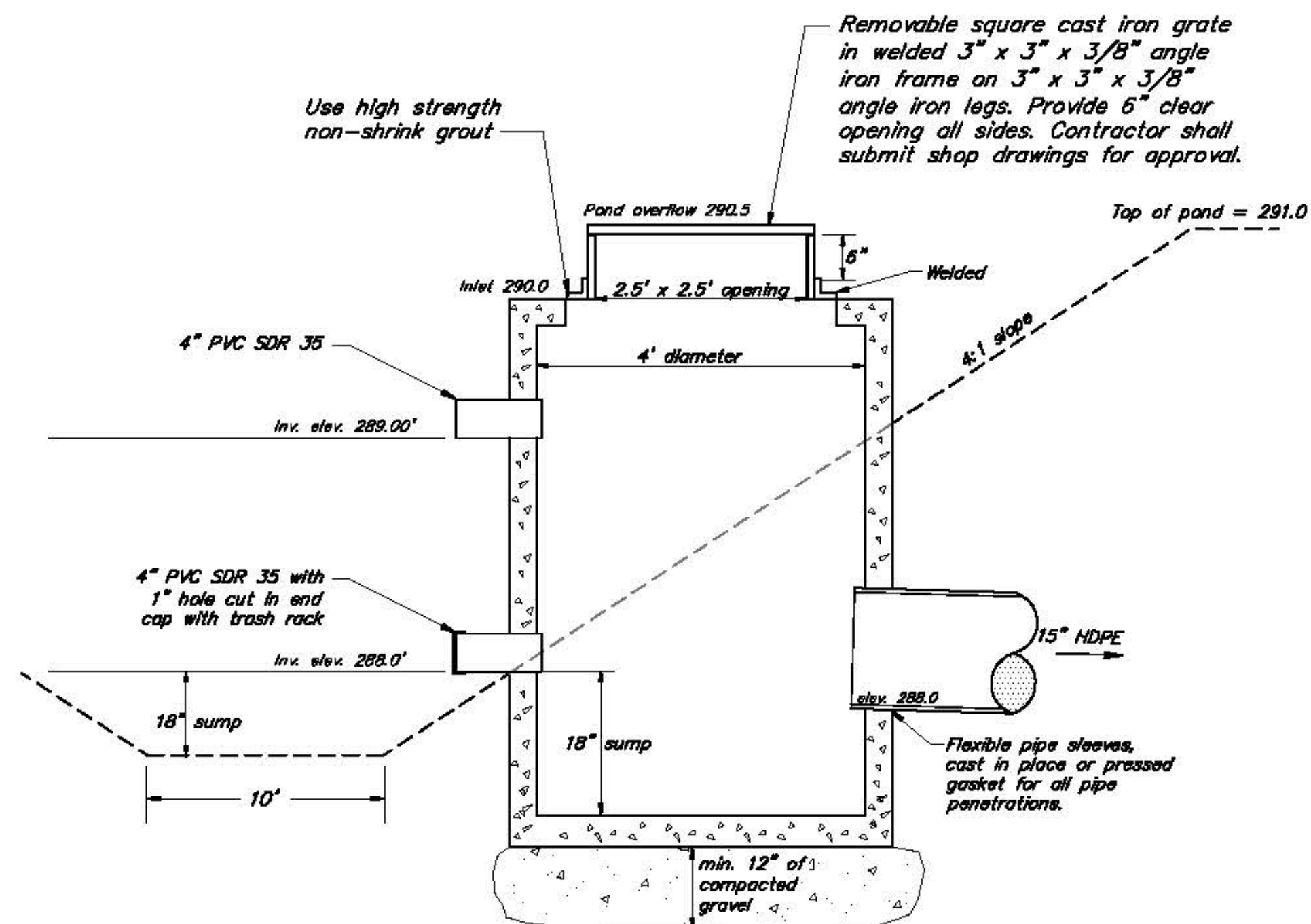
FOR PERMIT REVIEW

March 4, 2009	project name	swb	3/4/09
Date revised	Description	Checked	Date
Design	SWH	Road Details	
Drawn	SWH		
Checked		Pincrest Ridge	
Scale	n.t.s.		
Date	July 14, 2008	Baldwin & Burritt Road	
Project	07237		
KREBS & LANSING Consulting Engineers, Inc.		Hinesburg, Vermont	
164 Main Street, Colchester, Vermont 05446		6	

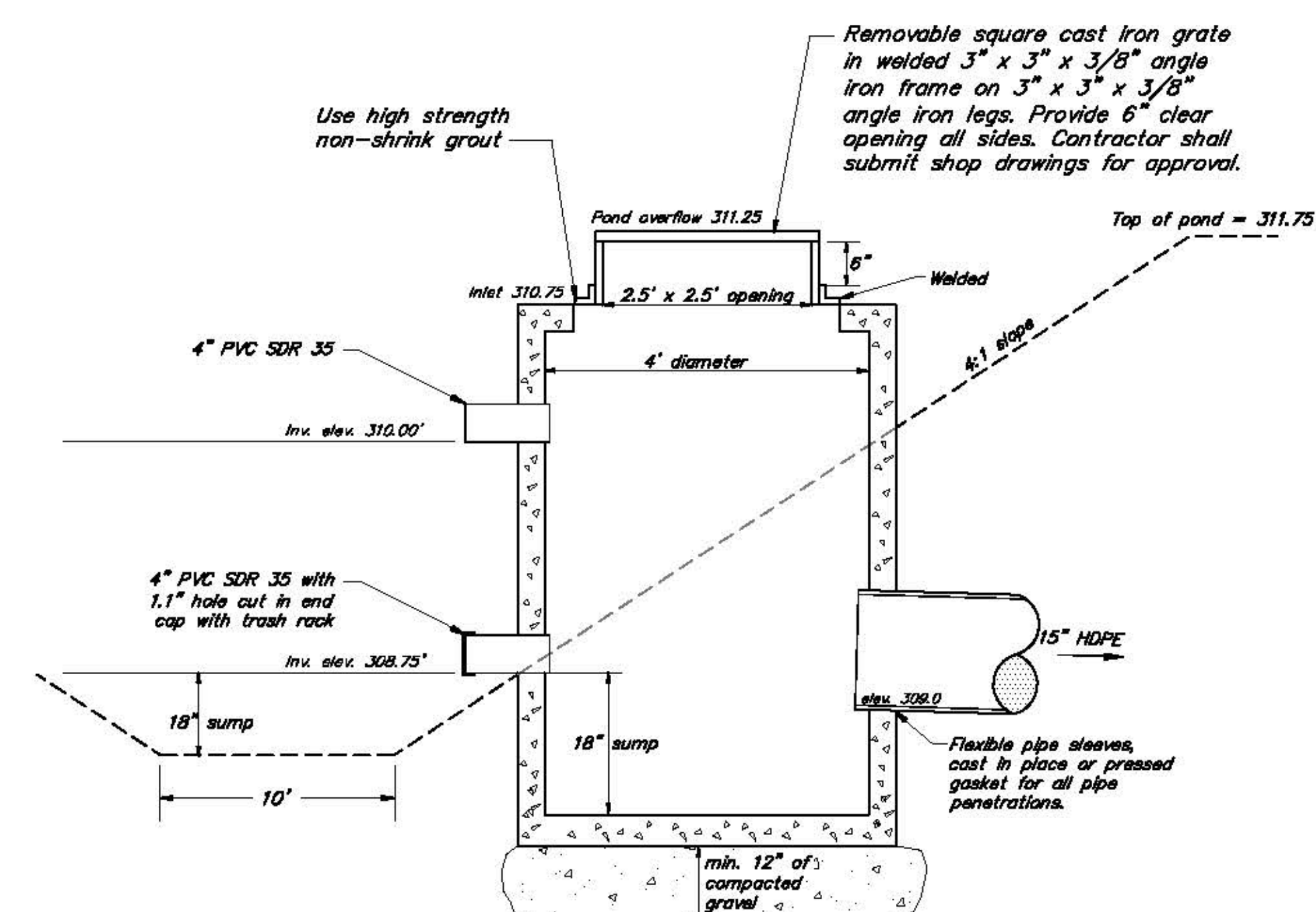




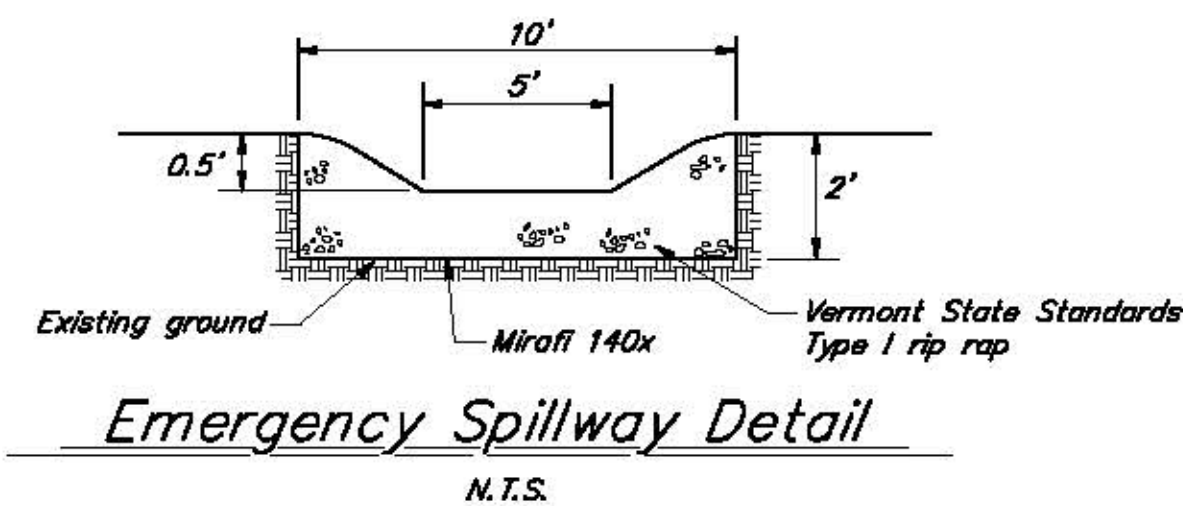
Dry Detention Pond #1  
Outlet Detail  
N.T.S.



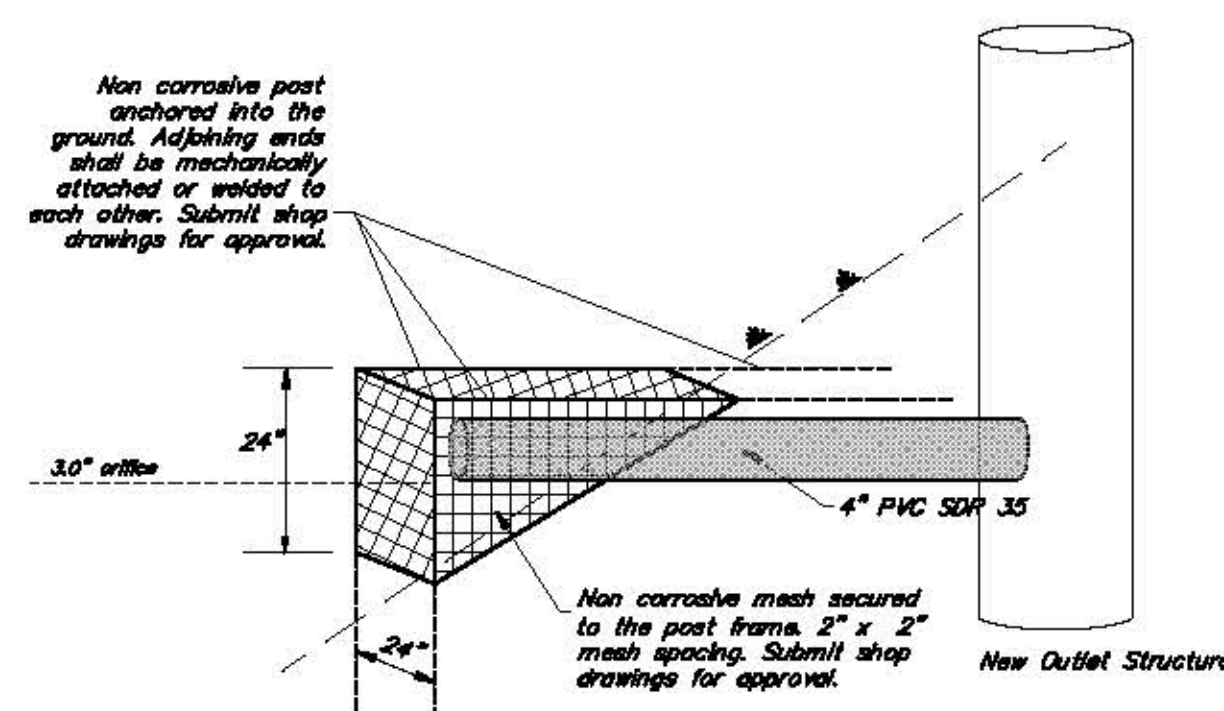
Dry Detention Pond #2  
Outlet Detail  
N.T.S.



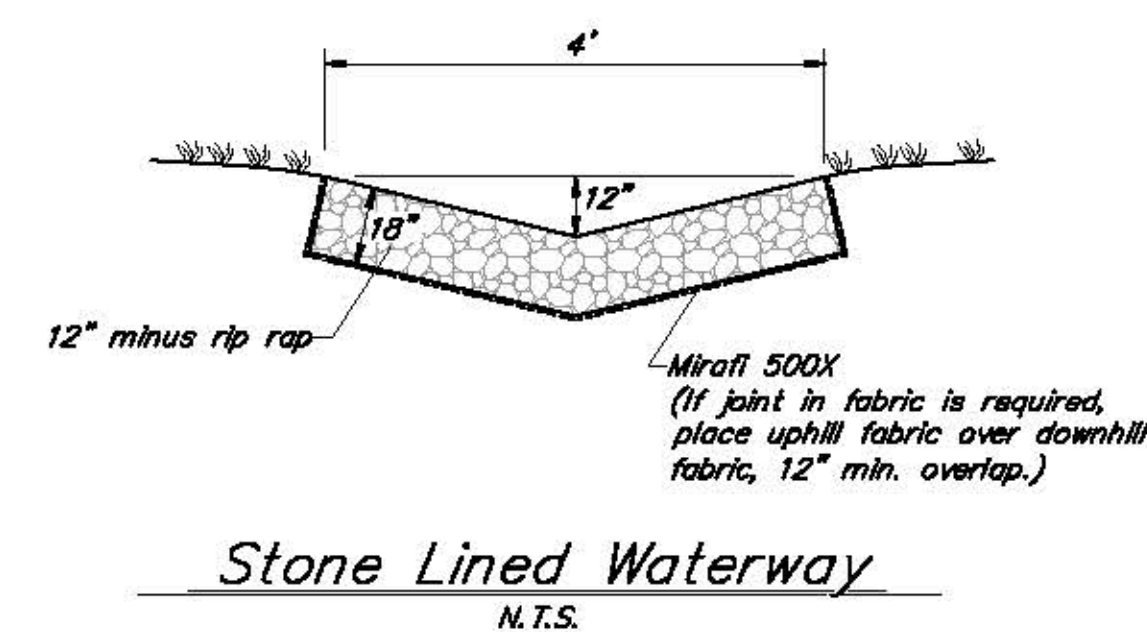
Dry Detention Pond #3  
Outlet Detail  
N.T.S.



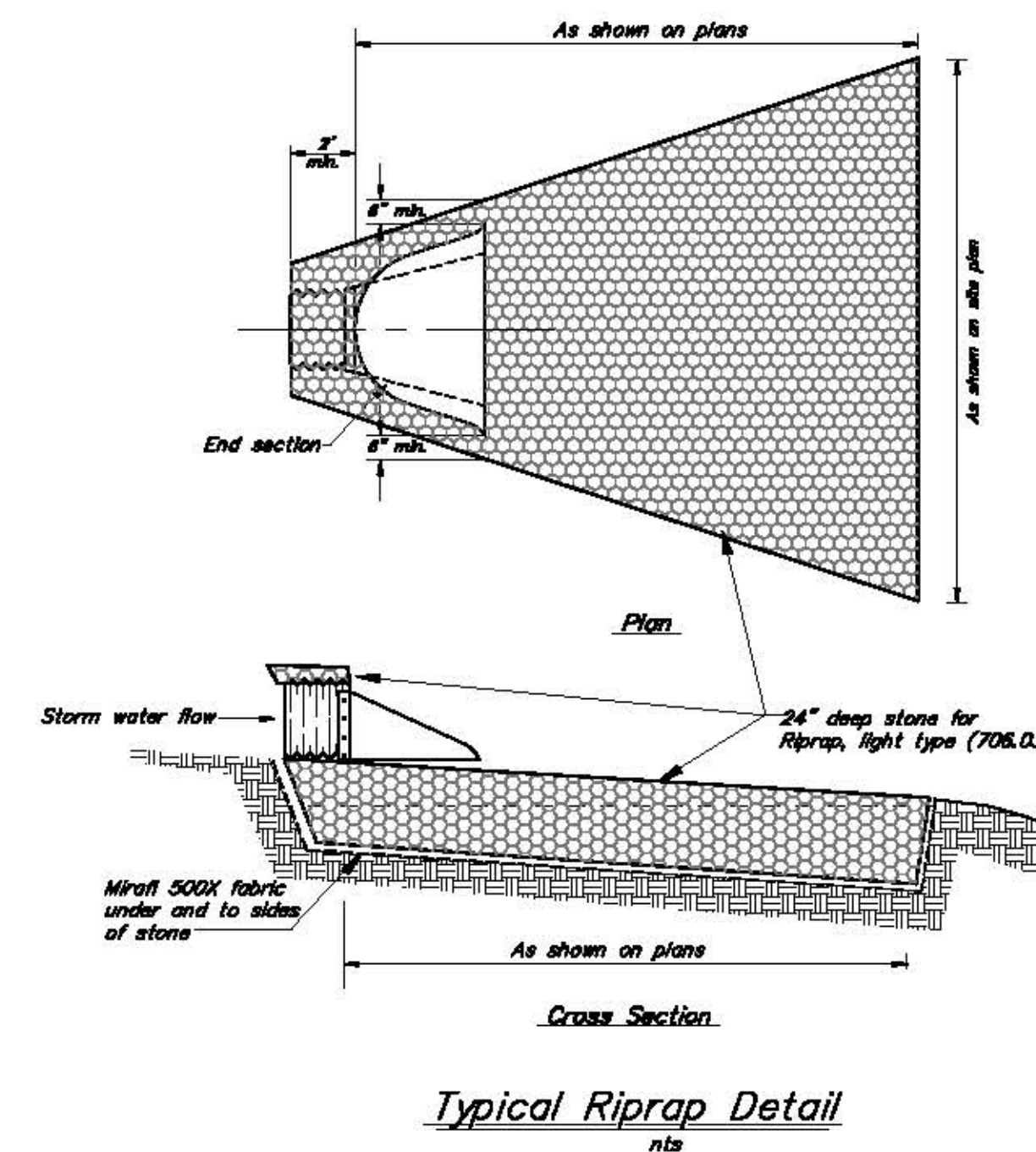
Emergency Spillway Detail  
N.T.S.



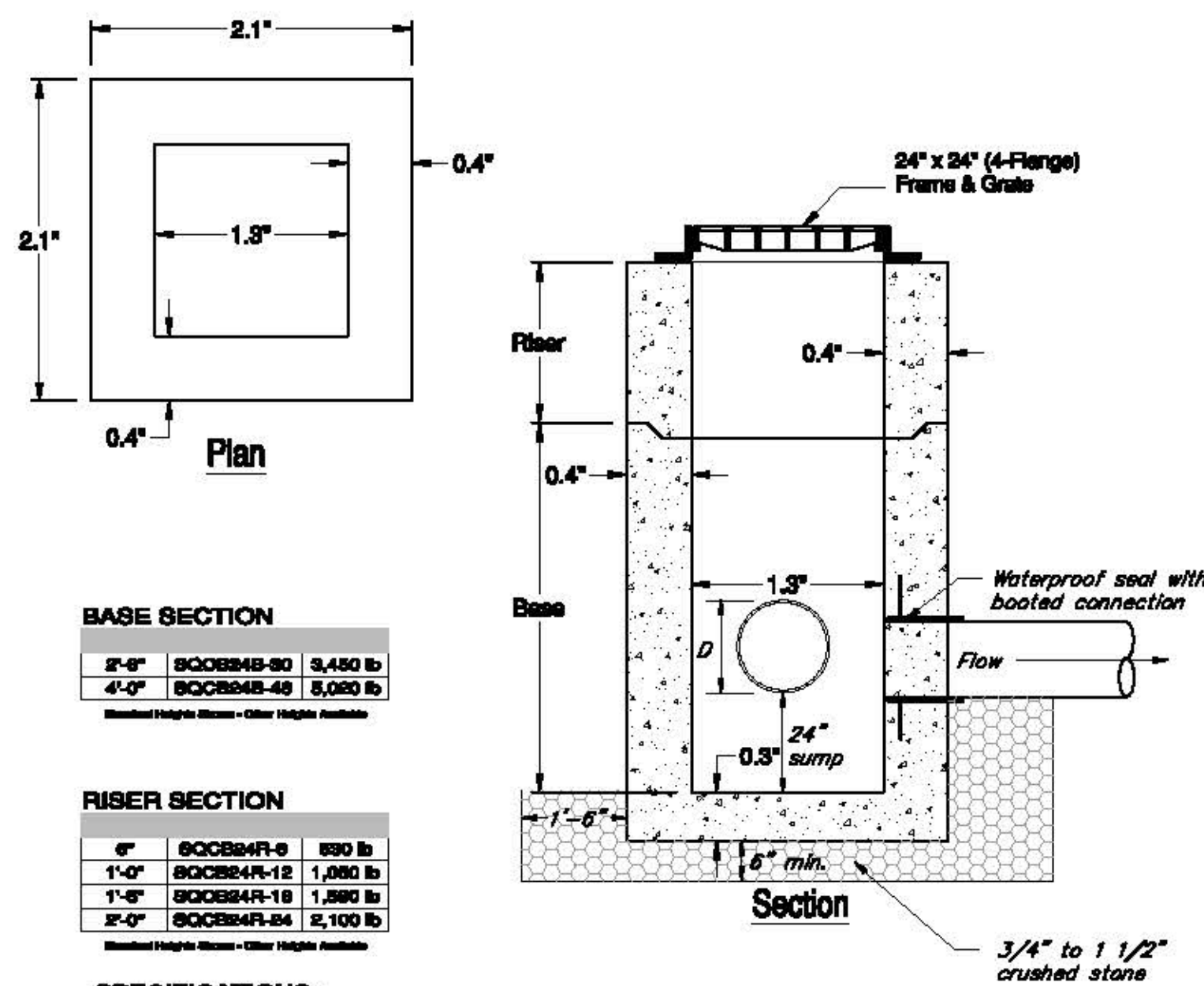
Dry Ponds #1, #2, & #3  
Trash Rack Detail  
Not to Scale



Stone Lined Waterway  
N.T.S.



Typical Riprap Detail  
n/s



Typical 24" Square Catch Basin  
N.T.S.

Vermont Stormwater Treatment Standards Section 3

**3.6 Environmentally Sensitive Rural Development Credit**

This credit is given when a group of environmental site design techniques are applied to lower density or rural residential development. The credit eliminates the need for structural practices to treat both the Re, and WQ, and can reduce required volumes for CP, and Qp.

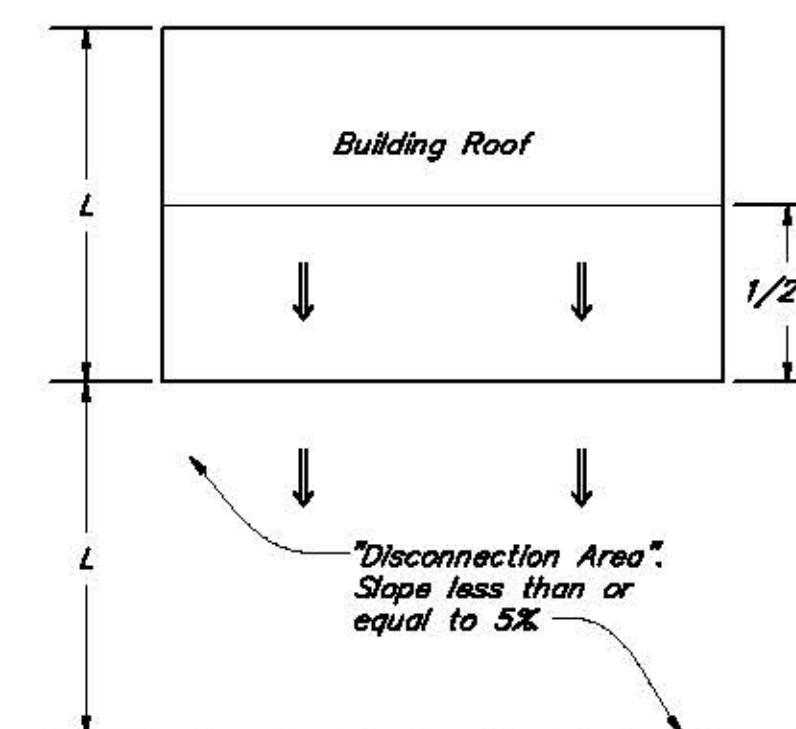
*Minimum Criteria for Credit*

The Re, and WQ, requirements are completely met without the use of structural practices in certain low density (a maximum of 1 unit per 2 acres as an average over the total project area) residential developments when the following conditions are met:

- The total impervious cover footprint is less than 8% of lot and project area. ✓
- A minimum of 25% of the project is protected in natural conservation areas. ✓
- Rooftop runoff is disconnected in accordance with the criteria outlined under Credit 2 (Section 3.2). ✓
- Grass channels are used to convey runoff versus curb and gutter for roads and/or driveways (with no specific constraints on water quality volume, velocity or minimum retention time). ✓
- Stream buffers are incorporated into the site design on both perennial and intermittent streams (where applicable). ✓

The designer must still address applicable stormwater detention for all roadway and connected impervious surfaces (i.e., CP, Q<sub>10</sub>, and Q<sub>100</sub>).

- Notes:**
- Contributing length of rooftop (L) shall be 75 feet or less.
  - If downspouts are used, the contributing rooftop area to a downspout shall not exceed 1000 sq. ft.
  - The length of the disconnection area must be equal or greater to the contributing rooftop length.
  - Downspouts must be located at least 10 ft. from the nearest impervious surface.



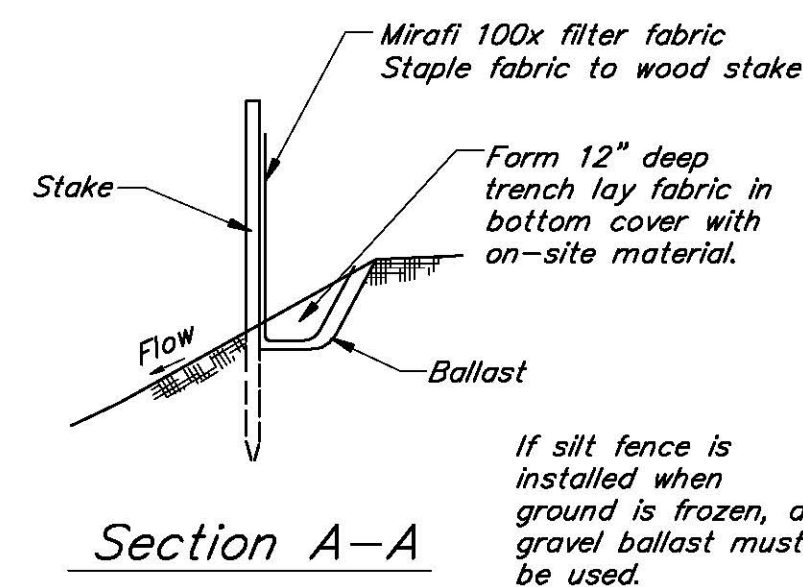
Disconnection of Rooftop Runoff Schematic  
N.T.S.

March 4, 2009	project name, outlet structures	swt	3/4/09
Date revised	Description	Checked	Date
Design	SMH	Stormwater Details	
Drawn	SMH		
Checked		Pinecrest Ridge	
Scale	n.t.s.		
Date	July 14, 2008		
Project	07237	Baldwin & Burritt Road	Hinesburg, Vermont
KREBS & LANSING Consulting Engineers, Inc.			7
164 Main Street, Colchester, Vermont 05446			



## Erosion Control Notes

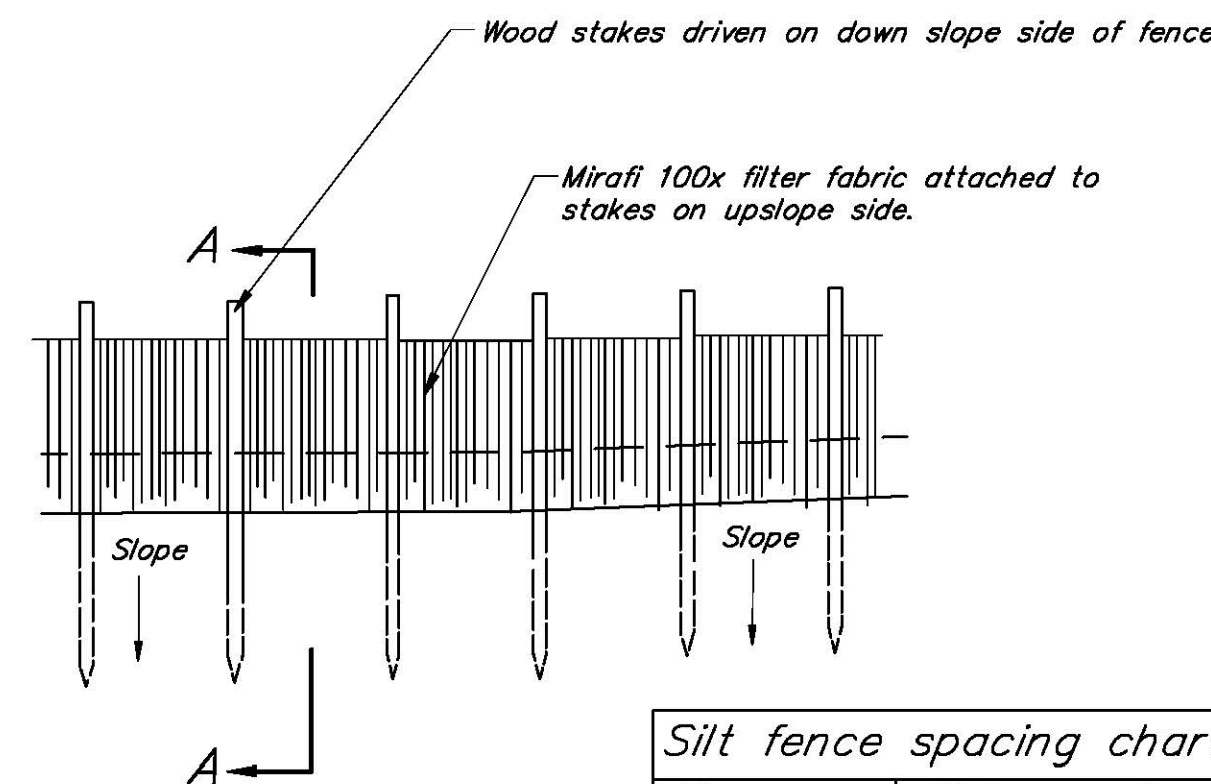
- The limit of disturbance shall be clearly defined prior to clearing. Erosion control shall be established to trap sediment on site.
- The site shall then be cleared and grubbed. All roots, stumps and deleterious materials shall be removed from the site. The Contractor shall minimize the amount of disturbed land at any given time.
- All erosion controls shall be installed as detailed in the publication State of Vermont Low Risk Site Handbook for Erosion Prevention and Sediment Control.
- All erosion control shall be placed as shown on the drawings or as ordered by the Engineer. The Contractor shall maintain the erosion control measures until the Engineer is satisfied that permanent ground cover is established and that further measures are not required.
- The erosion controls shall be checked regularly by the Engineer. Any necessary repairs or modifications shall be immediately completed by the Contractor.
- All excess material and topsoil shall be stockpiled in areas approved by the Engineer. These stockpiles shall be surrounded by hay bale erosion control dams and shall be seeded and mulched to minimize erosion potential as directed by Engineer.
- As disturbed areas are graded and topsoiled, they will be seeded and mulched to reduce the erosion potential of the soil.
- Any drainage swales with a slope greater than 5% shall use a stone lining for stabilization. See Engineer for detail.
- When erosion control measures are deemed no longer necessary, all materials detained, including silts and construction runoff debris, shall be collected and disposed of in a manner acceptable to the Engineer.
- The Contractor shall use water and/or calcium chloride for dust control.
- All erosion controls shall be installed prior to October 1 for winter construction.
- Additional erosion controls shall be installed as directed by the Site Engineer.
- The Engineer will regularly inspect the erosion controls in place to ensure their proper installation.
- All disturbed areas not involved in winter construction shall be mulched and seeded before October 1.
- All winter construction areas will be stabilized by mulch for winter/spring meltowns and when winter construction has halted.



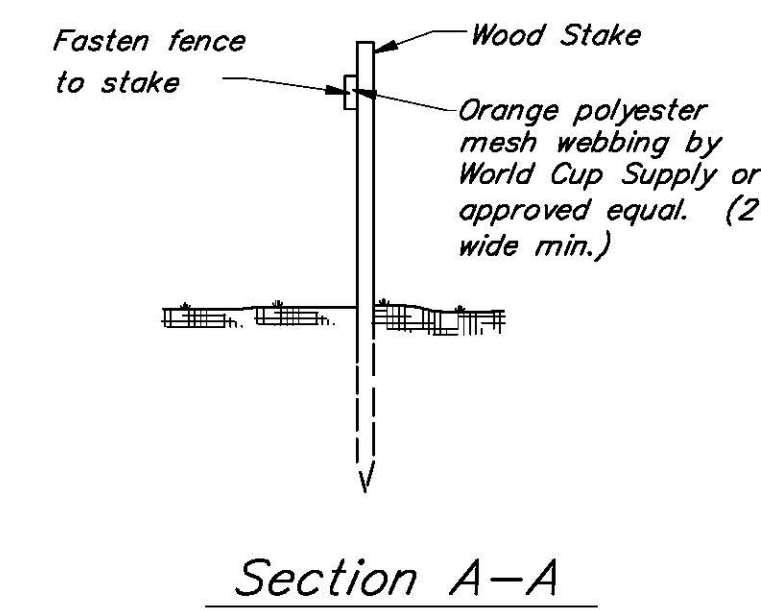
If silt fence is installed when ground is frozen, a gravel ballast must be used.

### Typical Temporary Silt Fence

(Rev. 2-2-06) N.T.S. Silt.dwg

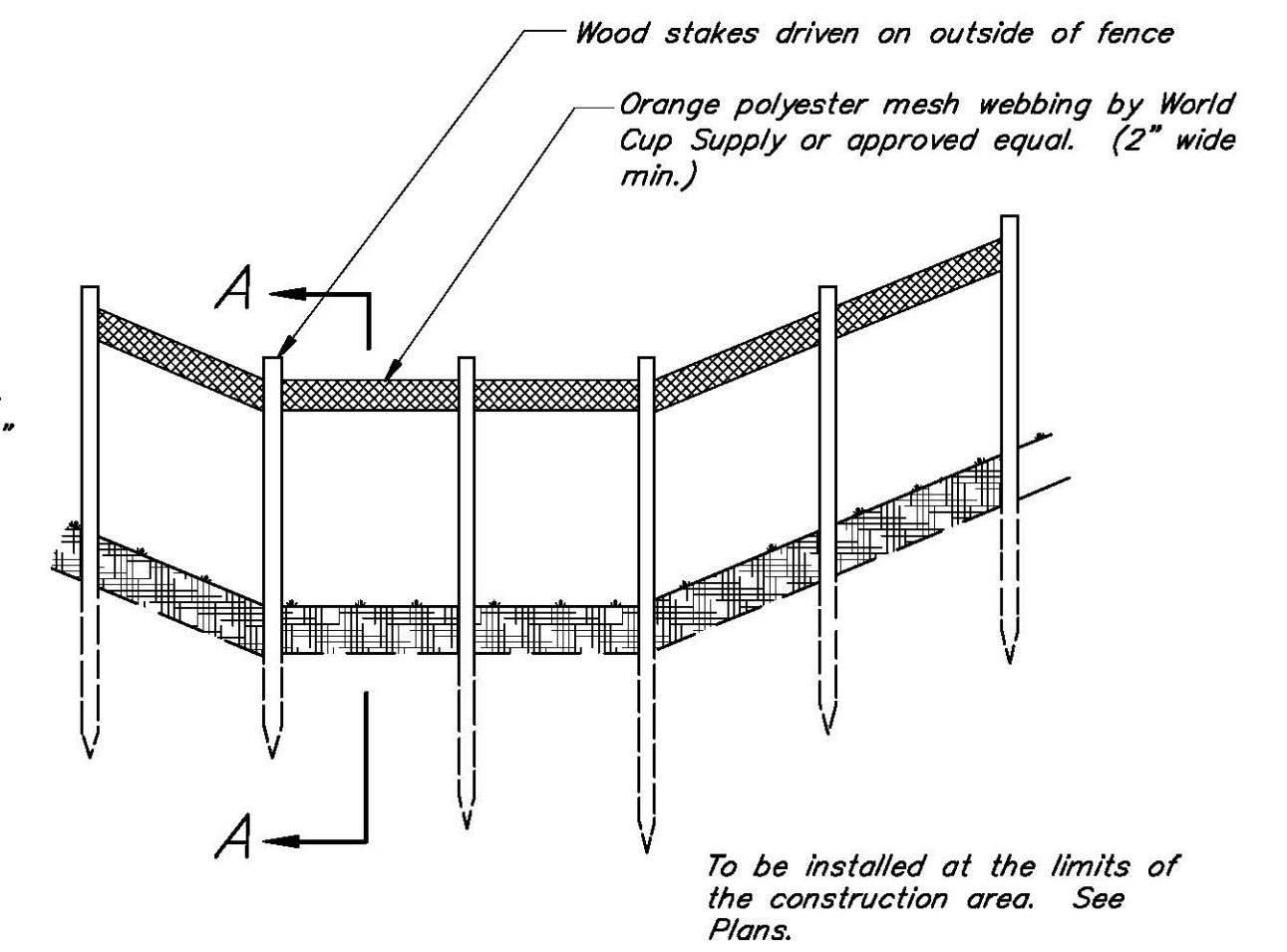


Slope	silt fence spacing
5% to 10%	50 ft. or less
10% to 20%	25 ft. or less
> 20%	15 ft. or less



### Typical Construction Limit Barrier

(Rev. 1-19-06) N.T.S. const-barrierfr.dwg



## Erosion Control Matting

### North American Green S75

#### Material Specifications

Erosion control blanket shall be a machine-produced mat of 100% agricultural straw.

The blanket shall be of consistent thickness with the straw evenly distributed over the entire area of the mat. The blanket shall be covered on the top side with polypropylene netting having an approximate 1/2" X 1/2" mesh and be sewn together with cotton thread.

Straw erosion control blanket shall be S75 as manufactured by North American Green, Inc. (812-867-6632) or equivalent. Erosion control blanket shall have the following properties:

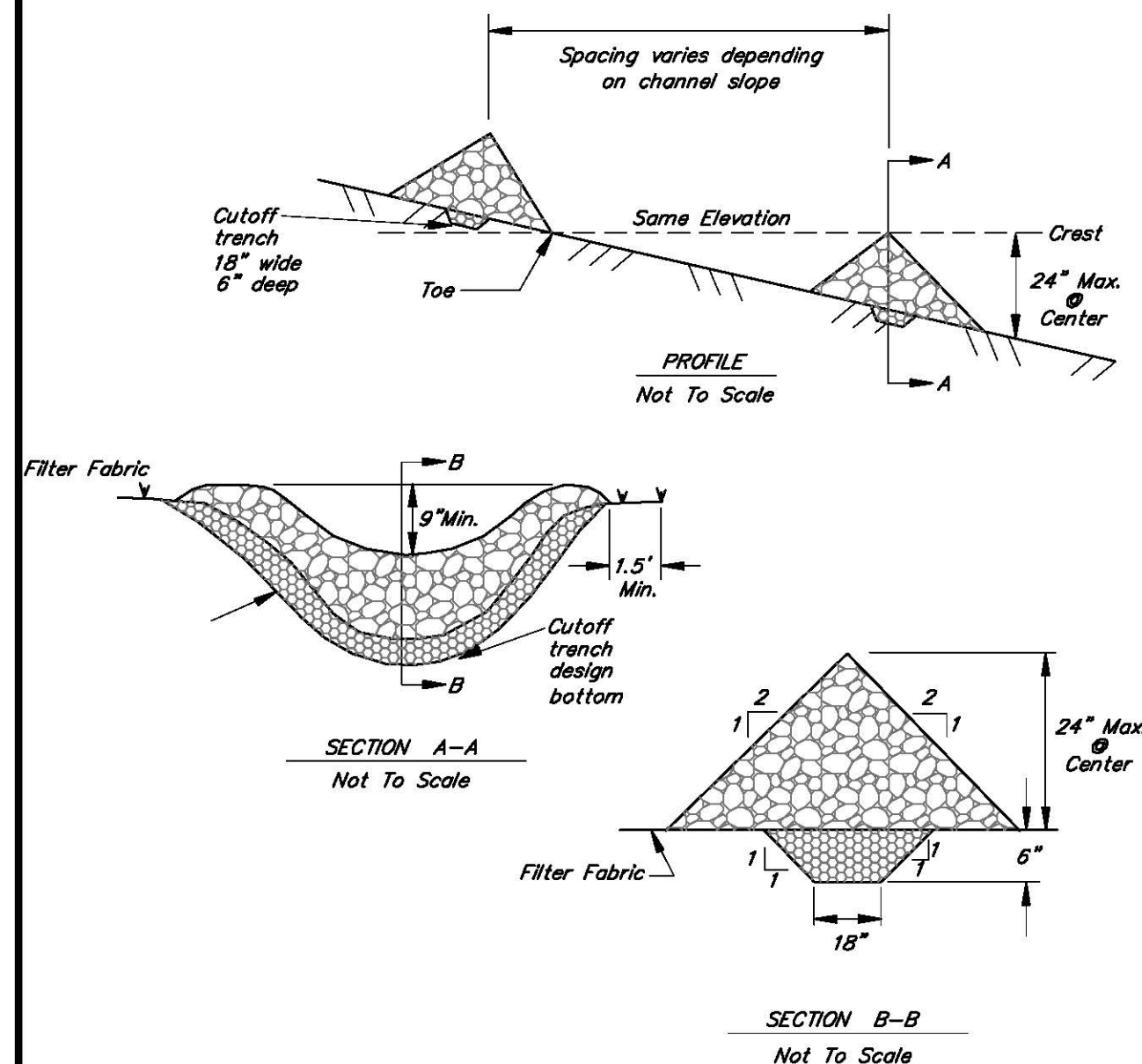
#### Material Content

Straw	100%
	(.50 lbs./sq.yd.) (.27 kg/m <sup>2</sup> )
Netting	One side only, photodegradable
	Weight approximately 1.64 lbs/1000 sq. ft.
Thread	Cotton

#### Physical Specifications (Roll)

Width	6.5 feet (2m)
Length	83.5 feet (25.4m)
Weight	30 lbs +/- 10% (13.6 kg)
Area	60 sq. yds. (50m <sup>2</sup> )

Installed as per manufacturer's specifications.

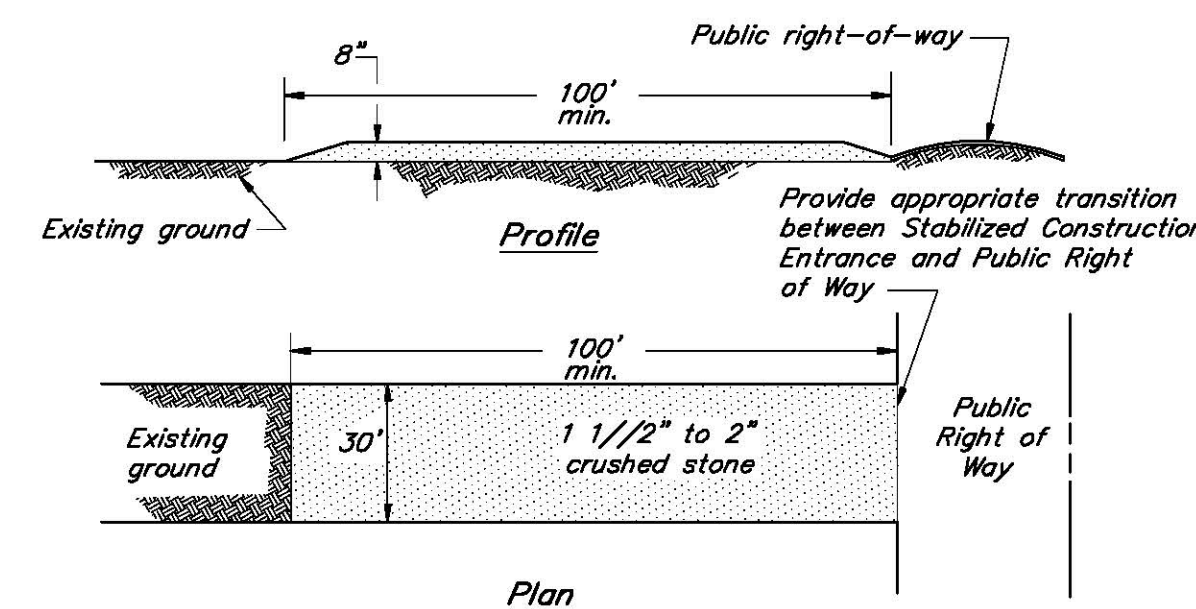


#### CONSTRUCTION SPECIFICATIONS

- Stone will be placed on a filter fabric foundation to the lines. Grades and locations shown in the plan.
- Set spacing of check dams to assume that the elevations of the crest of the downstream dam is at the same elevation of the toe of the upstream dam.
- Extend the stone a minimum of 1.5 feet beyond the ditch banks to prevent cutting around the dam.
- Protect the channel downstream of the lowest check dam from scour and erosion with stone or liner as appropriate.
- Ensure that channel appurtenances such as culvert entrances below check dams are not subject to damage or blockage from displaced stones.

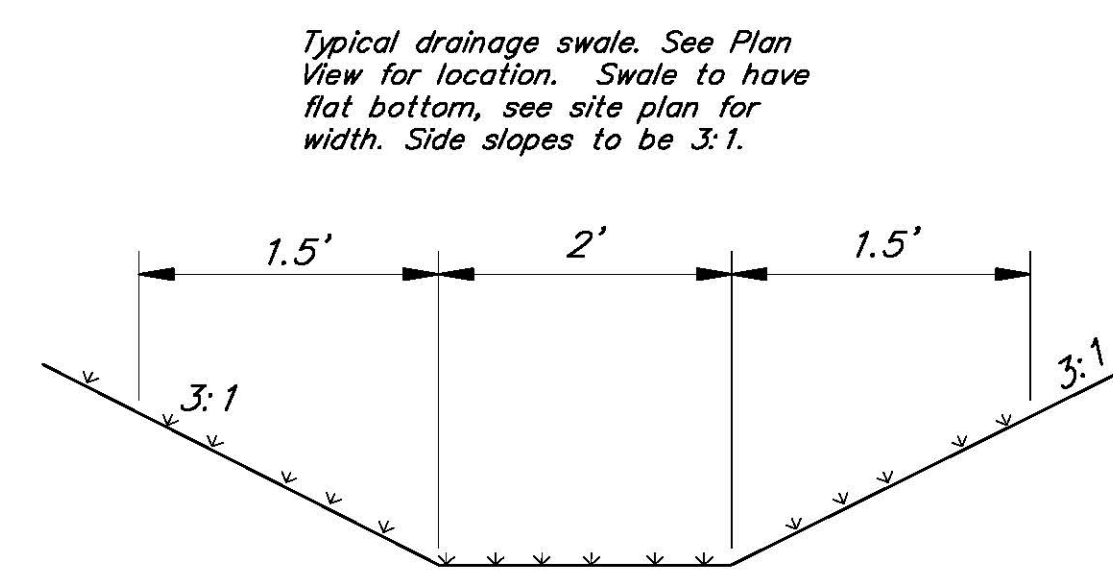
### Stone Check Dam Detail

N.T.S.



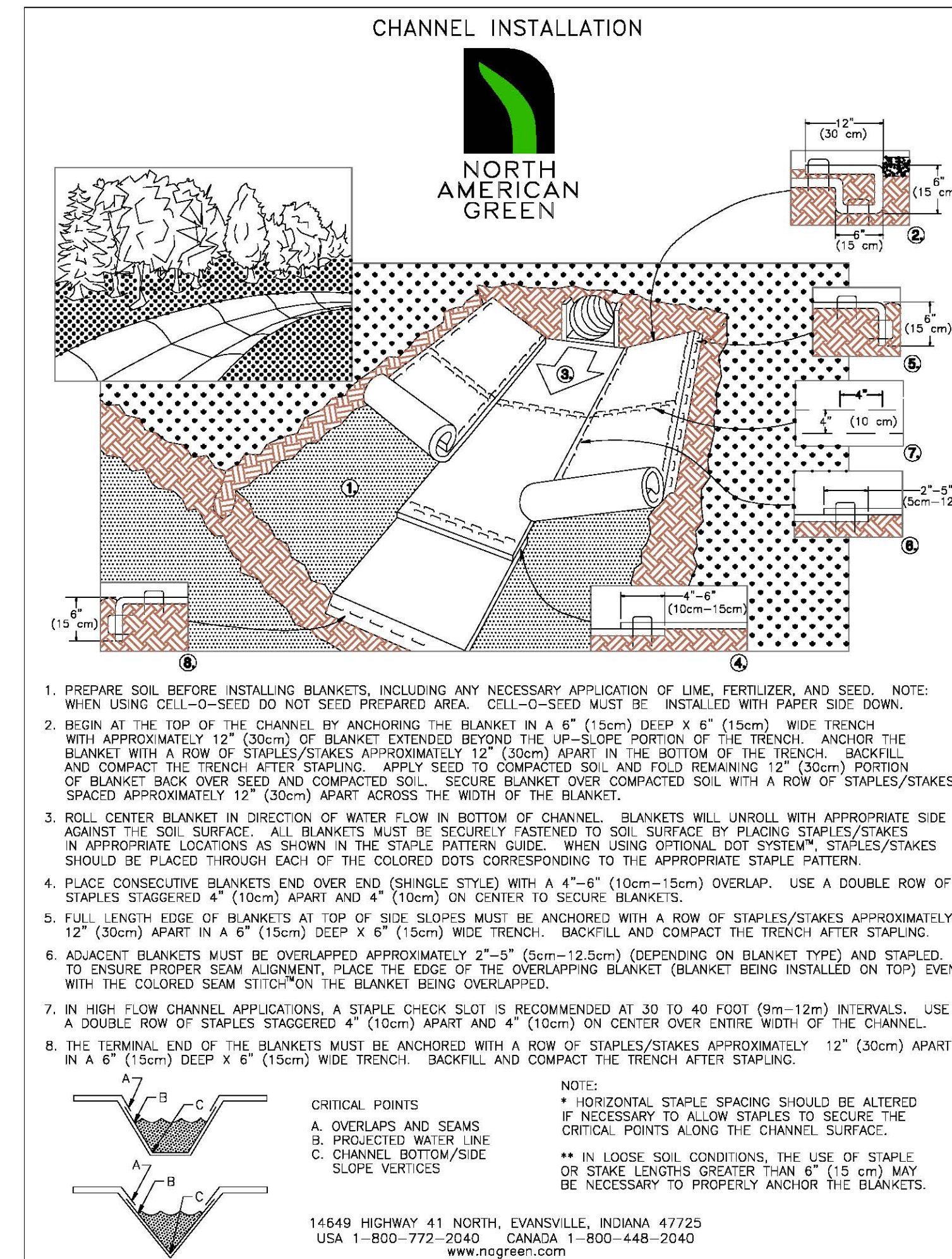
### Stabilized Construction Entrance

N.T.S.



### Grass Swale Cross Section

N.T.S.

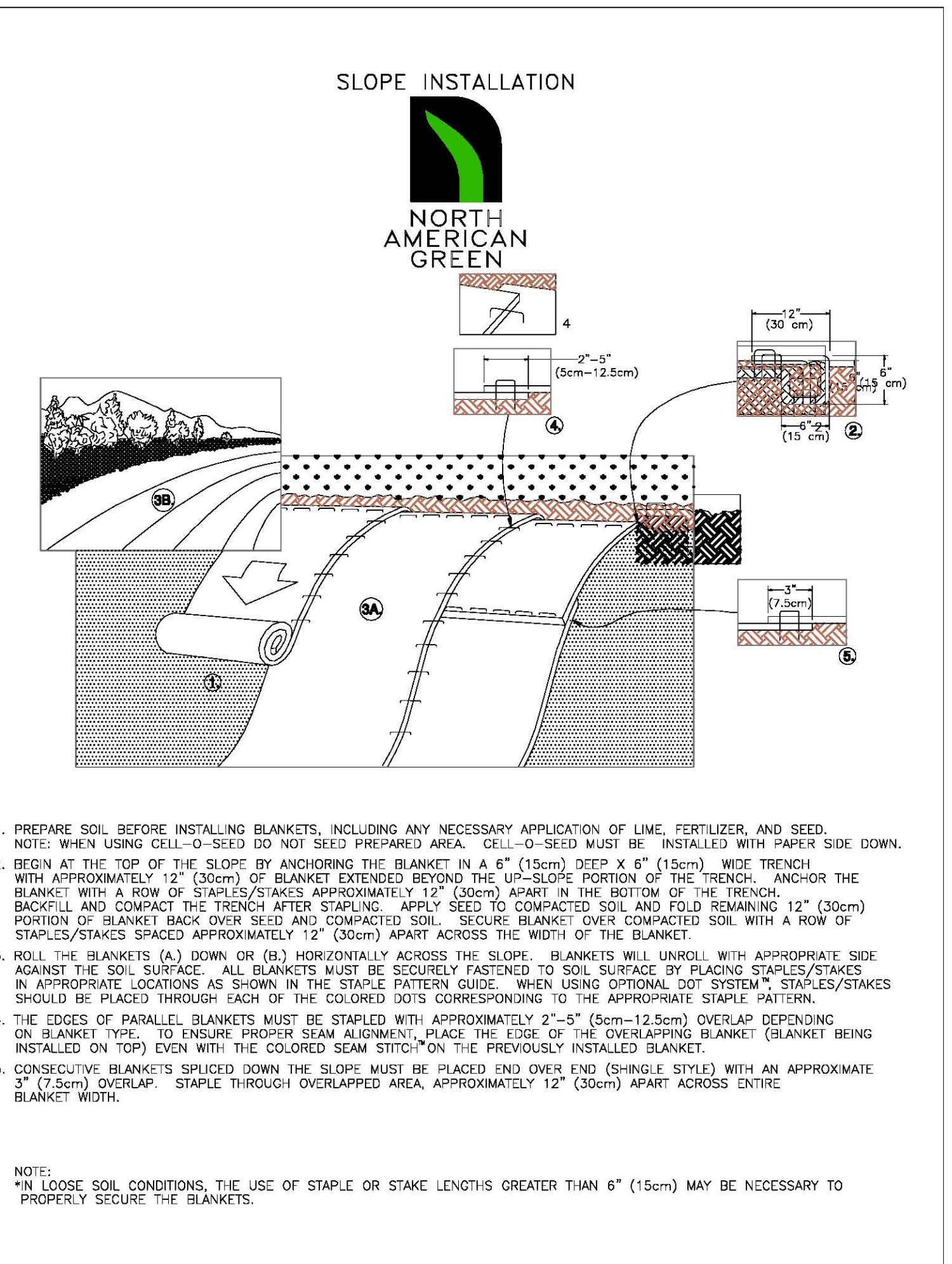


- PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING CELL-0-SEED DO NOT SEED PREPARED AREA. CELL-0-SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
- BEGIN AT THE TOP OF THE CHANNEL BY ANCHORING THE BLANKET IN A 6" (15cm) DEEP X 6" (15cm) WIDE TRENCH WITH APPROXIMATELY 12" (30cm) OF BLANKET EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30cm) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" (30cm) PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30cm) APART ACROSS THE WIDTH OF THE BLANKET.
- ROLL CENTER BLANKET IN DIRECTION OF WATER FLOW IN BOTTOM OF CHANNEL. BLANKETS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL BLANKETS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING OPTIONAL DOT SYSTEM, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
- PLACE CONSECUTIVE BLANKETS END OVER END (SHINGLE STYLE) WITH A 4"-6" (10cm-15cm) OVERLAP. USE A DOUBLE ROW OF STAPLES STAGGERED 4" (10cm) APART AND 4" (10cm) ON CENTER TO SECURE BLANKETS.
- FULL LENGTH EDGE OF BLANKETS AT TOP OF SIDE SLOPES MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30cm) APART IN A 6" (15cm) DEEP X 6" (15cm) WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
- ADJACENT BLANKETS MUST BE OVERLAPPED APPROXIMATELY 2"-5" (5cm-12.5cm) (DEPENDING ON BLANKET TYPE) AND STAPLED. TO ENSURE PROPER SEAM ALIGNMENT, PLACE THE EDGE OF THE OVERLAPPING BLANKET (BLANKET BEING INSTALLED ON TOP) EVEN WITH THE COLORED SEAM STITCH ON THE BLANKET BEING OVERLAPPED.
- IN HIGH FLOW CHANNEL APPLICATIONS, A STAPLE CHECK SLOT IS RECOMMENDED AT 30 TO 40 FOOT (9m-12m) INTERVALS. USE A DOUBLE ROW OF STAPLES STAGGERED 4" (10cm) APART AND 4" (10cm) ON CENTER OVER ENTIRE WIDTH OF THE CHANNEL.
- THE TERMINAL END OF THE BLANKETS MUST BE ANCHORED WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30cm) APART IN A 6" (15cm) DEEP X 6" (15cm) WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.

CRITICAL POINTS  
A. OVERLAPS AND SEAMS  
B. PROJECTED WATER LINE  
C. CHANNEL BOTTOM/SIDE SLOPE VERTICES

NOTE:  
\* HORIZONTAL STAPLE SPACING SHOULD BE ALTERED IF NECESSARY TO ALLOW STAPLES TO SECURE THE CRITICAL POINTS ALONG THE CHANNEL SURFACE.  
\*\* IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" (15 cm) MAY BE NECESSARY TO PROPERLY ANCHOR THE BLANKETS.

14649 HIGHWAY 41 NORTH, EVANSVILLE, INDIANA 47725  
USA 1-800-772-2040 CANADA 1-800-448-2040  
www.nagreen.com



- PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING CELL-0-SEED DO NOT SEED PREPARED AREA. CELL-0-SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
- BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A 6" (15cm) DEEP X 6" (15cm) WIDE TRENCH WITH APPROXIMATELY 12" (30cm) OF BLANKET EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" (30cm) APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" (30cm) PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" (30cm) APART ACROSS THE WIDTH OF THE BLANKET.
- ROLL THE BLANKETS (A) DOWN OR (B) HORIZONTALLY ACROSS THE SLOPE. BLANKETS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL BLANKETS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING OPTIONAL DOT SYSTEM, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
- THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH APPROXIMATELY 2"-5" (5cm-12.5cm) OVERLAP DEPENDING ON BLANKET TYPE. TO ENSURE PROPER SEAM ALIGNMENT, PLACE THE EDGE OF THE OVERLAPPING BLANKET (BLANKET BEING INSTALLED ON TOP) EVEN WITH THE COLORED SEAM STITCH ON THE PREVIOUSLY INSTALLED BLANKET.
- CONSECUTIVE BLANKETS SPICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" (7.5cm) OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" (30cm) APART ACROSS ENTIRE BLANKET WIDTH.

NOTE:  
\* IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" (15cm) MAY BE NECESSARY TO PROPERLY SECURE THE BLANKETS.

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www.nagreen.com

March 4, 2009	project name	sw	3/4/09
Date revised	Description	Checked	Date
Design	SWH	Erosion Control Details	
Drawn	SWH		
Checked		Pinecrest Ridge	
Scale	n.t.s.		
Date	July 14, 2008		
Project	07237	Baldwin & Burritt Road	Hinesburg, Vermont
KREBS & LANSING Consulting Engineers, Inc.			sw
164 Main Street, Colchester, Vermont 05446			8

FOR PERMIT REVIEW



**The Low Risk Site Handbook for Erosion Prevention and Sediment Control**



**The Low Risk Site Handbook for Erosion Prevention and Sediment Control**

Any construction activity that disturbs 1 or more acres of land, or is part of a larger development plan that will disturb 1 or more acres, requires a Vermont state permit for stormwater discharges from construction sites.

Construction General Permit 3-9020 guides an applicant in the determination of the potential risk to water quality from the construction activity and categorizes the applicant's activity as Low Risk, Moderate Risk, or that which requires an Individual Permit.

The standards in this handbook serve as the required Erosion Prevention and Sediment Control Plan for construction sites determined to be "Low Risk" under GP-3-9020.

**Contact Information**  
 VT DEC - Water Quality Division  
 Stormwater Section  
 103 South Main Street, Building 10 North  
 Waterbury, VT 05671-0408  
 Tel: 802-241-3770 or 4320  
 www.vtwaterquality.org/stormwater.htm

**How to install:**  
 Rock Size: Use a mix of 1 to 4 inch stone  
 Depth: 6 inches minimum  
 Width: 12 feet minimum  
 Length: 40 feet minimum (or length of driveway, if shorter)  
**Geotextile:** Place filter cloth under entire gravel bed  
**Maintenance:**  
 Address with clean stone as required to keep sediment from tracking onto the street.

Good stabilized construction entrance. Adequate width to accommodate construction traffic and prevent mud tracking onto neighboring streets. Ensure that the bed is 6 inches deep and 12 feet wide. Stabilize Construction Entrance

**4. Install Silt Fence**  
**Purpose:**  
 Silt fences intercept runoff and allow suspended sediment to settle out.  
**Requirements:**  
 Silt fence must be installed:  
 • on the downhill side of the construction activities  
 • between any ditch, swale, storm sewer inlet, or waters of the State and the disturbed soil  
 • Hay bales must not be used as sediment barriers due to their tendency to erode and fall apart.

Temporary silt fence on the downhill side. Dig down first, install fence in downhill side of trench, backfill into trench, then backfill on the uphill side the slope toward the area to be protected.

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**6. Slow Down Channelized Runoff**  
**Purpose:**  
 Stone check dams reduce erosion in drainage channels by slowing down the stormwater flow.  
**Requirements:**  
 If there is a concentrated flow (e.g. in a ditch or channel) of stormwater on your site, then you must install stone check dams. Hay bales must not be used as check dams.  
**How to install:**  
 Height: No greater than 2 feet. Center of dam should be 6 inches lower than the side elevation  
 Side slopes: 2:1 or flatter (see p.39 for slope calculation)  
 Stone size: Use a mixture of 2 to 9 inch stone  
 Width: Dams should span the width of the channel and extend up the sides of the banks  
 Spacing: Space the dams so that the bottom (top) of the upstream dam is at the elevation of the top (crest) of the downstream dam. This spacing is equal to the height of the check dam divided by the channel slope.  
 Spacing (in feet) = Height of check dam (in feet) / Slope in channel (ft/ft)  
**Maintenance:**  
 Remove sediment accumulated behind the dam

as needed to allow channel to drain through the stone check dam and prevent large flows from carrying sediment over the dam.  
 If significant erosion occurs between check dams, a liner of stone should be installed.

Check dams must be installed before excavation or soil activities begin. See "How to install" for spacing directions.

**Section 1 Introduction**  
**What is erosion prevention and sediment control?**  
 Sediment washing into streams is one of the largest water quality problems in Vermont. Sediment can kill or weaken fish and other organisms and adversely impact aquatic habitat.  
 On most construction sites, vegetation that holds the soil in place and protects it from erosive forces of rain and runoff is removed, leaving large areas of soil exposed to the elements. During rainfall or snowmelt, the exposed soil may be easily eroded and transported to nearby streams, lakes, or wetlands.

On most construction sites, vegetation that holds the soil in place and protects it from erosive forces of rain and runoff is removed, leaving large areas of soil exposed to the elements. During rainfall or snowmelt, the exposed soil may be easily eroded and transported to nearby streams, lakes, or wetlands.

**7. Construct Permanent Controls**  
**Purpose:**  
 Permanent stormwater treatment practices are constructed to maintain water quality, ensure groundwater flows, and prevent downstream flooding. Practices include detention ponds and wetlands, infiltration basins, and stormwater filters.  
**Requirements:**  
 If the total impervious area on your site, or within the common plan of development, will be 1 or more acres, you must apply for a Stormwater Discharge Permit and construct permanent stormwater treatment practices on your site. These practices must be installed before the construction of any impervious surfaces.  
**How to comply:**  
 Contact the Vermont Stormwater Program and follow the requirements in the Vermont Stormwater Management Manual.  
 The Stormwater Management Manual is available at: www.vtwaterquality.org/stormwater.htm

This pond is designed to treat stormwater runoff, recharge groundwater, regulate the flow of water into nearby streams, and prevent downstream flooding.

**Do I need a permit?**  
 Any construction activity that disturbs 1 or more acres of land, or is part of a larger development plan that will disturb 1 or more acres, requires a Vermont state permit for stormwater discharges from construction sites.

**Application Process**  
 1. Obtain a copy of the permit and determine the Risk Category of the proposed project. The permit is available online at: www.vtwaterquality.org/stormwater.htm.  
 2. Submit the Notice of Intent (NOI) form, notifying the Department of your intent to begin construction. Submit the NOI to DEC at least 60 days before you plan to begin construction to allow sufficient time for processing.  
 3. Upon receipt of written authorization from DEC, you are covered under the permit and may begin construction.  
 4. If your project is determined to be "Low Risk", you must follow this handbook for erosion prevention and sediment control on your construction site.  
 5. If your site is not classified as Low Risk, then you must follow the Department guidance in GP 3-9020 for Moderate Risk activities or those requiring an Individual Permit.

**Where to place:**  
 Place silt fence on the downhill edge of bare soil. At the bottom of slopes, place fence 10 feet downhill from the end of the slope (if space is available).  
 Ensure the silt fence catches all runoff from bare soil.  
 Maximum drainage area is 1/4 acre for 300 feet of silt fence.  
 Install silt fence across the slope (not up and down hills).  
 Install multiple rows of silt fence on long hills to break up flow.  
 Do not install silt fence across ditches, channels, or streams or in stream buffers.  
**How to install silt fence:**  
 Dig a trench 6 inches deep across the slope  
 Unroll silt fence along the trench  
 Ensure stakes are on the downhill side of the fence  
 Join fencing by rolling the end stakes together  
 Drive stakes in against downhill side of trench  
 Drive stakes until 16 inches of fabric is in trench  
 Push fabric into trench; spread along bottom  
 Fill trench with soil and pack down  
**Maintenance:**  
 Remove accumulated sediment before it is halfway up the fence.  
 Ensure that silt fence is trenched in ground and there are no gaps.  
**Install Silt Fence**

**8. Stabilize Exposed Soil**  
**Purpose:**  
 Seeding and mulching, applying erosion control matting, and hydroseeding are all methods to stabilize exposed soil. Mulches and mulches protect the soil surface while grass is establishing.  
**Requirements:**  
 All areas of disturbance must have temporary or permanent stabilization within 7, 14, or 21 days of initial disturbance, as stated on the project authorization. After this time, any disturbance in the area must be stabilized at the end of each work day.  
 The following exceptions apply:  
 • Stabilization is not required if earthwork is to continue in the area within the next 24 hours and there is no precipitation forecast for the next 24 hours.  
 • Stabilization is not required if the work is occurring in a self-contained excavation (i.e. no outlet) with a depth of 2 feet or greater (e.g. house foundation excavation, utility trenches).  
 All areas of disturbance must have permanent stabilization within 48 hours of reaching final grade (See page 33).  
**Hydroseed**  
 As per manufacturer's instructions

Stabilize Exposed Soil

**Section 2 The Requirements**  
**1. Mark Site Boundaries**  
**Purpose:**  
 Mark the site boundaries to identify the limits of construction. Delineating your site will help to limit the area of disturbance, preserve existing vegetation and limit erosion potential on the site.  
**Requirements:**  
 You must physically mark the limits of construction.

Physical staked markers mark the boundaries and limits of construction on this site.

**9. Winter Stabilization**  
**Purpose:**  
 Managing construction sites to minimize erosion and prevent sediment loading of waters is a year-round challenge. In Vermont, this challenge becomes even greater during the late fall, winter, and early spring months.  
 "Winter construction" as discussed here, describes the period between October 15 and April 15, when erosion prevention and sediment control is significantly more difficult.  
 Rains in late fall, thaws throughout the winter, and spring melt and rains can produce significant flows over frozen and saturated ground, greatly increasing the potential for erosion.  
**Requirements for Winter Construction**  
 If construction activities involving earth disturbance continue past October 15 or begin before April 15, the following requirements must be adhered to:  
 1. Enlarged access points, stabilized to provide for snow stockpiling.  
 2. Limits of disturbance moved or replaced to reflect boundary of winter work.  
 3. A snow management plan prepared with adequate storage and control of meltwater, requiring cleared snow to be stored down slope of all areas of disturbance and out of stormwater treatment structures.  
 4. A minimum 25 foot buffer shall be maintained from permanent controls such as silt fence.  
 5. In areas of disturbance that drain to a water body within 100 feet, two rows of silt fence must be installed along the contour.  
 6. Drainage structures must be kept open and free of snow and ice dams.  
 7. Silt fence and other practices requiring earth disturbance must be installed ahead of frozen ground.  
 8. Mulch used for temporary stabilization must be applied at double the standard rate, or a minimum of 3 inches with an 80-90% cover.  
 9. To ensure cover of disturbed soil in advance of a melt event, areas of disturbed soil must be stabilized at the end of each work day, with the following exceptions:  
 • If no precipitation within 24 hours is forecast and work will resume in the same disturbed area within 24 hours, daily stabilization is not necessary.  
 • Disturbed areas that collect and retain runoff, such as house foundation or open utility trenches.  
 10. Prior to stabilization, snow or ice must be removed within 100 feet, two rows of silt fence must be installed along the contour.  
 11. Use stone to stabilize areas such as the perimeter of buildings under construction or where construction vehicle traffic is anticipated. Stone paths should be 10-20 feet wide to accommodate vehicular traffic.

Green is fully stabilized before construction is completed at this house site.

**How to comply:**  
 Before beginning construction, walk the site boundaries and flag trees, post signs, or install orange safety fence.  
 Fence is required on any boundary within 50 feet of a stream, lake, pond or wetland, unless the area is already developed (existing roads, buildings, etc.)

Mark Site Boundaries

**10. Stabilize Soil at Final Grade**  
**Purpose:**  
 Stabilizing the site with seed and mulch or erosion control matting when it reaches final grade is the best way to prevent erosion while construction continues.  
**Requirements:**  
 Within 48 hours of final grading, the exposed soil must be seeded and mulched or covered with erosion control matting.  
**How to comply:**  
 Bring the site or sections of the site to final grade as soon as possible after construction is completed. This will reduce the need for additional sediment and erosion control measures and will reduce the total disturbed area.  
 For seeding and mulching rates, follow the specifications under Rule 8, "Stabilizing Exposed Soil".  
**Stabilize Soil at Final Grade**

**2. Limit Disturbance Area**  
**Purpose:**  
 Limit the amount of soil exposed at one time to reduce the potential erosion on site.  
**Requirements:**  
 The permitted disturbance area is specified on the site's written authorization to discharge. Only the acreage listed on the authorization form may be exposed at any given time.

Limit Disturbance Area

**5. Divert Upland Runoff**  
**Purpose:**  
 Diversion berms intercept runoff from above the construction site and direct it around the disturbed area. This prevents "clean" water from becoming muddied with soil from the construction site.  
**Requirements:**  
 If stormwater runs onto your site from upslope areas and your site meets the following two conditions, you must install a diversion berm before disturbing any soil.  
 1. You plan to have one or more acres of soil exposed at any one time (excluding roads).  
 2. Average slope of the disturbed area is 20% or steeper.  
 Berms and ditches divert clean runoff around construction sites and reduce erosion and sedimentation problems. Stabilize berms and ditches before disturbing soil.

Divert Upland Runoff

**3. Stabilize Construction Entrance**  
**Purpose:**  
 A stabilized construction entrance helps remove mud from vehicles wheels to prevent tracking onto streets.  
**Requirements:**  
 If there will be any vehicle traffic off of the construction site, you must install a stabilized construction entrance before construction begins.

Construction entrance detail. Entrance mat must keep mud from tracking onto curb and off road.

**How to install:**  
 2:1 SLOPE OR FLATTER  
 2:1 SLOPE OR FLATTER  
**How to comply:**  
 Prepare bare soil for seeding by grading the top 3 to 6 inches of soil and removing any large rocks or debris.  
**Seeding Rates for Temporary Stabilization**  
 April 15 - Sept. 15 - Hydroseed (annual or perennial) 20 lbs./acre  
 Sept. 15 - April 15 - Winter rye: 120 lbs./acre  
**Seeding Rates for Final Stabilization:**  

Grass Type	Variety	lbs./acre	lbs./1,000 sq.ft.
Orchard Grass	Hydroseed	20	0.20
	Winter Rye	120	1.20
Tall Fescue	Hydroseed	18	0.20
	Winter Rye	120	1.20
Perennial Ryegrass	Hydroseed	20	0.20
	Winter Rye	120	1.20

**Mulching Rates**  
 April 15 - Sept 15 - Hay or Straw: 1 inch deep (1.2 bales/1,000 sq. ft.)  
 Sept 15 - April 15 - Hay or Straw: 2 in. deep (2.4 bales/1,000 sq. ft.)  
**Erosion Control Matting**  
 As per manufacturer's instructions

Excellent stabilization of large slopes to limit area of disturbance. Fiber mats to be removed or replaced within 48 hours of grading to ensure good contact between soil and mat.

**How to comply:**  
 Plan ahead and phase the construction activities to ensure that no more than the permitted acreage is disturbed at one time.  
 Be sure to properly stabilize exposed soil with seed and mulch or erosion control matting before beginning work in a new section of the site.

Limit Disturbance Area

**How to comply:**  
 Prepare bare soil for seeding by grading the top 3 to 6 inches of soil and removing any large rocks or debris.  
**Seeding Rates for Temporary Stabilization**  
 April 15 - Sept. 15 - Hydroseed (annual or perennial) 20 lbs./acre  
 Sept. 15 - April 15 - Winter rye: 120 lbs./acre  
**Seeding Rates for Final Stabilization:**  

Grass Type	Variety	lbs./acre	lbs./1,000 sq.ft.
Orchard Grass	Hydroseed	20	0.20
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**Mulching Rates**  
 April 15 - Sept 15 - Hay or Straw: 1 inch deep (1.2 bales/1,000 sq. ft.)  
 Sept 15 - April 15 - Hay or Straw: 2 in. deep (2.4 bales/1,000 sq. ft.)  
**Erosion Control Matting**  
 As per manufacturer's instructions

Good tracking off road down slope. Seeding slows down runoff and prevents infiltration. More plants to be added.

**How to install:**  
 Height: No greater than 2 feet. Center of dam should be 6 inches lower than the side elevation  
 Side slopes: 2:1 or flatter (see p.39 for slope calculation)  
 Stone size: Use a mixture of 2 to 9 inch stone  
 Width: Dams should span the width of the channel and extend up the sides of the banks  
 Spacing: Space the dams so that the bottom (top) of the upstream dam is at the elevation of the top (crest) of the downstream dam. This spacing is equal to the height of the check dam divided by the channel slope.  
 Spacing (in feet) = Height of check dam (in feet) / Slope in channel (ft/ft)  
**Maintenance:**  
 Remove sediment accumulated behind the dam

Good installation of installed dams to divert rain runoff around residential construction site on steep slope near a river. Diversion ditches can be filled with grass if channel slopes are 2:1 or less, and with 4 inch stone if they are steeper.

**9. Winter Stabilization**  
**Purpose:**  
 Managing construction sites to minimize erosion and prevent sediment loading of waters is a year-round challenge. In Vermont, this challenge becomes even greater during the late fall, winter, and early spring months.  
 "Winter construction" as discussed here, describes the period between October 15 and April 15, when erosion prevention and sediment control is significantly more difficult.  
 Rains in late fall, thaws throughout the winter, and spring melt and rains can produce significant flows over frozen and saturated ground, greatly increasing the potential for erosion.  
**Requirements for Winter Shutdown:**  
 For those projects that will complete earth disturbance activities prior to the winter period (October 15), the following requirements must be adhered to:  
 1. For areas to be stabilized by vegetation, seeding shall be completed no later than September 15 to ensure adequate growth and cover.  
 2. If seeding is not completed by September 15, additional non-vegetative protection must be used to stabilize the site for the winter period. This includes use of Erosion Control Matting or netting of a heavy mulch layer. Seeding with winter rye is recommended to allow for early germination during wet spring conditions.  
 3. Where mulch is specified, apply roughly 2 inches with an 80-90% cover. Mulch should be tracked in or stabilized with netting in open areas vulnerable to wind.

Stabilize the site for the winter period. This includes use of Erosion Control Matting or netting of a heavy mulch layer. Seeding with winter rye is recommended to allow for early germination during wet spring conditions.

**12. Inspect Your Site**  
**Purpose:**  
 Perform site inspections to ensure that all sediment and erosion control practices are functioning properly. Regular inspections and maintenance of practices will help to reduce costs and protect water quality.  
**Requirements:**  
 Inspect the site at least once every 7 days and after every rainfall or snowmelt that results in a discharge from the site. Perform maintenance to ensure that practices are functioning according to the specifications outlined in this handbook.  
 In the event of a noticeable sediment discharge from the construction site, you must take immediate action to repair and maintain existing erosion prevention and sediment control practices. Any visible sediment discharge must be reduced or eliminated within 24 hours of discovery.  
**Example Site Inspection Form**

Y	N
1. Boundary Limits	
2. Limit Disturbance Area	
3. Construction Entrance	
4. Silt Fences	
5. Diversion Berms	
6. Check Dams	
7. Stabilize Exposed Soil	
8. Winter Stabilization	
9. Permanent Controls	
10. Stabilize Soil at Final Grade	
11. Dewatering Activities	
12. Inspect Your Site	

Water is pumped from the construction site into a silt fence enclosure on a vegetated area or into a silt fence away from waterways.

**12. Dewatering Activities**  
**Purpose:**  
 Treat water pumped from dewatering activities so that it is clear when leaving the construction site.  
**Requirements:**  
 Water from dewatering activities that flows off of the construction site must be clear. Water must not be pumped into storm sewers, lakes, or wetlands unless the water is clear.  
**How to comply:**  
 Using sock filters or sediment filter bags on dewatering discharge hoses or pipes, discharge water into silt fence enclosures installed in vegetated areas away from waterways. Remove accumulated sediment after the water has dispersed and stabilize the area with seed and mulch.

Dewatering Activities

**12. Inspect Your Site**  
**Purpose:**  
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 Inspect the site at least once every 7 days and after every rainfall or snowmelt that results in a discharge from the site. Perform maintenance to ensure that practices are functioning according to the specifications outlined in this handbook.  
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Water is pumped from the construction site into a silt fence enclosure on a vegetated area or into a silt fence away from waterways.

**3. Stabilize Construction Entrance**  
**Purpose:**  
 A stabilized construction entrance helps remove mud from vehicles wheels to prevent tracking onto streets.  
**Requirements:**  
 If there will be any vehicle traffic off of the construction site, you must install a stabilized construction entrance before construction begins.

Construction entrance detail. Entrance mat must keep mud from tracking onto curb and off road.

**How to comply:**  
 Prepare bare soil for seeding by grading the top 3 to 6 inches of soil and removing any large rocks or debris.  
**Seeding Rates for Temporary Stabilization**  
 April 15 - Sept. 15 - Hydroseed (annual or perennial) 20 lbs./acre  
 Sept. 15 - April 15 - Winter rye: 120 lbs./acre  
**Seeding Rates for Final Stabilization:**  

Grass Type	Variety	lbs./acre	lbs./1,000 sq.ft.
Orchard Grass	Hydroseed	20	0.20
	Winter Rye	120	1.20
Tall Fescue	Hydroseed	18	0.20
	Winter Rye	120	1.20
Perennial Ryegrass	Hydroseed	20	0.20
	Winter Rye	120	1.20

**Mulching Rates**  
 April 15 - Sept 15 - Hay or Straw: 1 inch deep (1.2 bales/1,000 sq. ft.)  
 Sept 15 - April 15 - Hay or Straw: 2 in. deep (2.4 bales/1,000 sq. ft.)  
**Erosion Control Matting**  
 As per manufacturer's instructions

Good tracking off road down slope. Seeding slows down runoff and prevents infiltration. More plants to be added.

**How to comply:**  
 Prepare bare soil for seeding by grading the top 3 to 6 inches of soil and removing any large rocks or debris.  
**Seeding Rates for Temporary Stabilization**  
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**Section 3 Additional Resources**

**How to calculate slope:**  
 2:1 Slope Ratio

**Approximate Slope Conversions**

Percent	Ratio	Degree
10%	1:1	6°
20%	1:2	11°
30%	1:3	16°
40%	1:4	22°
50%	1:2	27°
60%	1:1.5	34°
70%	1:1.3	41°
80%	1:1.1	51°
90%	1:1	63°

**How to estimate disturbance area:**  
 1 acre = 43,560 square feet = 4,840 square yards

**Area in acres (width in feet x length in feet)**

Width (ft)	Length (ft)	Area (sq. ft)	Area (acres)
100	100	10,000	0.23
150	150	22,500	0.51
200	200	40,000	0.92
250	250	62,500	1.43
300	300	90,000	2.07
350	350	122,500	2.81
400	400	160,000	3.67
450	450	202,500	4.65
500	500	250,000	5.75

**Acknowledgments**  
 Design details and standards for sediment and erosion control practices have been adapted from the New York State Standards and Specifications for Erosion and Sediment Control, August 2005.  
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This document has been adapted from the Kentucky Erosion Prevention and Sediment Control Field Guide produced by the Tetra Tech Water Resources Division in Fairfax VA for the Kentucky Division of Conservation and Division of Water. Inquiries regarding this publication should be directed to Barry Townley, Tetra Tech,