

SITE ENGINEER:  
  
 CIVIL ENGINEERING ASSOCIATES, INC.  
 10 MANSFIELD VIEW LANE, SOUTH BURLINGTON, VT 05403  
 802-864-2323 FAX: 802-864-2271 web: www.caa-vt.com

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 DRAWN: MAB/PJM  
 CHECKED: BCE  
 APPROVED: BCE

OWNER:  
**DAVID BOYDEN**  
 CAMBRIDGE VERMONT

PROJECT:  
**PROPOSED DRIVEWAY**  
 26 WESTMAN ROAD UNDERHILL, VT

DATE	CHECKED	REVISION

DATE	CHECKED	REVISION

**DRIVEWAY GRADING PLAN**

DATE: 9/17/2015  
 SCALE: 1" = 40'  
 PROJ. NO.: 15217  
 DRAWING NUMBER: **C1.0**

**EROSION CONTROL LEGEND**

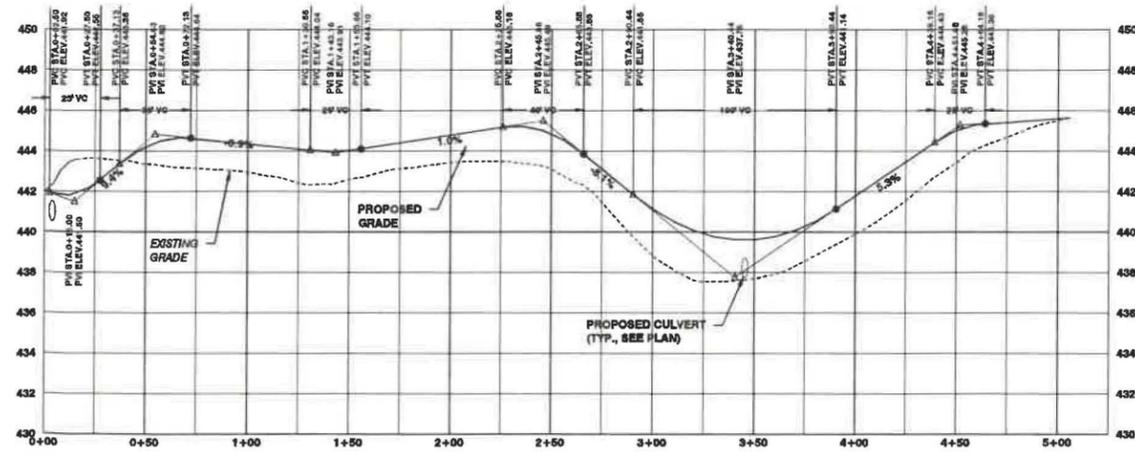
-  SILT FENCE
-  EROSION MATTING
-  STONE CHECK DAM

NOTES:  
 1. SILT FENCE TO BE INSTALLED WHERE SHOWN PRIOR TO SOIL DISTURBANCE IN UPHILL AREAS.

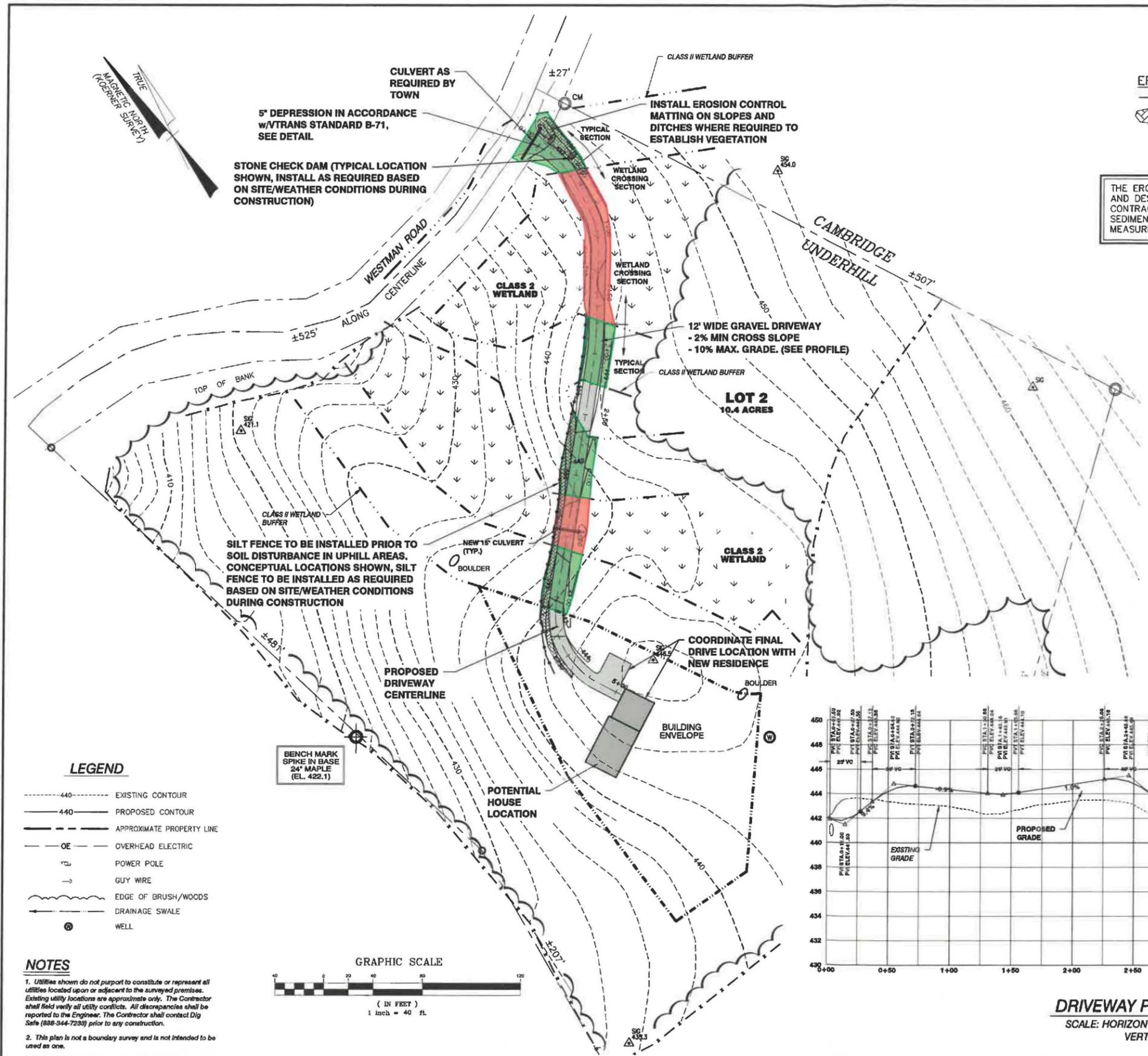
THE EROSION CONTROL PLANS AND REQUIREMENTS ARE INTENDED TO SHOW AND DESCRIBE MINIMUM MEASURES NECESSARY DURING CONSTRUCTION. THE CONTRACTOR IS RESPONSIBLE FOR PREVENTING DISCHARGE OF SEDIMENT OR SEDIMENT-LADEN WATER FROM THE SITE, AND SHALL INSTALL ADDITIONAL MEASURES AS NECESSARY TO PREVENT SUCH DISCHARGE.

**CLASS II WETLAND/BUFFER IMPACTS**

- WETLAND IMPACTS  
 IMPACT AREA = 3,890 s.f. 
- WETLAND BUFFER IMPACTS  
 IMPACT AREA = 5,420 s.f. 



**DRIVEWAY PROFILE**  
 SCALE: HORIZONTAL 1" = 40'  
 VERTICAL 1" = 4'

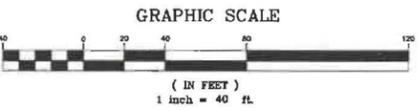


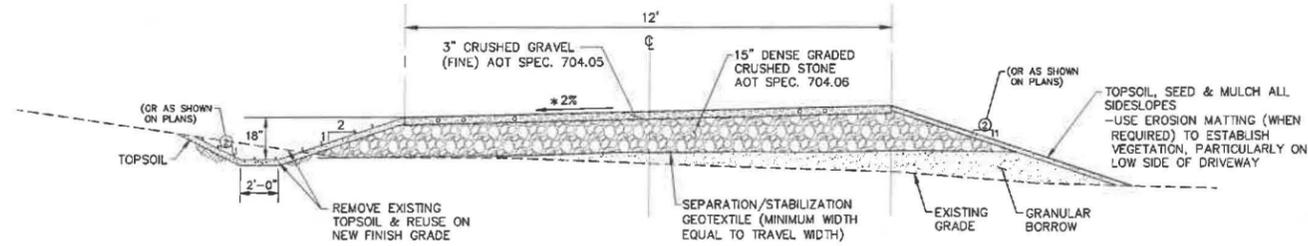
**LEGEND**

-  440 EXISTING CONTOUR
-  440 PROPOSED CONTOUR
-  APPROXIMATE PROPERTY LINE
-  OVERHEAD ELECTRIC
-  POWER POLE
-  GUY WIRE
-  EDGE OF BRUSH/WOODS
-  DRAINAGE SWALE
-  WELL

**NOTES**

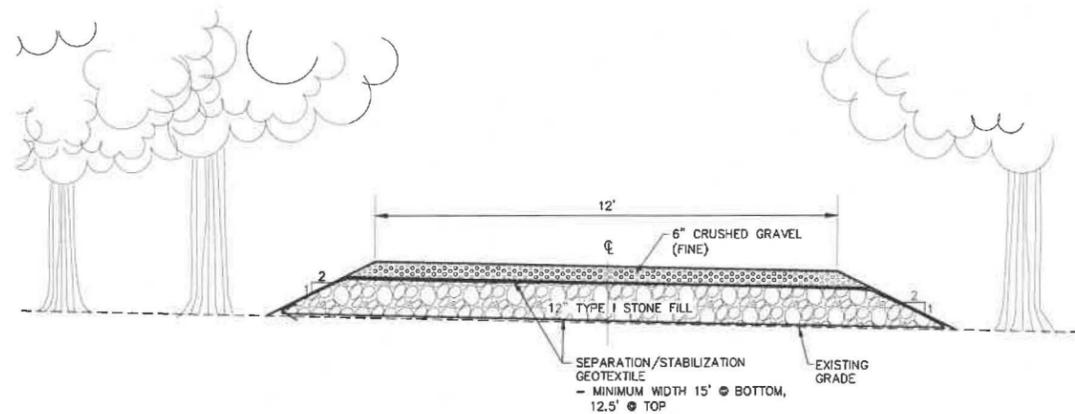
1. Utilities shown do not purport to constitute or represent all utilities located upon or adjacent to the surveyed premises. Existing utility locations are approximate only. The Contractor shall field verify all utility conflicts. All discrepancies shall be reported to the Engineer. The Contractor shall contact Dig Safe (888-344-7239) prior to any construction.
2. This plan is not a boundary survey and is not intended to be used as one.
3. The sole purpose of these plans are to depict the proposed design for the drive. Site topography, property lines, and additional site information was supplied to Civil Engineering Associates, Inc. for design of the drive. No site work was performed to verify this information.





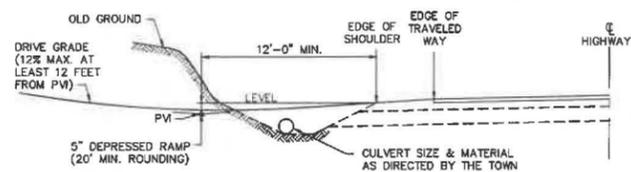
**TYPICAL DRIVE SECTION**

\*SUPERELEVATE AS SHOWN ON PLAN



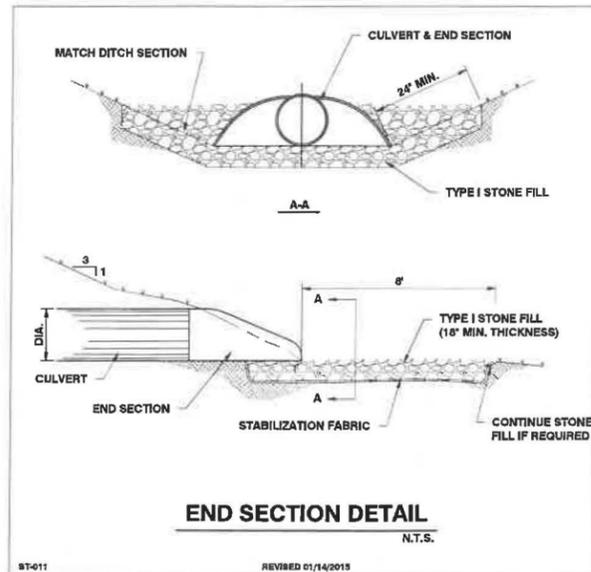
**TYPICAL SECTION - WETLAND CROSSING**

SCALE: 1/2" = 1'



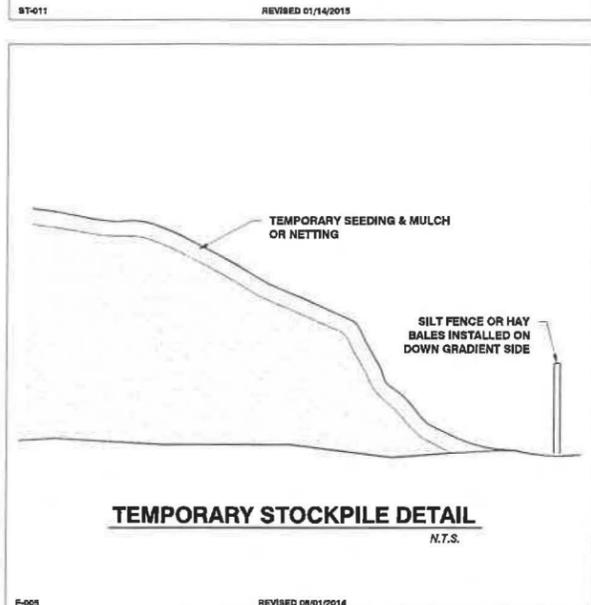
**PROFILE OF DRIVE INTERSECTION (CUT SECTION)**

NTS  
BASED UPON VTRANS  
STANDARD DRAWING B-71



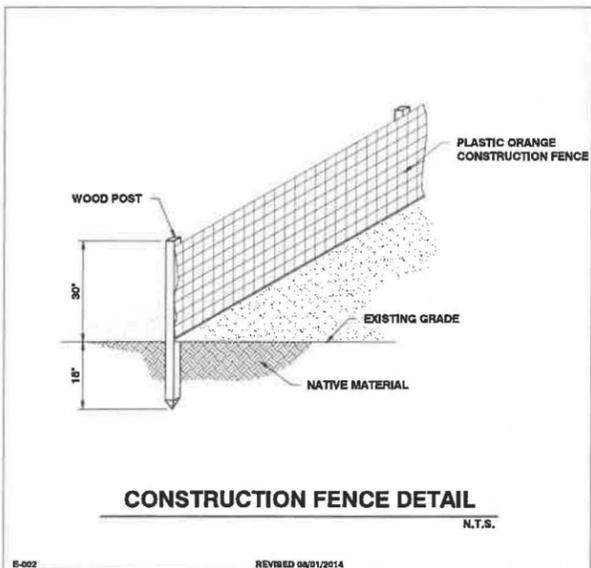
**END SECTION DETAIL**

N.T.S.



**TEMPORARY STOCKPILE DETAIL**

N.T.S.



**CONSTRUCTION FENCE DETAIL**

N.T.S.

SITE ENGINEER:



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**DETAILS**

DATE  
9/17/2015  
SCALE  
AS SHOWN  
PROJ. NO.  
15217

DRAWING NUMBER

**C2.0**

**Introduction**

This project is subject to the terms and conditions of the authorization from the State of Vermont to discharge construction related storm water runoff.

Coverages under the State Construction General Permit 3-9020 is required for 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.

This project has been deemed to qualify as a Low Risk Site which is subject to the erosion prevention and sediment control (EPSC) standards set for in the State of Vermont. Low Risk Site Handbook for Erosion Prevention and Sediment Control

The following narrative and implementation requirements represent the minimum standard for which this site is required to be maintained as regulated by the State of Vermont.

Any best management practices (BMPs) depicted on the project's EPSC Site plan which go beyond the Handbook requirements are considered to be integral to the management of the site and represent components of the municipal EPSC approval for the project which shall be implemented.

The EPSC plan depicts one snap shot in time of the site. All construction areas are fluid in their day to day exposures and risks as it relates to minimizing sediment loss from the site. It is the responsibility of the Contractor to implement the necessary BMPs to comply with the Low Risk Handbook standards outlined on this sheet based on the interim site disturbance conditions which may or may not be shown on the EPSC Site Plan.

Specific BMPs which are critical to allowing the project to be considered a Low risk site include the items checked below:

- Limit the amount of disturbed earth to two acres or less at any one time.
- There shall be a maximum of 7 consecutive days of disturbed earth exposure in any location before temporary or final stabilization is implemented.

**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.

**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.)

**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.

**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.

**3. Stabilize Construction Entrance**

**Purpose:** A stabilized construction entrance helps remove mud from vehicle 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.

**How to Install**  
**Rock Size:** Use a mix of 1 to 4 inch stone  
**Depth:** 8 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:** Redress with clean stone as required to keep sediment from tracking onto the street.

**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 degrade and fall apart.

**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 100 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.

**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 storm water 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.

**How to install:**

1. Compact the berm with a shovel or earth-moving equipment.
2. Seed and mulch berm or cover with erosion control matting immediately after installation.
3. Stabilize the flow channel with seed and straw mulch or erosion control matting. Line the channel with 4 inch stone if the channel slope is greater than 20%.
4. Ensure the berm drains to an outlet stabilized with riprap. Ensure that there is no erosion at the outlet.
5. The diversion berm shall remain in place until the disturbed areas are completely stabilized.

**6. Slow Down Channelized Runoff**

**Purpose:** Stone check dams reduce erosion in drainage channels by slowing down the storm water flow.

**Requirements:**

If there is a concentrated flow (e.g. in a ditch or channel) of storm water 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 9 inches lower than the side elevation  
**Side slopes:** 2:1 or flatter  
**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 (toe) 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 (W/H)**

**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.

**7. Construct Permanent Controls**

**Purpose:** Permanent storm water treatment practices are constructed to maintain water quality, ensure groundwater flows, and prevent downstream flooding. Practices include detention ponds and wetlands, infiltration basins, and storm water 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 State Storm Water Discharge Permit and construct permanent storm water treatment practices on your site. These practices must be installed before the construction of any impervious surfaces.

**How to comply:**

Contact the Vermont Storm water Program and follow the requirements in the Vermont Storm water Management Manual. The Storm water Management Manual is available at: [www.vtwaterquality.org/stormwater.htm](http://www.vtwaterquality.org/stormwater.htm)  
 \*An impervious surface is a manmade surface, including, but not limited to, paved and unpaved roads, parking areas, roofs, driveways, and walkways, from which precipitation runs off rather than infiltrates.

**8. Stabilize Exposed Soil**

**Purpose:** Seeding and mulching, applying erosion control matting, and hydroseeding are all methods to stabilize exposed soil. Mulch and matting 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 in 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.

**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 — Ryegrass (annual or perennial): 20 lbs./acre  
 Sept. 15 - April 15 — Winter rye: 120 lbs./acre

**Seeding Rates for Final Stabilization: Choose**

Seeding Rates for Final Stabilization:	Choose from:	Quantity	lbs./acre	lbs./1000 sq.ft.
Standard seed mix	Timothy/Pasture	51	0.11	
or	Common white clover	5	0.1	0.2
or	Redtop	7	0.25	
or	Ryegrass (perennial) / Perennial Lim	4	0.1	

1-Mix 2.5 each of Timothy and Pasture OR 2.5 lbs. of Redtop and 2.5 lbs. white clover per acre

**Mulching Rates**

April 15 - Sept. 15 — Hay or Straw: 1 inch deep (1-2 bales/1000 sq.ft.)  
 Sept. 15 - April 15 — Hay or Straw: 2 in. deep (2-4 bales/1000 sq.ft.)

**Erosion Control Matting**

As per manufacturer's instructions

**Hydroseed**

As per manufacturer's instructions

**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, thaw 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.

**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 storm water treatment structures.
4. A minimum 25 foot buffer shall be maintained from perimeter 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.
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 foundations or open utility trenches.
10. Prior to stabilization, snow or ice must be removed to less than 1 inch thickness.
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 to 20 feet wide to accommodate vehicular traffic.

**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 6, Stabilizing Exposed Soil.

**11. 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 stabilizes the area with seed and mulch.

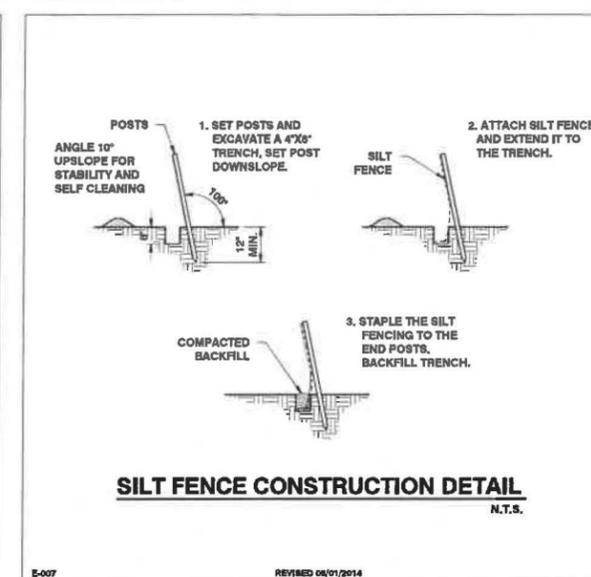
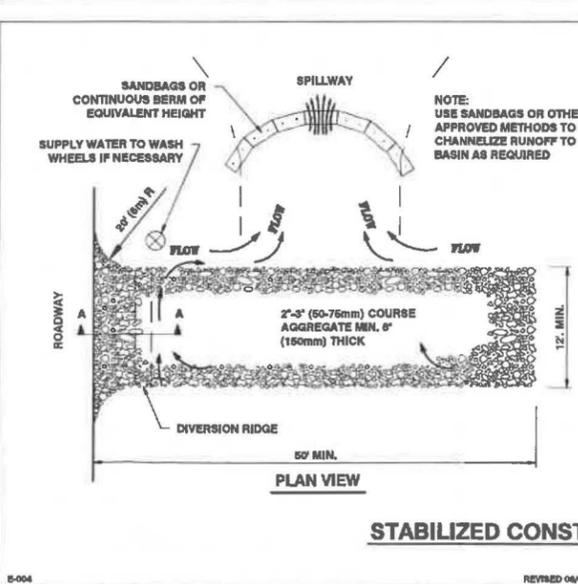
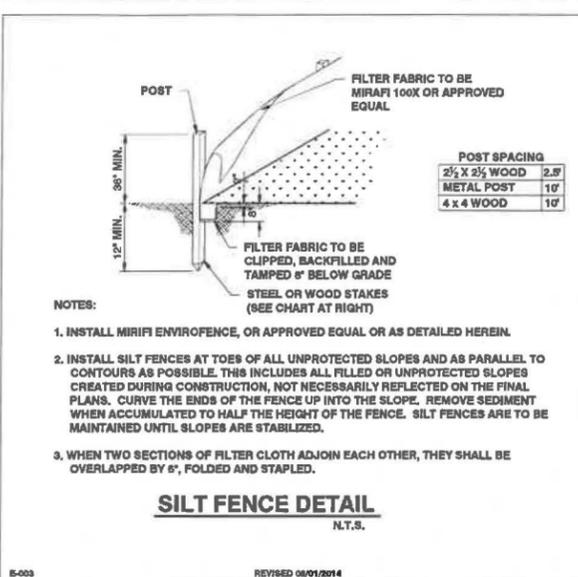
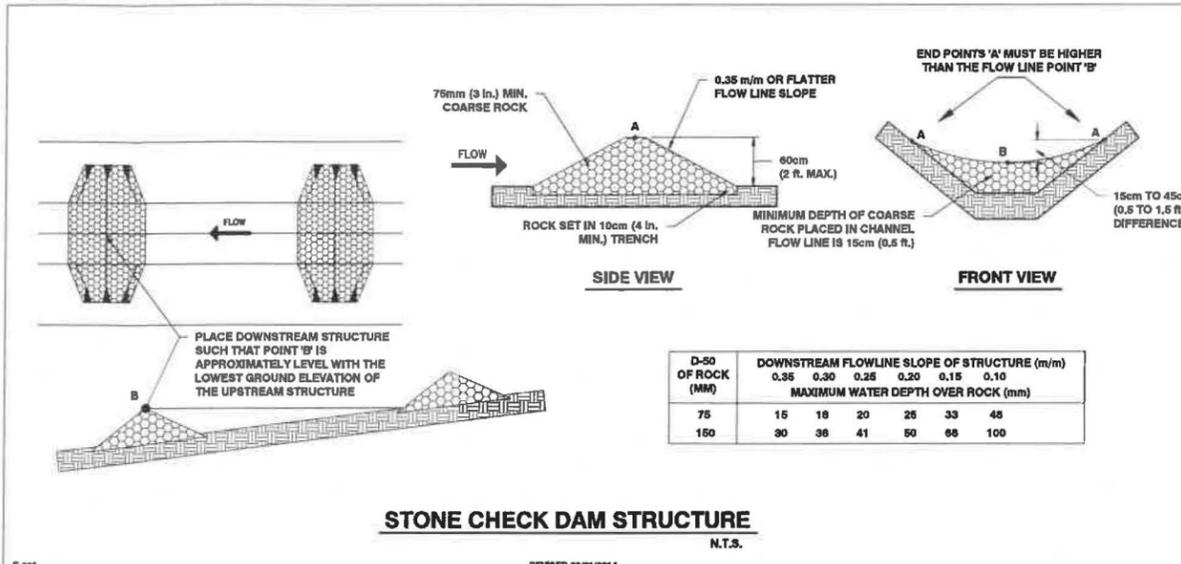
**12. Inspect Your Site**

**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 snow melt 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 inspect and maintain existing erosion prevention and sediment control practices. Any visibly discolored storm water runoff to waters of the State must be reported. Forms for reporting discharges are available at: [www.vtwaterquality.org/stormwater.htm](http://www.vtwaterquality.org/stormwater.htm)



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**EROSION CONTROL DETAILS & SPECIFICATION**

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