

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"> ■ 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: 40px;"> Mail to: Vermont Wetlands Program Watershed Management Division One National Life Drive, Main 2 Montpelier, VT 05620-3522 </div> ■ Applications can also be submitted via email to the following address: anr.wsmdwetlands@state.vt.us <ul style="list-style-type: none"> ■ 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. <i>It is not necessary to mail in a copy of the complete application.</i>

Applicant Name:	Application Preparer Name:
Town where project is located:	County:
Span#:	Vermont Wetlands Project (VWP)# if Known:
Project Location Description: <i>911 street address or direction from nearest intersection</i>	
Brief Project Summary:	
Application Type: <input type="checkbox"/> Individual Permit (multiple wetlands) <input type="checkbox"/> After the Fact Permit <input type="checkbox"/> Wetland Determination <input type="checkbox"/> Individual Permit (single wetland) <input type="checkbox"/> General Permit Coverage Authorization <input type="checkbox"/> Permit Amendment: VWP Project # _____	
Existing Land Use Type(s): <i>(Check all that apply)</i> <input type="checkbox"/> Residential (single family) <input type="checkbox"/> Residential (subdivision) <input type="checkbox"/> Undeveloped <input 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	
Proposed Land Use Type(s): <i>(Check all that apply)</i> <input type="checkbox"/> Residential (single family) <input type="checkbox"/> Residential (subdivision) <input type="checkbox"/> Undeveloped <input 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	
Proposed Impact Type(s): <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 type="checkbox"/> Road <input type="checkbox"/> Aesthetics <input type="checkbox"/> No Impact <input type="checkbox"/> Other: _____	
Wetland and Buffer Impact Type: <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 type="checkbox"/> Other: _____	
Wetland Delineation Date(s):	

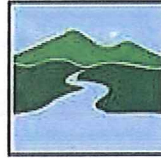
Wetland Improvements	Buffer Zone Improvements	Reason for Improvements
Restoration: s.f.	Restoration: s.f.	<input type="checkbox"/> Correction of Violation <input type="checkbox"/> To offset permit impacts <input type="checkbox"/> Voluntary
Creation: s.f.	Creation: s.f.	
Enhancement: s.f.	Enhancement: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

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

Additional Fees		
	Agricultural Crop Conversion <i>Check here:</i> <small>(Flat fee of \$200.00)</small>	\$
	Minimum Application Fee: (\$50.00) <small>Required when total impact fee is less than \$50.00</small>	\$
	Administrative Fee:	\$

Make Checks Payable to: State of Vermont	Total Check Amount:	\$
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**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: <i>If the applicant is someone other than the landowner, the landowner information must be included below</i>			
Applicant Name: VTrans			
Address: One National Life Drive		City/Town: Montpelier	State: VT
Phone Number: (802)279-0583		Email Address: glenn.gingras@vermont.gov	
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: Glenn Gingras		Date: _____	

Digitally signed by Glenn Gingras
DN: cn=Glenn Gingras, o=VTrans, ou=Highway Division-Project Delivery
Bureau-Environmental Section, email=glenn.gingras@state.vt.us, c=US
Date: 2016.03.14 07:32:47 -04'00'

Landowner Information: <i>Landowner must sign the application. If landowner is different from the applicant this section must be filled out</i>			
<input checked="" type="checkbox"/> Check this box if landowner is the same as the applicant			
Landowner Name: _____			
Address: _____		City/Town: _____	State: _____
Phone Number: _____		Email Address: _____	
Landowner Easement: <i>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:</i>			
All work is being completed within the highway and railroad right of way.			
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: Glenn Gingras		Date: _____	

Digitally signed by Glenn Gingras
DN: cn=Glenn Gingras, o=VTrans, ou=Highway Division-Project Delivery
Bureau-Environmental Section, email=glenn.gingras@state.vt.us, c=US
Date: 2016.03.14 07:33:03 -04'00'

Application Preparer Information: <i>Consultant, engineer, or other representative that is responsible for filling out the application, if other than the applicant or landowner.</i>			
Application Preparer Name: Glenn Gingras		Organization/Company: VTrans	
Address: One National Life Drive		City/Town: Montpelier	State: VT
Phone Number: (802)279-0583		Email Address: glenn.gingras@vermont.gov	
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: Glenn Gingras		Date: _____	

Digitally signed by Glenn Gingras
DN: cn=Glenn Gingras, o=VTrans, ou=Highway Division-
Project Delivery Bureau-Environmental Section,
email=glenn.gingras@state.vt.us, c=US
Date: 2016.03.14 07:33:18 -04'00'

Handwritten signatures are also accepted

<p>1. Location of wetland and project: <i>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.</i></p>

<p>2. Site visit date(s) and attendees: <i>A site visit is required before the application can be called complete</i></p>	
<p>2.1 Date of Visit(s) with State District Wetland Ecologist</p>	<p>2.2. List of people present for site visit(s) including Ecologist, landowner, and representatives.</p>

<p>3. Wetland Classification: <i>For multiple wetlands fill out the multiple wetlands table for sections 1 and 3 through 1</i></p>
<p>3.1. The wetland is a Class II wetland because :</p>
<p>3.2. Section 4.6 Presumption <i>If the wetland meets the Section 4.6 Presumption, it does so primarily because:</i></p>

<p>4. Description of the Entire Wetland: <i>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.</i></p>
<p>4.1. Size of Complex in Acres: <i>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.</i></p>
<p>4.2. Vegetation Cover Types Present: <i>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</i></p>
<p>4.3. Landscape Position: <i>Where is the wetland located on the landscape? For example: Bottom of a basin, edge of a stream, shore of a lake, etc.</i></p>
<p>4.4. Hydrology: <i>Describe the main source of water for the entire wetland. List any river, stream, lakes, or ponds</i></p>
<p>4.4.1. Direction of Flow: <i>For example: Stream flows from north to south through the wetland complex, or the wetland drains generally to the southwest.</i></p>
<p>4.4.2. Influence of Hydrology on the Entire Wetland: <i>For example: The river provides floodwater to the wetland in the spring.</i></p>
<p>4.4.3. Relation of Entire Wetland to the Project Area: <i>The distance between the project area and any nearby surface waters</i></p>

<p>4.4.4. Entire Wetland Hydroperiod: <i>Discuss the frequency and duration of flooding, ponding, and/or soil saturation</i></p>
<p>4.5. Surrounding Landuse of the Entire Wetland: <i>For example: Rural residential and forested; Agricultural and undeveloped</i></p>
<p>4.6. Relation of the Entire Wetland to Other Nearby Wetlands: <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>
<p>4.7. Pre-project Cumulative Impacts to the Entire Wetland: <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>

<p>5. Description of Subject Wetland and Buffer: <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>5.1. Context of Subject Wetland: <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>
<p>5.2. Subject Wetland Land Use: <i>For example: Mowed lawn, old field, naturally vegetated. Describe any previous and ongoing disturbance in the subject wetland.</i></p>
<p>5.3. Subject Wetland Vegetation: <i>List dominant wetland vegetation cover type and associated dominant plant species.</i></p>
<p>5.4. Subject Wetland Soils: <i>Use the USDA NRCS information where possible and use the ACOE Delineation Manual soil description</i></p>
<p>5.5. Subject Wetland Hydrology: <i>Use the description from the ACOE Delineation Manual</i></p>

5.6. Buffer Zone: <i>Describe the buffer zone of the subject wetland (50 foot envelope of land adjacent to wetland boundary).</i>
5.6.1. Buffer Land Use: <i>For example: Mowed shoulder, forested, old field, paved road, and residential lawns, etc. Describe any previous and ongoing disturbance in the buffer zone.</i>
5.6.2. Buffer Vegetation: <i>List the vegetation cover type and dominant plant species.</i>
5.6.3. Buffer Soils: <i>Use USDA NRCS information where possible, and the ACOE Delineation Manual soil description.</i>

6. Entire Wetland Function and Value Summary (as defined in the Vermont Wetland Rules Section 5): <i>Check which functions are present in the entire wetland</i>	
<input type="checkbox"/> Flood/Storm Storage	<input type="checkbox"/> RTE Species
<input 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

<p>Functions and Values: <i>For each function and value:</i></p> <ol style="list-style-type: none"> 1. <i>Evaluate the entire wetland and check all that apply. Use Wetland Inventory Maps for offsite areas</i> 2. <i>Evaluate how the wetland in the project area contributes to the function.</i> 3. <i>Explain how the project will not result in adverse impacts to the function.</i> <p><i>Include any information on specific avoidance and minimization measures.</i></p> <p><i>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.</i></p>
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7. Water Storage for Flood Water and Storm Runoff
<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"> <input type="checkbox"/> Constricted outlet or no outlet and an unconstructed inlet. <input type="checkbox"/> 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. <input type="checkbox"/> 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. <input type="checkbox"/> Physical evidence of seasonal flooding or ponding such as water stained leaves, water marks on trees, drift rows, debris deposits, or standing water. <input type="checkbox"/> Hydrologic or hydraulic study indicates wetland attenuates flooding <p>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.</p>

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

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.

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.

8.1. Subject Wetland Contribution to Water Protection:

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

8.2. Statement of No Undue Adverse Impact to Surface and Ground Water Protection:

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.

9. Fish Habitat:

- Function is present and likely to be significant: Any of the following physical and vegetative characteristics indicate the wetland provides this function.
 - 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.
 - 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.
 - Documented or professionally judged spawning habitat for northern pike.
 - Provides cold spring discharge that lowers the temperature of receiving waters and creates summer habitat for salmonoid species.
 - 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.

9.1. Subject Wetland Contribution to Fish Habitat:

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

9.2. Statement of No Undue Adverse Impact to Fish 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.

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.

10.1. Subject Wetland Contribution to Wildlife Habitat Functions:

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

10.2. Statement of No Undue Adverse Impact to Wildlife 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.

11. Exemplary Wetland Natural Community

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

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

The wetland is also likely to be significant if any of the following conditions are met:

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.

Contains ecological features that contribute to Vermont's natural heritage, including, but not limited to:

Deep peat accumulation reflecting a long history of wetland formation;

Forested wetlands displaying very old trees and other old growth characteristics;

A wetland natural community that is at the edge of the normal range for that type;

A wetland mosaic containing examples of several to many wetland community types; or

A large wetland complex containing examples of several wetland community types.

List species or communities of concern:

11.1. Subject Wetland Proximity to Exemplary Natural Communities

11.2. Statement of No Undue Adverse Impact to Exemplary Wetland Natural Community:

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.

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.

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.

13. Education and Research in Natural Sciences:

- Function is present and likely to be significant: Any of the following characteristics indicate the wetland provides this function.
 - Owned by or leased to a public entity dedicated to education or research.
 - History of use for education or research.
 - Has one or more characteristics making it valuable for education or research.

13.1. Subject Wetland Education and Research Potential:

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

13.2 Statement of No Undue Adverse Impact to Education and Research in Natural Sciences:

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.

14. Recreational Value and Economic Benefits:

- Function is present and likely to be significant: Any of the following characteristics indicate the wetland provides this function.
 - Used for, or contributes to, recreational activities.
 - Provides economic benefits.
 - Provides important habitat for fish or wildlife which can be fished, hunted or trapped under applicable state law.
 - Used for harvesting of wild foods.

Comments:

14.1. Subject Wetland Recreational and Economic Value:

Explain how the subject wetland contributes to the value listed above.

14.2. Statement of No Undue Adverse Impact to Recreational Value and Economic Benefits:

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.

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.

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.

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.

16.1. Subject Wetland Contribution to Erosion Control:

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

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.

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.*

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.*

17.3. Acreage of Parcel(s) or Easements(s): <i>Acreage of subject property.</i>
17.4. Acreage of Project Area: <i>Acreage of area involved in the project.</i>

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

18.1. Specific Impacts to Wetland and Buffer Zone Dimensions: <i>List portions of the project that will specifically impact the wetland or buffer zone and their dimensions.</i> <i>For example:</i> <i>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>

--

18.2. Bridges and Culverts: <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>

--

18.3. Construction Sequence: <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>

--

18.4. Stormwater Design** <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>

--

18.5. Permanent Demarcation of Limit of Impacts** <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 <u>required</u> 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>
--

--

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

19.2. Buffer Zone Impacts:

Summarize the square footage of impact in the appropriate category.

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

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.

20. Mitigation Sequence:

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.

20.1. Avoidance of Wetland Impacts:

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.

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.

20.2. Avoidance to the Impact to Functions and Values:

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? Yes No

20.2.2. What design alternatives were examined to avoid impacts to wetland function? *For example: Use of matting, relocation of footprint, etc.*

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.

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.

20.3. Minimization and Restoration:

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? Yes No N/A

20.3.2. What measures will be used during construction and on an ongoing basis to protect the wetland and buffer zone? *For example: Stormwater treatment, signs, fencing, etc.*

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.

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.

21. Wetland Determination:

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.

- Wetland is mapped or contiguous to the Vermont Significant Wetland Inventory Map
- Wetland is not mapped on or contiguous to the Vermont Significant Wetland Inventory Map

21.1. Reason for Petition:

Please choose one from the dropdown menu.

21.2. Determination Narrative:

Please provide any narrative to support the petition for a wetland determination here, including previous decisions by the Secretary or Water Board.

22. Supporting Materials:

****ADDITIONAL MATERIAL REQUIRED TO CALL APPLICATION COMPLETE**

22.1. **Location Map:

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.

Date	Title

22.2. **Site Plan(s):

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.

Title	Author	Date	Date of Last Revision

22.3. **U.S. Army Corps of Engineer Wetland Delineation Forms:

List attachment names, dates data was collected, cover types sampled, and number of paired plots included

Attachment #/Title	Range of Collection Dates	Vegetation Cover Types	# of Paired Plots

22.4. Other Supporting Documents:

Provide any other documentation that supports the application.
Examples include but are not limited to: Photographs, easements, agreements, restoration/plan, GIS shapefiles, additional ACOE forms.

Date	Last Revision	Author	Title

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:	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)



LEGEND

- Wetlands - VSWI
 - Class 1 Wetland
 - Class 2 Wetland
- + Railroads
- Roads
 - Principal Arterial
 - Minor Arterial
 - Rural Major Collector
 - Rural Minor Collector
 - Urban Collector
 - Local
 - Not part of the Functional Classific
- Town Boundary

1: 9,589
March 9, 2016

NOTES

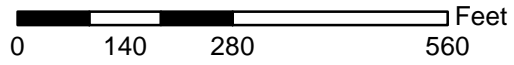
Map created using ANR's Natural Resources Atlas

487.0 0 244.00 487.0 Meters

WGS_1984_Web_Mercator_Auxiliary_Sphere 1" = 799 Ft. 1cm = 96 Meters
© Vermont Agency of Natural Resources THIS MAP IS NOT TO BE USED FOR NAVIGATION

DISCLAIMER: This map is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. ANR and the State of Vermont make no representations of any kind, including but not limited to, the warranties of merchantability, or fitness for a particular use, nor are any such warranties to be implied with respect to the data on this map.



VTrans Project
Wallingford ERCULV (39)



1:3,000



Legend

-  WetlandResourceID
-  Vermont Wetlands (VSWI)

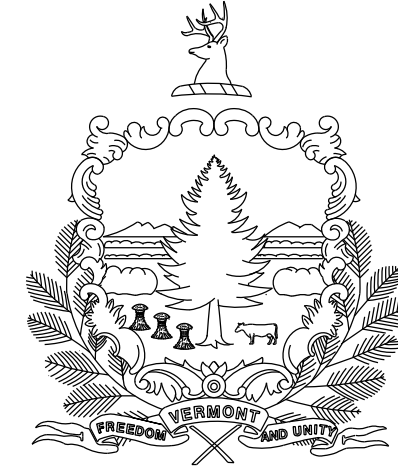
US 7 Culvert



Railroad Culvert

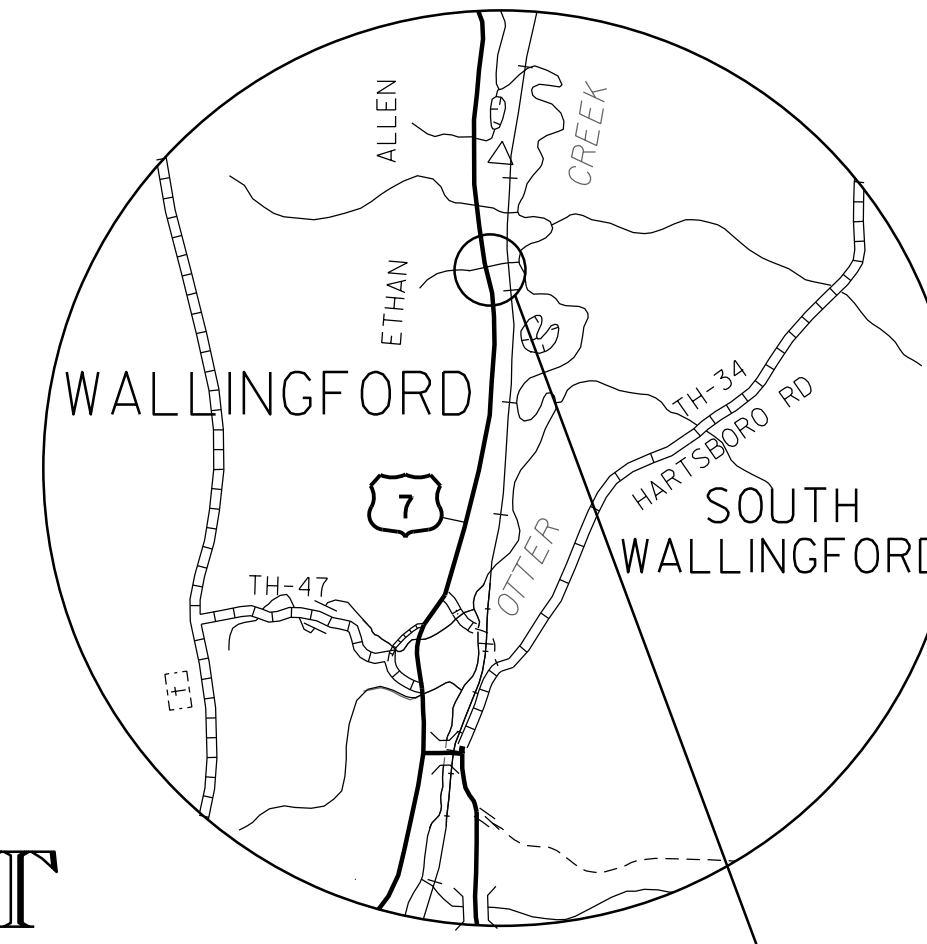
FOR INDEX AND VAOT
STANDARD SHEETS, REFER
TO SHEET 2

STATE OF VERMONT AGENCY OF TRANSPORTATION

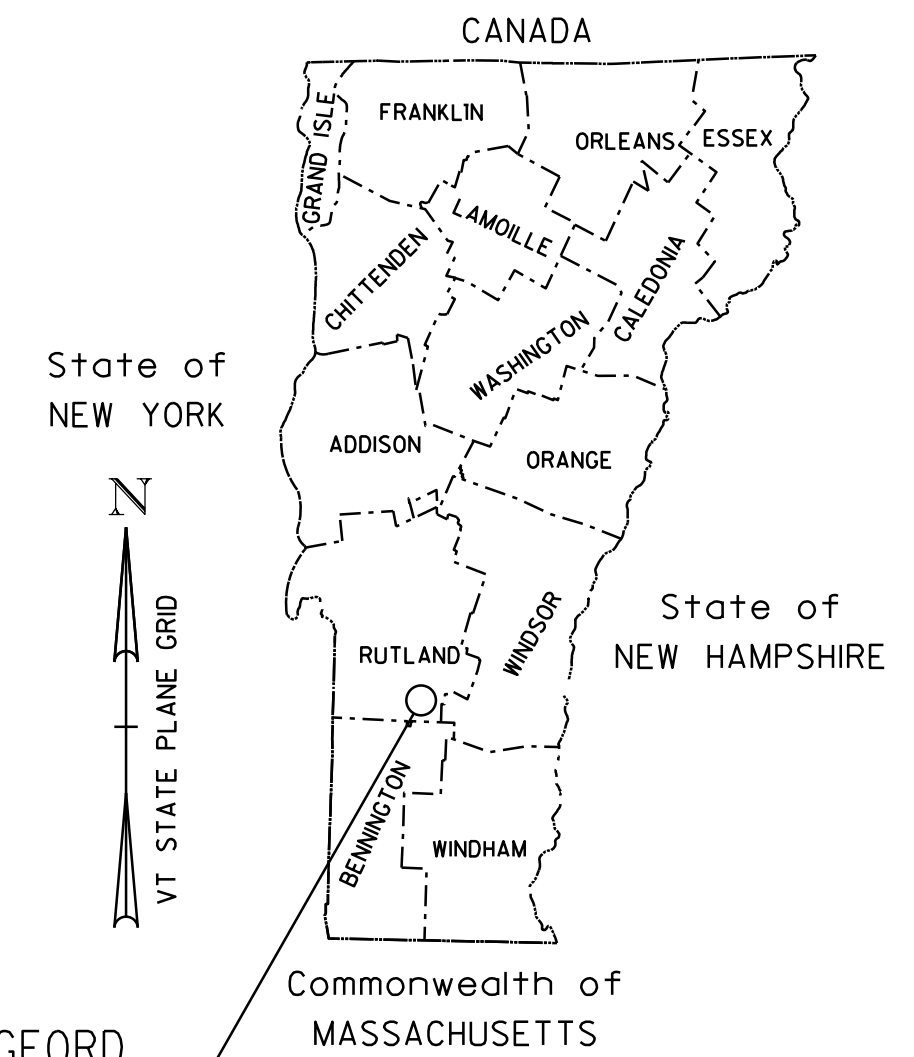


PROPOSED IMPROVEMENT CULVERT REPLACEMENT PROJECT

TOWN OF WALLINGFORD COUNTY OF RUTLAND BRIDGE NO.73A AND RR CULVERT C06470 WALLINGFORD ER CULV(39) U.S.ROUTE 7 (PRINCIPAL ARTERIAL)



LOCATION MAP
NOT TO SCALE

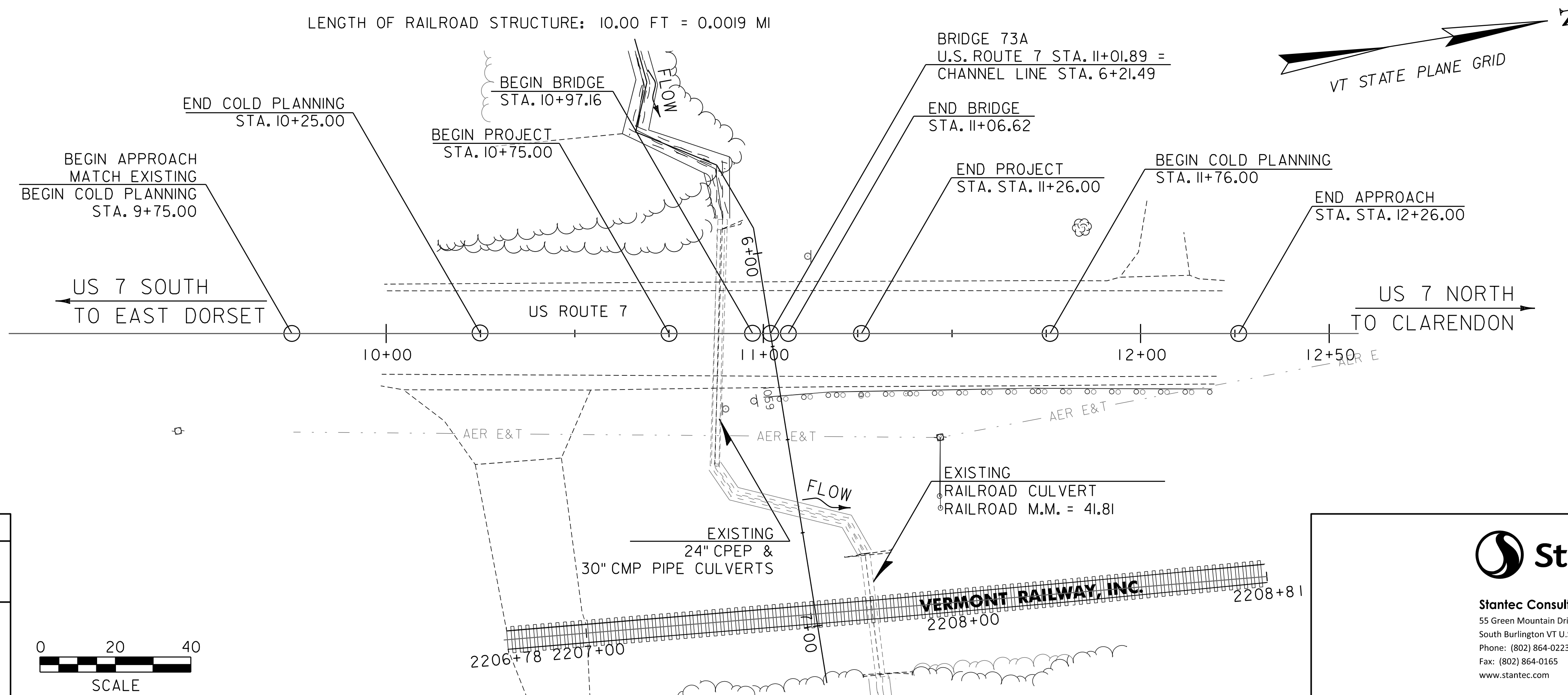


WALLINGFORD
ER CULV(39)

PROJECT LOCATION: BRIDGE NO. 73A WALLINGFORD ER CULV(39) IS LOCATED AT MILE MARKER 2.12 ON U.S. ROUTE 7, 3.2 MILES SOUTH OF THE INTERSECTION OF U.S. ROUTE 7 AND VERMONT ROUTE 140. EXISTING RAILROAD CULVERT IS LOCATED DIRECTLY DOWNSTREAM FROM BRIDGE NO. 73A.

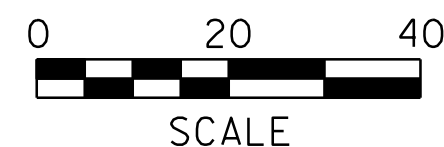
PROJECT DESCRIPTION: REPLACEMENT OF EXISTING 24" CPEP & 30" CMP PIPE CULVERTS BENEATH US ROUTE 7 WITH AN 8' x 6' PRECAST CONCRETE STRUCTURE. SINGLE LANE ALTERNATING TRAFFIC WILL BE MAINTAINED THROUGHOUT CONSTRUCTION. CONSTRUCTION OF AN 8' x 6' PRECAST BOX CULVERT JUST SOUTH OF EXISTING 3' x 4' STONE BOX CULVERT BENEATH THE RAILROAD. THE RAILROAD WILL ALLOW A 60 HOUR WORK WINDOW FOR INSTALLATION OF CULVERT C06470.

LENGTH OF PROJECT: 51.00 FT = 0.0100 MI
LENGTH OF BRIDGE NO. 73A STRUCTURE: 9.46 FT = 0.0018 MI
LENGTH OF ROADWAY: 41.54 FT = 0.0079 MI
LENGTH OF RAILROAD STRUCTURE: 10.00 FT = 0.0019 MI



CONSTRUCTION IS TO BE CARRIED ON IN ACCORDANCE WITH THESE PLANS AND THE STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2011, AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION ON JULY 20, 2011 FOR USE ON THIS PROJECT, INCLUDING ALL SUBSEQUENT REVISIONS AND SUCH REVISED SPECIFICATIONS AND SPECIAL PROVISIONS AS ARE INCORPORATED IN THESE PLANS.

QUALITY ASSURANCE PROGRAM : LEVEL 2	
SURVEYED BY : VSE	
SURVEYED DATE : AUGUST 2012	
DATUM	
VERTICAL	NAVD 88 (GEOID12) FT
HORIZONTAL	NAD 83 (2011) SPC (4400 VT) sFT



Stantec Consulting Services Inc.
55 Green Mountain Drive
South Burlington VT U.S.A. 05403
Phone: (802) 864-0223
Fax: (802) 864-0165
www.stantec.com

DIRECTOR OF PROJECT DELIVERY	APPROVED _____ DATE _____
PROJECT MANAGER : KEN UPMAL , PE	
PROJECT NAME : WALLINGFORD	
PROJECT NUMBER : ER CULV (39)	
SHEET 1 OF 36 SHEETS	

PRELIMINARY INFORMATION SHEET (BRIDGE) - US 7 BR 73A

BRIDGE QUANTITIES

INDEX OF SHEETS

SHEET NO.	SHEET TITLE
1	TITLE SHEET
2	PRELIMINARY INFORMATION SHEET - US 7 BR73A
3-4	PROJECT NOTES 1-2
5-6	QUANTITY SHEETS 1-2
7	CONVENTIONAL SYMBOLOGY LEGEND
8	TYPICAL SECTIONS - BR73A
9	SURVEY CONTROL AND TIES
10	LAYOUT PLAN - BRIDGE NO. 73A
11	ROADWAY PROFILE
12	STREAM PROFILE
13	STRUCTURAL PLAN & DETAILS - BR73A
14	PRELIMINARY INFORMATION SHEET - CO6470
15	TYPICAL SECTIONS - RR CULV C06470
16	LAYOUT PLAN - RR CULV C06470
17	STRUCTURAL PLAN/DET. - RR CULV C06470
18	TRAFFIC CONTROL
19	BORING PLAN
20-23	BORING LOG 1-4
24-25	US ROUTE 7 CROSS SECTIONS 1-3
26	RAILROAD CROSS SECTIONS
27-28	STREAM CROSS SECTIONS 1-2
29	EPSC NARRATIVE
30	EPSC PLAN
31-32	EPSC DETAILS 1-2
33	PROJECTS IMPACTS PLAN
34	PROJECTS IMPACTS PLAN 2
35	ROW DETAIL SHEET #1
36	ROW LAYOUT PLAN #1

STRUCTURE DETAIL SHEETS

SD-366.00	LONGSPAN STEEL BEAM GUARDRAIL, GALVANIZED	01/03/14
SD-501.00	CONCRETE DETAILS AND NOTES	02/09/12
SD-502.00	CONCRETE DETAILS AND NOTES	10/10/12

VAOT STANDARD SHEETS

E-121	STANDARD SIGN PLACEMENT - CONVENTIONAL ROAD	08/08/95
E-123	GUIDE SIGN PLACEMENT - MISCELLANEOUS DETAILS	03/16/04
E-171A	TRAFFIC CONTROL SIGNALS GENERAL NOTES & DETAILS	08/09/95
E-172	VEHICLE LOOP DETAILS	08/09/95
E-191	PAVEMENT MARKING DETAILS	02/01/99
E-192	PAVEMENT MARKING DETAILS	10/12/00
E-193	PAVEMENT MARKING DETAILS	08/18/95
G-1	STEEL BEAM GUARDRAIL DETAIL (POST, DELINEATOR, TYPICALS)	02/10/14
G-19	GENERIC PLANS FOR GUARDRAIL END TERMINALS	11/15/02
G-10	STEEL BEAM GUARDRAIL DETAILS (END TERMINAL, ANCHOR, MEDIAN)	02/10/14
T-1	TRAFFIC CONTROL GENERAL NOTES	08/06/12
T-10	CONVENTIONAL ROADS AND CONSTRUCTION APPROACH SIGNING	08/06/12
T-28	CONSTRUCTION SIGN DETAILS	08/06/12
T-30	CONSTRUCTION SIGN DETAILS	08/06/12
T-35	CONSTRUCTION ZONE LONGITUDINAL DROP-OFFS	08/06/12
T-36	CONSTRUCTION ZONE LONGITUDINAL DROP-OFFS FOR PAVING	08/06/12
T-42	BRIDGE NUMBER PLAQUE	04/09/14
T-45	SQUARE TUBE SIGN POST AND ANCHOR	01/02/13

FINAL HYDRAULIC REPORT

HYDROLOGIC DATA Date: November 2014

DRAINAGE AREA : 0.8 sq. mi.
 CHARACTER OF TERRAIN : Hilly to mountainous, mostly forested with some open areas
 STREAM CHARACTERISTICS : Small, intermittent, sinuous
 NATURE OF STREAMBED : Gravel, cobbles and sand

PEAK FLOW DATA

Q 2.33 =	70 cfs	Q 50 =	185 cfs
Q 10 =	130 cfs	Q 100 =	205 cfs
Q 25 =	160 cfs	Q 500 =	270 cfs

DATE OF FLOOD OF RECORD : Unknown
 ESTIMATED DISCHARGE : Unknown
 WATER SURFACE ELEV. : Unknown
 NATURAL STREAM VELOCITY : @ Q50 = 8.1 fps
 ICE CONDITIONS : Moderate
 DEBRIS : Moderate
 DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? Yes
 IS ORDINARY RISE RAPID? Yes
 IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? Yes
 IF YES, DESCRIBE : This site may be in the Otter Creek floodplain. Floodwaters from that river may affect this site.

WATERSHED STORAGE : < 1% HEADWATERS :
 UNIFORM : X
 IMMEDIATELY ABOVE SITE :

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: 24" CPEP(SL) above 30" CMP
 YEAR BUILT: Unknown
 CLEAR SPAN(NORMAL TO STREAM): 24" and 30"
 VERTICAL CLEARANCE ABOVE STREAMBED: 24" and 30"
 WATERWAY OF FULL OPENING: 3.1 sq. ft. and 4.9 sq. ft. = 8.0 sq. ft. total
 DISPOSITION OF STRUCTURE: Remove and replace with a new structure
 TYPE OF MATERIAL UNDER SUBSTRUCTURE: Unknown

WATER SURFACE ELEVATIONS AT:

Q2.33 =	587.3'	VELOCITY =	10.5 fps *
Q10 =	588.1'	"	6.8 fps *
Q25 =	588.2'	"	6.5 fps *
Q50 =	588.3'	"	6.6 fps *
Q100 =	588.4'	"	6.4 fps *

*Pipe barrel of 24" PCP

LONG TERM STREAMBED CHANGES: None noted.

IS THE ROADWAY OVERTOPPED BELOW Q100: Yes
 FREQUENCY: Below Q10
 RELIEF ELEVATION: 587.5'
 DISCHARGE OVER ROAD @Q100: 160 cfs

UPSTREAM STRUCTURE

TOWN: N/A - Stream divides DISTANCE: _____
 HIGHWAY # : _____ STRUCTURE #: _____
 CLEAR SPAN: _____ CLEAR HEIGHT: _____
 YEAR BUILT: _____ FULL WATERWAY: _____
 STRUCTURE TYPE: _____

DOWNSTREAM STRUCTURE

TOWN: Wallingford DISTANCE: 75'
 HIGHWAY # : VT Railway STRUCTURE #: CO6470
 CLEAR SPAN: 3' CLEAR HEIGHT: 2'
 YEAR BUILT: N/A FULL WATERWAY: 4 sq. ft.
 STRUCTURE TYPE: Box

LRFR LOAD RATING FACTORS

LOADING LEVELS	TRUCK						
	H-20	HL-93	3S2	6 AXLE	3A. STR.	4A. STR.	5A. SEM
TONNAGE	20	36	36	66	30	34.5	38
INVENTORY							
POSTING							
OPERATING							
COMMENTS:	TABLE TO BE COMPLETED BY CONTRACTOR'S DESIGNER						

SEE SHEET 3 FOR CULVERT DESIGN CRITERIA

PROPOSED STRUCTURE

STRUCTURE TYPE: Precast concrete box

CLEAR SPAN(NORMAL TO STREAM): 8.0'
 VERTICAL CLEARANCE ABOVE STREAMBED: 4.5'
 WATERWAY OF FULL OPENING: 36 sq. ft.

WATER SURFACE ELEVATIONS AT:

Q2.33 =	581.6'	VELOCITY=	5.4 fps *
Q10 =	582.7'	"	7.3 fps *
Q25 =	583.2'	"	7.6 fps *
Q50 =	583.7'	"	7.8 fps *
Q100 =	584.0'	"	7.9 fps *

* Within box culvert

IS THE ROADWAY OVERTOPPED BELOW Q100: No
 FREQUENCY: Above Q100
 RELIEF ELEVATION: 587.6'
 DISCHARGE OVER ROAD @Q100: None

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 584.4' at the inlet
 VERTICAL CLEARANCE: @ Q50 = 0.6'

SCOUR: Not applicable for a box.
 REQUIRED CHANNEL PROTECTION: Stone Fill, Type III

PERMIT INFORMATION

AVERAGE DAILY FLOW: 2 cfs DEPTH OR ELEVATION:
 ORDINARY LOW WATER: 1 cfs Depth < 0.1'
 ORDINARY HIGH WATER: 30 cfs Depth = 1'

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: No temporary bridge required. Using phased construction.
 CLEAR SPAN (NORMAL TO STREAM): _____
 VERTICAL CLEARANCE ABOVE STREAMBED: _____
 WATERWAY AREA OF FULL OPENING: _____

ADDITIONAL INFORMATION

Hydraulics at this site may be affected by tailwater due to the Otter Creek. The unnamed stream is anticipated to peak prior to the Otter Creek, therefore this report does not consider Otter Creek tailwater in predicting water surface elevations. Water surface elevations may be higher than reported if tailwater conditions exist.

DESIGN VALUES

1. DESIGN LIVE LOAD	HL-93
2. FUTURE PAVEMENT	d _p : 3.0 INCH
3. DESIGN SPAN	L: 8.00 FT
4. MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)	Δ: ---
5. PRESTRESSING STRAND	f _y : ---
6. PRESTRESSED CONCRETE STRENGTH	f' _c : ---
7. PRESTRESSED CONCRETE RELEASE STRENGTH	f' _{cr} : ---
8. CONCRETE, HIGH PERFORMANCE CLASS AA	f' _c : ---
9. CONCRETE, HIGH PERFORMANCE CLASS A	f' _c : 4.0 KSI
10. CONCRETE, HIGH PERFORMANCE CLASS B	f' _c : ---
11. CONCRETE, CLASS C	f' _c : ---
12. REINFORCING STEEL	f _y : 60 KSI
13. STRUCTURAL STEEL AASHTO M270	f _y : ---
14. SOIL UNIT WEIGHT	γ: 0.140 KCF
15. NOMINAL BEARING RESISTANCE OF SOIL	q _n : 6.0 KSF
16. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	φ: 0.45
17. NOMINAL BEARING RESISTANCE OF ROCK	q _n : ---
18. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	φ: ---
19. NOMINAL AXIAL PILE RESISTANCE	q _p : ---
20. PILE YIELD STRENGTH ASTM A572	f _y : ---
21. PILE SIZE	---
22. EST. PILE LENGTH	L _p : ---
23. PILE RESISTANCE FACTOR	φ: ---
24. LATERAL PILE DEFLECTION	Δ: ---
25. BASIC WIND SPEED	V _{3s} : ---
26. MINIMUM GROUND SNOW LOAD	pg: ---
27. SEISMIC DATA	PGA: --- S _s : --- S ₁ : ---

PROJECT NAME: WALLINGFORD
 PROJECT NUMBER: ER CULV(39)

FILE NAME: z_wallingford_pi.xlsm PLOT DATE: 2/19/2016
 PROJECT LEADER: G. BOGUE DRAWN BY: J. SOTER
 DESIGNED BY: M. CHENETTE CHECKED BY:
 PRELIMINARY INFORMATION SHEET - US 7 BR 73A SHEET 2 OF 36

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT	
2013	4300	480	54	11.6	510	20 year ESAL for flexible pavement from 2013 to 2033 : 3,331,000
2033	4600	530	54	17.3	820	40 year ESAL for flexible pavement from 2103 to 2053 : 7,480,000
						Design Speed : 50 mph

AS BUILT "REBAR" DETAIL		
LEVEL I	LEVEL II	LEVEL III
TYPE:	TYPE:	TYPE:
GRADE:	GRADE:	GRADE:

INDEX OF SHEETS

PLAN SHEETS

FOR INDEX OF SHEETS AND
VAOT STANDARD SHEETS, SEE
SHEET 2.

STANDARDS LIST

FINAL HYDRAULIC REPORT

HYDROLOGIC DATA Date: November 2014

DRAINAGE AREA : 0.8 sq. mi.
 CHARACTER OF TERRAIN : Hilly to mountainous, mostly forested with some open areas
 STREAM CHARACTERISTICS : Small, intermittent, sinuous
 NATURE OF STREAMBED : Gravel, cobbles and sand

PEAK FLOW DATA

Q 2.33 = 70 cfs	Q 50 = 185 cfs
Q 10 = 130 cfs	Q 100 = 205 cfs
Q 25 = 160 cfs	Q 500 = 270 cfs

DATE OF FLOOD OF RECORD : Unknown
 ESTIMATED DISCHARGE : Unknown
 WATER SURFACE ELEV. : Unknown
 NATURAL STREAM VELOCITY : @ Q50 = 8.1 fps
 ICE CONDITIONS : Moderate
 DEBRIS : Moderate

DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? Yes
 IS ORDINARY RISE RAPID? Yes
 IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? Yes
 IF YES, DESCRIBE: This site may be in the Otter Creek floodplain. Floodwaters from that river may affect this site.

WATERSHED STORAGE: < 1% HEADWATERS:
 UNIFORM: X
 IMMEDIATELY ABOVE SITE:

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: 3' wide X 4' high Stone Box Culvert
 YEAR BUILT: Unknown
 CLEAR SPAN(NORMAL TO STREAM): 3'
 VERTICAL CLEARANCE ABOVE STREAMBED: 4'
 WATERWAY OF FULL OPENING: 12.0 sq. ft. total
 DISPOSITION OF STRUCTURE: Remove and replace with a new structure
 TYPE OF MATERIAL UNDER SUBSTRUCTURE: Unknown

WATER SURFACE ELEVATIONS AT:

Q2.33 = 582.9'	VELOCITY = 9.1 fps *
Q10 = 586.4'	" 10.6 fps * *At downstream
Q25 = 586.6'	" 10.8 fps end of box culvert
Q50 = 586.7'	" 11.3 fps
Q100 = 586.8'	" 11.7 fps

LONG TERM STREAMBED CHANGES: None noted.

IS THE ROADWAY OVERTOPPED BELOW Q100: Yes
 FREQUENCY: Below Q10
 RELIEF ELEVATION: 586.0'
 DISCHARGE OVER ROAD @Q100: 97 cfs

UPSTREAM STRUCTURE

TOWN: Wallingford DISTANCE:
 HIGHWAY #: US Route 7 STRUCTURE #: 73A
 CLEAR SPAN: 8'-0" CLEAR HEIGHT: 4'-6"
 YEAR BUILT: New FULL WATERWAY: 36 sf
 STRUCTURE TYPE: Concrete Box Culvert

DOWNSTREAM STRUCTURE

TOWN: N/A DISTANCE:
 HIGHWAY #: STRUCTURE #:
 CLEAR SPAN: CLEAR HEIGHT:
 YEAR BUILT: FULL WATERWAY:
 STRUCTURE TYPE:

LRFR LOAD RATING FACTORS

LOADING LEVELS	TRUCK						
	H-20	HL-93	3S2	6 AXLE	3A. STR.	4A. STR.	5A. SEM
TONNAGE	20	36	36	66	30	34.5	38
INVENTORY							
POSTING							
OPERATING							
COMMENTS:	TABLE TO BE COMPLETED BY CONTRACTOR'S DESIGNER						

SEE SHEET 3 FOR CULVERT DESIGN CRITERIA

PROPOSED STRUCTURE

STRUCTURE TYPE: N/A

CLEAR SPAN(NORMAL TO STREAM): 8.0'
 VERTICAL CLEARANCE ABOVE STREAMBED: 4.5'
 WATERWAY OF FULL OPENING: 36 sq. ft.

WATER SURFACE ELEVATIONS AT:

Q2.33 = 580.1'	VELOCITY= 6.6 fps *
Q10 = 581.3'	" 8.1 fps *
Q25 = 581.8'	" 8.6 fps *
Q50 = 582.2'	" 9.0 fps *
Q100 = 582.5'	" 9.4 fps * *Within box

IS THE ROADWAY OVERTOPPED BELOW Q100: No
 FREQUENCY: Above Q100
 RELIEF ELEVATION: 586.0'
 DISCHARGE OVER ROAD @Q100: None

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 582.9' at the inlet
 VERTICAL CLEARANCE: @ Q50 = -0.6'

SCOUR:

REQUIRED CHANNEL PROTECTION: Stone Fill, Type III

PERMIT INFORMATION

AVERAGE DAILY FLOW: 2 cfs DEPTH OR ELEVATION:
 ORDINARY LOW WATER: 1 cfs Depth < 0.1'
 ORDINARY HIGH WATER: 24 cfs Depth = 1'

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: No temporary bridge required. Temporary closure approved by RR.
 CLEAR SPAN (NORMAL TO STREAM):
 VERTICAL CLEARANCE ABOVE STREAMBED:
 WATERWAY AREA OF FULL OPENING:

ADDITIONAL INFORMATION

Hydraulics at this site may be affected by tailwater due to the Otter Creek. The unnamed stream is anticipated to peak prior to the Otter Creek, therefore this report does not consider Otter Creek tailwater in predicting water surface elevations. Water surface elevations may be higher than reported if tailwater conditions exist.

- TRAFFIC MAINTENANCE NOTES**
1. MAINTAIN TWO-WAY TRAFFIC ON A TEMPORARY BRIDGE.
 2. TRAFFIC SIGNALS ARE NOT NECESSARY.
 3. SIDEWALKS ARE NOT NECESSARY
 4. THE APPROACHES FOR THE TEMPORARY BRIDGE SHALL BE PAVED.

DESIGN VALUES

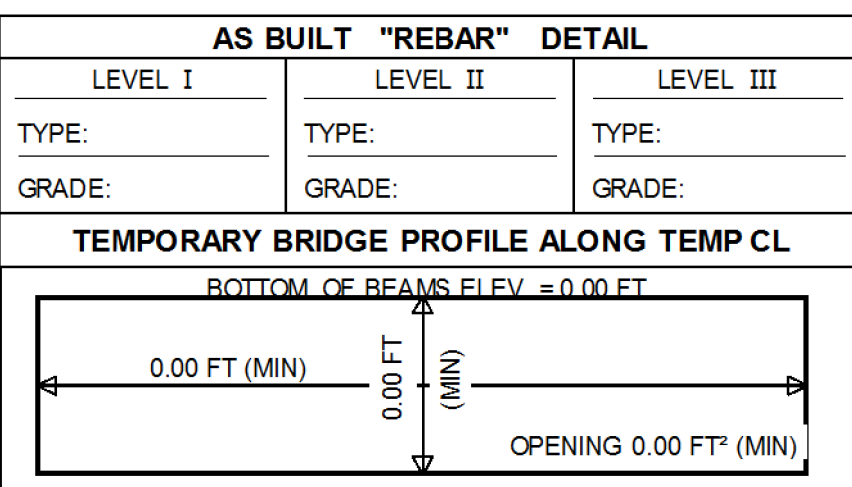
1. DESIGN LIVE LOAD	COOP. E80
2. FUTURE PAVEMENT	dp: 3.0 INCH
3. DESIGN SPAN	L: 8.00 FT
4. MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)	Δ: ---
5. PRESTRESSING STRAND	fy: ---
6. PRESTRESSED CONCRETE STRENGTH	f'c: ---
7. PRESTRESSED CONCRETE RELEASE STRENGTH	f'ci: ---
8. CONCRETE, HIGH PERFORMANCE CLASS AA	f'c: ---
9. CONCRETE, HIGH PERFORMANCE CLASS A	f'c: 4.0 KSI
10. CONCRETE, HIGH PERFORMANCE CLASS B	f'c: ---
11. CONCRETE, CLASS C	f'c: ---
12. REINFORCING STEEL	fy: 60 KSI
13. STRUCTURAL STEEL AASHTO M270	fy: ---
14. NOMINAL BEARING RESISTANCE OF SOIL	qn: ---
15. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	φ: ---
16. NOMINAL BEARING RESISTANCE OF ROCK	qn: ---
17. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	φ: ---
18. PILE RESISTANCE FACTOR	φ: ---
19. LATERAL PILE DEFLECTION	Δ: ---
20. BASIC WIND SPEED	V3s: ---
21. MINIMUM GROUND SNOW LOAD	ps: ---
22. SEISMIC DATA	PGA: 0 S: ---
23.	S: ---
24.	---
25.	---
26.	---

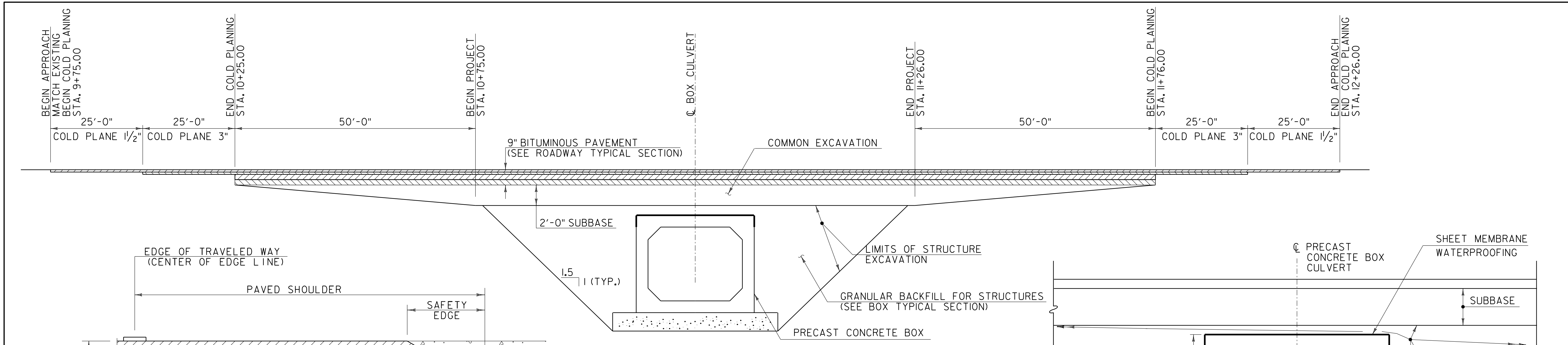
PROJECT NAME: **WALLINGFORD**
 PROJECT NUMBER: **ER CULV(39)**
 FILE NAME: z_RR wallingford_pt.xls PLOT DATE: 2/19/2016
 PROJECT LEADER: G. BOGUE DRAWN BY: L. BUXTON
 DESIGNED BY: T. KNIGHT CHECKED BY: G. BOGUE
 PRELIMINARY INFORMATION SHEET - C06470 SHEET 14 OF 36

TRAFFIC DATA

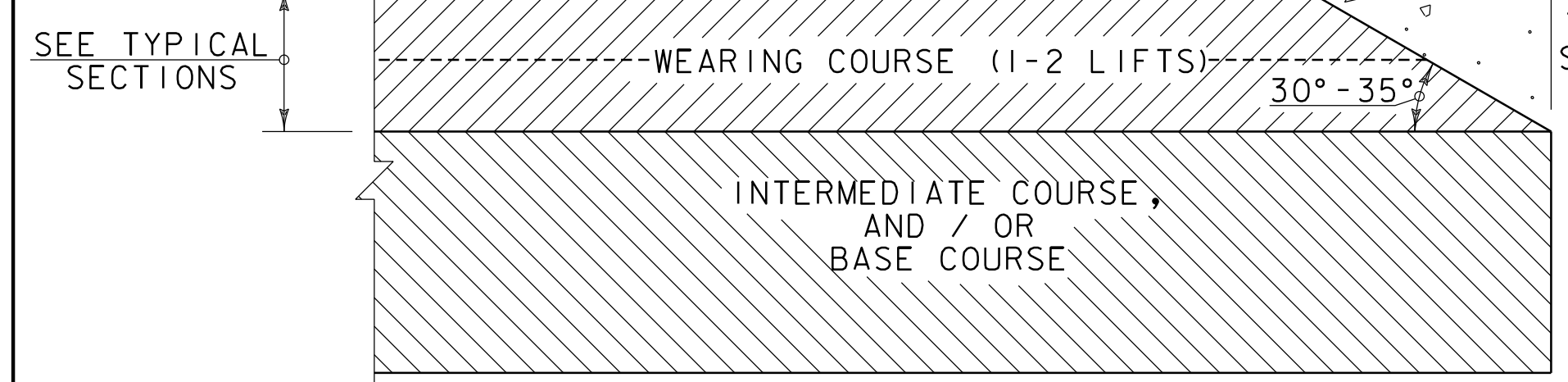
YEAR	ADT	DHV	% D	% T	ADTT
0	0	0	0	0	0
XXXX	0	0	0	0	0

20 year ESAL for flexible pavement from XXXX to XXXX : 0
 40 year ESAL for flexible pavement from XXXX to XXXX : 0
 Design Speed : 0 mph



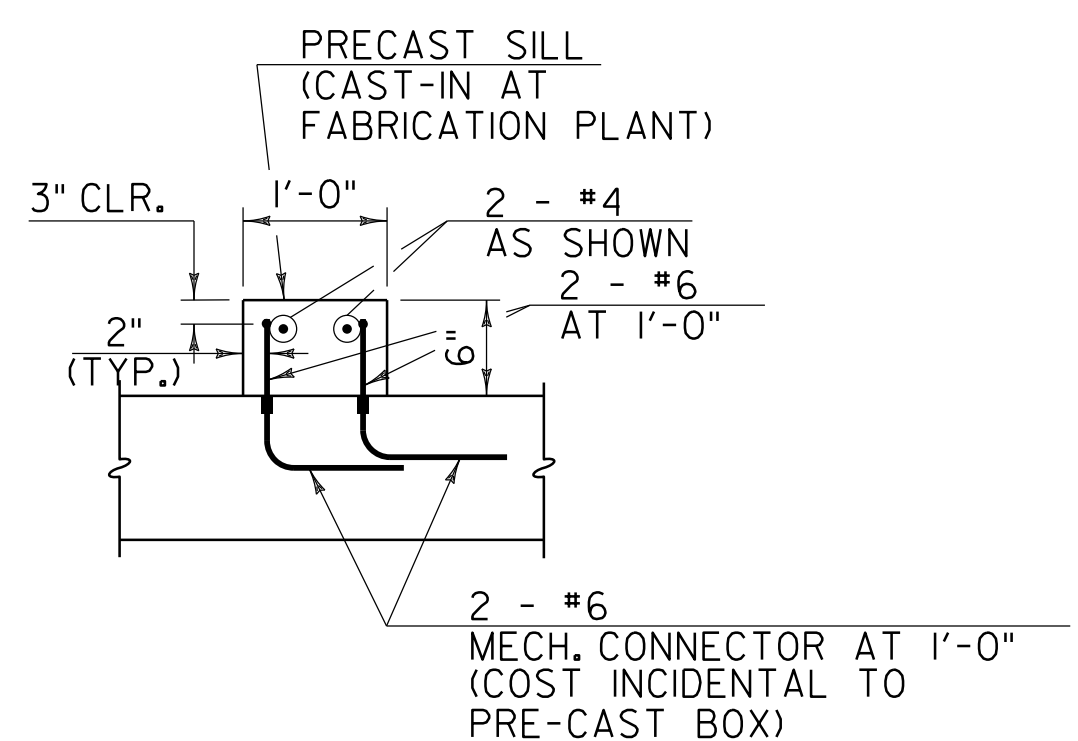


TYPICAL APPROACH SECTION
NOT TO SCALE

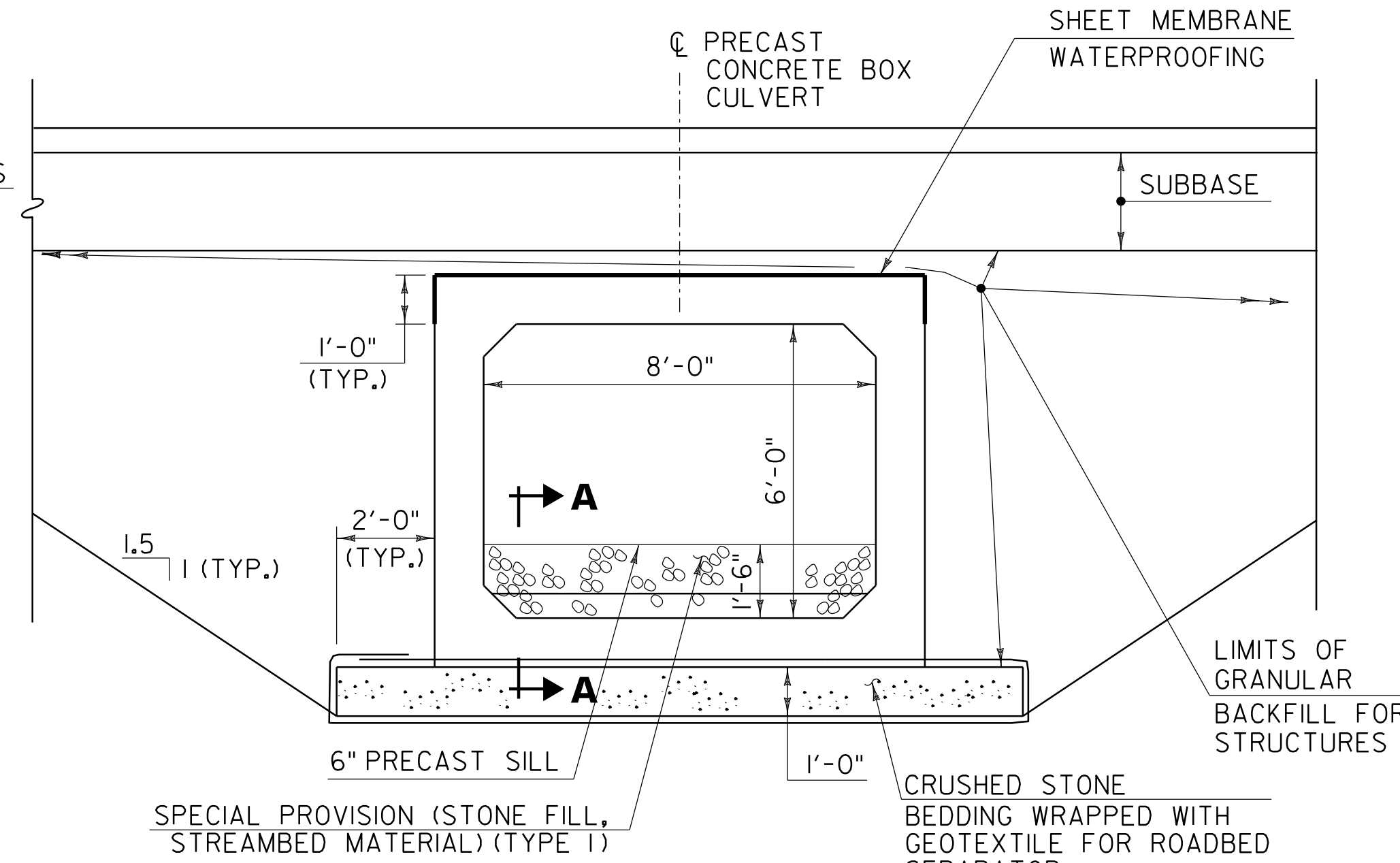


SAFETY EDGE DETAIL
NOT TO SCALE

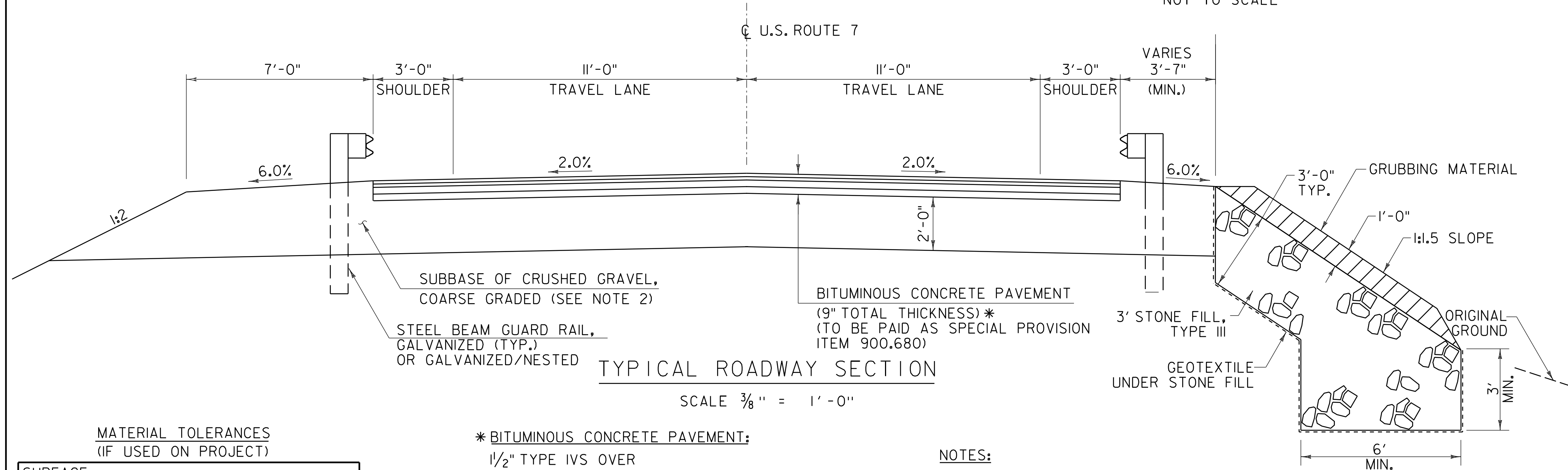
- NOTES:**
1. THE EDGE OF PAVEMENT SHALL BE FORMED IN SUCH A WAY THAT THE BITUMINOUS CONCRETE PAVEMENT IS EXTRUDED OR COMPRESSED TO FORM THE 30 TO 35 DEGREE ANGLE. DEVICES THAT SIMPLY STRIKE-OFF THE MIX WITHOUT PROVIDING ANY COMPACTIVE EFFORT WILL NOT BE ALLOWED.
 2. THE PAVED SHOULDER EXTENDS FROM THE EDGE OF TRAVELED WAY TO THE EDGE OF THE WEARING COURSE, INCLUDING THE "SAFETY EDGE".



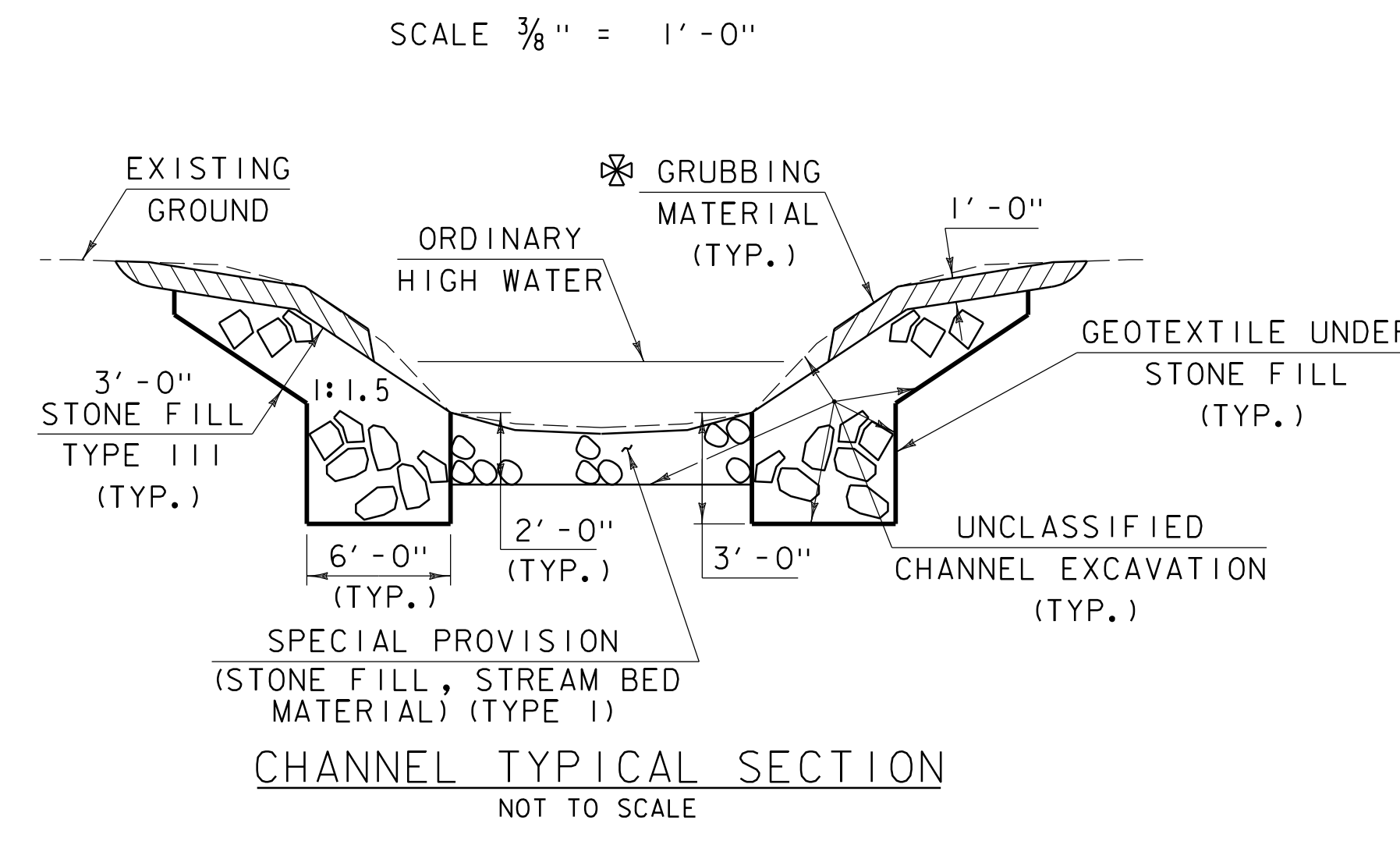
SECTION A-A
NOT TO SCALE



PRECAST CONCRETE BOX TYPICAL SECTION



TYPICAL ROADWAY SECTION
SCALE 3/8" = 1'-0"



CHANNEL TYPICAL SECTION
NOT TO SCALE

MATERIAL TOLERANCES (IF USED ON PROJECT)

SURFACE	
- PAVEMENT (TOTAL THICKNESS)	+/- 1/4"
- AGGREGATE SURFACE COARSE	+/- 1/2"
SUBBASE	+/- 1"
SAND BORROW	+/- 1"

*** BITUMINOUS CONCRETE PAVEMENT:**
 1 1/2" TYPE IVS OVER
 1 1/2" TYPE IVS OVER
 3" TYPE IIS OVER
 3" TYPE IIS
 EMULSIFIED ASPHALT BETWEEN LAYERS (SEE NOTE 1)

- NOTES:**
1. EMULSIFIED ASPHALT SHALL BE APPLIED ON COLD PLANED SURFACES AT THE RATE OF 0.08 GAL/SY AND BETWEEN PAVED LAYERS AT THE RATE OF 0.04 GAL/SY.
 2. DENSE GRADED CRUSHED STONE MAY BE SUBSTITUTED FOR SUBBASE OF CRUSHED GRAVEL, COURSE GRADED.

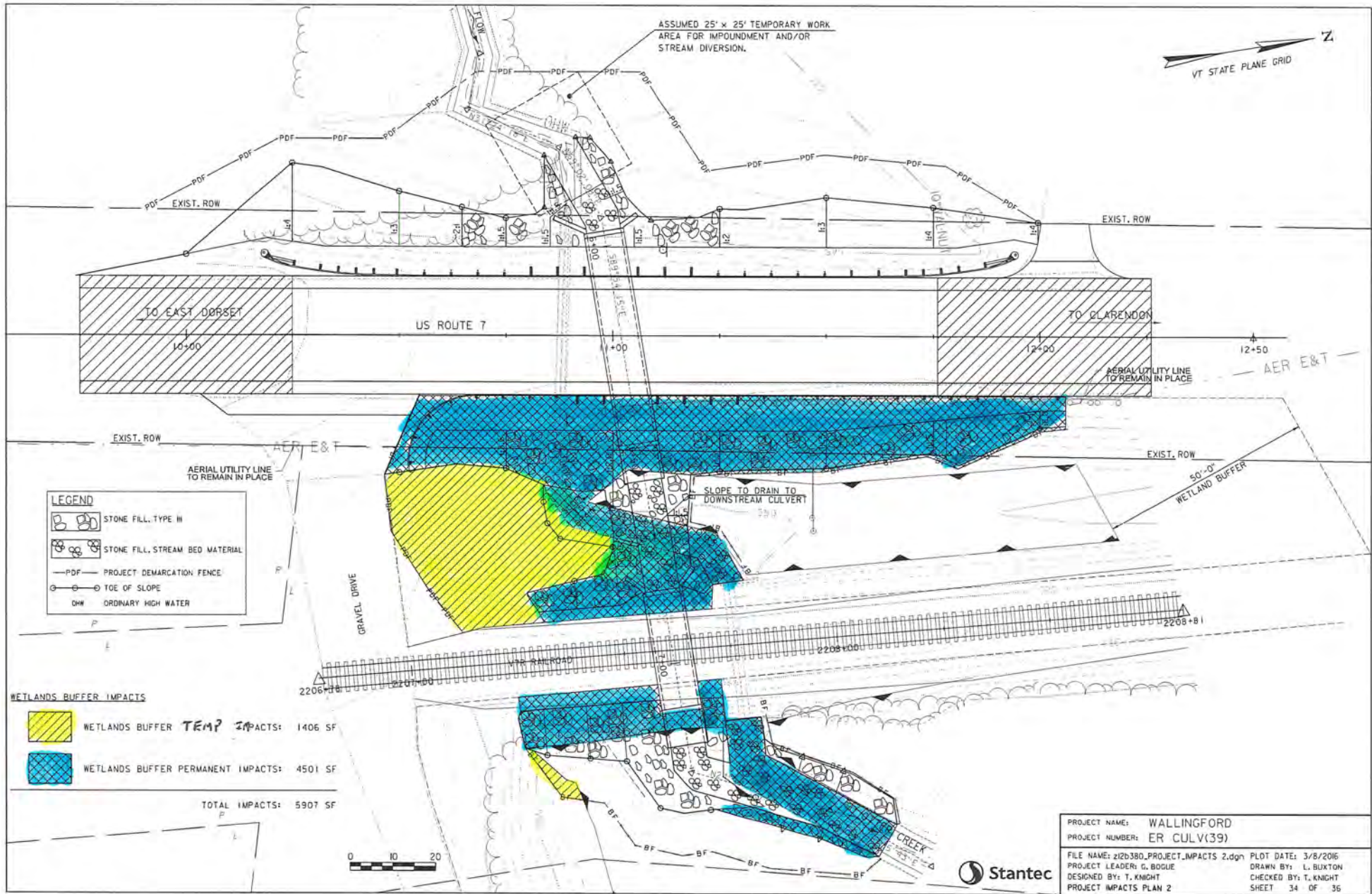
☒ WHENEVER CHANNEL SLOPE INTERSECTS ROADWAY SUBBASE, GRUBBING MATERIAL SHALL BEGIN AT THE BOTTOM OF SUBBASE.

PROJECT NAME:	WALLINGFORD
PROJECT NUMBER:	ER CULV(39)
FILE NAME:	z12b380.TYPICAL_SECTIONS.dgn
PROJECT LEADER:	G. BOGUE
DESIGNED BY:	J. HUNGERFORD
TYPICAL SECTIONS - BR 73A	
PLOT DATE:	3/8/2016
DRAWN BY:	L. BUXTON
CHECKED BY:	T. KNIGHT
SHEET	8 OF 36





ASSUMED 25' x 25' TEMPORARY WORK
AREA FOR IMPOUNDMENT AND/OR
STREAM DIVERSION.

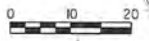


LEGEND

- STONE FILL, TYPE III
- STONE FILL, STREAM BED MATERIAL
- PROJECT DEMARCATION FENCE
- TOE OF SLOPE
- ORDINARY HIGH WATER

WETLANDS BUFFER IMPACTS



	WETLANDS BUFFER <i>TEMP</i> IMPACTS:	1406 SF
	WETLANDS BUFFER PERMANENT IMPACTS:	4501 SF
TOTAL IMPACTS:		5907 SF



PROJECT NAME:	WALLINGFORD
PROJECT NUMBER:	ER CULV(39)
FILE NAME:	212b380_PROJECT_IMPACTS 2.dgn
PROJECT LEADER:	G. BOGUE
DESIGNED BY:	T. KNIGHT
PROJECT IMPACTS PLAN 2	
PLOT DATE:	3/8/2016
DRAWN BY:	L. BUXTON
CHECKED BY:	T. KNIGHT
SHEET	34 OF 36

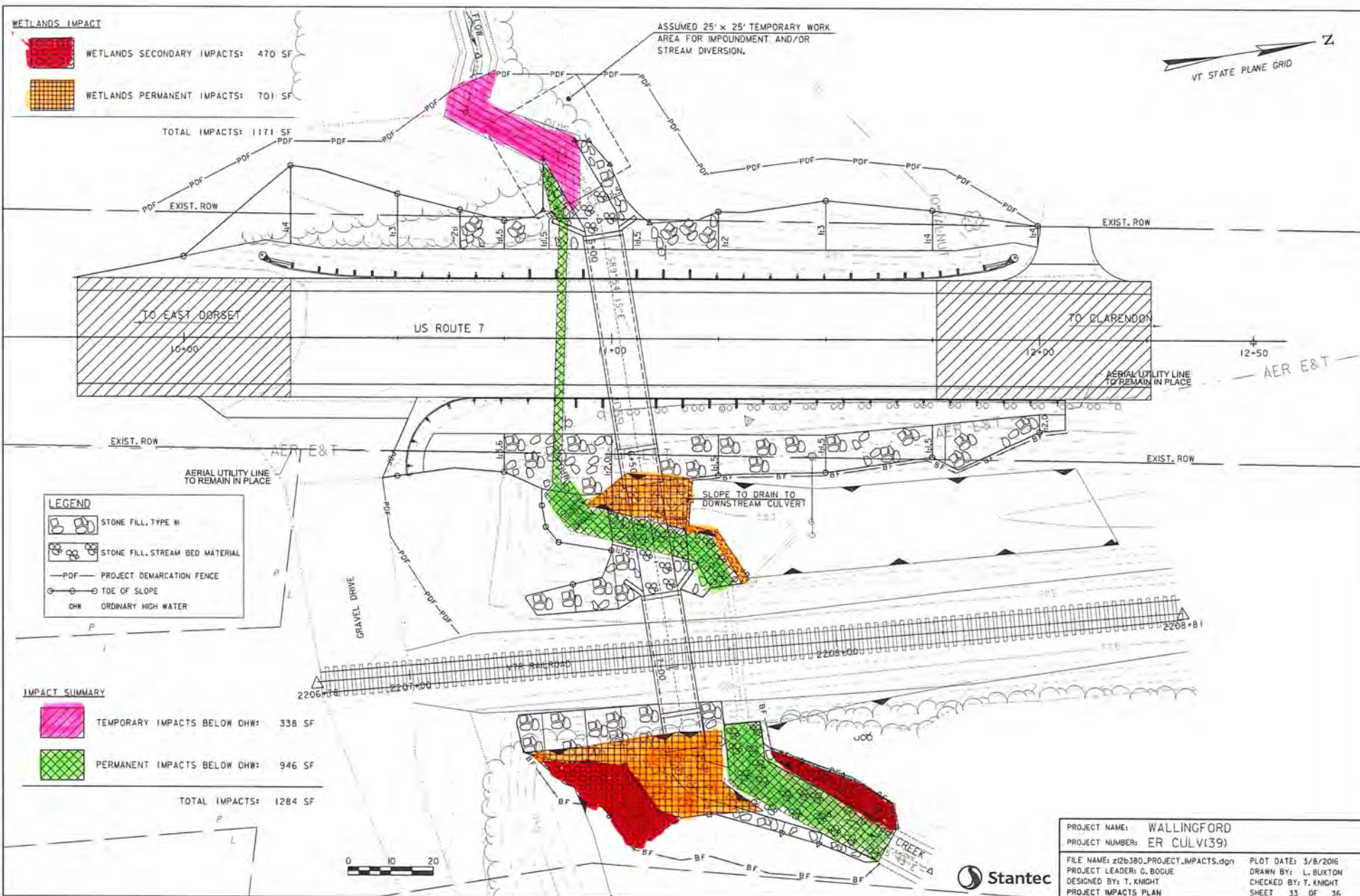


WETLANDS IMPACT






-  WETLANDS SECONDARY IMPACTS: 470 SF
-  WETLANDS PERMANENT IMPACTS: 701 SF

TOTAL IMPACTS: 1171 SF



ASSUMED 25' x 25' TEMPORARY WORK AREA FOR IMPOUNDMENT AND/OR STREAM DIVERSION.



LEGEND

-  STONE FILL, TYPE III
-  STONE FILL, STREAM BED MATERIAL
-  PROJECT DEMARCATION FENCE
-  TOE OF SLOPE
-  ORDINARY HIGH WATER

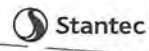
IMPACT SUMMARY

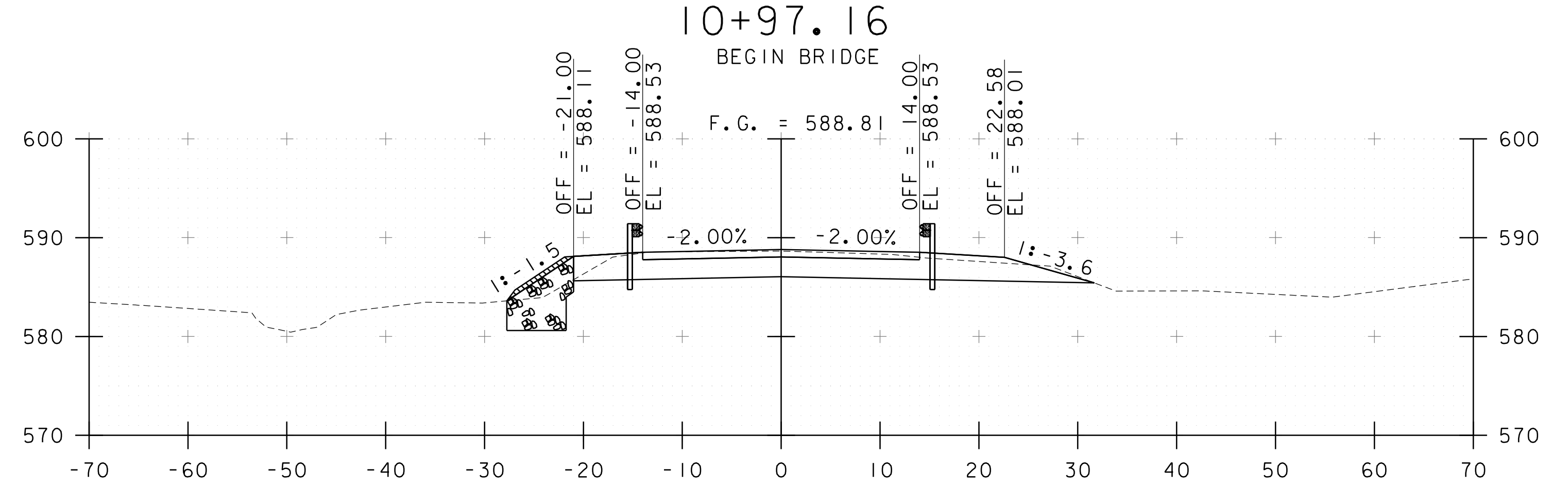
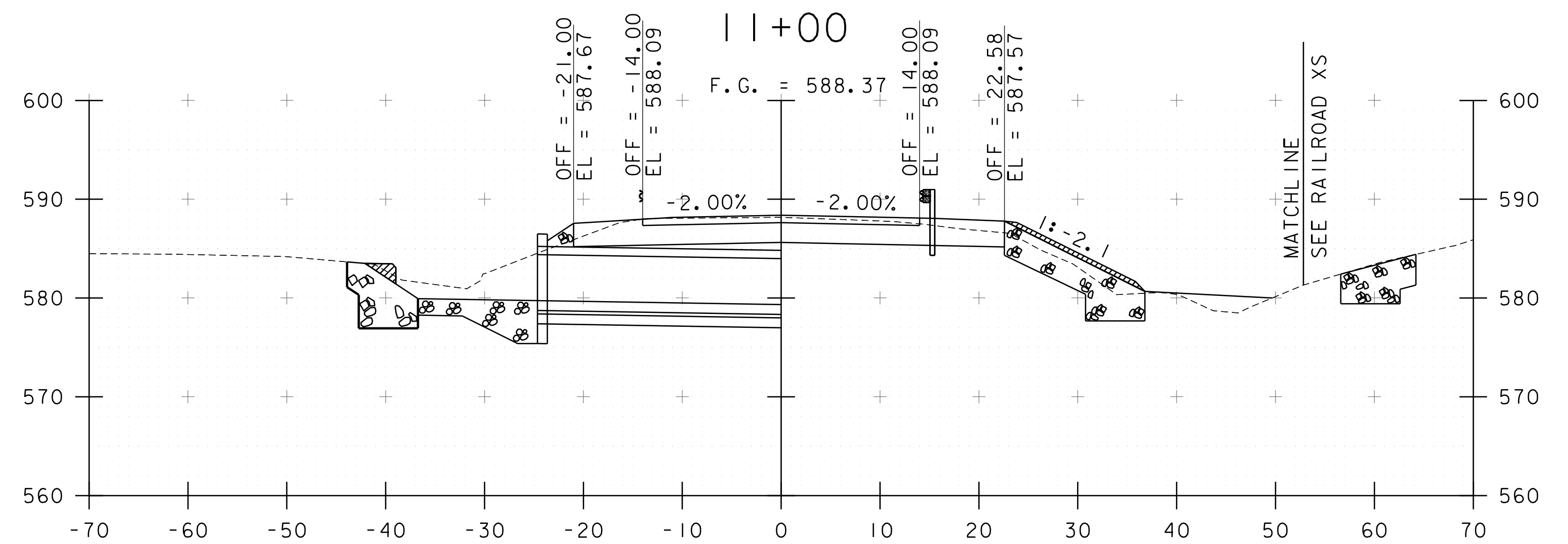
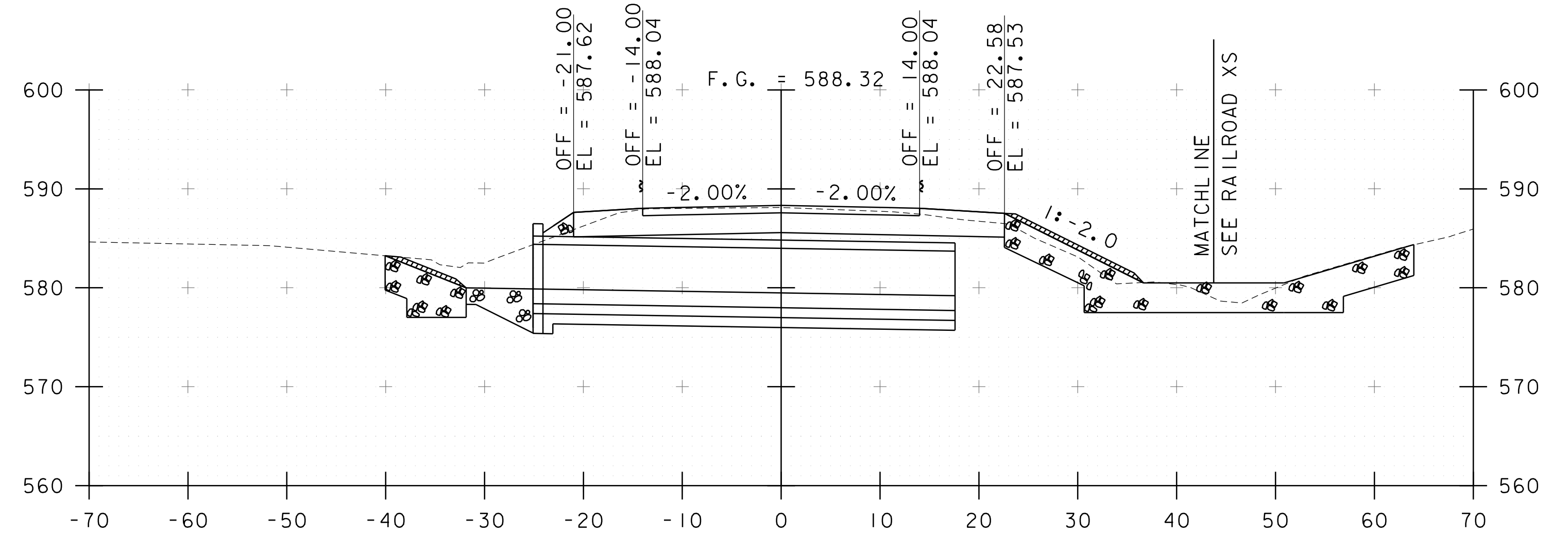
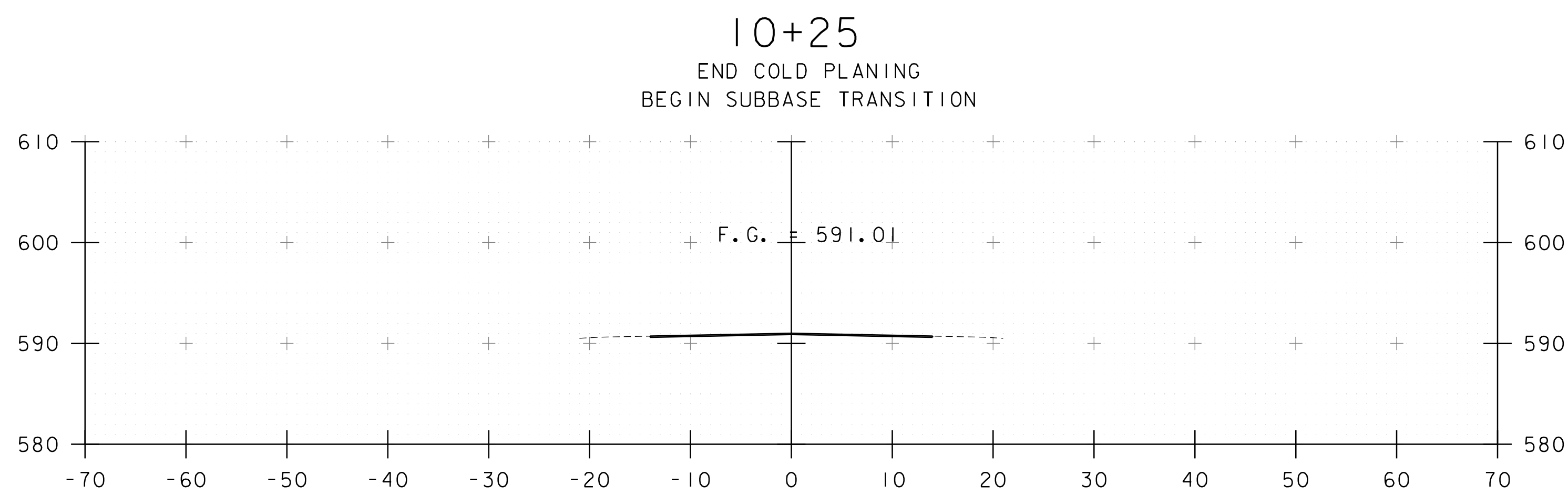
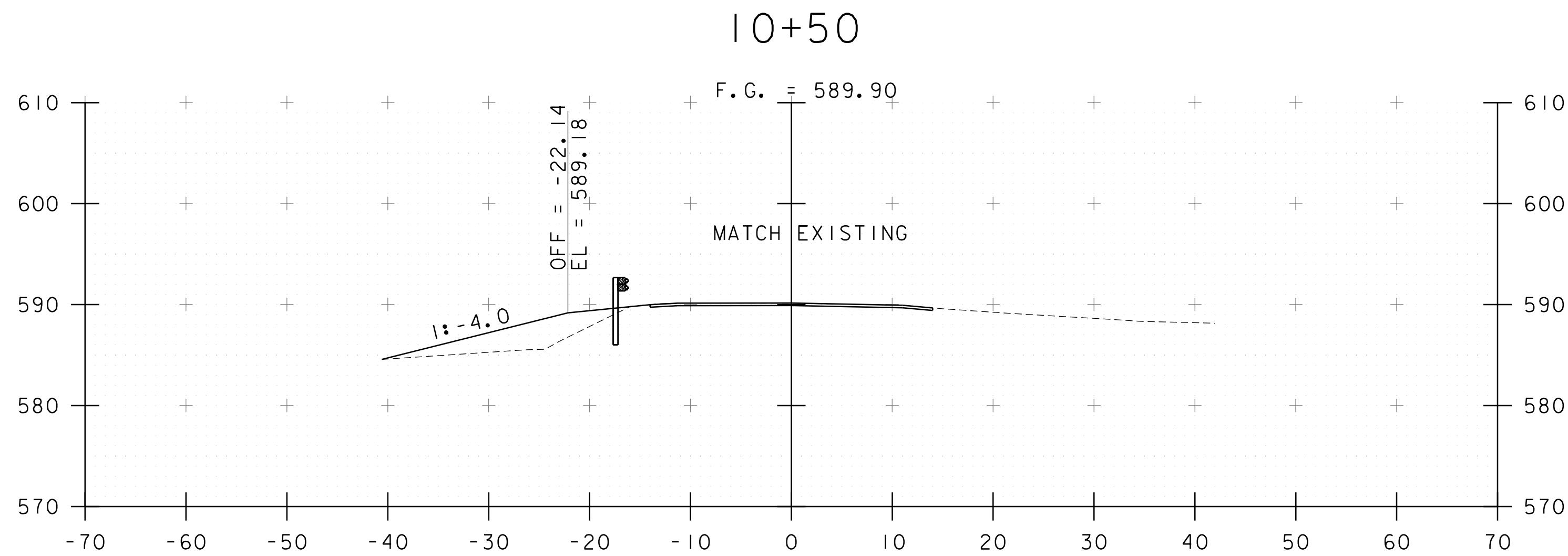
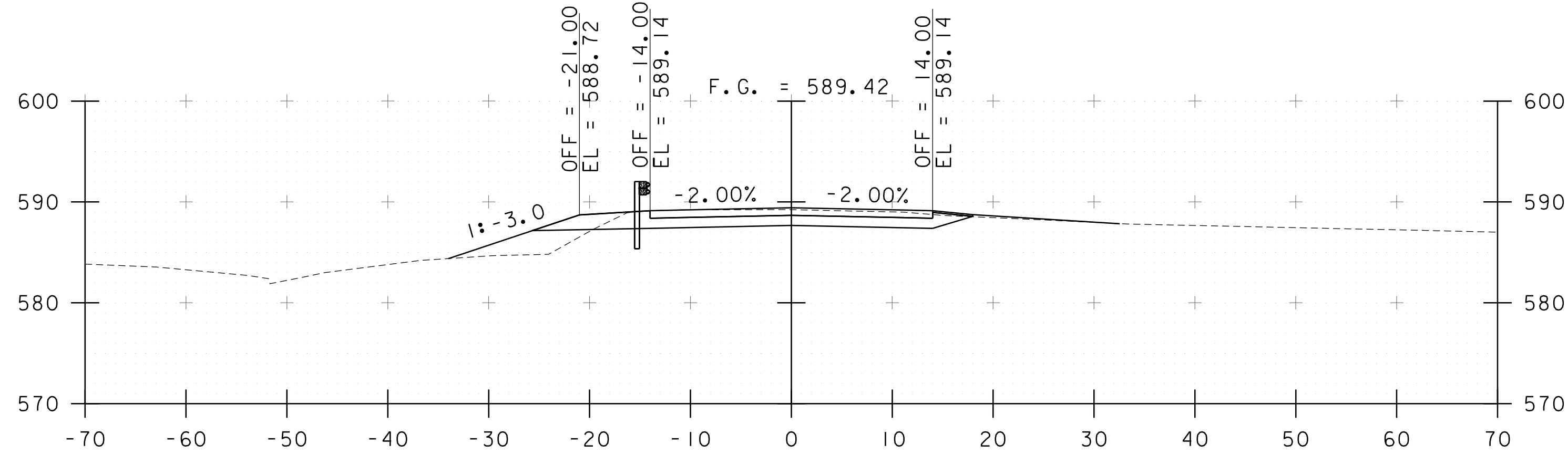
-  TEMPORARY IMPACTS BELOW DHW: 338 SF
-  PERMANENT IMPACTS BELOW DHW: 946 SF

TOTAL IMPACTS: 1284 SF

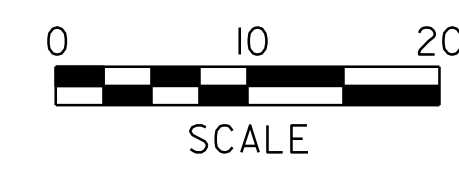


PROJECT NAME:	WALLINGFORD	PLOT DATE:	3/8/2016
PROJECT NUMBER:	ER CULV(39)	DRAWN BY:	L. BUXTON
FILE NAME:	z126380_PROJECT.IMPACTS.dgn	DESIGNED BY:	T. KNIGHT
PROJECT LEADER:	G. BOGUE	CHECKED BY:	T. KNIGHT
PROJECT IMPACTS PLAN		SHEET	33 OF 36

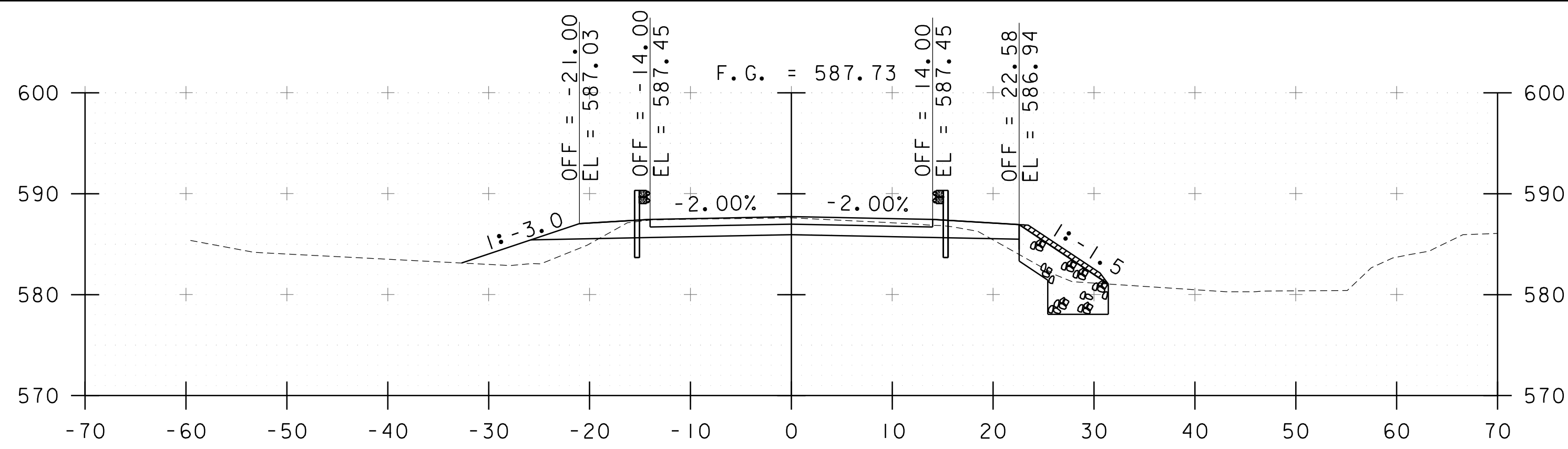




STA. 10+00 TO STA. 11+00

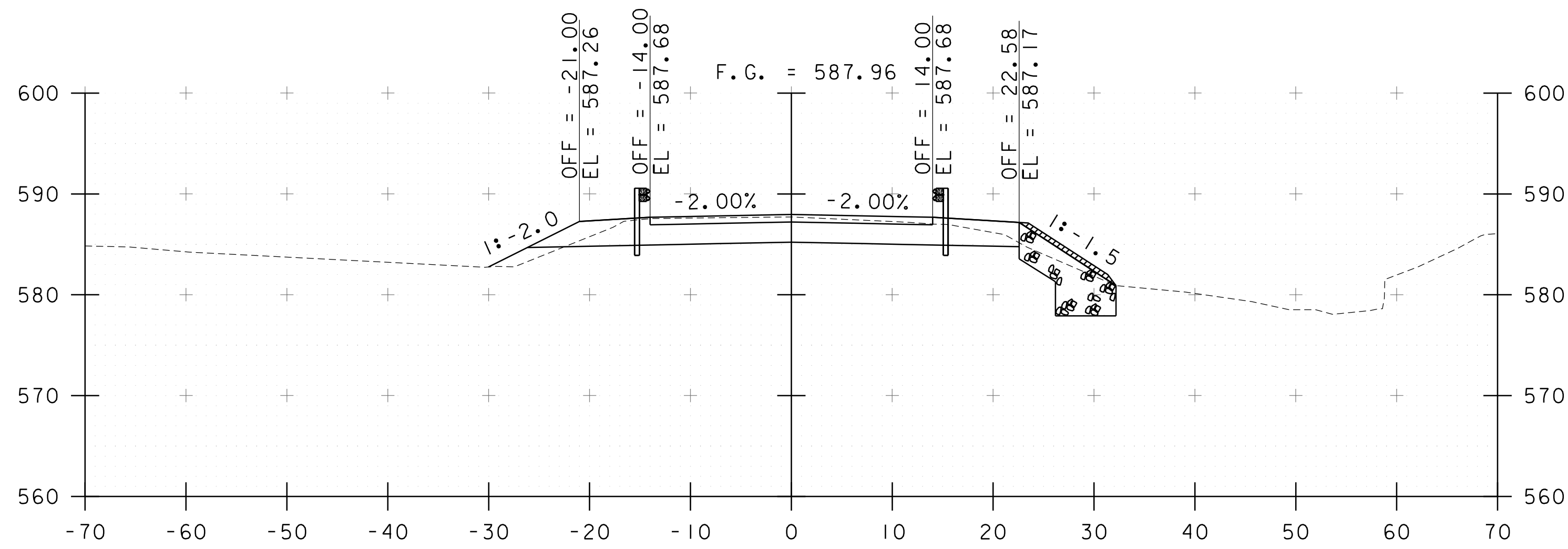


PROJECT NAME:	WALLINGFORD	PLOT DATE:	3/8/2016
PROJECT NUMBER:	ER CULV(39)	DRAWN BY:	I. MAYNARD
FILE NAME:	...drawing\z12b380_xs.dgn	DESIGNED BY:	I. MAYNARD
PROJECT LEADER:	G. BOGUE	CHECKED BY:	G. SANTY
US ROUTE 7 CROSS SECTIONS 1		SHEET	24 OF 36



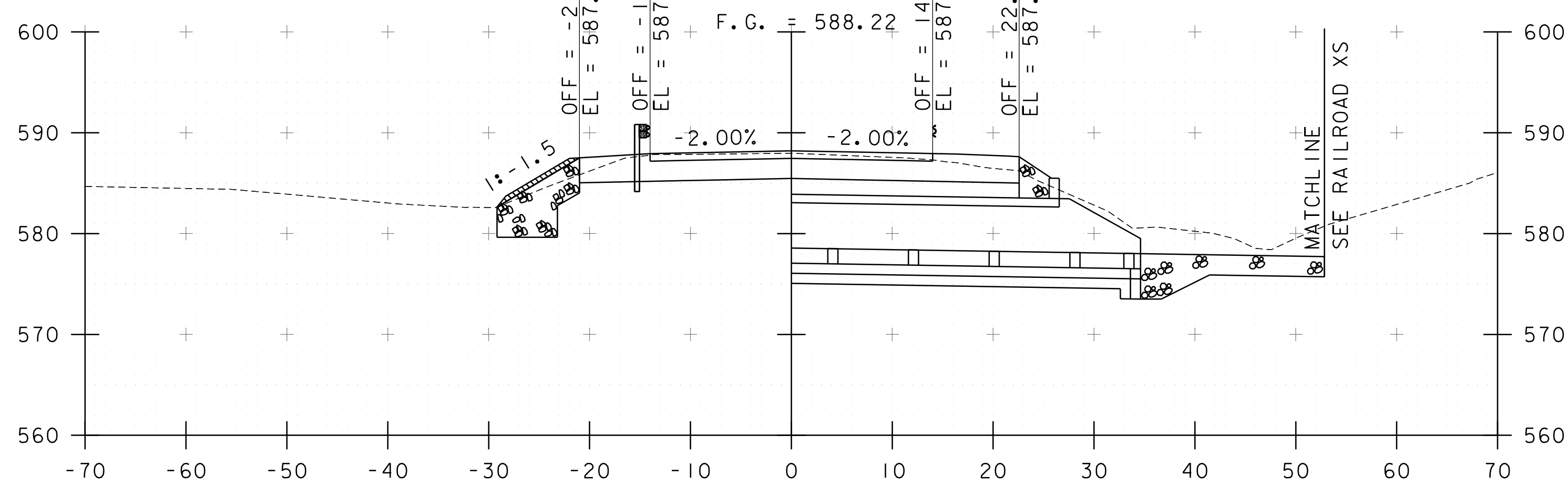
11+50

STA. 11+26.00
END PROJECT

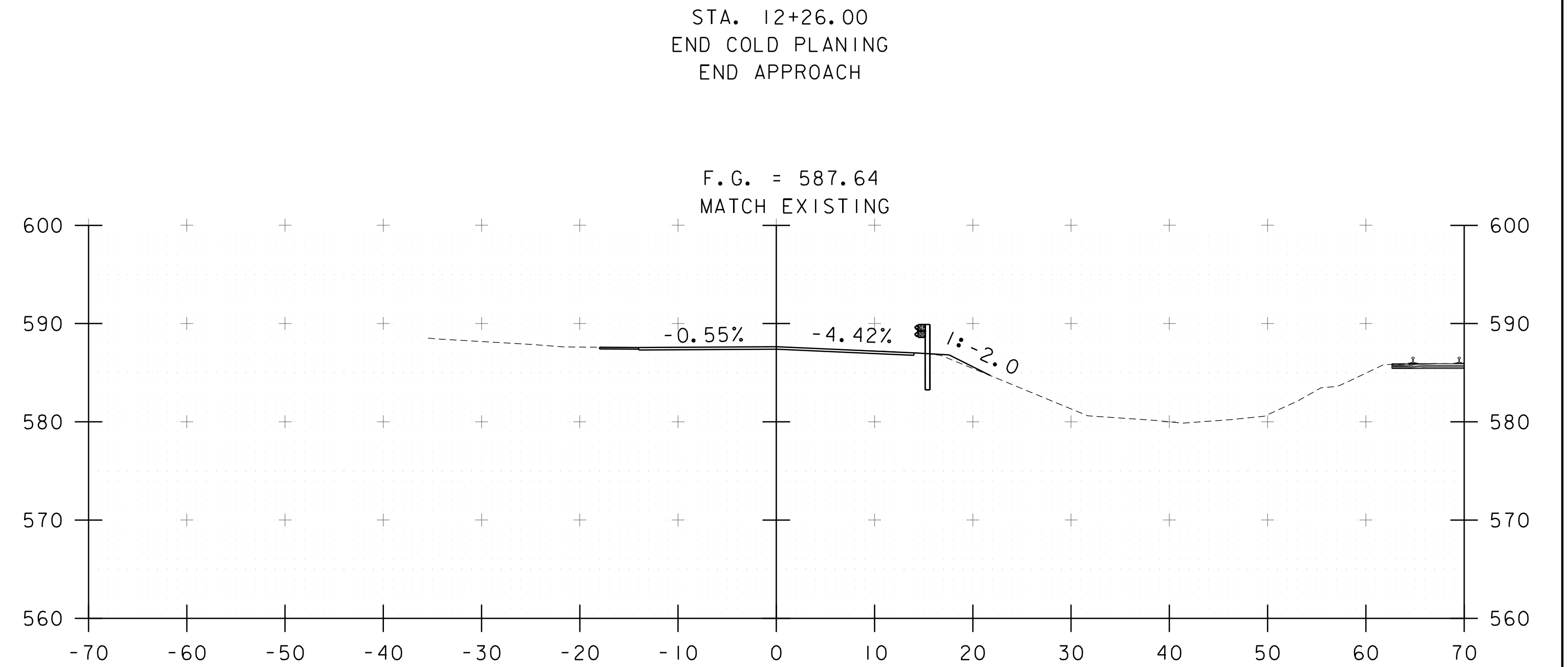


11+25

F.G. = 588.22

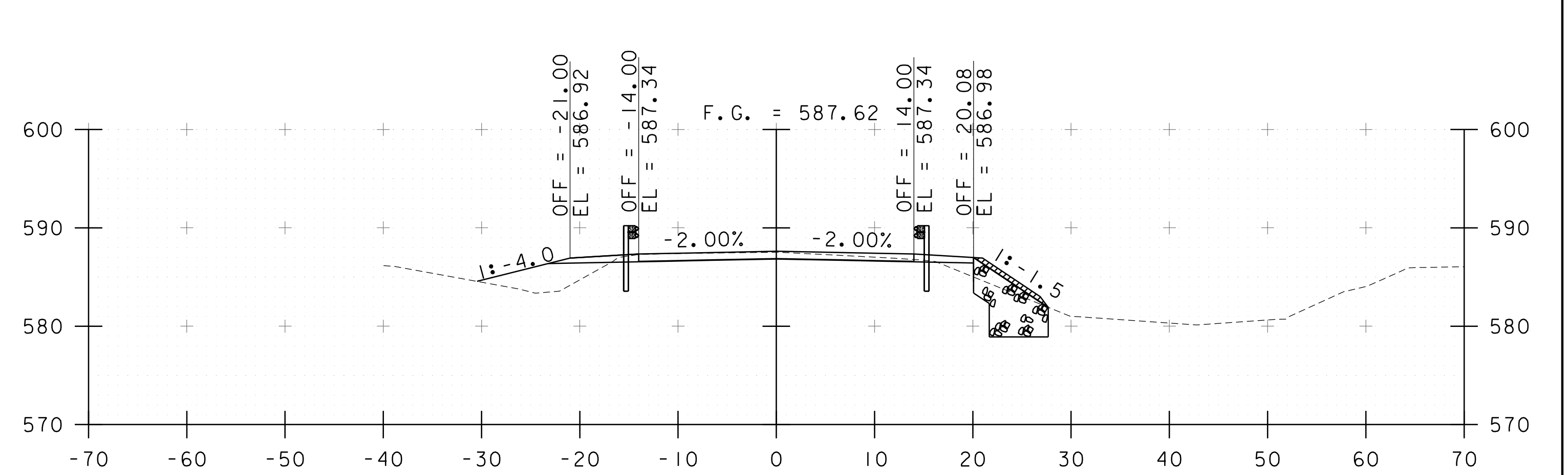


11+06.62
END BRIDGE



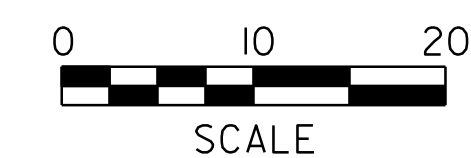
12+00

STA. 11+76.00
BEGIN COLD PLANING



11+75

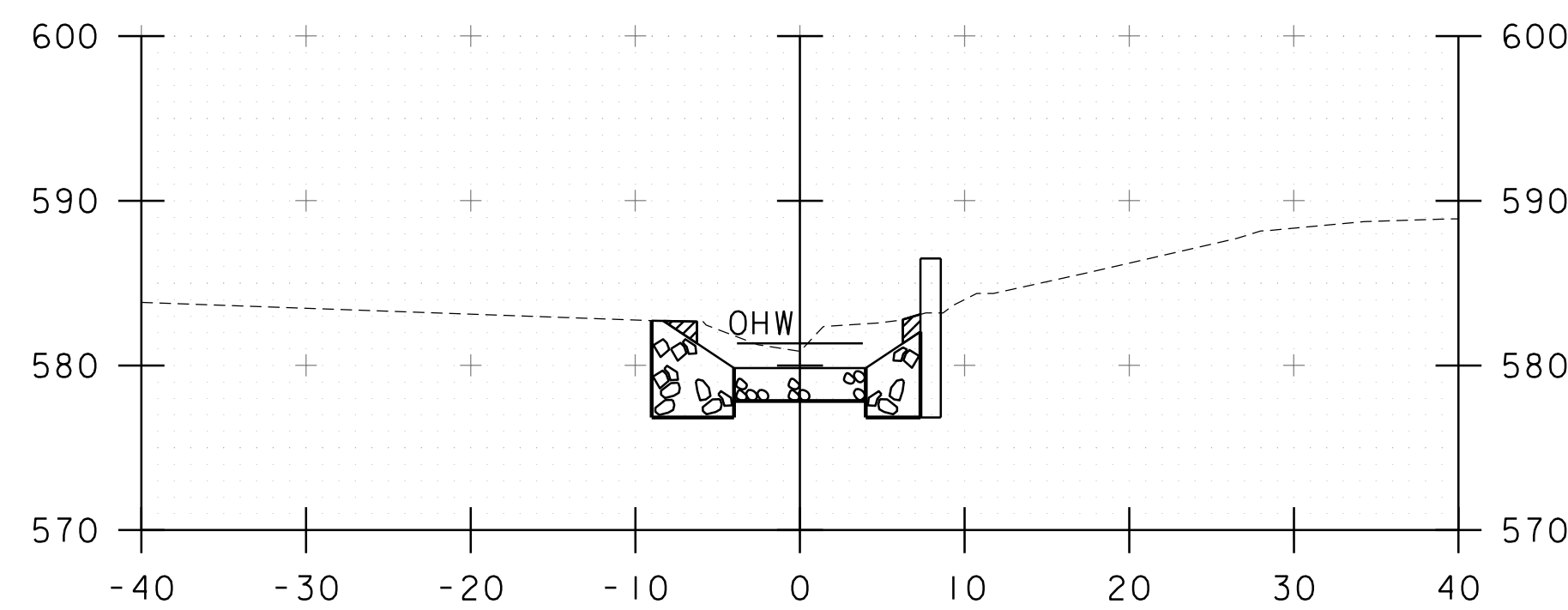
STA. 11+07 TO STA. 12+00



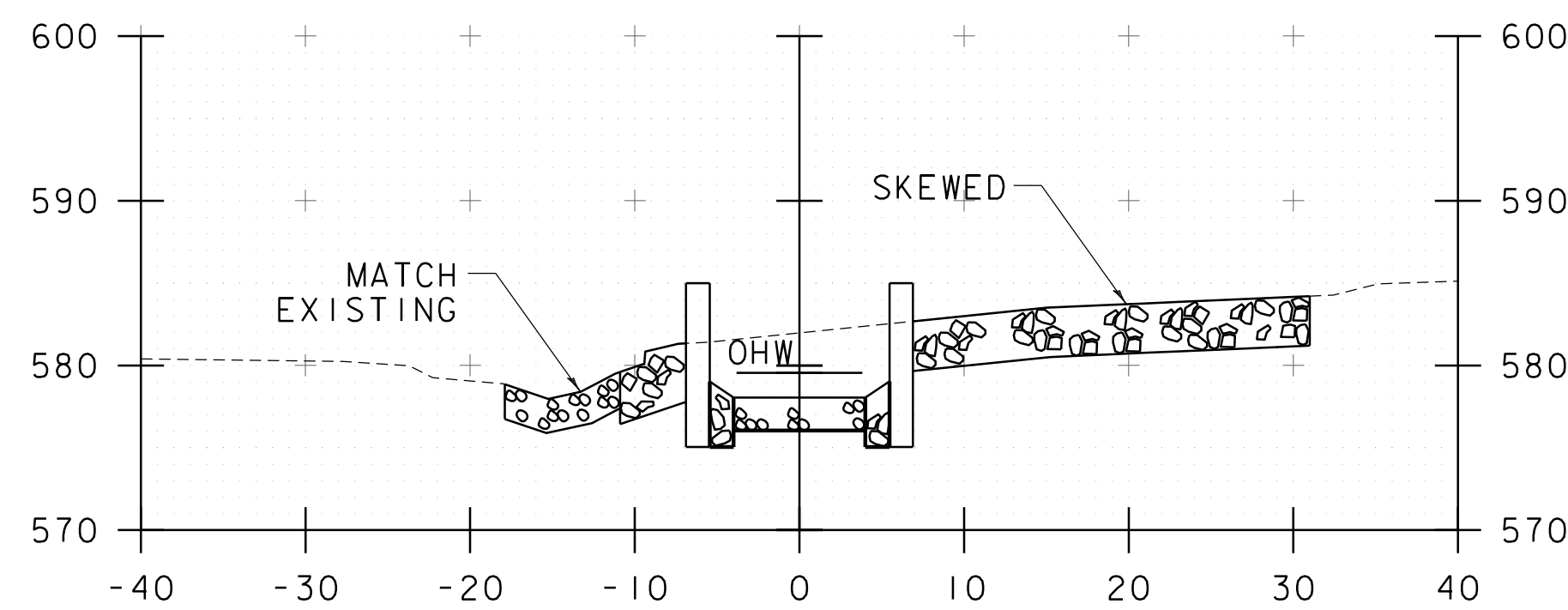
PROJECT NAME: WALLINGFORD
PROJECT NUMBER: ER CULV(39)

FILE NAME: ...drawing\z12b380_xs.dgn
PROJECT LEADER: G. BOGUE
DESIGNED BY: I. MAYNARD
US ROUTE 7 CROSS SECTIONS 2

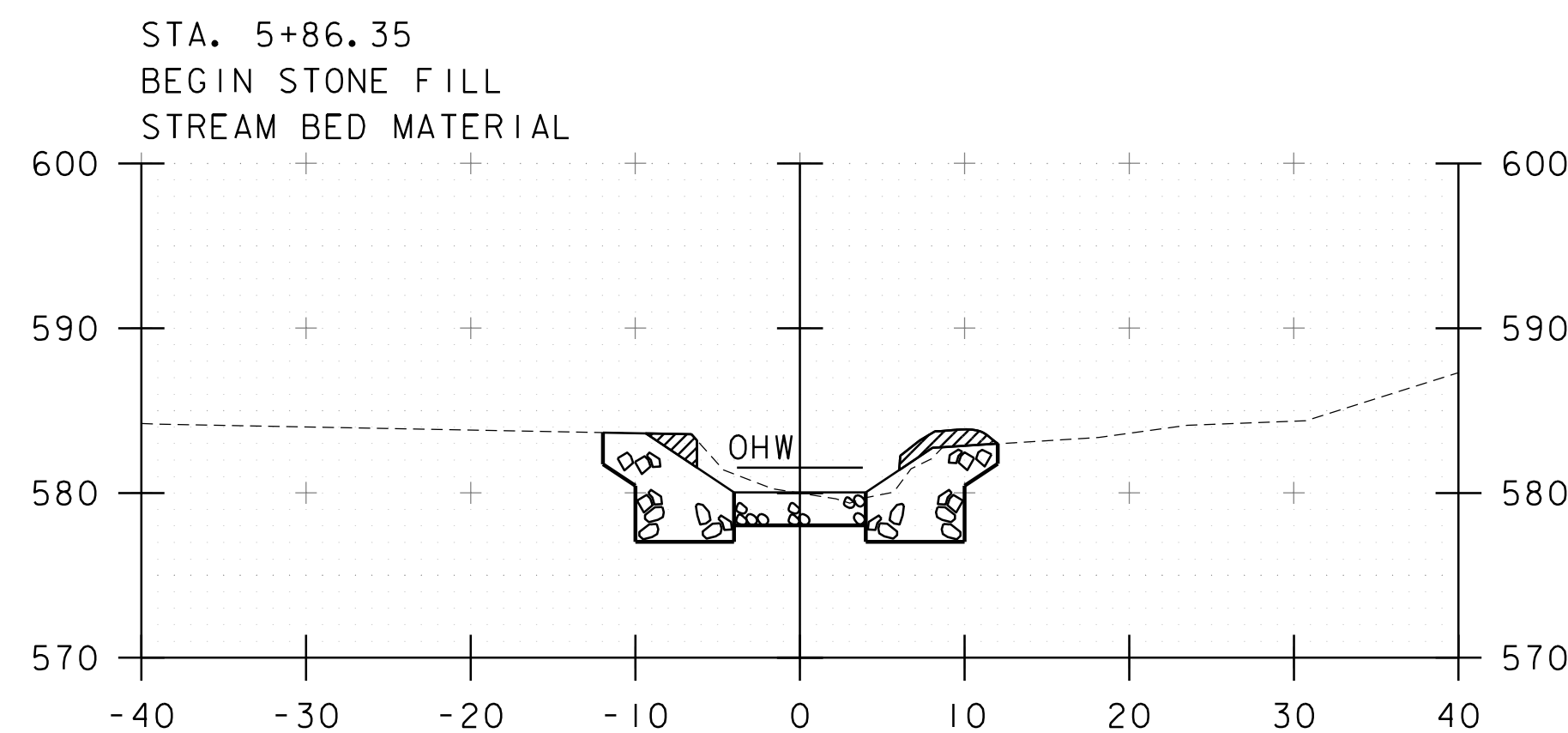
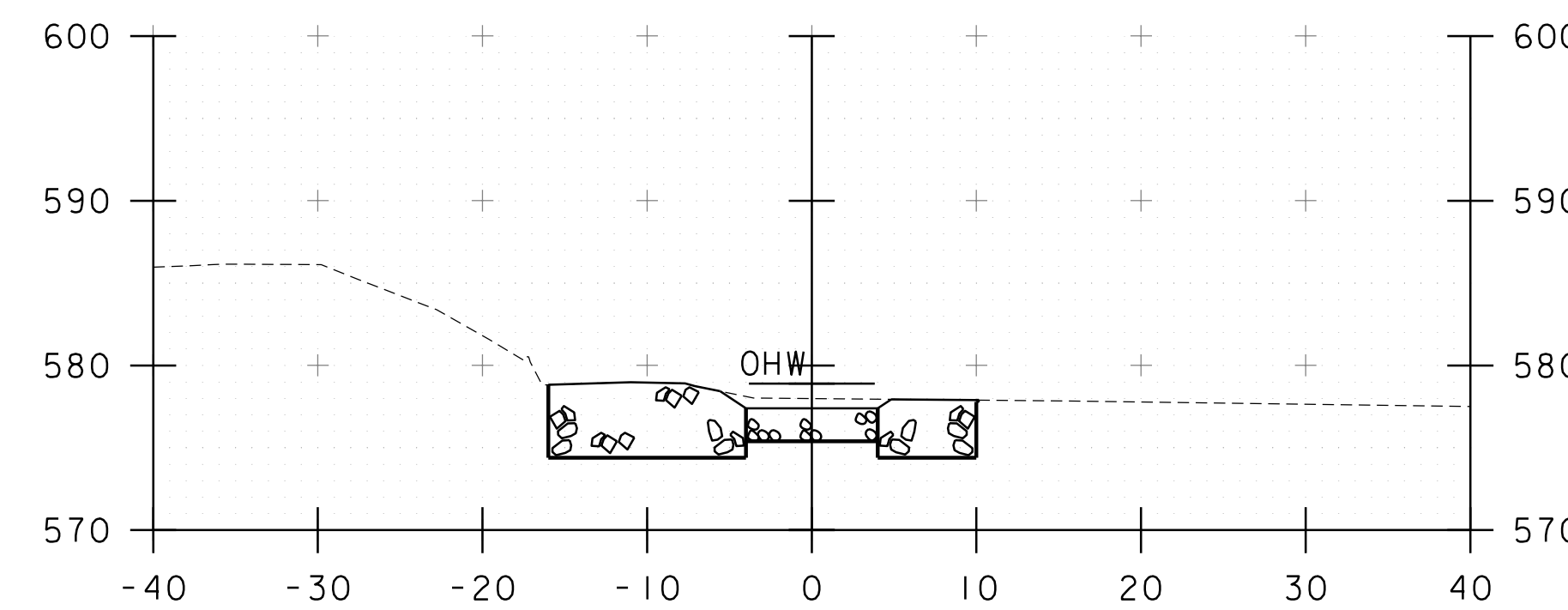
PLOT DATE: 3/8/2016
DRAWN BY: I. MAYNARD
CHECKED BY: G. SANTY
SHEET 25 OF 36



STA. 5+96
 BEGIN BRIDGE
 STOP STONE FILL STREAM
 BED MATERIAL
 UNCLASSIFIED CHANNEL EXCAVATION

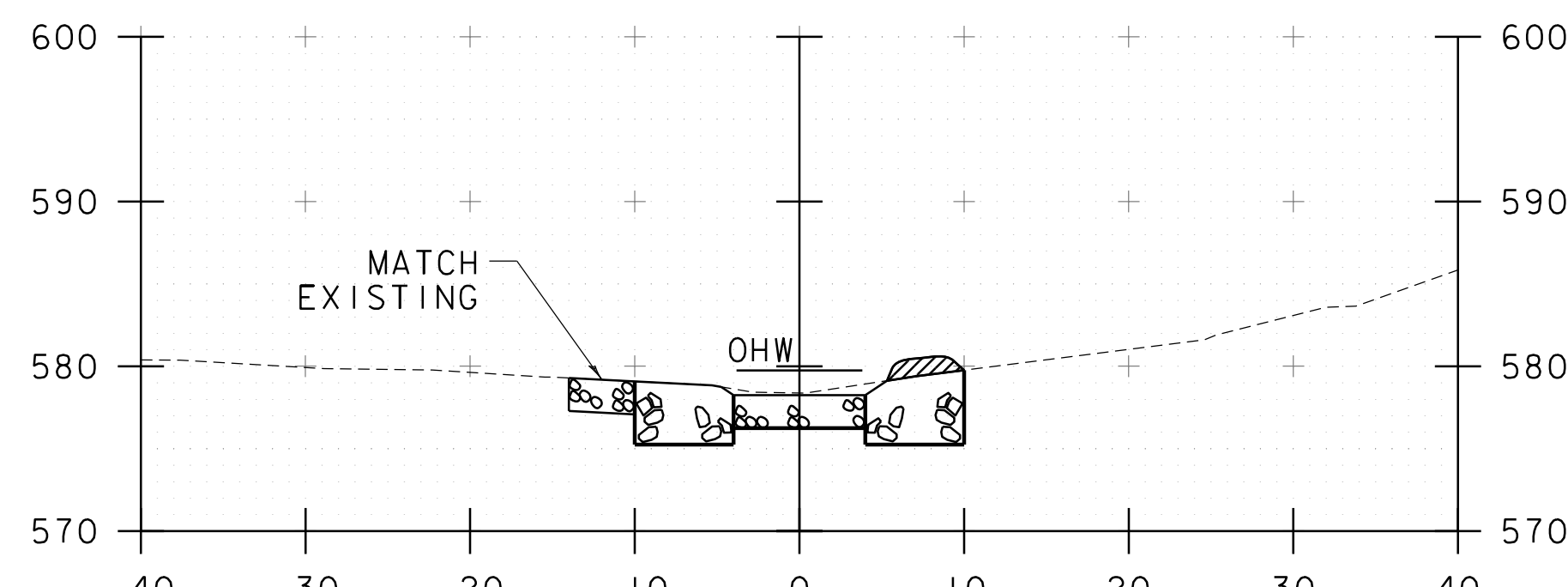


STA. 6+83
 BEGIN BRIDGE
 STOP STONE FILL STREAM
 UNCLASSIFIED CHANNEL EXCAVATION

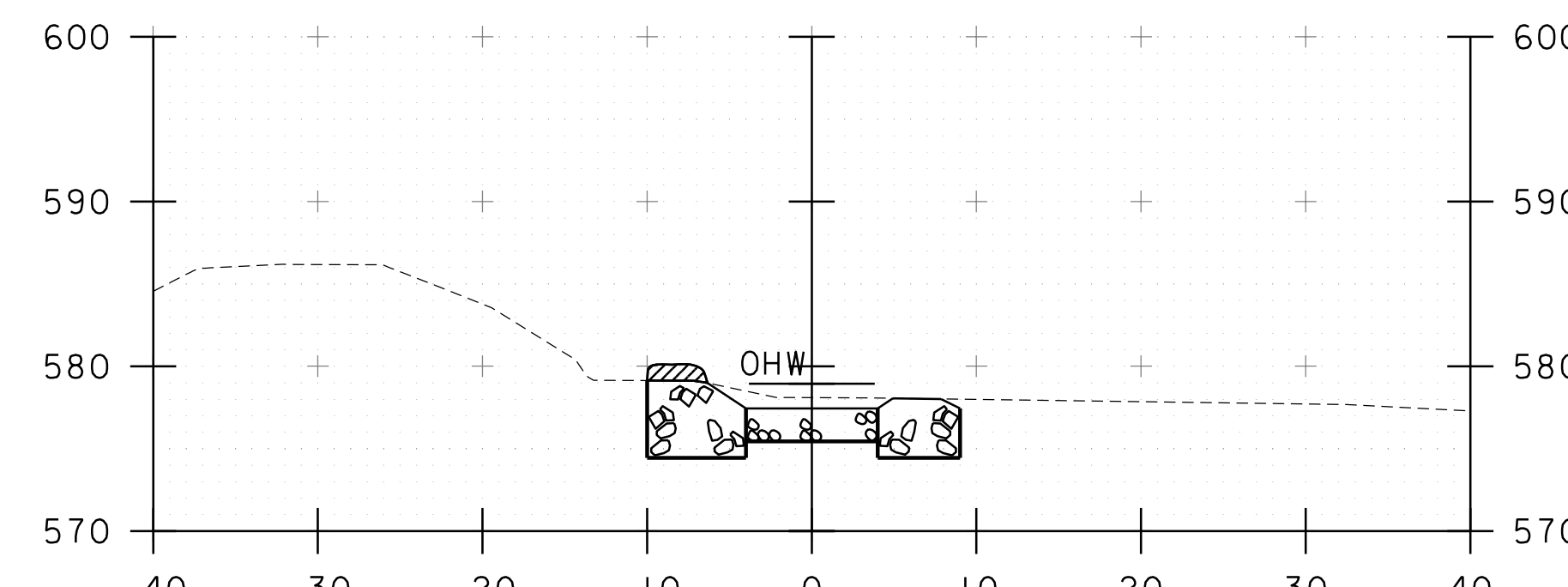


STA. 5+86.35
 BEGIN STONE FILL
 STREAM BED MATERIAL

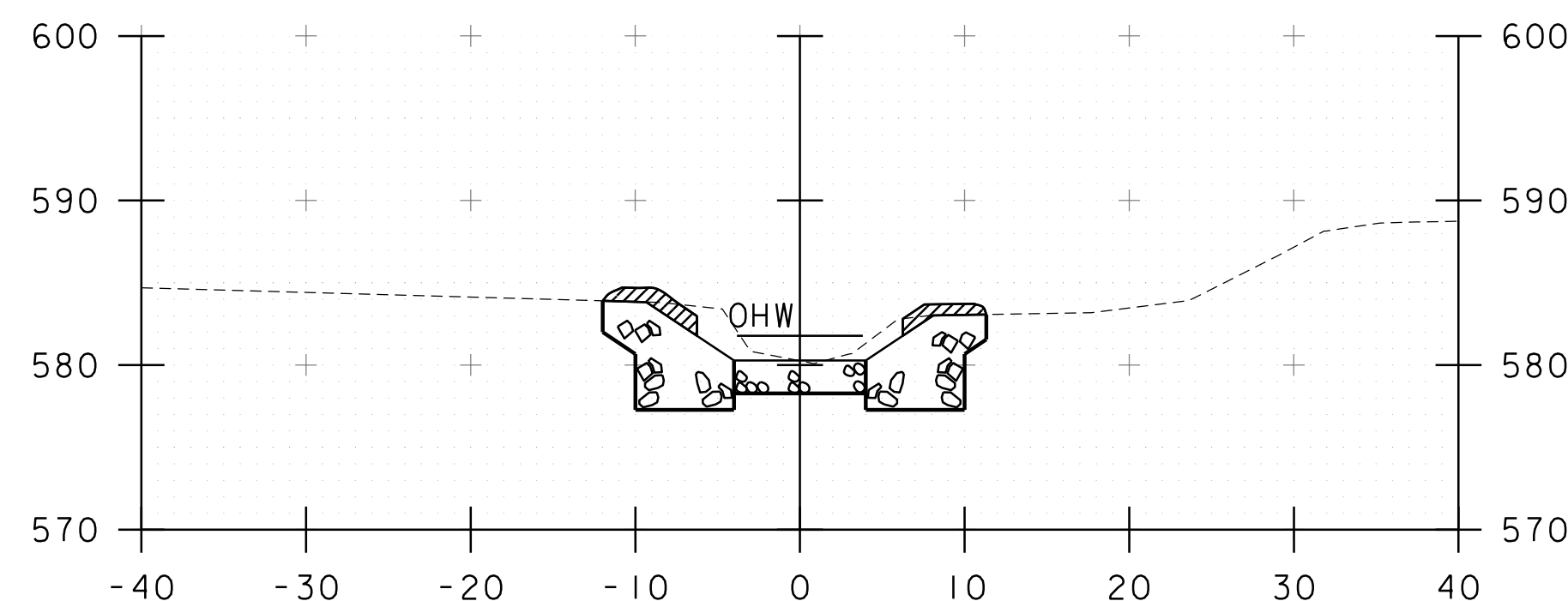
5+80



6+70

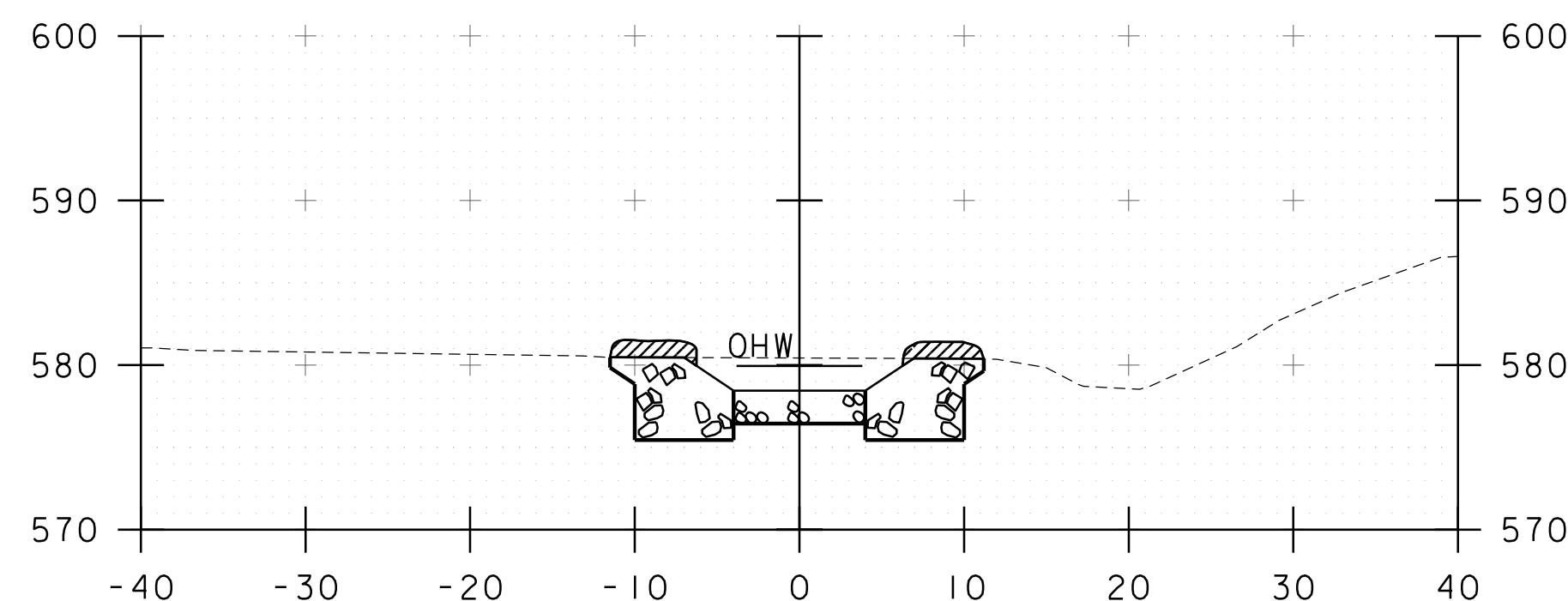


7+30



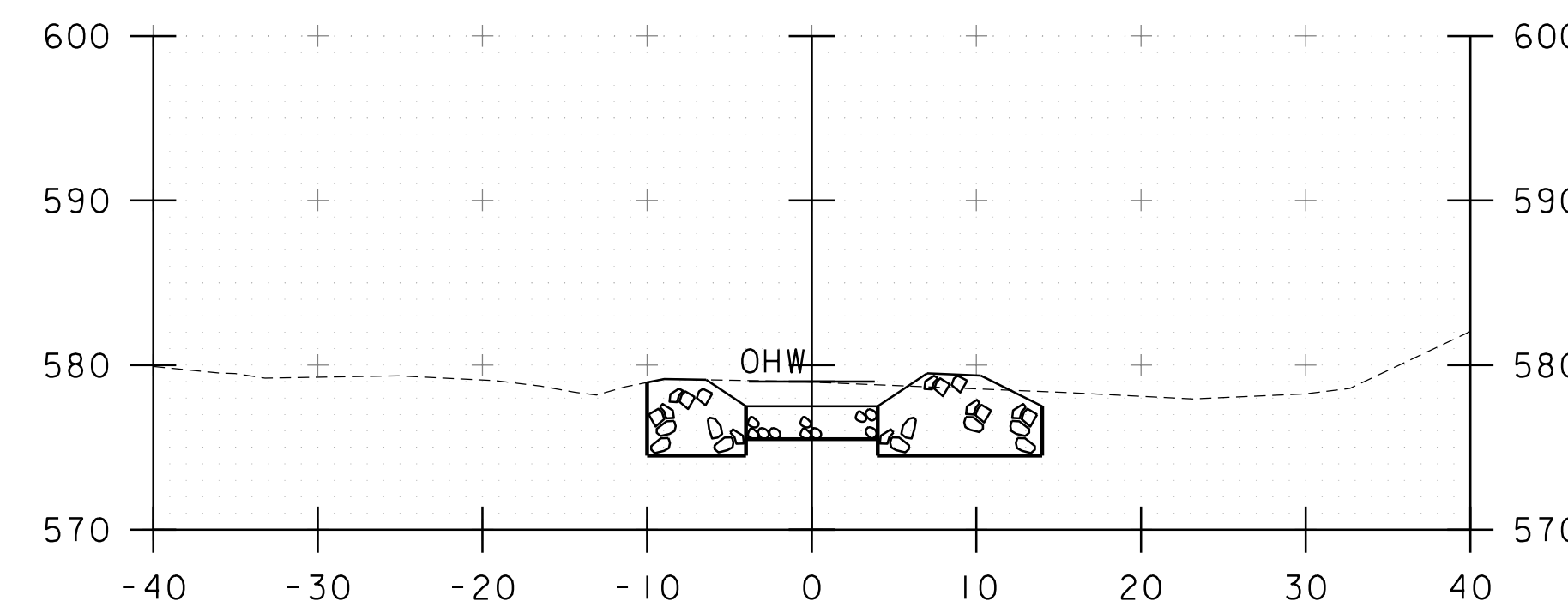
STA. 5+74 LT & RT
 BEGIN UNCLASSIFIED CHANNEL EXCAVATION
 GEOTEXTILE UNDER STONE FILL
 STONE FILL, TYPE III
 GRUBBING MATERIAL

5+74



STA. 6+56
 END BRIDGE
 RESUME STONE FILL STREAM
 BED MATERIAL
 UNCLASSIFIED CHANNEL EXCAVATION

6+60



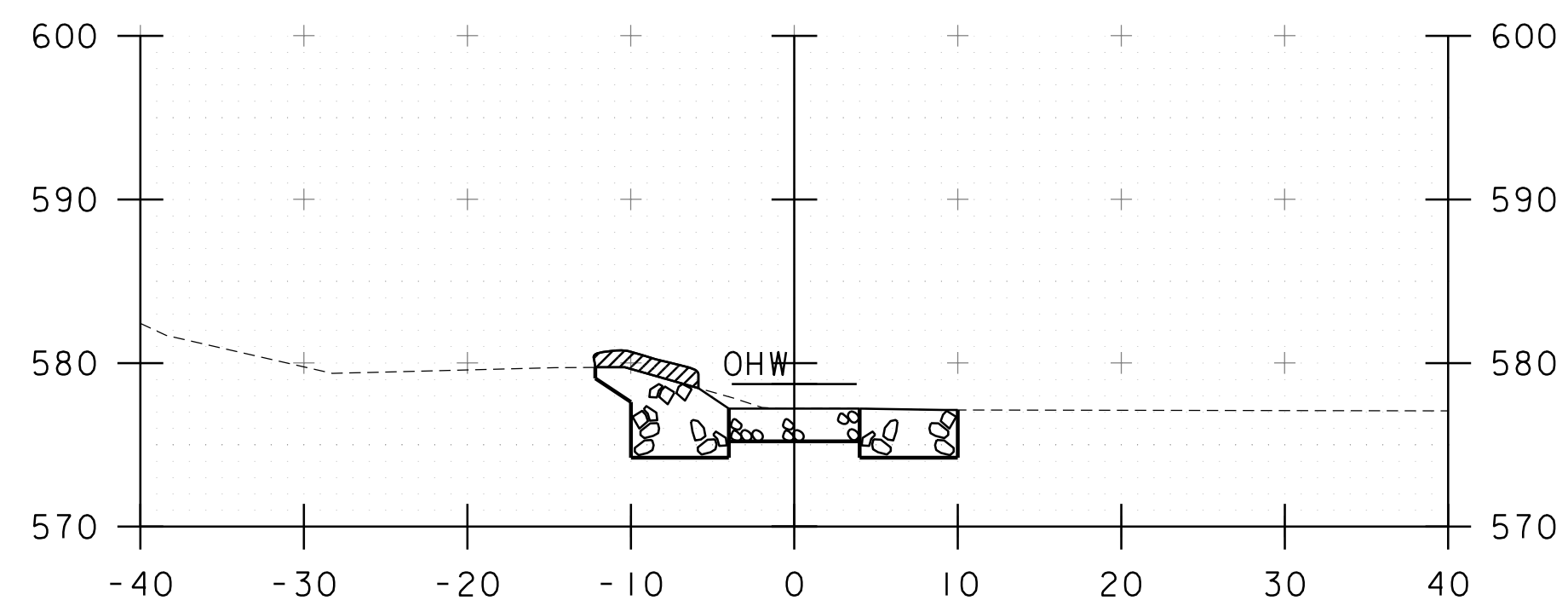
STA. 7+20
 END BRIDGE
 RESUME STONE FILL STREAM
 UNCLASSIFIED CHANNEL EXCAVATION

7+20

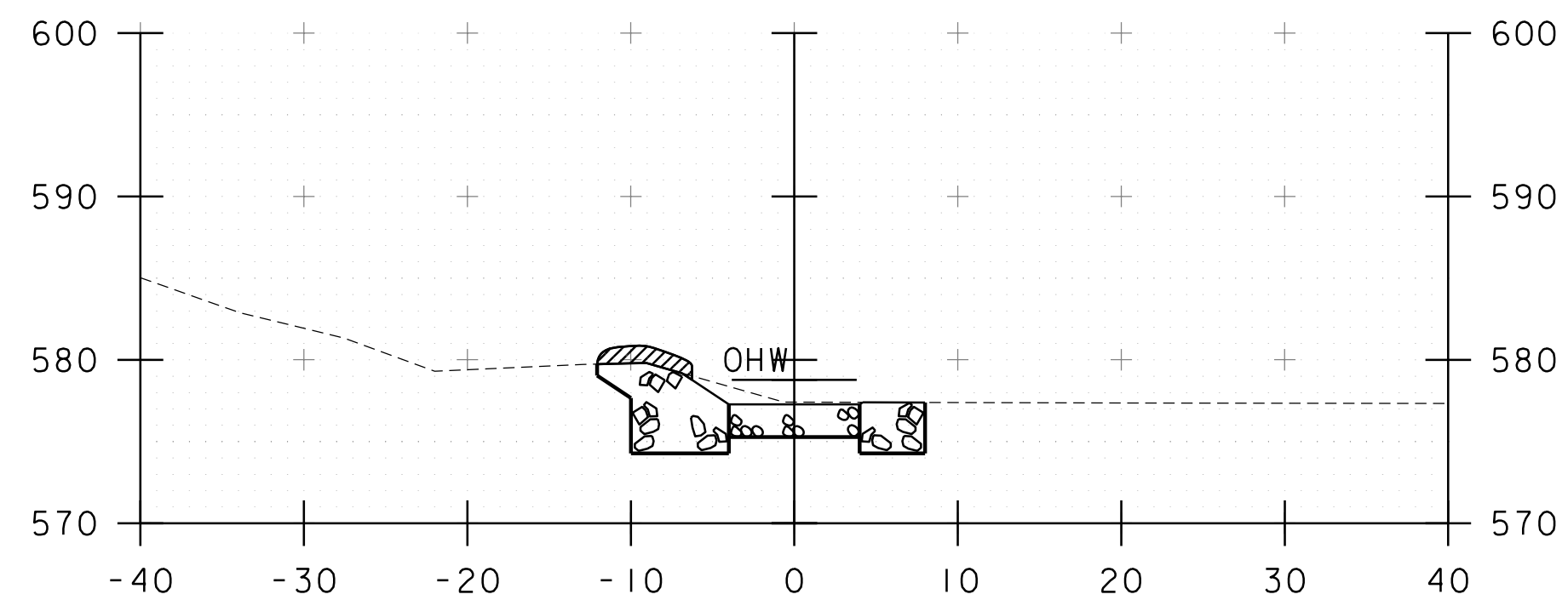


REFER TO TYPICAL FOR SECTIONS WITHIN CULVERT

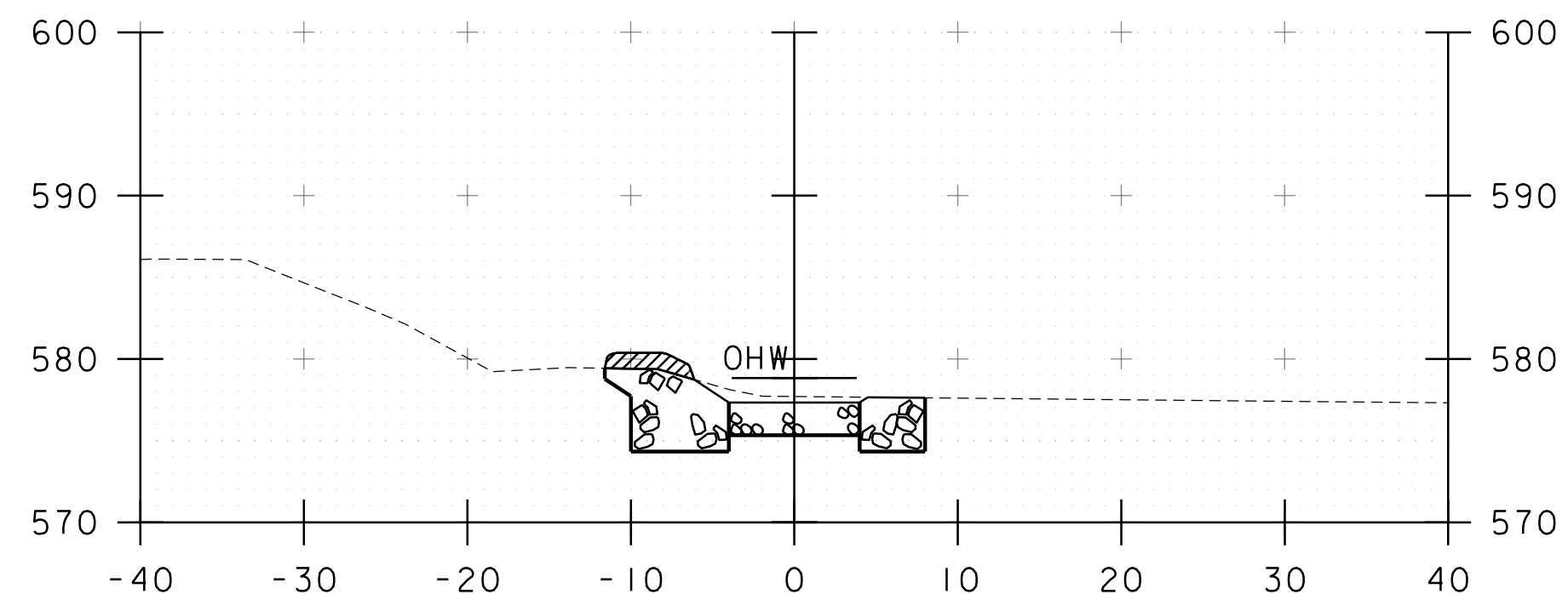
PROJECT NAME: WALLINGFORD	
PROJECT NUMBER: ER CULV(39)	
FILE NAME: ...drawing\z12b380_xs.dgn	PLOT DATE: 3/8/2016
PROJECT LEADER: G. BOGUE	DRAWN BY: J. SOTER
DESIGNED BY: T. KNIGHT	CHECKED BY: N. TIRK
STREAM CROSS SECTIONS I	SHEET 27 OF 36



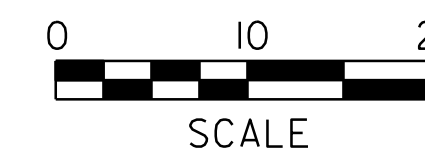
STA. 7+75
 END UNCLASSIFIED CHANNEL EXCAVATION
 7+70 GEOTEXTILE UNDER STONE FILL
 STONE FILL, TYPE III
 GRUBBING MATERIAL
 STONE FILL STREAM BED MATERIAL




7+60



7+50



REFER TO TYPICAL FOR SECTIONS WITHIN CULVERT 

PROJECT NAME: WALLINGFORD	PLOT DATE: 3/8/2016
PROJECT NUMBER: ER CULV(39)	DRAWN BY: J. SOTER
FILE NAME: ...drawing\z12b380_xs.dgn	CHECKED BY: N. TIRK
PROJECT LEADER: G. BOGUE	SHEET 28 OF 36
DESIGNED BY: T. KNIGHT	
STREAM CROSS SECTIONS 2	

EPSC PLAN NARRATIVE

1.1 PROJECT DESCRIPTION

THIS PROJECT INVOLVES THE REPLACEMENT OF CULVERT UNDER U.S. ROUTE 7 AND THE VTR RAILROAD WITH CONCRETE BOX CULVERTS, RELATED CHANNEL WORK AND INCIDENTALS. THE CROSSING UNDER ROUTE 7 IS A DOUBLE CULVERT WITH A 24" CPEP AND A 20" CMP, WHICH WILL BE REPLACED WITH AN 8' X 5' PRECAST CONCRETE BOX CULVERT. THE EXISTING CULVERT UNDER THE VTR RAILROAD IS BEING REPLACED WITH AN 8' X 5' PRECAST CONCRETE BOX CULVERT. THE NEW CULVERTS WILL CONVEY THE UNNAMED TRIBUTARY TO OTTER CREEK UNDER U.S. ROUTE 7 AND THE RAILROAD TO OTTER CREEK APPROXIMATELY 300' DOWNSTREAM.

NOTE: AREA OF DISTURBANCE INCLUDES LIMITS OF EARTH DISTURBANCE WITHIN THE PROJECT AREA, AS WELL AS WASTE, BORROW AND STAGING AREAS, AND OTHER EARTH DISTURBING ACTIVITIES WITHIN OR DIRECTLY ADJACENT TO THE PROJECT LIMITS AS SHOWN ON THE ATTACHED EPSC PLAN.

TOTAL AREA OF DISTURBANCE AS SHOWN ON THE ATTACHED EPSC PLAN IS APPROXIMATELY 0.65 ACRES.

IT IS ANTICIPATED THAT THIS PROJECT WILL LAST ONE CONSTRUCTION SEASON.

1.2 SITE INVENTORY

1.2.1 TOPOGRAPHY

THE TOPOGRAPHY OF THE PROJECT SITE IS A LOW LYING WITH GRASSY UNDERGROWTH. US ROUTE 7 AND THE VTR RAILROAD ARE WITHIN THE PROJECT SITE. THERE IS ADJACENT AGRICULTURAL FARMLAND. GRASS AND UNDERGROWTH BUFFERS THE AGRICULTURAL FARMLAND FROM THE PROJECT SITE. THERE ARE OVERHEAD UTILITIES THAT SHOULD NOT BE IMPACTED BY THE PROJECT.

1.2.2 DRAINAGE, WATERWAYS, BODIES OF WATER, AND PROXIMITY TO NATURAL OR MAN-MADE WATER FEATURES

DUE TO THE NATURE OF THE SURROUNDING TERRAIN THE PROJECT SITE COULD RECEIVE RUNOFF FROM THE SURROUNDING SLOPES, ROADWAY DITCHES AND THE ROADWAY OVER TOP OF CULVERT.

1.2.3 VEGETATION

THE VEGETATION IN THE PROJECT AREA CONSISTS OF OPEN GRASSED AREAS, AND UNDERGROWTH ON THE BANKS OF THE BROOK. THE IMPACT TO VEGETATION WILL BE LIMITED TO THAT WHICH IS RELATED TO THE EXCAVATION REQUIRED FOR THE INSTALLATION OF THE CULVERT, HEADWALLS, WINGWALLS, STONE FILL, AND TEMPORARY ACCESS. UPON PROJECT COMPLETION, THE CHANNEL AND DISTURBED AREAS WITH SLOPES GREATER THAN 2:1 WILL BE ARMORED WITH STONE FILL TYPE III AS SPECIFIED ON THE PLANS. DISTURBED VEGETATION WILL BE REESTABLISHED WITH STANDARD SEED AND MULCH PRACTICES.

1.2.4 SOILS

ALL SOIL DATA CAME FROM THE U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE FOR THE COUNTY OF RUTLAND, VERMONT. SOILS ON THE PROJECT SITE ARE PAWLING SILT LOAM, "K FACTOR" = 0.37. THE SOIL IS CONSIDERED HIGHLY ERODIBLE DUE TO K-VALUE.

NOTE: K-VALUES GENERALLY INDICATE THE FOLLOWING:
0.0-0.23 = LOW EROSION POTENTIAL
0.24-0.36 = MODERATE EROSION POTENTIAL
0.37 AND HIGHER = HIGH EROSION POTENTIAL

1.2.5 SENSITIVE RESOURCE AREAS

CRITICAL HABITATS: NO
HISTORICAL OR ARCHEOLOGICAL AREAS: NO
PRIME AGRICULTURAL LAND: NO
THREATENED AND ENDANGERED SPECIES: NO
WATER RESOURCE: UNNAMED TRIBUTARY TO OTTER CREEK
WETLANDS: NO

1.3 RISK EVALUATION

SINCE THIS PROJECT DOES NOT DISTURB MORE THAN 1 ACRE THIS PROJECT DOES NOT FALL UNDER THE JURISDICTION OF GENERAL PERMIT 3-9020 FOR STORMWATER RUNOFF FROM CONSTRUCTION SITES. SHOULD CHANGES PRIOR TO OR DURING CONSTRUCTION RESULT IN ONE OR MORE ACRES OF EARTH DISTURBANCE OR SHOULD THE PROJECT BECOME PART OF A LARGER PLAN OF DEVELOPMENT, THE CONTRACTOR WILL BE RESPONSIBLE FOR ANY ADDITIONAL PERMITTING.

1.4 EROSION PREVENTION AND SEDIMENT CONTROL

THE EROSION CONTROL PLANS ARE MEANT AS A GUIDELINE FOR PREVENTING EROSION AND CONTROLLING SEDIMENT TRANSPORT. THE PRINCIPLES OUTLINED IN THIS NARRATIVE CONSIST OF APPLYING MEASURES THROUGHOUT CONSTRUCTION OF THE PROJECT IN ORDER TO MINIMIZE SEDIMENT TRANSPORT TO THE RECEIVING WATERS. THE MEASURES INCLUDE STABILIZATION AND STRUCTURAL PRACTICES, STORM WATER CONTROLS AND OTHER POLLUTION PREVENTION PRACTICES. THEY HAVE BEEN PROPOSED BY THE DESIGNER AS A BASIS FOR PROTECTING RESOURCES AND WILL NEED TO BE BUILT UPON BASED ON THE SPECIFIC MEANS AND METHODS OF THE CONTRACTOR. REFER TO THE LOW RISK SITE HANDBOOK AND APPROPRIATE DETAIL SHEETS FOR SPECIFIC GUIDANCE AND CONSTRUCTION DETAILING. THE CONTRACTOR IS RESPONSIBLE FOR DEVELOPING AND SUBMITTING AN EPSC PLAN IN ACCORDANCE WITH SECTION 652 OF THE SPECIAL PROVISIONS.

IN ADDITION, THE CONTRACTOR SHALL DESIGN AND IMPLEMENT A TEMPORARY STREAM DIVERSION, INCLUDING EPSC MEASURES IN ACCORDANCE WITH ITEM 900.645, SPECIAL PROVISION (TEMPORARY RELOCATION OF STREAM).

ALL MEASURES SHALL BE REGULARLY MAINTAINED AND SHALL BE CHECKED FOR SEDIMENT BUILD-UP. SEDIMENT SHALL BE DISPOSED OF AT AN APPROVED SITE WHERE IT WILL NOT BE SUBJECT TO EROSION.

1.4.1 MARK SITE BOUNDARIES

SITE BOUNDARIES AND AREAS CONSTRUCTION EQUIPMENT CAN ACCESS SHALL BE DELINEATED.

PROJECT DEMARCATION FENCING (PDF) SHALL BE USED TO PHYSICALLY MARK SITE BOUNDARIES.

1.4.2 LIMIT DISTURBANCE AREA

PREVENTING INITIAL SOIL EROSION BY MINIMIZING THE EXPOSED AREA IS MUCH MORE EFFECTIVE THAN TREATING ERODED SEDIMENT. EARTH DISTURBANCE CAN BE MINIMIZED THROUGH CONSTRUCTION PHASING BY ONLY OPENING UP EARTH AS NECESSARY. THIS CAN LIMIT THE AREA THAT WILL BE DISTURBED AND EXPOSED TO EROSION. EMPLOY TEMPORARY CONSTRUCTION STABILIZATION PRACTICES IN INCREMENTAL STAGES AS PHASES CHANGE. FOR PROJECTS WHICH FALL UNDER THE CONSTRUCTION GENERAL PERMIT, ONLY THE ACREAGE LISTED ON THE PERMIT AUTHORIZATION MAY BE EXPOSED AT ANY GIVEN TIME.

MAINTAINING VEGETATED BUFFERS ALONG STREAM BANKS, WETLANDS OR OTHER SENSITIVE AREAS IS A CRUCIAL EROSION AND SEDIMENT CONTROL MEASURE THAT SHOULD BE ESTABLISHED WHEREVER POSSIBLE.

1.4.3 SITE ENTRANCE/EXIT STABILIZATION

TRACKING OF SEDIMENT ONTO PUBLIC HIGHWAYS SHALL BE MINIMIZED TO REDUCE THE POTENTIAL FOR RUNOFF ENTERING RECEIVING WATERS. INSTALLATION SHALL COINCIDE WITH THE CONTRACTOR'S PROGRESS SCHEDULE.

STABILIZED CONSTRUCTION ENTRANCES SHALL BE INSTALLED AS PROPOSED ON THE EPSC PLAN AND ANYWHERE EQUIPMENT WILL BE GOING FROM AREAS OF EXPOSED SOILS TO PAVED SURFACES.

1.4.4 INSTALL SEDIMENT BARRIERS

SEDIMENT BARRIERS SHALL BE UTILIZED TO INTERCEPT RUNOFF AND ALLOW SUSPENDED SEDIMENT TO SETTLE OUT. THEY SHALL BE INSTALLED PRIOR TO ANY UP SLOPE WORK.

SILT FENCE WILL BE INSTALLED AS PROPOSED ON THE EPSC PLAN.

1.4.5 DIVERT UPLAND RUNOFF

DIVERSIONARY MEASURES SHALL BE USED TO INTERCEPT RUNOFF FROM ABOVE THE CONSTRUCTION AND DIRECT IT AROUND THE DISTURBED AREA SO THAT CLEAN WATER DOES NOT BECOME MUDDIED WHILE TRAVELING OVER EXPOSED SOILS ON THE CONSTRUCTION SITE.

THE PROJECT AREA IS RELATIVELY FLAT WITH MINIMAL OFF-SITE RUNOFF FLOWING THROUGH THE SITE. THEREFORE DIVERSION MEASURES WILL NOT BE NECESSARY.

1.4.6 SLOW DOWN CHANNELIZED RUNOFF

CHECK STRUCTURES SHALL BE UTILIZED TO REDUCE THE VELOCITY, AND THUS THE EROSION POTENTIAL, OF CONCENTRATED FLOW IN CHANNELS.

STONE CHECK DAMS WILL BE INSTALLED AS NEEDED AND AS DIRECTED BY THE ENGINEER.

1.4.7 CONSTRUCT PERMANENT CONTROLS

THERE ARE NO PERMANENT STORMWATER TREATMENT DEVICES TO BE INSTALLED WITH THIS PROJECT.

1.4.8 STABILIZE EXPOSED SOILS DURING CONSTRUCTION

ALL AREAS OF DISTURBANCE MUST HAVE TEMPORARY STABILIZATION IN PLACE WITHIN 48 HOURS OF DISTURBANCE OR IN ACCORDANCE WITH THE CONSTRUCTION GENERAL PERMIT 3-9020 AUTHORIZATION.

SURFACE ROUGHENING OF ALL EXPOSED SLOPES, COMBINED WITH TEMPORARY MULCHING, SHALL BE UTILIZED ON A REGULAR BASIS. BIODEGRADABLE EROSION CONTROL MATTING OR AN EQUIVALENT SHALL BE USED TO STABILIZE ALL SLOPES STEEPER THAN 1:3.

THE FORECAST OF RAINFALL EVENTS SHALL TRIGGER IMMEDIATE PROTECTION OF EXPOSED SOILS.

1.4.9 WINTER STABILIZATION

VARIOUS MEASURES SPECIFIC TO WINTER MAY BE NECESSARY SHOULD THE PROJECT EXTEND INTO WINTER (OCTOBER 15 THROUGH APRIL 15). REFER TO THE LOW RISK SITE HANDBOOK FOR GUIDANCE.

1.4.10 STABILIZE SOIL AT FINAL GRADE

EXPOSED SOIL MUST BE STABILIZED WITHIN 48 HOURS OF REACHING FINAL GRADE.

SEED, MULCH, FERTILIZER AND LIME SHALL BE USED TO ESTABLISH PERMANENT VEGETATION. FOR SLOPES STEEPER THAN 1:3, BIODEGRADABLE EROSION CONTROL MATTING OR AN EQUIVALENT SHALL BE USED INSTEAD OF MULCH.

1.4.11 DE-WATERING ACTIVITIES

DISCHARGE FROM DEWATERING ACTIVITIES THAT FLOWS OFF OF THE CONSTRUCTION SITE MUST NOT CAUSE OR CONTRIBUTE TO A VIOLATION OF THE VERMONT WATER QUALITY STANDARDS.

SEDIMENT CONTAINMENT BAGS (FILTER BAGS) FOR HEADWALL WORK SHALL BE USED AS NECESSARY AND AS DIRECTED BY THE ENGINEER. SEE SHEET 30 FOR DETAIL.

1.4.12 INSPECT YOUR SITE

INSPECT THE PROJECT SITE BASED ON SPECIAL PROVISION REQUIREMENTS.

1.5 SEQUENCE AND STAGING

THIS SECTION WILL BE DEVELOPED BY THE CONTRACTOR USING THE GUIDANCE OUTLINED IN THE VTRANS EPSC PLAN CONTRACTOR CHECKLIST.

1.5.1 OFF-SITE ACTIVITIES

IN ADDITION TO THE CONTRACTOR CHECKLIST ANY ACTIVITIES OUTSIDE THE CONSTRUCTION LIMITS SHALL FOLLOW SUBSECTIONS 105.25- 105.29 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION.

PROJECT NAME: WALLINGFORD

PROJECT NUMBER: ER CULV(39)

FILE NAME: z12b380_ero_det.dgn

PROJECT LEADER: G. BOGUE

DESIGNED BY: I. MAYNARD

EPSC NARRATIVE

PLOT DATE: 3/8/2016

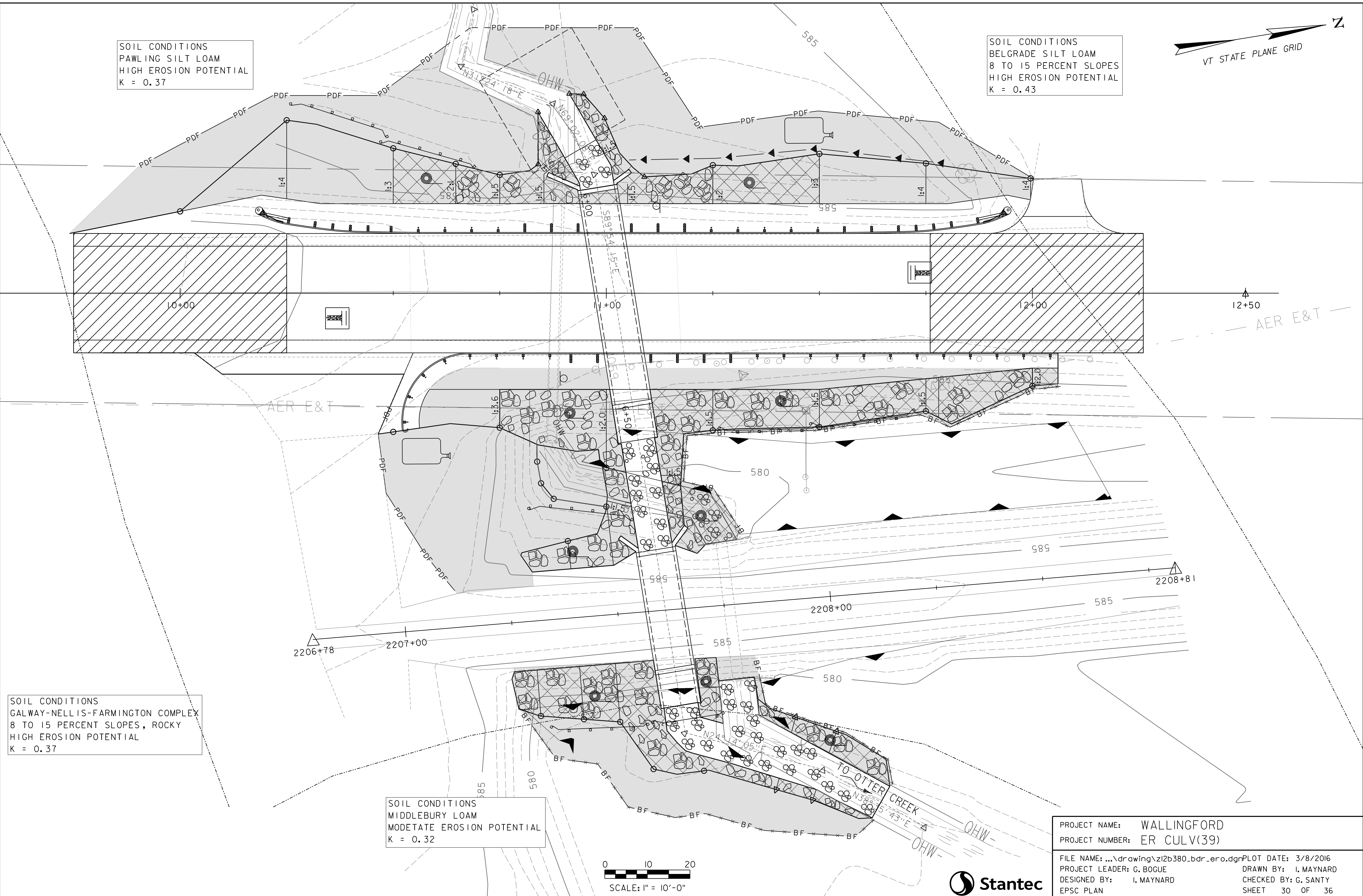
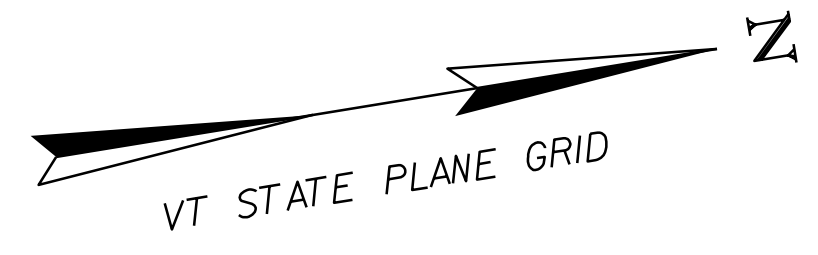
DRAWN BY: I. MAYNARD

CHECKED BY: G. SANTY

SHEET 29 OF 36

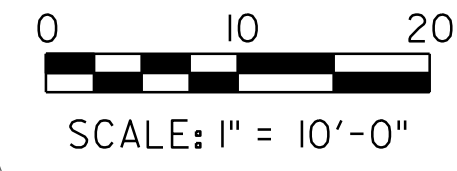
SOIL CONDITIONS
PAWLING SILT LOAM
HIGH EROSION POTENTIAL
K = 0.37

SOIL CONDITIONS
BELGRADE SILT LOAM
8 TO 15 PERCENT SLOPES
HIGH EROSION POTENTIAL
K = 0.43

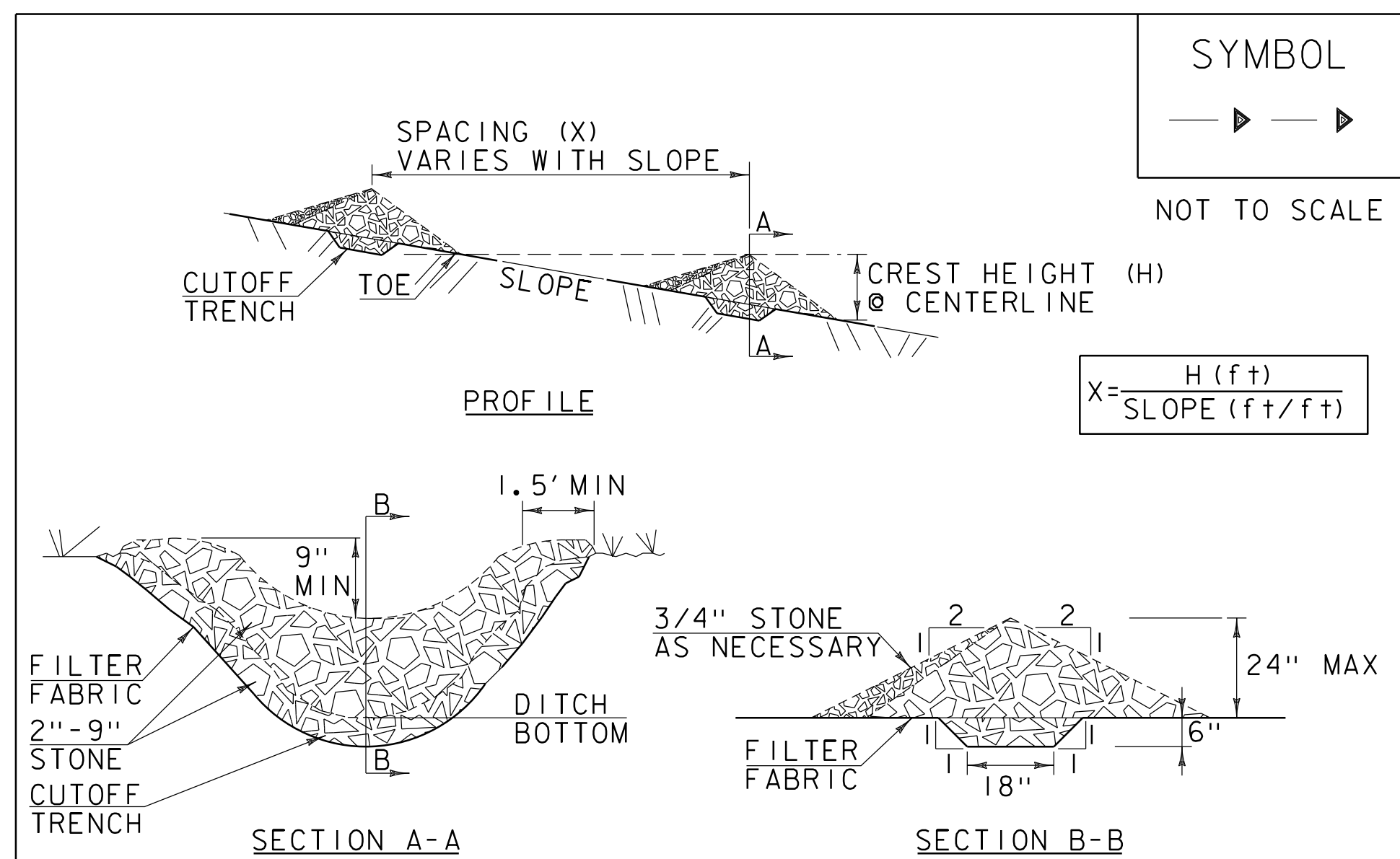


SOIL CONDITIONS
GALWAY-NELLIS-FARMINGTON COMPLEX
8 TO 15 PERCENT SLOPES, ROCKY
HIGH EROSION POTENTIAL
K = 0.37

SOIL CONDITIONS
MIDDLEBURY LOAM
MODERATE EROSION POTENTIAL
K = 0.32



PROJECT NAME:	WALLINGFORD
PROJECT NUMBER:	ER CULV(39)
FILE NAME: ...drawing\z12b380_bdr_ero.dgn	PLOT DATE: 3/8/2016
PROJECT LEADER: G. BOGUE	DRAWN BY: I. MAYNARD
DESIGNED BY: I. MAYNARD	CHECKED BY: G. SANTY
EPSC PLAN	SHEET 30 OF 36



CONSTRUCTION SPECIFICATIONS

1. STONE WILL BE PLACED ON A FILTER FABRIC FOUNDATION.
2. CHECK DAMS SHALL BE SPACED SO THAT THE ELEVATION OF THE CREST OF THE DOWNSTREAM DAM IS AT THE SAME ELEVATION AS THE TOE OF THE UPSTREAM DAM.
3. 3/4" FILTERING STONE MAY BE ADDED TO THE FACE OF THE CHECK DAM AS NECESSARY.
4. EXTEND THE STONE A MINIMUM OF 1.5' BEYOND THE DITCH BANKS TO PREVENT CUTTING AROUND THE DAM.
5. PROTECT CHANNEL DOWNSTREAM OF THE LOWEST CHECK DAM FROM SCOUR AND EROSION WITH STONE OR LINER AS APPROPRIATE.
6. ENSURE THAT CHANNEL APPURTENANCES SUCH AS CULVERT ENTRANCES BELOW CHECK DAMS ARE NOT SUBJECT TO DAMAGE OR BLOCKAGE FROM DISPLACED STONE.
7. MAXIMUM DRAINAGE AREA 2 ACRES.

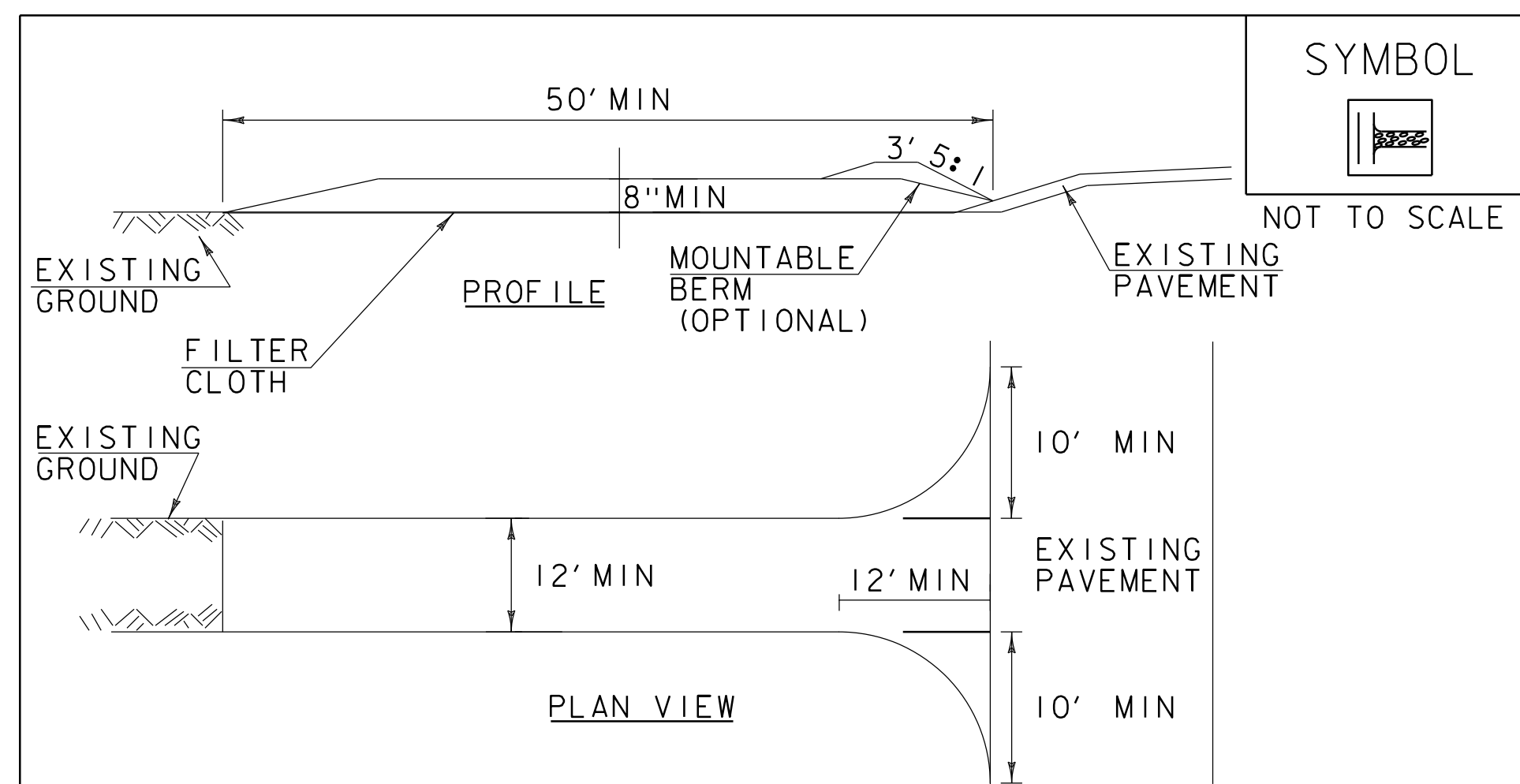
ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

CHECK DAM

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006-" FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 FOR TEMPORARY STONE CHECK DAM, TYPE I (PAY ITEM 653.25)

REVISIONS	
MARCH 21, 2008	WHF
JANUARY 8, 2009	WHF



CONSTRUCTION SPECIFICATIONS

1. STONE SIZE- USE 1-4" STONE, RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH- NOT LESS THAN 50' (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30' MINIMUM LENGTH APPLIES).
3. THICKNESS- NOT LESS THAN 8".
4. WIDTH- 12' MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. 24' IF SINGLE ENTRANCE TO SITE.
5. GEOTEXTILE MUST BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING STONE.
6. SURFACE WATER- ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED ACCORDING TO PERMIT REQUIREMENTS.

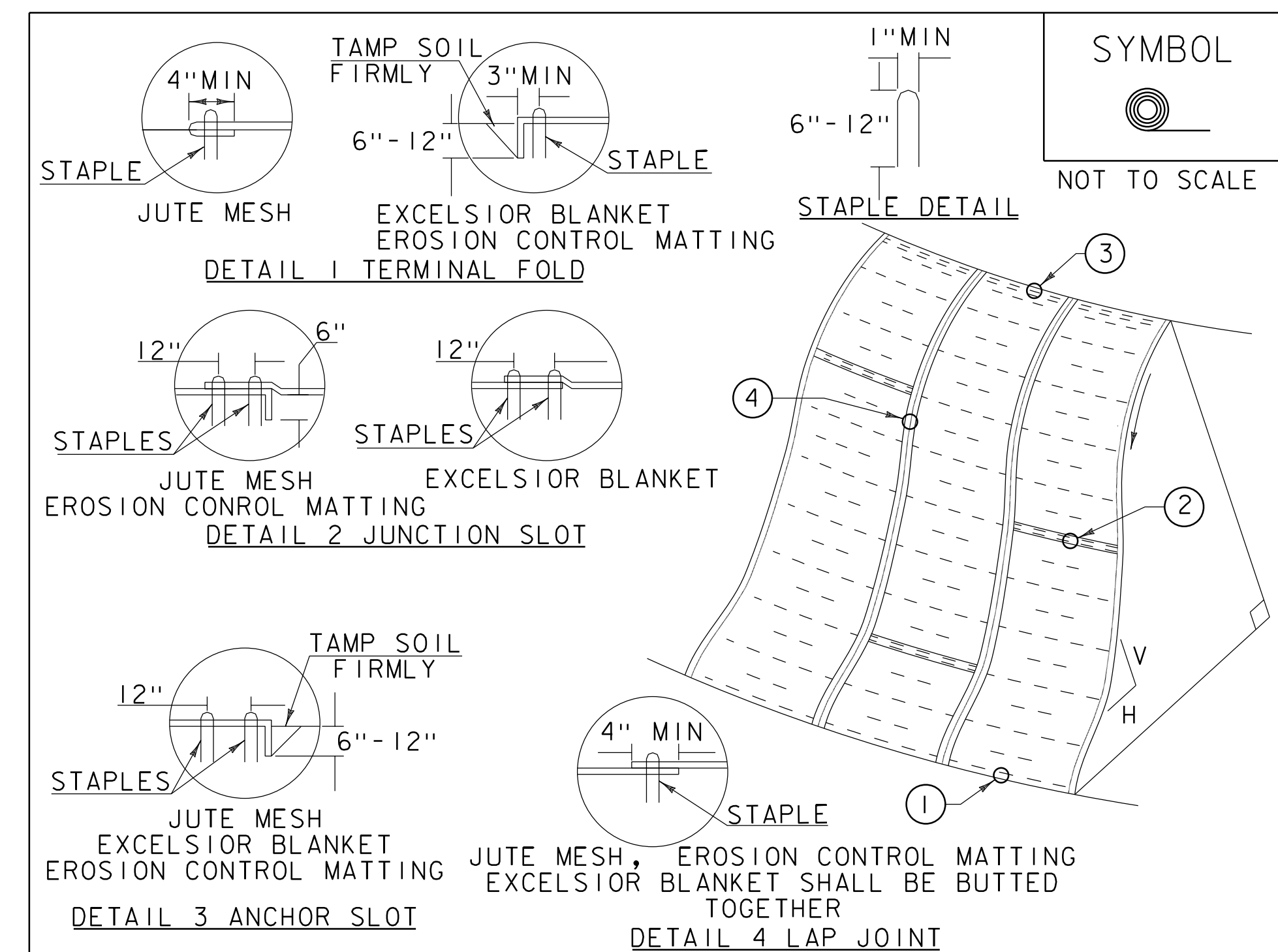
ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

STABILIZED CONSTRUCTION ENTRANCE

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006-" FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 FOR VEHICLE TRACKING PAD (PAY ITEM 653.35) OR AS SPECIFIED IN THE CONTRACT.

REVISIONS	
MARCH 24, 2008	WHF
JANUARY 13, 2009	WHF



CONSTRUCTION SPECIFICATIONS

1. APPLY TO SLOPES GREATER THAN 3H:1V OR WHERE NECESSARY TO AID IN ESTABLISHING VEGETATION.
2. APPLY FERTILIZER, LIME SEED PRIOR TO PLACING MATTING.
3. STAPLES ARE TO BE PLACED ALTERNATELY, IN COLUMNS APPROXIMATELY 2' APART AND IN ROWS APPROXIMATELY 3' APART. APPROXIMATELY 175 STAPLES ARE REQUIRED PER 4' X 225' ROLL OF MATERIAL AND 125 STAPLES ARE REQUIRED PER 4' X 150' ROLL OF MATERIAL.
4. DISTURBED AREAS SHALL BE SMOOTHLY GRADED. EROSION CONTROL MATERIAL SHALL BE PLACED LOOSELY OVER GROUND SURFACE. DO NOT STRETCH.
5. ALL TERMINAL ENDS AND TRANSVERSE LAPS SHALL BE STAPLED AT APPROXIMATELY 12" INTERVALS.

ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

ROLLED EROSION CONTROL PRODUCT (RECP) SIDE SLOPE

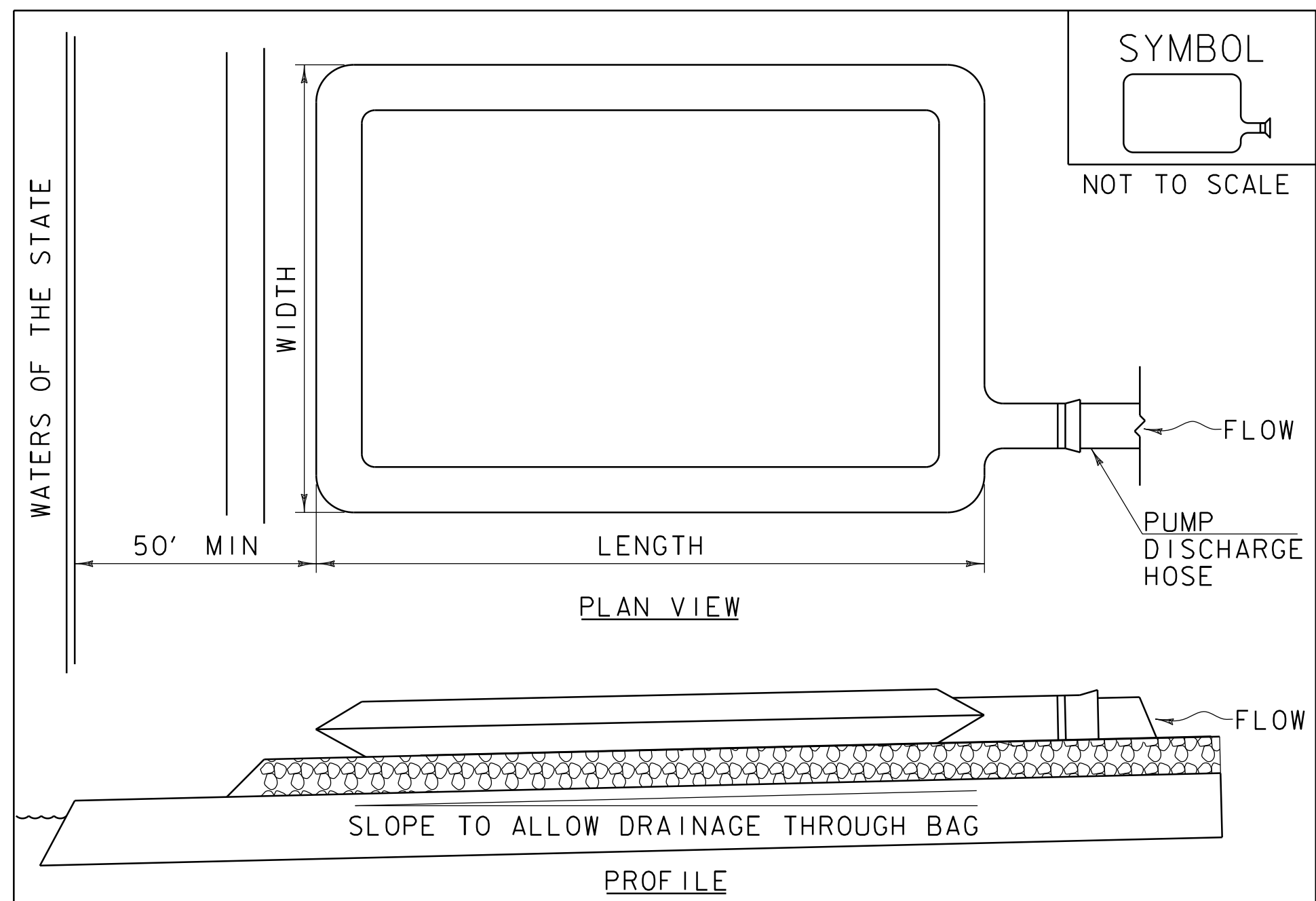
NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006-" FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.
THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 AND AS SHOWN IN THE PLANS FOR TEMPORARY EROSION MATTING (PAY ITEM 653.20) OR PERMANENT EROSION MATTING (PAY ITEM 653.21).

REVISIONS	
APRIL 16, 2007	JMF
JANUARY 13, 2009	WHF

PROJECT NAME: WALLINGFORD
PROJECT NUMBER: ER CULV(39)

FILE NAME: z12b380_ero_det.dgn
PROJECT LEADER: G. BOGUE
DESIGNED BY: VAOT
EPSC DETAILS I

PLOT DATE: 3/8/2016
DRAWN BY: VAOT
CHECKED BY: VAOT
SHEET 31 OF 36



CONSTRUCTION SPECIFICATIONS

1. THE PRIMARY PURPOSE OF FILTER BAG IS TO RETAIN SILT, SAND, AND FINES DURING DEWATERING OPERATIONS.
2. FILTER BAGS SHALL BE INSTALLED ON A VEGETATED SLOPE GRADED TO ALLOW INCOMING WATER TO FLOW THROUGH THE BAG.
3. FILTER BAGS MAY ALSO BE PLACED ON COARSE AGGREGATE, STONE, OR HAYBALES TO INCREASE FILTRATION EFFICIENCY.
4. FILTER BAGS SHALL BE LOCATED A MINIMUM OF 50' FROM WATERS OF THE STATE UNLESS OTHERWISE APPROVED BY THE ENGINEER.
5. THE NECK OF THE FILTER BAG SHALL BE STRAPPED TIGHTLY TO THE DISCHARGE HOSE.
6. A FILTER BAG IS FULL WHEN IT NO LONGER CAN EFFICIENTLY FILTER SEDIMENT OR ALLOW WATER TO PASS AT A REASONABLE RATE.
7. FILTER BAG SHALL BE DISPOSED OF AS APPROVED IN THE EPSC PLAN OR AS DIRECTED BY THE ENGINEER.

FILTER BAG

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- "FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 FOR FILTER BAG (PAY ITEM 653.45) AND AS SPECIFIED IN THE CONTRACT.

REVISIONS	
MARCH 24, 2008	WHF
JANUARY 13, 2009	WHF

VAOT LOW GROW/FINE FESCUE MIX						
WEIGHT	LBS/AC		NAME	LATIN NAME	GERM	PURITY
	BROADCAST	HYDROSEED				
38%	57	95	CREeping RED FESCUE	FESTUCA RUBRA VAR. RUBRA	90%	98%
29%	43.5	72.5	HARD FESCUE	FESTUCA LONGIFOLIA	85%	95%
15%	22.5	37.5	CHEWINGS FESCUE	FESTUCA RUBRA VAR. COMMUTATA	87%	95%
15%	22.5	37.5	ANNUAL RYEGRASS	LOLIUM MULTIFLORUM	90%	95%
3%	4.5	7.5	INERTS			
100%	150	250				

VAOT RURAL AREA MIX						
WEIGHT	LBS/AC		NAME	LATIN NAME	GERM	PURITY
	BROADCAST	HYDROSEED				
37.5%	22.5	45	CREeping RED FESCUE	FESTUCA RUBRA VAR. RUBRA	85%	98%
37.5%	22.5	45	TALL FESCUE	FESTUCA ARUNDINACEA	90%	95%
5.0%	3	6	RED TOP	AGROSTIS GIGANTEA	90%	95%
15.0%	9	18	WHITE FIELD CLOVER	TRIFOLIUM REPENS	85%	98%
5.0%	3	6	ANNUAL RYE GRASS	LOLIUM MULTIFLORUM	85%	95%
100%	60	120				

GENERAL AMENDMENT GUIDANCE

FERTILIZER	LIME	
10/20/10	AG LIME	PELLITIZED
500 LBS/AC	2 TONS/AC	1 TONS/AC

CONSTRUCTION GUIDANCE

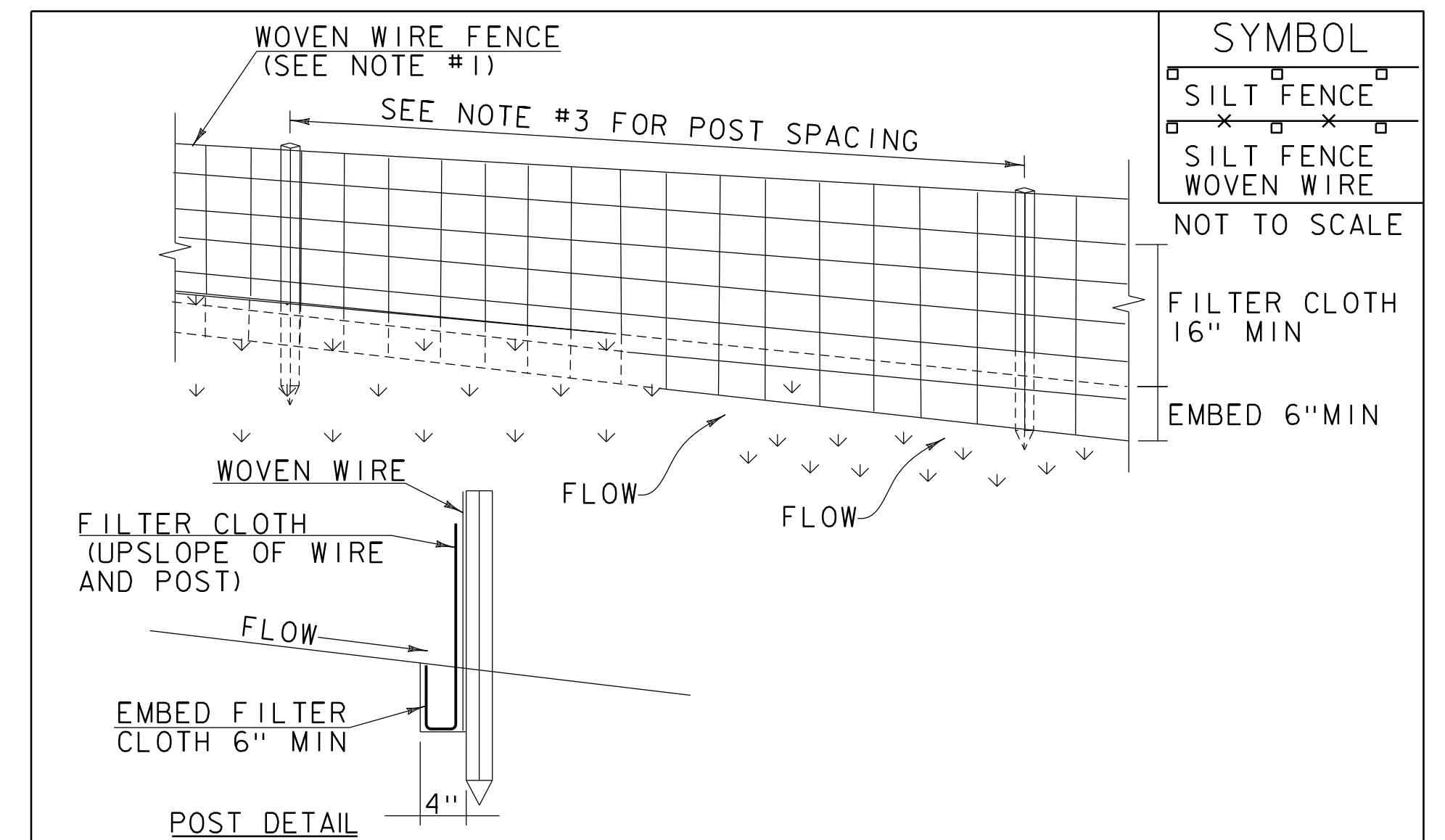
1. SEED MIX: THE CONTRACTOR SHALL COORDINATE WITH THE RESIDENT ENGINEER ON WHICH SEED MIX TO USE.
2. SEED MIX: USE AS INDICATED IN THE PLANS AND/OR FOR ALL ESTABLISHED UPLAND (NON WETLAND) AREAS DISTURBED BY THE CONTRACTOR.
3. ALL SEED MIXTURES: SHALL NOT HAVE A WEED CONTENT EXCEEDING 0.40% BY WEIGHT AND SHALL BE FREE OF ALL NOXIOUS SEED.
4. FERTILIZER AND LIMESTONE: SHALL FOLLOW RATES SHOWN ON PLAN OR AS DIRECTED BY THE ENGINEER.
5. HAY MULCH: TO BE PLACED ON EARTH SLOPES AT THE RATE OF 2 TONS/ACRE, ACHIEVE 90% GROUND COVER OR AS DIRECTED BY THE ENGINEER.
6. HYDROSEEDING: ALTHOUGH GUIDANCE IS GIVEN ABOVE THE SITE CONDITIONS AND THE TYPE OF HYDROSEED PROPOSED FOR USE WILL ULTIMATELY DICTATE THE AMOUNTS AND TYPES OF SOIL AMENDMENTS TO BE APPLIED.
7. TURF ESTABLISHMENT: PLACING SEED, FERTILIZER, LIME AND MULCH PRIOR TO SEPTEMBER 15 AND AFTER APRIL 15 CAN BETTER ENSURE A VIGOROUS GROWTH OF GRASS.

ADAPTED FROM VTRANS TECHNICAL LANDSCAPE MANUAL FOR ROADWAYS AND TRANSPORTATION FACILITIES

TURF ESTABLISHMENT

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 651 FOR SEED (PAY ITEM 651J5)

REVISIONS	
JANUARY 12, 2015	WHF



CONSTRUCTION SPECIFICATIONS

1. WOVEN WIRE REINFORCED FENCE IS REQUIRED WITHIN 100' UPSLOPE OF RECEIVING WATERS WHEN THE PROJECT FALLS UNDER A CONSTRUCTION STORMWATER PERMIT. WOVEN WIRE SHALL BE A MIN. 14 GAUGE WITH A 6" MAX. MESH OPENING.
2. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAF1100X, STABILINKA T140N OR APPROVED EQUIVALENT.
3. POST SPACING FOR WIRE-BACKED FENCE SHALL BE 10' MAXIMUM. FOR FILTER-CLOTH FENCE, WHEN ELONGATION IS >50%, POST SPACING SHALL NOT EXCEED 4' AND WHEN ELONGATION IS <50%, POST SPACING SHALL NOT EXCEED 6'.
4. WOVEN WIRE FENCE IS TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES. FILTER CLOTH IS TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY 6" AND FOLDED.
6. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN SEDIMENT REACHES HALF OF FABRIC HEIGHT.

ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SILT FENCE

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- "FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 649 AND AS SHOWN IN THE PLANS FOR GEOTEXTILE FOR SILT FENCE (PAY ITEM 649.51) OR GEOTEXTILE FOR SILT FENCE, WOVEN WIRE REINFORCED (PAY ITEM 649.515).

REVISIONS	
MARCH 21, 2008	WHF
DECEMBER 11, 2008	WHF
JANUARY 13, 2009	WHF

PROJECT NAME: WALLINGFORD
PROJECT NUMBER: ER CULV(39)

FILE NAME: z12b380_ero_det.dgn
PROJECT LEADER: G. BOGUE
DESIGNED BY: VAOT
EPSC DETAILS 2

PLOT DATE: 3/8/2016
DRAWN BY: VAOT
CHECKED BY: VAOT
SHEET 32 OF 36

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Wallingford ER CULV (39) City/County: Wallingford/Rutland Sampling Date: 5/6/15
 Applicant/Owner: VTrans State: VT Sampling Point: WETA
 Investigator(s): Glenn Gingras Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): concave
 Slope (%): 1-2% Lat: 43.42599 Long: -72.98785 Datum: _____
 Soil Map Unit Name: Middlebury Loam NWI classification: PSSFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Hydric Soil Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	Is the Sampled Area within a Wetland? Yes <input checked="" type="radio"/> No <input type="radio"/> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.)	

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input checked="" type="checkbox"/> Surface Water (A1) <input checked="" type="checkbox"/> Water-Stained Leaves (B9) <input checked="" type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input checked="" type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input checked="" type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input checked="" type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input checked="" type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input checked="" type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input checked="" type="checkbox"/> Stunted or Stressed Plants (D1) <input checked="" type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): <u>16"</u> Water Table Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Depth (inches): <u>2"</u> Saturation Present? Yes <input checked="" type="radio"/> No <input type="radio"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: WETA

Tree Stratum (Plot size: <u>30'</u>)		Absolute % Cover	Dominant Species?	Indicator Status
1.	<u>Acer rubrum</u>	<u>10</u>	<u>X</u>	<u>FAC</u>
2.	<u>Salix nigra</u>	<u>10</u>	<u>X</u>	<u>OBL</u>
3.	<u>Acer negundo</u>	<u>10</u>	<u>X</u>	<u>FAC</u>
4.	_____	_____	_____	_____
5.	_____	_____	_____	_____
6.	_____	_____	_____	_____
7.	_____	_____	_____	_____
		<u>30</u>	= Total Cover	
Sapling/Shrub Stratum (Plot size: <u>15'</u>)		Absolute % Cover	Dominant Species?	Indicator Status
1.	<u>Cornus alba</u>	<u>90</u>	<u>X</u>	<u>FACW</u>
2.	<u>Lonicera spp.</u>	<u>10</u>	_____	<u>FAC</u>
3.	<u>Salix nigra</u>	<u>25</u>	<u>X</u>	<u>OBL</u>
4.	_____	_____	_____	_____
5.	_____	_____	_____	_____
6.	_____	_____	_____	_____
7.	_____	_____	_____	_____
		<u>125</u>	= Total Cover	
Herb Stratum (Plot size: <u>5'</u>)		Absolute % Cover	Dominant Species?	Indicator Status
1.	<u>Galium tinctorium</u>	<u>60</u>	<u>X</u>	<u>OBL</u>
2.	<u>Matteuccia struthiopteris</u>	<u>30</u>	<u>X</u>	<u>FAC</u>
3.	<u>Solidago rugosa</u>	<u>30</u>	<u>X</u>	<u>FAC</u>
4.	<u>Tussilago farfara</u>	<u>5</u>	_____	<u>FACU</u>
5.	_____	_____	_____	_____
6.	_____	_____	_____	_____
7.	_____	_____	_____	_____
8.	_____	_____	_____	_____
9.	_____	_____	_____	_____
10.	_____	_____	_____	_____
11.	_____	_____	_____	_____
12.	_____	_____	_____	_____
		<u>125</u>	= Total Cover	
Woody Vine Stratum (Plot size: _____)		Absolute % Cover	Dominant Species?	Indicator Status
1.	<u>Vitis riparia</u>	<u>50</u>	<u>X</u>	<u>FAC</u>
2.	_____	_____	_____	_____
3.	_____	_____	_____	_____
4.	_____	_____	_____	_____
		<u>50</u>	= Total Cover	

Dominance Test worksheet:
 Number of Dominant Species That Are OBL, FACW, or FAC: 8 (A)
 Total Number of Dominant Species Across All Strata: 8 (B)
 Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:
 Total % Cover of: _____ Multiply by: _____
 OBL species _____ x 1 = _____
 FACW species _____ x 2 = _____
 FAC species _____ x 3 = _____
 FACU species _____ x 4 = _____
 UPL species _____ x 5 = _____
 Column Totals: 0 (A) 0 (B)
 Prevalence Index = B/A = 0

Hydrophytic Vegetation Indicators:
 Rapid Test for Hydrophytic Vegetation
 Dominance Test is >50%
 Prevalence Index is ≤3.0¹
 Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
 Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:
Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.
Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.
Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.
Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes No

Remarks: (Include photo numbers here or on a separate sheet.)

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: Wallingford ER CULV (39) City/County: Wallingford/Rutland Sampling Date: 5/6/15
 Applicant/Owner: VTrans State: VT Sampling Point: UPA
 Investigator(s): Glenn Gingras Section, Township, Range: _____
 Landform (hillslope, terrace, etc.): floodplain Local relief (concave, convex, none): _____
 Slope (%): 1-2% Lat: 43.42599 Long: -72.98785 Datum: _____
 Soil Map Unit Name: Middlebury Loam NWI classification: PSSFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes No
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	Is the Sampled Area within a Wetland? Yes <input type="radio"/> No <input checked="" type="radio"/> If yes, optional Wetland Site ID: _____
Remarks: (Explain alternative procedures here or in a separate report.) Boundary abrupt with railroad fill slope and private road fill slopes.	

HYDROLOGY

Wetland Hydrology Indicators: <u>Primary Indicators (minimum of one is required; check all that apply)</u> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	<u>Secondary Indicators (minimum of two required)</u> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
Field Observations: Surface Water Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:	
Remarks:	

VEGETATION – Use scientific names of plants.

Sampling Point: UPA

Tree Stratum (Plot size: <u>30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. N/A			
2.			
3.			
4.			
5.			
6.			
7.			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 40 (A/B)

Sapling/Shrub Stratum (Plot size: <u>15'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Cornus alba</u>	<u>30</u>	<u>X</u>	<u>FACW</u>
2. <u>Rhus aromatica</u>	<u>15</u>	<u>X</u>	<u>FACU</u>
3.			
4.			
5.			
6.			
7.			

Prevalence Index worksheet:

Total % Cover of: 0 Multiply by: _____

OBL species 0 x 1 = _____

FACW species 30 x 2 = 60

FAC species 20.5 x 3 = 61.5

FACU species 56 x 4 = 224

UPL species _____ x 5 = _____

Column Totals: 106.5 (A) 345.5 (B)

Prevalence Index = B/A = 3.2

Herb Stratum (Plot size: <u>5'</u>)	Absolute % Cover	Dominant Species?	Indicator Status
1. <u>Rubus idaeus</u>	<u>20.5</u>	<u>X</u>	<u>FACU</u>
2. <u>Tussilago farfara</u>	<u>20.5</u>	<u>X</u>	<u>FACU</u>
3. <u>Equisetum hyemale</u>	<u>20.5</u>	<u>X</u>	<u>FAC</u>
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			

Hydrophytic Vegetation Indicators:

Rapid Test for Hydrophytic Vegetation

Dominance Test is >50%

Prevalence Index is ≤3.0¹

Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Woody Vine Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

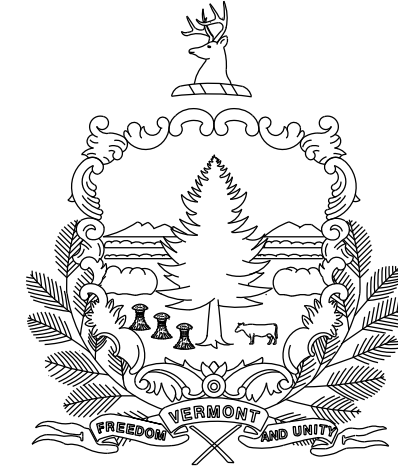
Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes No

Remarks: (Include photo numbers here or on a separate sheet.)

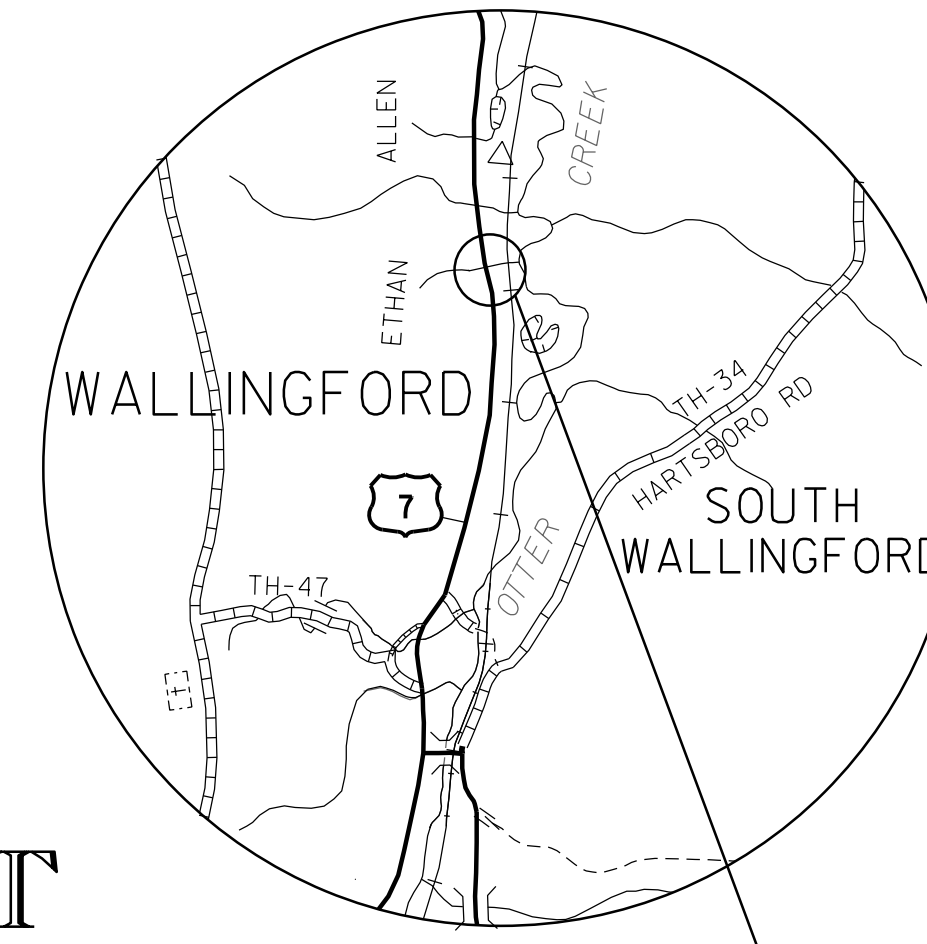
FOR INDEX AND VAOT
STANDARD SHEETS, REFER
TO SHEET 2

STATE OF VERMONT AGENCY OF TRANSPORTATION

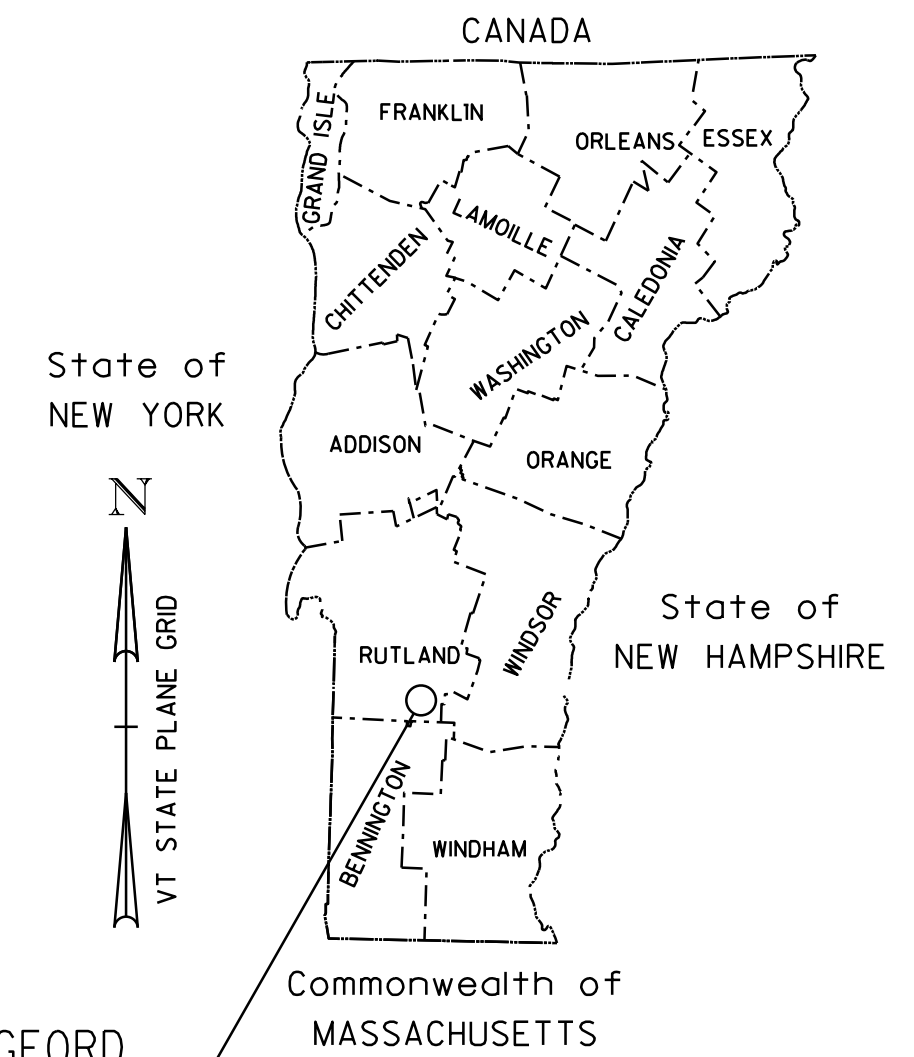


PROPOSED IMPROVEMENT CULVERT REPLACEMENT PROJECT

TOWN OF WALLINGFORD COUNTY OF RUTLAND BRIDGE NO.73A AND RR CULVERT C06470 WALLINGFORD ER CULV(39) U.S.ROUTE 7 (PRINCIPAL ARTERIAL)



LOCATION MAP
NOT TO SCALE

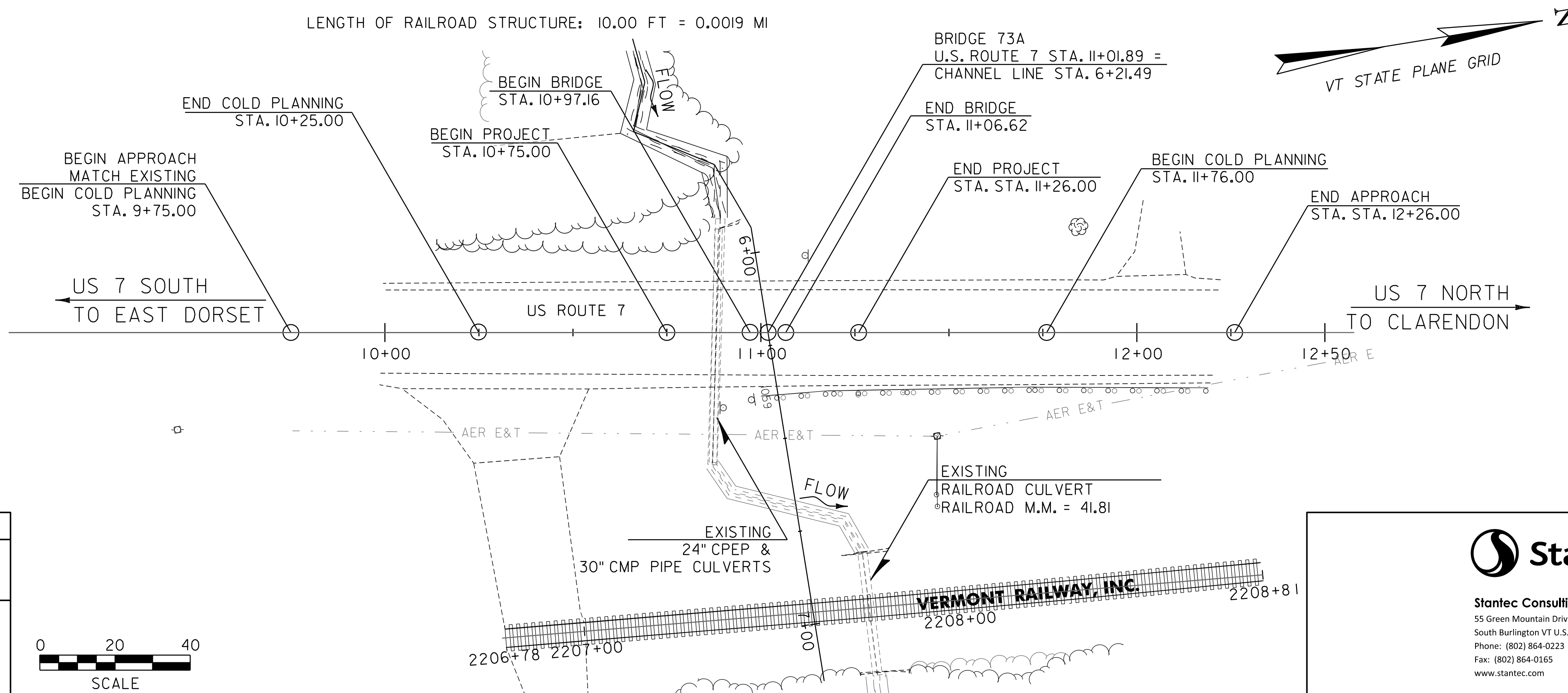


WALLINGFORD
ER CULV(39)

PROJECT LOCATION: BRIDGE NO. 73A WALLINGFORD ER CULV(39) IS LOCATED AT MILE MARKER 2.12 ON U.S. ROUTE 7, 3.2 MILES SOUTH OF THE INTERSECTION OF U.S. ROUTE 7 AND VERMONT ROUTE 140. EXISTING RAILROAD CULVERT IS LOCATED DIRECTLY DOWNSTREAM FROM BRIDGE NO. 73A.

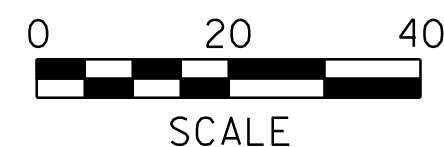
PROJECT DESCRIPTION: REPLACEMENT OF EXISTING 24" CPEP & 30" CMP PIPE CULVERTS BENEATH US ROUTE 7 WITH AN 8' x 6' PRECAST CONCRETE STRUCTURE. SINGLE LANE ALTERNATING TRAFFIC WILL BE MAINTAINED THROUGHOUT CONSTRUCTION. CONSTRUCTION OF AN 8' x 6' PRECAST BOX CULVERT JUST SOUTH OF EXISTING 3' x 4' STONE BOX CULVERT BENEATH THE RAILROAD. THE RAILROAD WILL ALLOW A 60 HOUR WORK WINDOW FOR INSTALLATION OF CULVERT C06470.

LENGTH OF PROJECT: 51.00 FT = 0.0100 MI
LENGTH OF BRIDGE NO. 73A STRUCTURE: 9.46 FT = 0.0018 MI
LENGTH OF ROADWAY: 41.54 FT = 0.0079 MI
LENGTH OF RAILROAD STRUCTURE: 10.00 FT = 0.0019 MI



CONSTRUCTION IS TO BE CARRIED ON IN ACCORDANCE WITH THESE PLANS AND THE STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2011, AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION ON JULY 20, 2011 FOR USE ON THIS PROJECT, INCLUDING ALL SUBSEQUENT REVISIONS AND SUCH REVISED SPECIFICATIONS AND SPECIAL PROVISIONS AS ARE INCORPORATED IN THESE PLANS.

QUALITY ASSURANCE PROGRAM : LEVEL 2	
SURVEYED BY : VSE	
SURVEYED DATE : AUGUST 2012	
DATUM	
VERTICAL	NAVD 88 (GEOID12) FT
HORIZONTAL	NAD 83 (2011) SPC (4400 VT) sFT



Stantec Consulting Services Inc.
55 Green Mountain Drive
South Burlington VT U.S.A. 05403
Phone: (802) 864-0223
Fax: (802) 864-0165
www.stantec.com

DIRECTOR OF PROJECT DELIVERY	
APPROVED _____	DATE _____
PROJECT MANAGER : KEN UPMAL , PE	
PROJECT NAME : WALLINGFORD	
PROJECT NUMBER : ER CULV (39)	
SHEET 1 OF 36 SHEETS	

PRELIMINARY INFORMATION SHEET (BRIDGE) - US 7 BR 73A

BRIDGE QUANTITIES

INDEX OF SHEETS

SHEET NO.	SHEET TITLE
1	TITLE SHEET
2	PRELIMINARY INFORMATION SHEET - US 7 BR73A
3-4	PROJECT NOTES 1-2
5-6	QUANTITY SHEETS 1-2
7	CONVENTIONAL SYMBOLOGY LEGEND
8	TYPICAL SECTIONS - BR73A
9	SURVEY CONTROL AND TIES
10	LAYOUT PLAN - BRIDGE NO. 73A
11	ROADWAY PROFILE
12	STREAM PROFILE
13	STRUCTURAL PLAN & DETAILS - BR73A
14	PRELIMINARY INFORMATION SHEET - CO6470
15	TYPICAL SECTIONS - RR CULV C06470
16	LAYOUT PLAN - RR CULV C06470
17	STRUCTURAL PLAN/DET. - RR CULV C06470
18	TRAFFIC CONTROL
19	BORING PLAN
20-23	BORING LOG 1-4
24-25	US ROUTE 7 CROSS SECTIONS 1-3
26	RAILROAD CROSS SECTIONS
27-28	STREAM CROSS SECTIONS 1-2
29	EPSC NARRATIVE
30	EPSC PLAN
31-32	EPSC DETAILS 1-2
33	PROJECTS IMPACTS PLAN
34	PROJECTS IMPACTS PLAN 2
35	ROW DETAIL SHEET #1
36	ROW LAYOUT PLAN #1

VAOT STANDARD SHEETS

E-121	STANDARD SIGN PLACEMENT - CONVENTIONAL ROAD	08/08/95
E-123	GUIDE SIGN PLACEMENT - MISCELLANEOUS DETAILS	03/16/04
E-171A	TRAFFIC CONTROL SIGNALS GENERAL NOTES & DETAILS	08/09/95
E-172	VEHICLE LOOP DETAILS	08/09/95
E-191	PAVEMENT MARKING DETAILS	02/01/99
E-192	PAVEMENT MARKING DETAILS	10/12/00
E-193	PAVEMENT MARKING DETAILS	08/18/95
G-1	STEEL BEAM GUARDRAIL DETAIL (POST, DELINEATOR, TYPICALS)	02/10/14
G-19	GENERIC PLANS FOR GUARDRAIL END TERMINALS	11/15/02
G-10	STEEL BEAM GUARDRAIL DETAILS (END TERMINAL, ANCHOR, MEDIAN)	02/10/14
T-1	TRAFFIC CONTROL GENERAL NOTES	08/06/12
T-10	CONVENTIONAL ROADS AND CONSTRUCTION APPROACH SIGNING	08/06/12
T-28	CONSTRUCTION SIGN DETAILS	08/06/12
T-30	CONSTRUCTION SIGN DETAILS	08/06/12
T-35	CONSTRUCTION ZONE LONGITUDINAL DROP-OFFS	08/06/12
T-36	CONSTRUCTION ZONE LONGITUDINAL DROP-OFFS FOR PAVING	08/06/12
T-42	BRIDGE NUMBER PLAQUE	04/09/14
T-45	SQUARE TUBE SIGN POST AND ANCHOR	01/02/13

STRUCTURE DETAIL SHEETS

SD-366.00	LONGSPAN STEEL BEAM GUARDRAIL, GALVANIZED	01/03/14
SD-501.00	CONCRETE DETAILS AND NOTES	02/09/12
SD-502.00	CONCRETE DETAILS AND NOTES	10/10/12

FINAL HYDRAULIC REPORT

HYDROLOGIC DATA Date: November 2014

DRAINAGE AREA: 0.8 sq. mi.
 CHARACTER OF TERRAIN: Hilly to mountainous, mostly forested with some open areas
 STREAM CHARACTERISTICS: Small, intermittent, sinuous
 NATURE OF STREAMBED: Gravel, cobbles and sand

PEAK FLOW DATA

Q 2.33 =	70 cfs	Q 50 =	185 cfs
Q 10 =	130 cfs	Q 100 =	205 cfs
Q 25 =	160 cfs	Q 500 =	270 cfs

DATE OF FLOOD OF RECORD: Unknown
 ESTIMATED DISCHARGE: Unknown
 WATER SURFACE ELEV.: Unknown
 NATURAL STREAM VELOCITY: @ Q50 = 8.1 fps
 ICE CONDITIONS: Moderate
 DEBRIS: Moderate
 DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? Yes
 IS ORDINARY RISE RAPID? Yes
 IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? Yes
 IF YES, DESCRIBE: This site may be in the Otter Creek floodplain. Floodwaters from that river may affect this site.

WATERSHED STORAGE: < 1% HEADWATERS: UNIFORM: X
 IMMEDIATELY ABOVE SITE:

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: 24" CPEP(SL) above 30" CMP
 YEAR BUILT: Unknown
 CLEAR SPAN(NORMAL TO STREAM): 24" and 30"
 VERTICAL CLEARANCE ABOVE STREAMBED: 24" and 30"
 WATERWAY OF FULL OPENING: 3.1 sq. ft. and 4.9 sq. ft. = 8.0 sq. ft. total
 DISPOSITION OF STRUCTURE: Remove and replace with a new structure
 TYPE OF MATERIAL UNDER SUBSTRUCTURE: Unknown

WATER SURFACE ELEVATIONS AT:

Q2.33 =	587.3'	VELOCITY =	10.5 fps *
Q10 =	588.1'	"	6.8 fps *
Q25 =	588.2'	"	6.5 fps *
Q50 =	588.3'	"	6.6 fps *
Q100 =	588.4'	"	6.4 fps *

*Pipe barrel of 24" PCP

LONG TERM STREAMBED CHANGES: None noted.

IS THE ROADWAY OVERTOPPED BELOW Q100: Yes
 FREQUENCY: Below Q10
 RELIEF ELEVATION: 587.5'
 DISCHARGE OVER ROAD @Q100: 160 cfs

UPSTREAM STRUCTURE

TOWN: N/A - Stream divides DISTANCE: _____
 HIGHWAY #: _____ STRUCTURE #: _____
 CLEAR SPAN: _____ CLEAR HEIGHT: _____
 YEAR BUILT: _____ FULL WATERWAY: _____
 STRUCTURE TYPE: _____

DOWNSTREAM STRUCTURE

TOWN: Wallingford DISTANCE: 75'
 HIGHWAY #: VT Railway STRUCTURE #: CO6470
 CLEAR SPAN: 3' CLEAR HEIGHT: 2'
 YEAR BUILT: N/A FULL WATERWAY: 4 sq. ft.
 STRUCTURE TYPE: Box

LRFR LOAD RATING FACTORS

LOADING LEVELS	TRUCK						
	H-20	HL-93	3S2	6 AXLE	3A. STR.	4A. STR.	5A. SEM
TONNAGE	20	36	36	66	30	34.5	38
INVENTORY							
POSTING							
OPERATING							
COMMENTS:	TABLE TO BE COMPLETED BY CONTRACTOR'S DESIGNER						

SEE SHEET 3 FOR CULVERT DESIGN CRITERIA

PROPOSED STRUCTURE

STRUCTURE TYPE: Precast concrete box

CLEAR SPAN(NORMAL TO STREAM): 8.0'
 VERTICAL CLEARANCE ABOVE STREAMBED: 4.5'
 WATERWAY OF FULL OPENING: 36 sq. ft.

WATER SURFACE ELEVATIONS AT:

Q2.33 =	581.6'	VELOCITY=	5.4 fps *
Q10 =	582.7'	"	7.3 fps *
Q25 =	583.2'	"	7.6 fps *
Q50 =	583.7'	"	7.8 fps *
Q100 =	584.0'	"	7.9 fps *

* Within box culvert

IS THE ROADWAY OVERTOPPED BELOW Q100: No
 FREQUENCY: Above Q100
 RELIEF ELEVATION: 587.6'
 DISCHARGE OVER ROAD @Q100: None

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 584.4' at the inlet
 VERTICAL CLEARANCE: @ Q50 = 0.6'

SCOUR: Not applicable for a box.
 REQUIRED CHANNEL PROTECTION: Stone Fill, Type III

PERMIT INFORMATION

AVERAGE DAILY FLOW: 2 cfs DEPTH OR ELEVATION:
 ORDINARY LOW WATER: 1 cfs Depth < 0.1'
 ORDINARY HIGH WATER: 30 cfs Depth = 1'

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: No temporary bridge required. Using phased construction.
 CLEAR SPAN (NORMAL TO STREAM): _____
 VERTICAL CLEARANCE ABOVE STREAMBED: _____
 WATERWAY AREA OF FULL OPENING: _____

ADDITIONAL INFORMATION

Hydraulics at this site may be affected by tailwater due to the Otter Creek. The unnamed stream is anticipated to peak prior to the Otter Creek, therefore this report does not consider Otter Creek tailwater in predicting water surface elevations. Water surface elevations may be higher than reported if tailwater conditions exist.

DESIGN VALUES

1. DESIGN LIVE LOAD	HL-93
2. FUTURE PAVEMENT	d _p : 3.0 INCH
3. DESIGN SPAN	L: 8.00 FT
4. MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)	Δ: ---
5. PRESTRESSING STRAND	f _y : ---
6. PRESTRESSED CONCRETE STRENGTH	f' _c : ---
7. PRESTRESSED CONCRETE RELEASE STRENGTH	f' _{cr} : ---
8. CONCRETE, HIGH PERFORMANCE CLASS AA	f' _c : ---
9. CONCRETE, HIGH PERFORMANCE CLASS A	f' _c : 4.0 KSI
10. CONCRETE, HIGH PERFORMANCE CLASS B	f' _c : ---
11. CONCRETE, CLASS C	f' _c : ---
12. REINFORCING STEEL	f _y : 60 KSI
13. STRUCTURAL STEEL AASHTO M270	f _y : ---
14. SOIL UNIT WEIGHT	γ: 0.140 KCF
15. NOMINAL BEARING RESISTANCE OF SOIL	q _n : 6.0 KSF
16. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	φ: 0.45
17. NOMINAL BEARING RESISTANCE OF ROCK	q _n : ---
18. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	φ: ---
19. NOMINAL AXIAL PILE RESISTANCE	q _p : ---
20. PILE YIELD STRENGTH ASTM A572	f _y : ---
21. PILE SIZE	---
22. EST. PILE LENGTH	L _p : ---
23. PILE RESISTANCE FACTOR	φ: ---
24. LATERAL PILE DEFLECTION	Δ: ---
25. BASIC WIND SPEED	V _{3s} : ---
26. MINIMUM GROUND SNOW LOAD	pg: ---
27. SEISMIC DATA	PGA: --- S _s : --- S ₁ : ---

PROJECT NAME: **WALLINGFORD**
 PROJECT NUMBER: **ER CULV(39)**
 FILE NAME: z_wallingford_pi.xlsm PLOT DATE: 2/19/2016
 PROJECT LEADER: G. BOGUE DRAWN BY: J. SOTER
 DESIGNED BY: M. CHENETTE CHECKED BY:
 PRELIMINARY INFORMATION SHEET - US 7 BR 73A SHEET 2 OF 36

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT	
2013	4300	480	54	11.6	510	20 year ESAL for flexible pavement from 2013 to 2033 : 3,331,000
2033	4600	530	54	17.3	820	40 year ESAL for flexible pavement from 2103 to 2053 : 7,480,000
						Design Speed : 50 mph

AS BUILT "REBAR" DETAIL		
LEVEL I	LEVEL II	LEVEL III
TYPE:	TYPE:	TYPE:
GRADE:	GRADE:	GRADE:

INDEX OF SHEETS

PLAN SHEETS

FOR INDEX OF SHEETS AND
VAOT STANDARD SHEETS, SEE
SHEET 2.

STANDARDS LIST

FINAL HYDRAULIC REPORT

HYDROLOGIC DATA Date: November 2014

DRAINAGE AREA : 0.8 sq. mi.
 CHARACTER OF TERRAIN : Hilly to mountainous, mostly forested with some open areas
 STREAM CHARACTERISTICS : Small, intermittent, sinuous
 NATURE OF STREAMBED : Gravel, cobbles and sand

PEAK FLOW DATA

Q 2.33 = 70 cfs	Q 50 = 185 cfs
Q 10 = 130 cfs	Q 100 = 205 cfs
Q 25 = 160 cfs	Q 500 = 270 cfs

DATE OF FLOOD OF RECORD : Unknown
 ESTIMATED DISCHARGE : Unknown
 WATER SURFACE ELEV. : Unknown
 NATURAL STREAM VELOCITY : @ Q50 = 8.1 fps
 ICE CONDITIONS : Moderate
 DEBRIS : Moderate

DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? Yes
 IS ORDINARY RISE RAPID? Yes
 IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? Yes
 IF YES, DESCRIBE: This site may be in the Otter Creek floodplain. Floodwaters from that river may affect this site.

WATERSHED STORAGE: < 1% HEADWATERS: UNIFORM: X
 IMMEDIATELY ABOVE SITE:

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: 3' wide X 4' high Stone Box Culvert
 YEAR BUILT: Unknown
 CLEAR SPAN(NORMAL TO STREAM): 3'
 VERTICAL CLEARANCE ABOVE STREAMBED: 4'
 WATERWAY OF FULL OPENING: 12.0 sq. ft. total
 DISPOSITION OF STRUCTURE: Remove and replace with a new structure
 TYPE OF MATERIAL UNDER SUBSTRUCTURE: Unknown

WATER SURFACE ELEVATIONS AT:

Q2.33 = 582.9'	VELOCITY = 9.1 fps *
Q10 = 586.4'	" 10.6 fps * *At downstream
Q25 = 586.6'	" 10.8 fps end of box culvert
Q50 = 586.7'	" 11.3 fps
Q100 = 586.8'	" 11.7 fps

LONG TERM STREAMBED CHANGES: None noted.

IS THE ROADWAY OVERTOPPED BELOW Q100: Yes
 FREQUENCY: Below Q10
 RELIEF ELEVATION: 586.0'
 DISCHARGE OVER ROAD @Q100: 97 cfs

UPSTREAM STRUCTURE

TOWN: Wallingford DISTANCE: _____
 HIGHWAY #: US Route 7 STRUCTURE #: 73A
 CLEAR SPAN: 8'-0" CLEAR HEIGHT: 4'-6"
 YEAR BUILT: New FULL WATERWAY: 36 sf
 STRUCTURE TYPE: Concrete Box Culvert

DOWNSTREAM STRUCTURE

TOWN: N/A DISTANCE: _____
 HIGHWAY #: _____ STRUCTURE #: _____
 CLEAR SPAN: _____ CLEAR HEIGHT: _____
 YEAR BUILT: _____ FULL WATERWAY: _____
 STRUCTURE TYPE: _____

LRFR LOAD RATING FACTORS

LOADING LEVELS	TRUCK						
	H-20	HL-93	3S2	6 AXLE	3A. STR.	4A. STR.	5A. SEM
TONNAGE	20	36	36	66	30	34.5	38
INVENTORY							
POSTING							
OPERATING							
COMMENTS:	TABLE TO BE COMPLETED BY CONTRACTOR'S DESIGNER						

SEE SHEET 3 FOR CULVERT DESIGN CRITERIA

PROPOSED STRUCTURE

STRUCTURE TYPE: N/A

CLEAR SPAN(NORMAL TO STREAM): 8.0'
 VERTICAL CLEARANCE ABOVE STREAMBED: 4.5'
 WATERWAY OF FULL OPENING: 36 sq. ft.

WATER SURFACE ELEVATIONS AT:

Q2.33 = 580.1'	VELOCITY= 6.6 fps *
Q10 = 581.3'	" 8.1 fps *
Q25 = 581.8'	" 8.6 fps *
Q50 = 582.2'	" 9.0 fps *
Q100 = 582.5'	" 9.4 fps * *Within box

IS THE ROADWAY OVERTOPPED BELOW Q100: No
 FREQUENCY: Above Q100
 RELIEF ELEVATION: 586.0'
 DISCHARGE OVER ROAD @Q100: None

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 582.9' at the inlet
 VERTICAL CLEARANCE: @ Q50 = -0.6'

SCOUR: _____

REQUIRED CHANNEL PROTECTION: Stone Fill, Type III

PERMIT INFORMATION

AVERAGE DAILY FLOW: 2 cfs DEPTH OR ELEVATION:
 ORDINARY LOW WATER: 1 cfs Depth < 0.1'
 ORDINARY HIGH WATER: 24 cfs Depth = 1'

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: No temporary bridge required. Temporary closure approved by RR.
 CLEAR SPAN (NORMAL TO STREAM): _____
 VERTICAL CLEARANCE ABOVE STREAMBED: _____
 WATERWAY AREA OF FULL OPENING: _____

ADDITIONAL INFORMATION

Hydraulics at this site may be affected by tailwater due to the Otter Creek. The unnamed stream is anticipated to peak prior to the Otter Creek, therefore this report does not consider Otter Creek tailwater in predicting water surface elevations. Water surface elevations may be higher than reported if tailwater conditions exist.

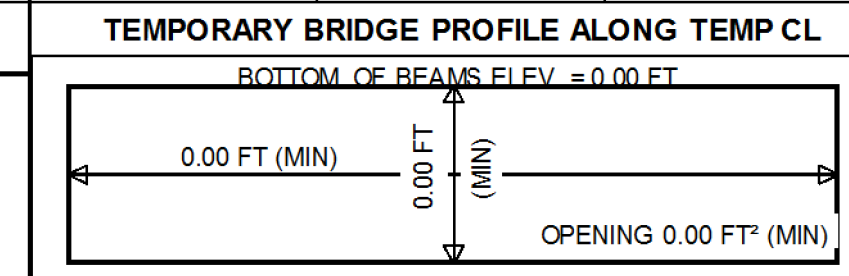
- TRAFFIC MAINTENANCE NOTES**
1. MAINTAIN TWO-WAY TRAFFIC ON A TEMPORARY BRIDGE.
 2. TRAFFIC SIGNALS ARE NOT NECESSARY.
 3. SIDEWALKS ARE NOT NECESSARY
 4. THE APPROACHES FOR THE TEMPORARY BRIDGE SHALL BE PAVED.

DESIGN VALUES

1. DESIGN LIVE LOAD	COOP. E80
2. FUTURE PAVEMENT	dp: 3.0 INCH
3. DESIGN SPAN	L: 8.00 FT
4. MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)	Δ: ---
5. PRESTRESSING STRAND	fy: ---
6. PRESTRESSED CONCRETE STRENGTH	f'c: ---
7. PRESTRESSED CONCRETE RELEASE STRENGTH	f'ci: ---
8. CONCRETE, HIGH PERFORMANCE CLASS AA	f'c: ---
9. CONCRETE, HIGH PERFORMANCE CLASS A	f'c: 4.0 KSI
10. CONCRETE, HIGH PERFORMANCE CLASS B	f'c: ---
11. CONCRETE, CLASS C	f'c: ---
12. REINFORCING STEEL	fy: 60 KSI
13. STRUCTURAL STEEL AASHTO M270	fy: ---
14. NOMINAL BEARING RESISTANCE OF SOIL	qn: ---
15. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	φ: ---
16. NOMINAL BEARING RESISTANCE OF ROCK	qn: ---
17. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	φ: ---
18. PILE RESISTANCE FACTOR	φ: ---
19. LATERAL PILE DEFLECTION	Δ: ---
20. BASIC WIND SPEED	V3s: ---
21. MINIMUM GROUND SNOW LOAD	ps: ---
22. SEISMIC DATA	PGA: 0 S: ---
23.	S: ---
24.	---
25.	---
26.	---

AS BUILT "REBAR" DETAIL

LEVEL I	LEVEL II	LEVEL III
TYPE:	TYPE:	TYPE:
GRADE:	GRADE:	GRADE:

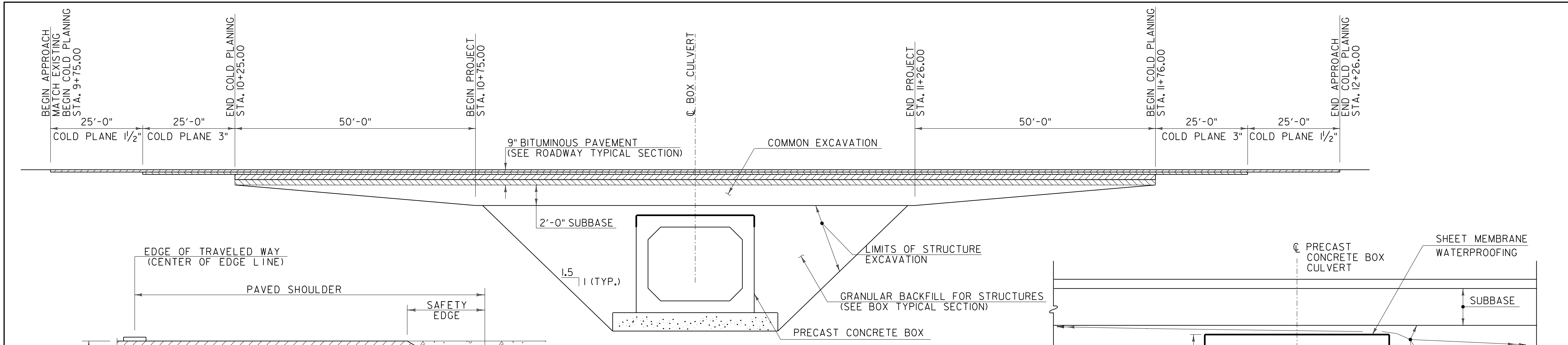


TRAFFIC DATA

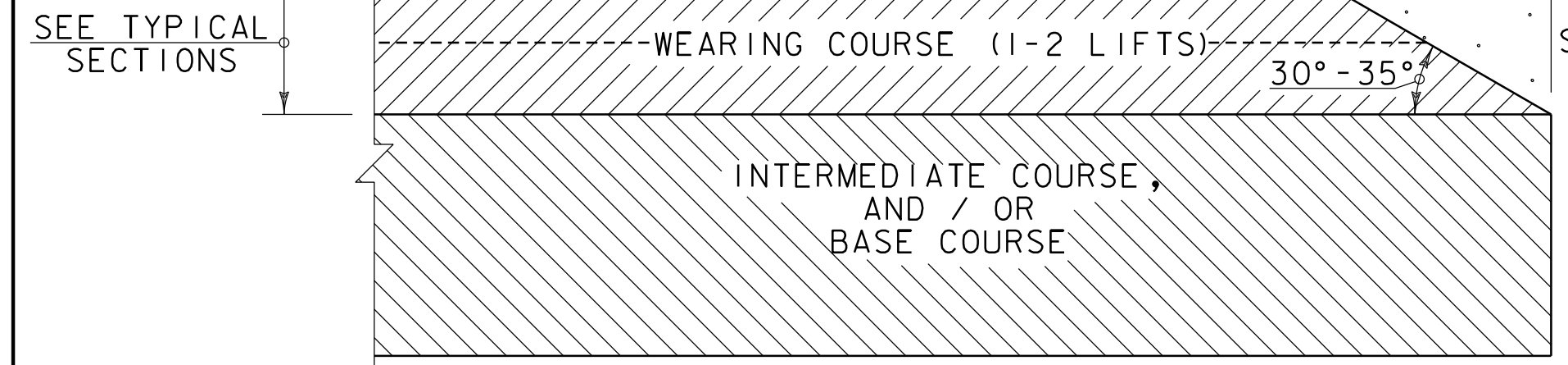
YEAR	ADT	DHV	% D	% T	ADTT	Notes
0	0	0	0	0	0	20 year ESAL for flexible pavement from XXXX to XXXX : 0
XXXX	0	0	0	0	0	40 year ESAL for flexible pavement from XXXX to XXXX : 0
						Design Speed : 0 mph

PROJECT NAME: **WALLINGFORD**
 PROJECT NUMBER: **ER CULV(39)**

FILE NAME: z_RR wallingford_pt.xls PLOT DATE: 2/19/2016
 PROJECT LEADER: G. BOGUE DRAWN BY: L. BUXTON
 DESIGNED BY: T. KNIGHT CHECKED BY: G. BOGUE
 PRELIMINARY INFORMATION SHEET - C06470 SHEET 14 OF 36

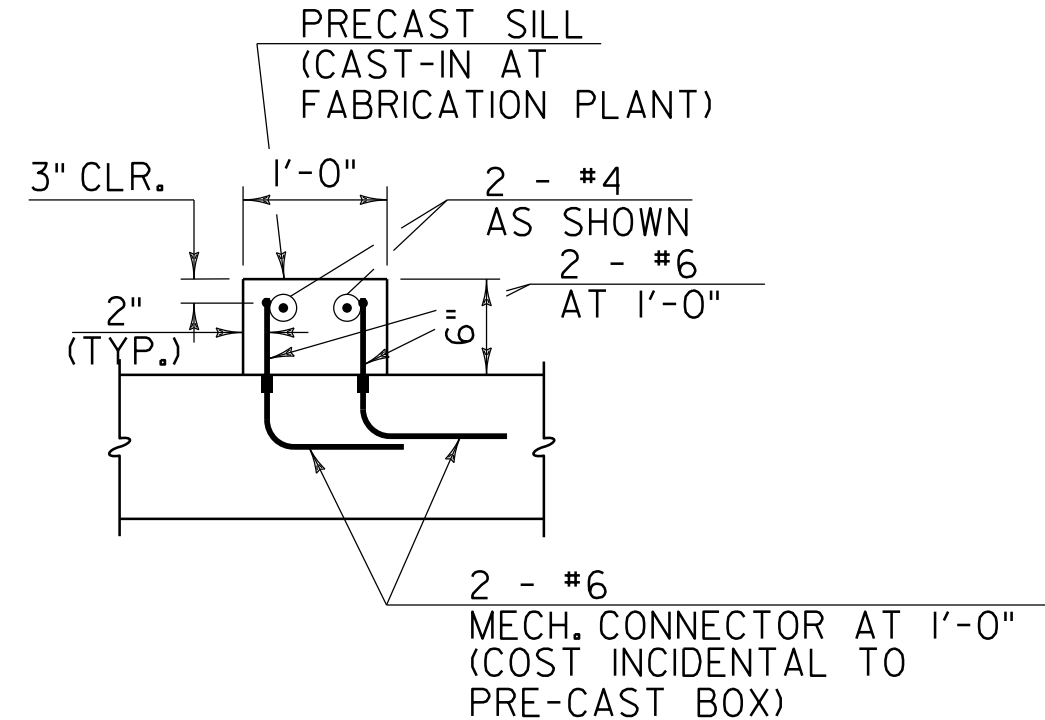


TYPICAL APPROACH SECTION
NOT TO SCALE

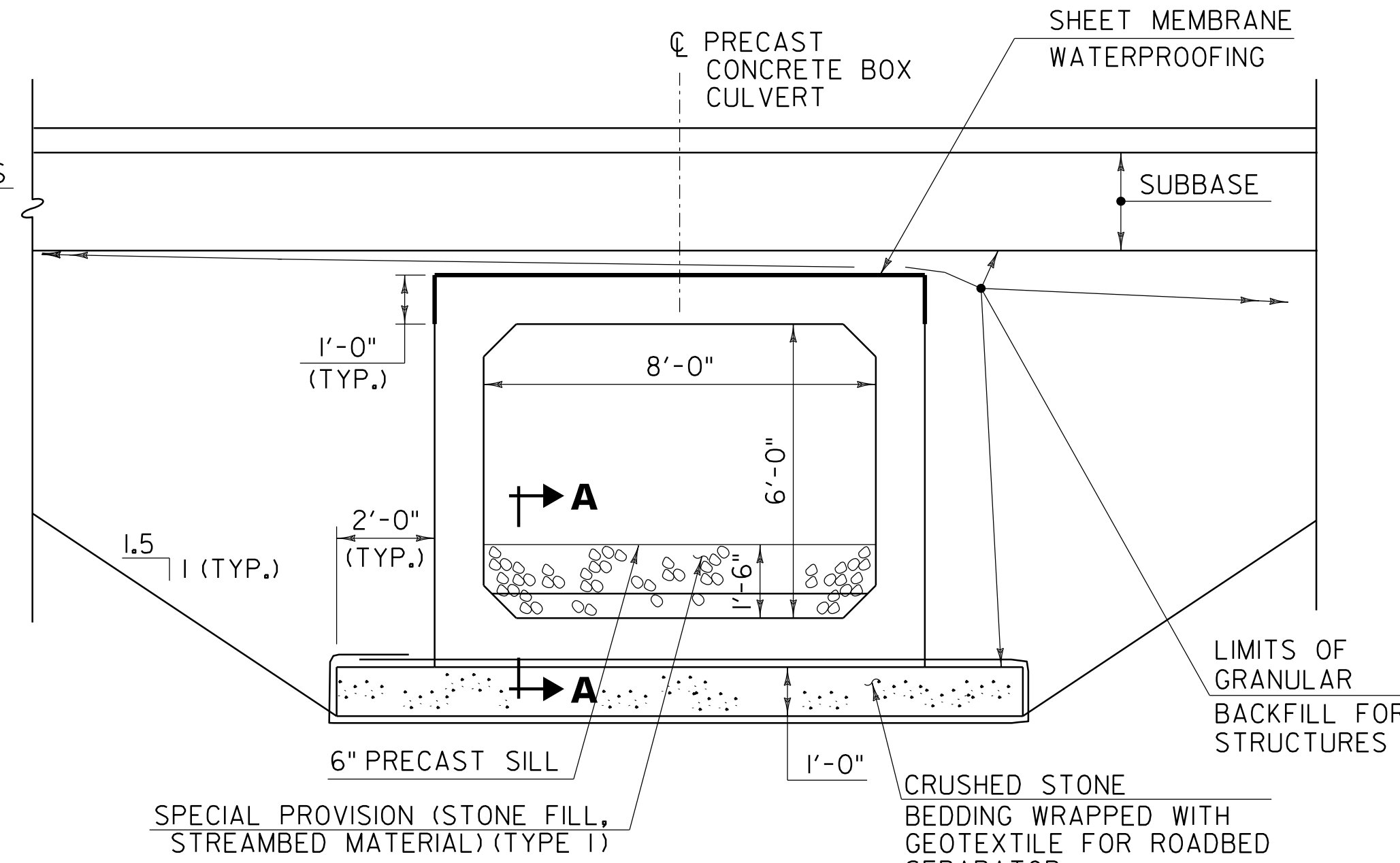


SAFETY EDGE DETAIL
NOT TO SCALE

- NOTES:**
1. THE EDGE OF PAVEMENT SHALL BE FORMED IN SUCH A WAY THAT THE BITUMINOUS CONCRETE PAVEMENT IS EXTRUDED OR COMPRESSED TO FORM THE 30 TO 35 DEGREE ANGLE. DEVICES THAT SIMPLY STRIKE-OFF THE MIX WITHOUT PROVIDING ANY COMPACTIVE EFFORT WILL NOT BE ALLOWED.
 2. THE PAVED SHOULDER EXTENDS FROM THE EDGE OF TRAVELED WAY TO THE EDGE OF THE WEARING COURSE, INCLUDING THE "SAFETY EDGE".

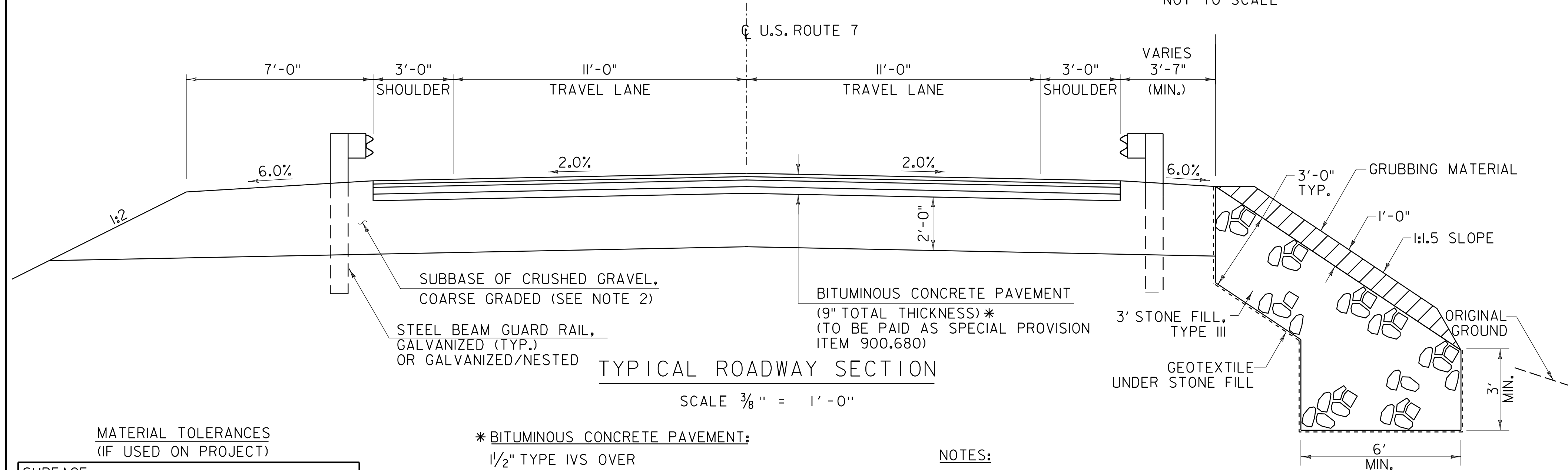


SECTION A-A
NOT TO SCALE



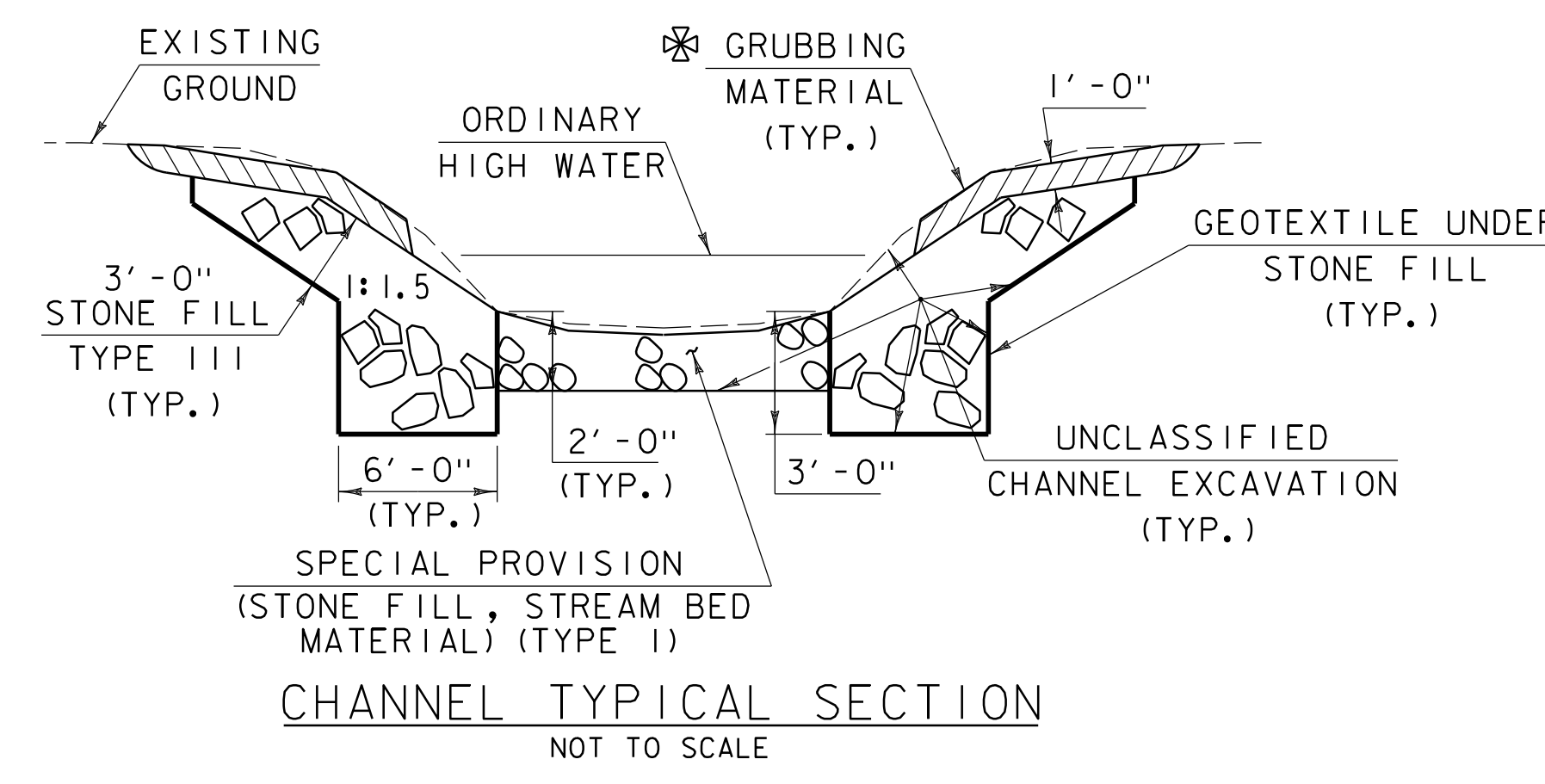
PRECAST CONCRETE BOX TYPICAL SECTION

SCALE 3/8" = 1'-0"



TYPICAL ROADWAY SECTION

SCALE 3/8" = 1'-0"



CHANNEL TYPICAL SECTION

NOT TO SCALE

WHENEVER CHANNEL SLOPE INTERSECTS ROADWAY SUBBASE, GRUBBING MATERIAL SHALL BEGIN AT THE BOTTOM OF SUBBASE.

MATERIAL TOLERANCES
(IF USED ON PROJECT)

SURFACE	
- PAVEMENT (TOTAL THICKNESS)	+/- 1/4"
- AGGREGATE SURFACE COARSE	+/- 1/2"
SUBBASE	+/- 1"
SAND BORROW	+/- 1"

*** BITUMINOUS CONCRETE PAVEMENT:**
1 1/2" TYPE IVS OVER
1 1/2" TYPE IVS OVER
3" TYPE IIS OVER
3" TYPE IIS
EMULSIFIED ASPHALT BETWEEN LAYERS (SEE NOTE 1)

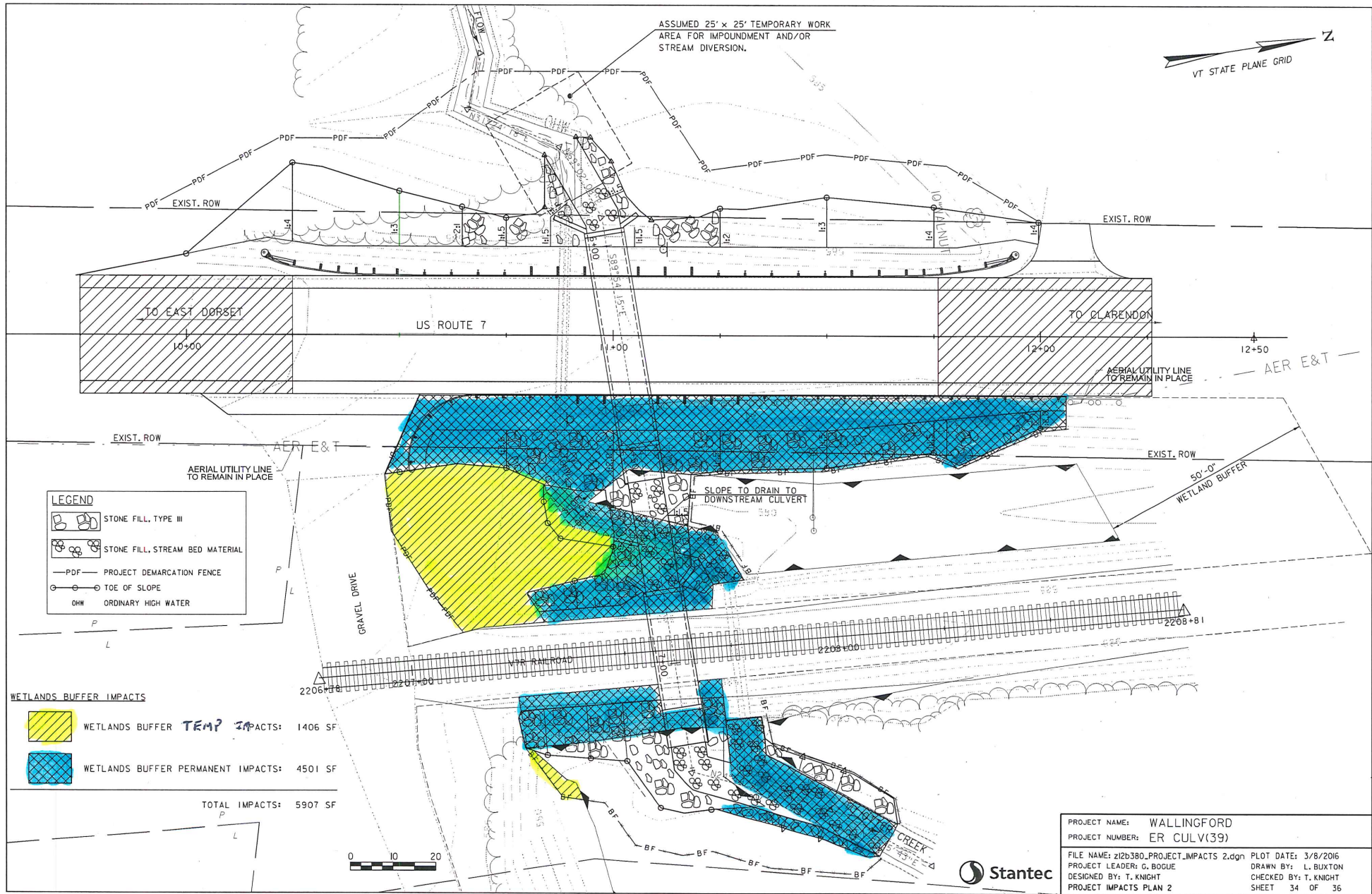
- NOTES:**
1. EMULSIFIED ASPHALT SHALL BE APPLIED ON COLD PLANED SURFACES AT THE RATE OF 0.08 GAL/SY AND BETWEEN PAVED LAYERS AT THE RATE OF 0.04 GAL/SY.
 2. DENSE GRADED CRUSHED STONE MAY BE SUBSTITUTED FOR SUBBASE OF CRUSHED GRAVEL, COURSE GRADED.

PROJECT NAME:	WALLINGFORD	PLOT DATE:	3/8/2016
PROJECT NUMBER:	ER CULV(39)	DRAWN BY:	L. BUXTON
FILE NAME:	z12b380.TYPICAL_SECTIONS.dgn	DESIGNED BY:	J. HUNGERFORD
PROJECT LEADER:	G. BOGUE	CHECKED BY:	T. KNIGHT
TYPICAL SECTIONS - BR 73A		SHEET	8 OF 36





ASSUMED 25' x 25' TEMPORARY WORK
AREA FOR IMPOUNDMENT AND/OR
STREAM DIVERSION.

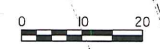


LEGEND

- STONE FILL, TYPE III
- STONE FILL, STREAM BED MATERIAL
- PROJECT DEMARCATION FENCE
- TOE OF SLOPE
- ORDINARY HIGH WATER

WETLANDS BUFFER IMPACTS

	WETLANDS BUFFER TEMP IMPACTS:	1406 SF
	WETLANDS BUFFER PERMANENT IMPACTS:	4501 SF
TOTAL IMPACTS:		5907 SF



PROJECT NAME:	WALLINGFORD
PROJECT NUMBER:	ER CULV(39)
FILE NAME:	z12b380_PROJECT_IMPACTS 2.dgn
PROJECT LEADER:	G. BOGUE
DESIGNED BY:	T. KNIGHT
PROJECT IMPACTS PLAN 2	
PLOT DATE:	3/8/2016
DRAWN BY:	L. BUXTON
CHECKED BY:	T. KNIGHT
SHEET	34 OF 36



WETLANDS IMPACT



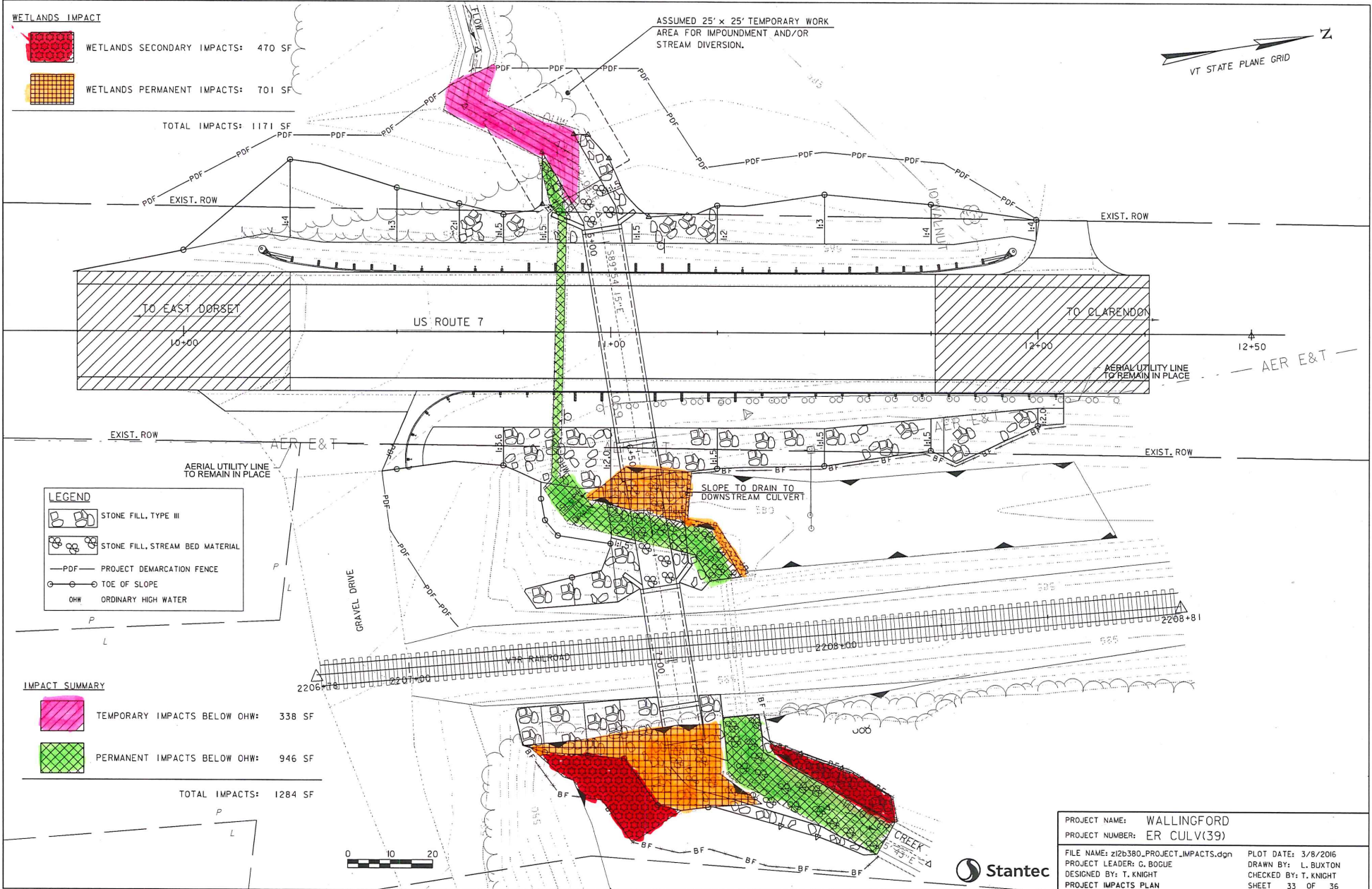
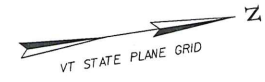
WETLANDS SECONDARY IMPACTS: 470 SF



WETLANDS PERMANENT IMPACTS: 701 SF

TOTAL IMPACTS: 1171 SF

ASSUMED 25' x 25' TEMPORARY WORK AREA FOR IMPOUNDMENT AND/OR STREAM DIVERSION.



LEGEND

- STONE FILL, TYPE III
- STONE FILL, STREAM BED MATERIAL
- PROJECT DEMARCATION FENCE
- TOE OF SLOPE
- ORDINARY HIGH WATER

IMPACT SUMMARY

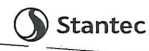


TEMPORARY IMPACTS BELOW OHW: 338 SF

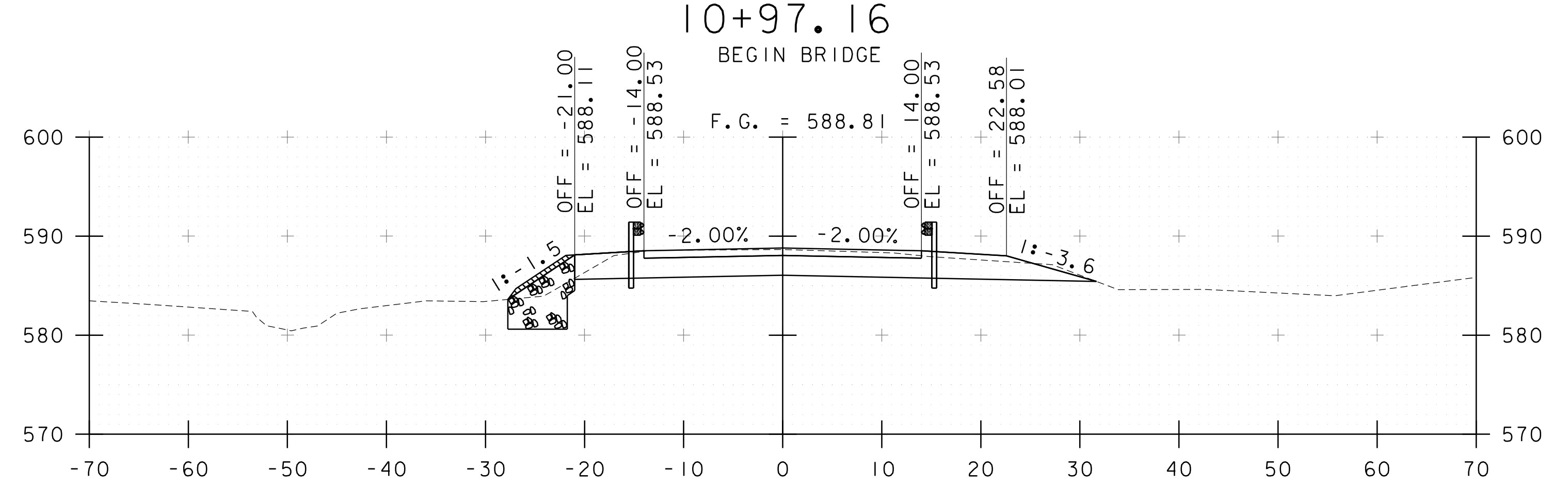
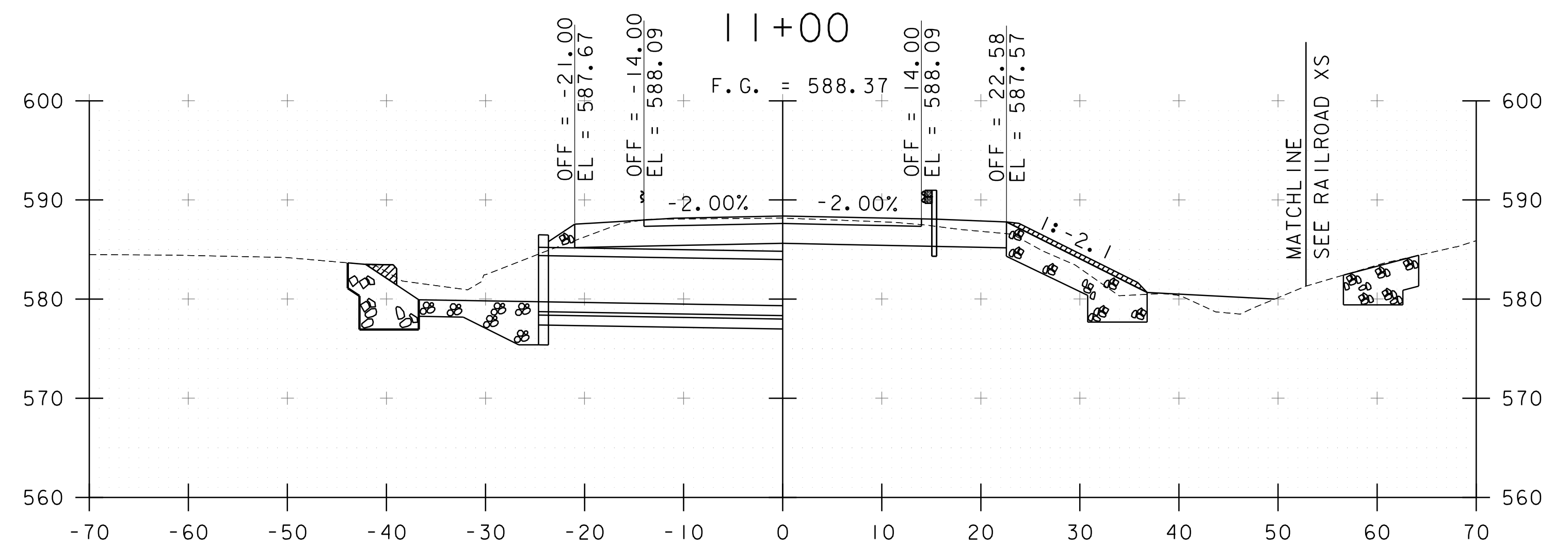
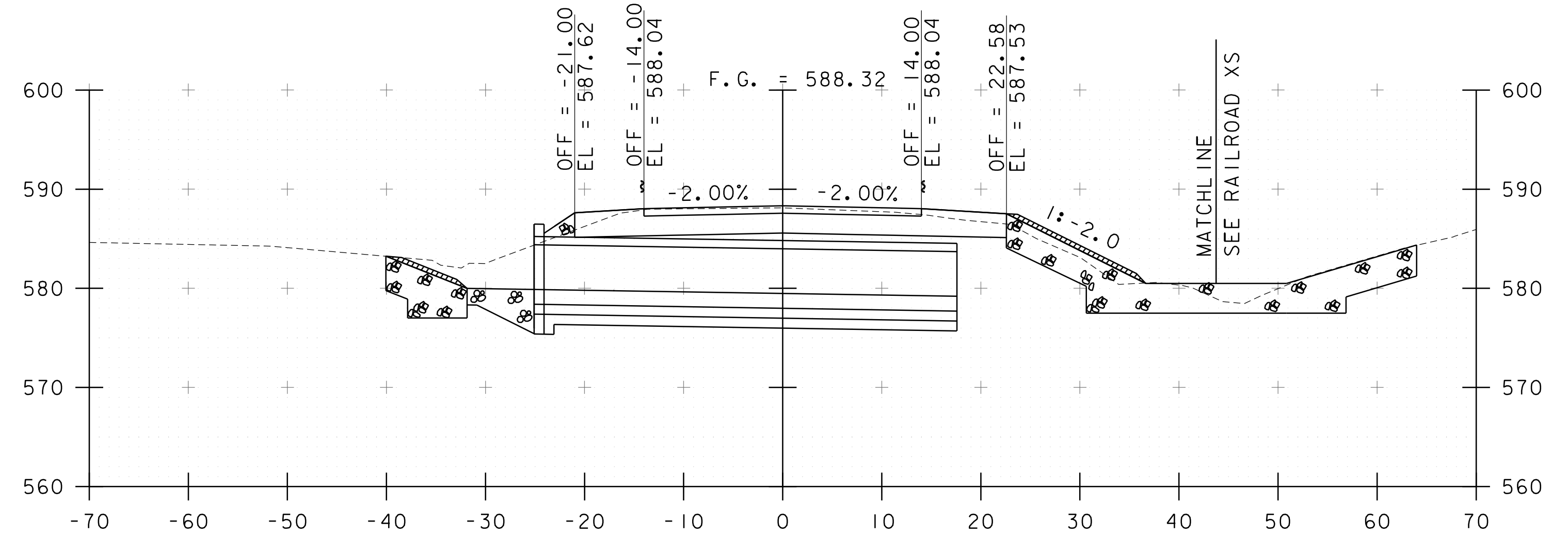
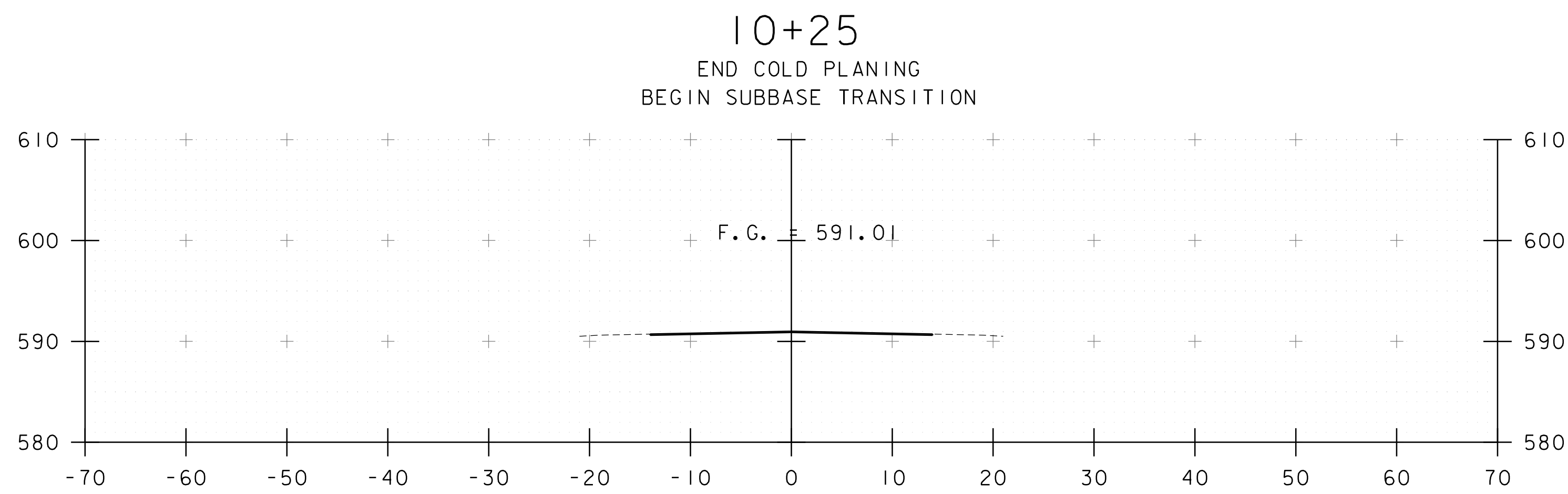
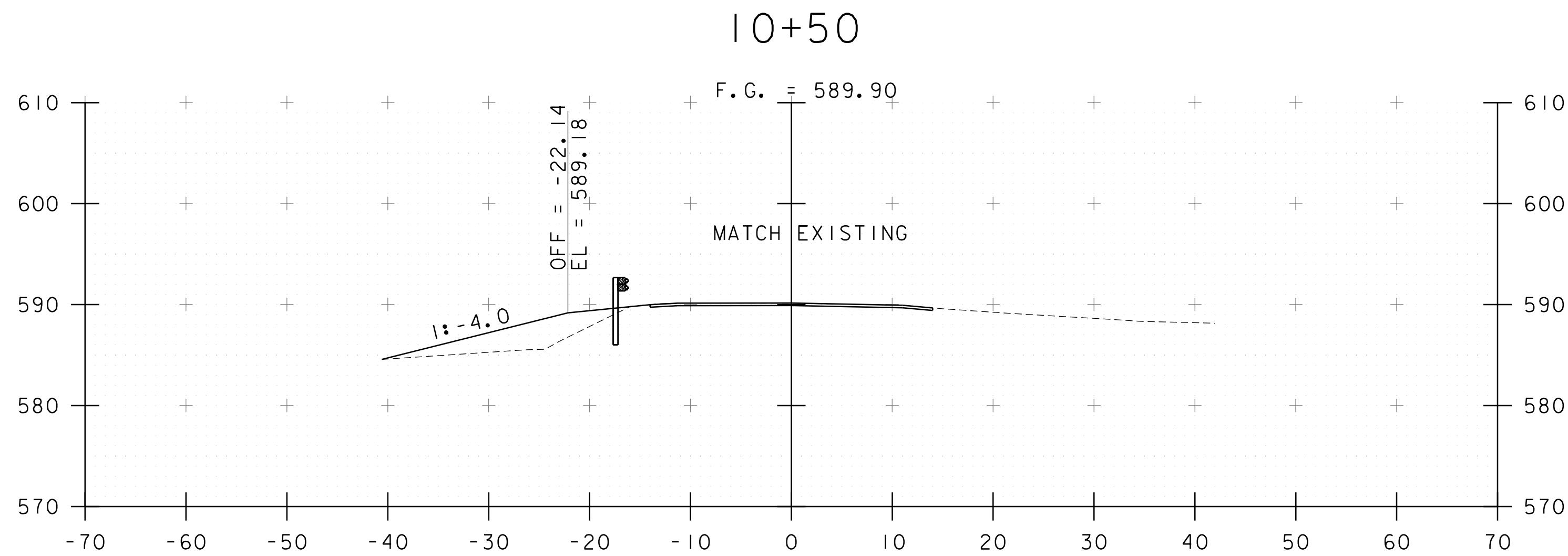
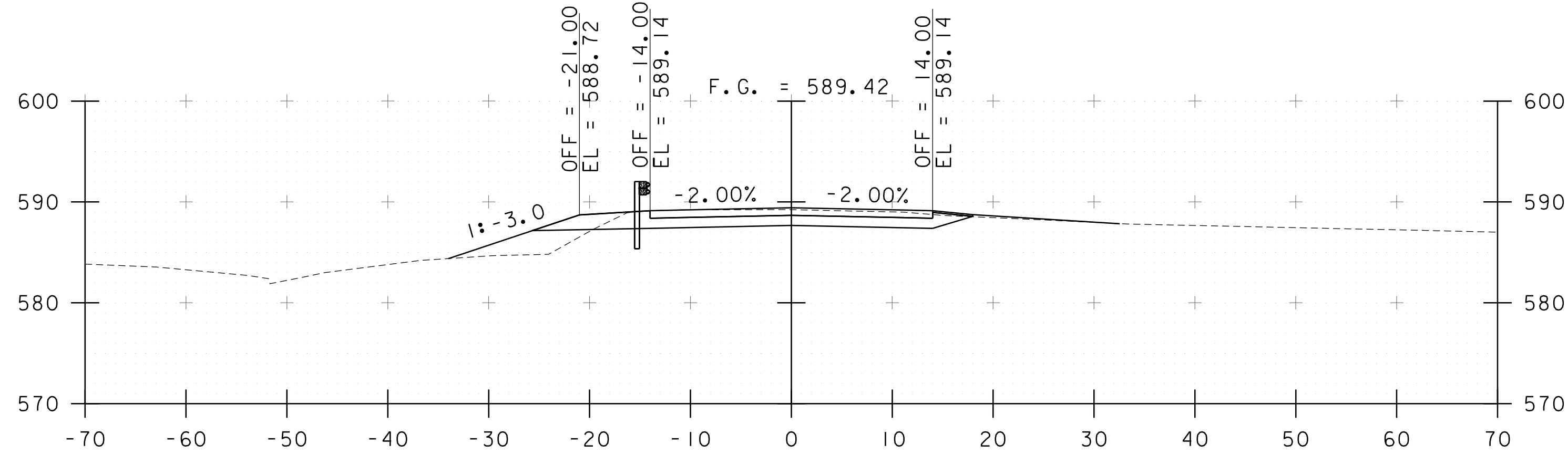


PERMANENT IMPACTS BELOW OHW: 946 SF

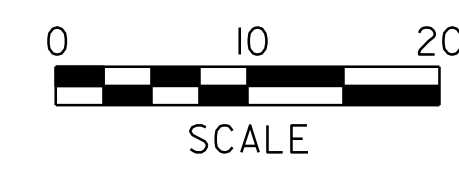
TOTAL IMPACTS: 1284 SF



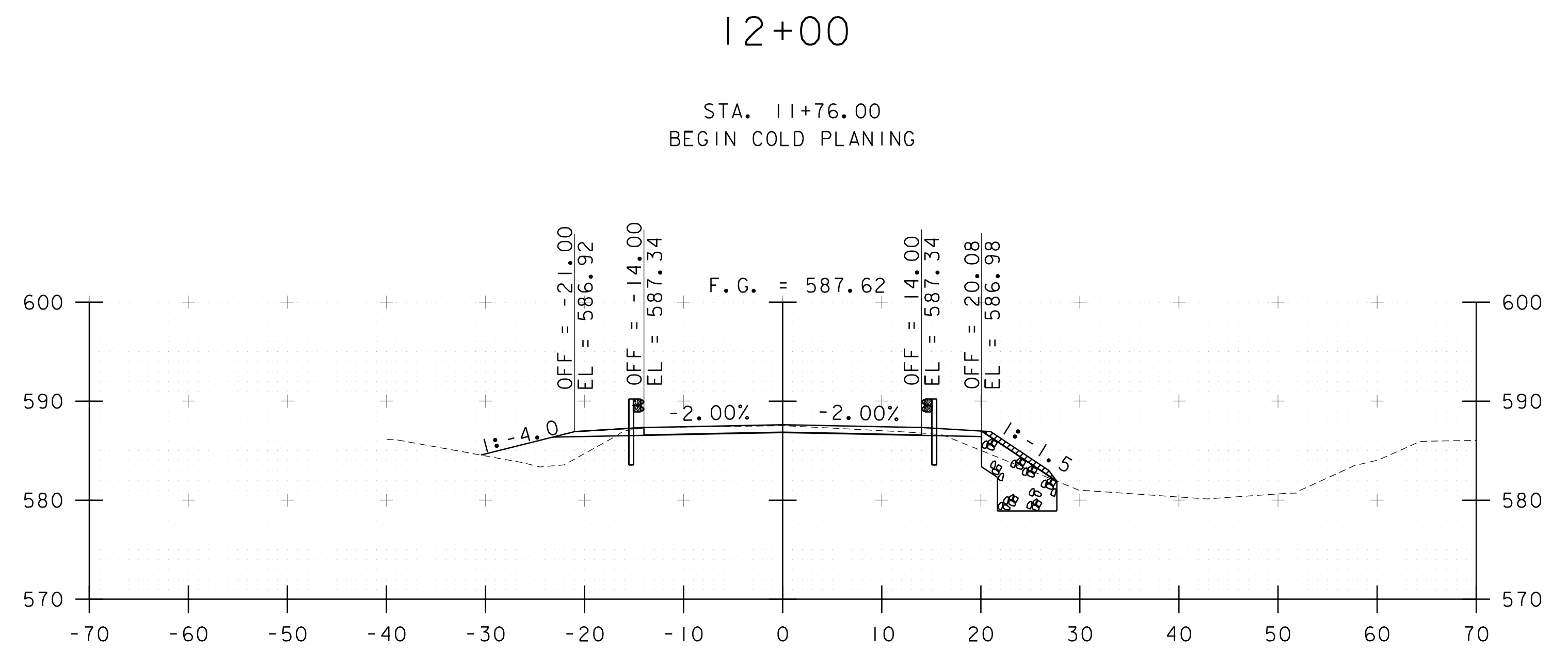
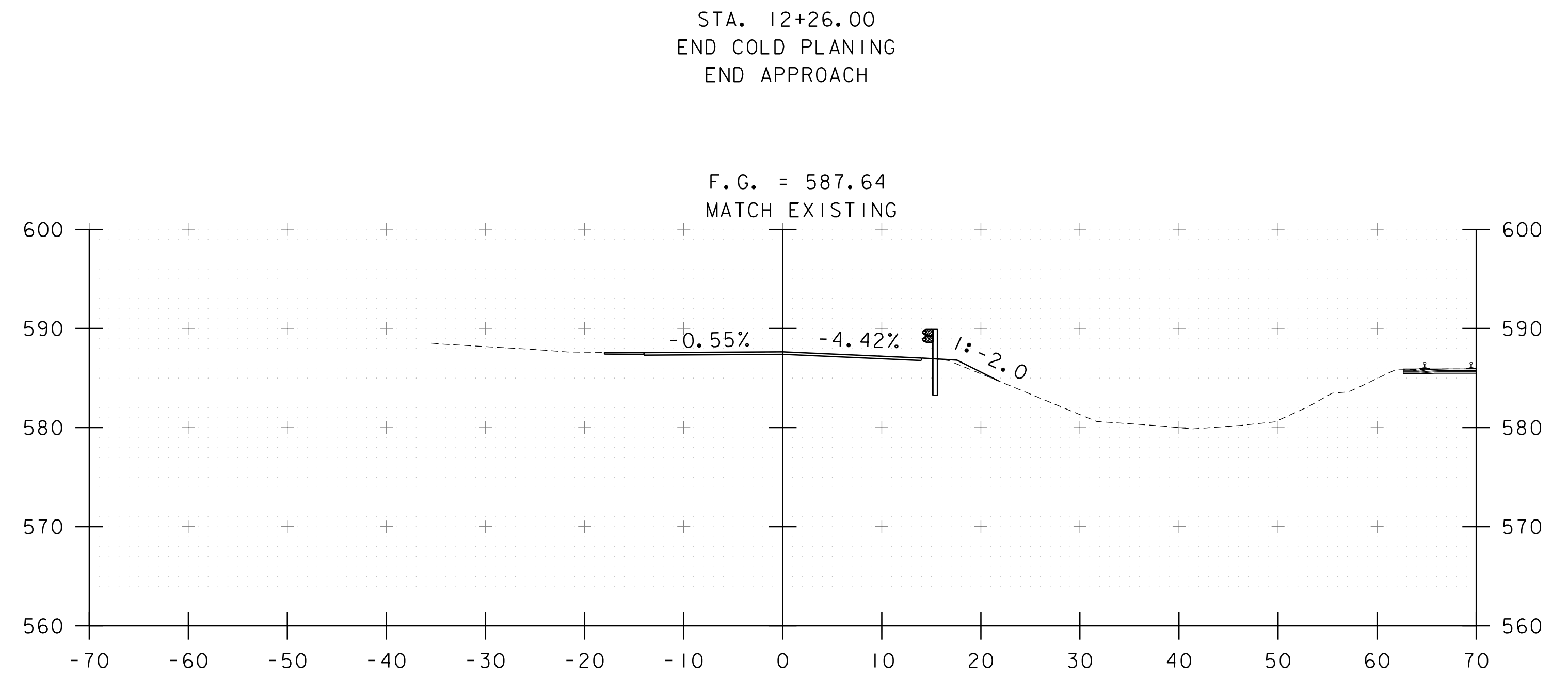
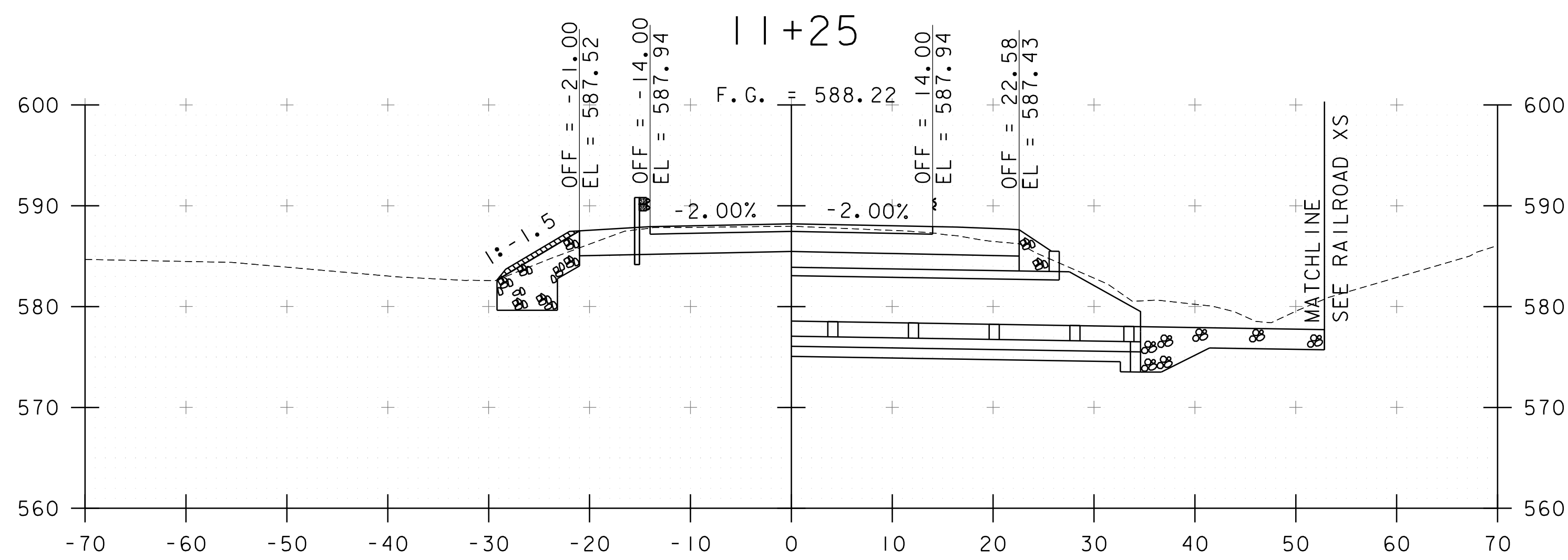
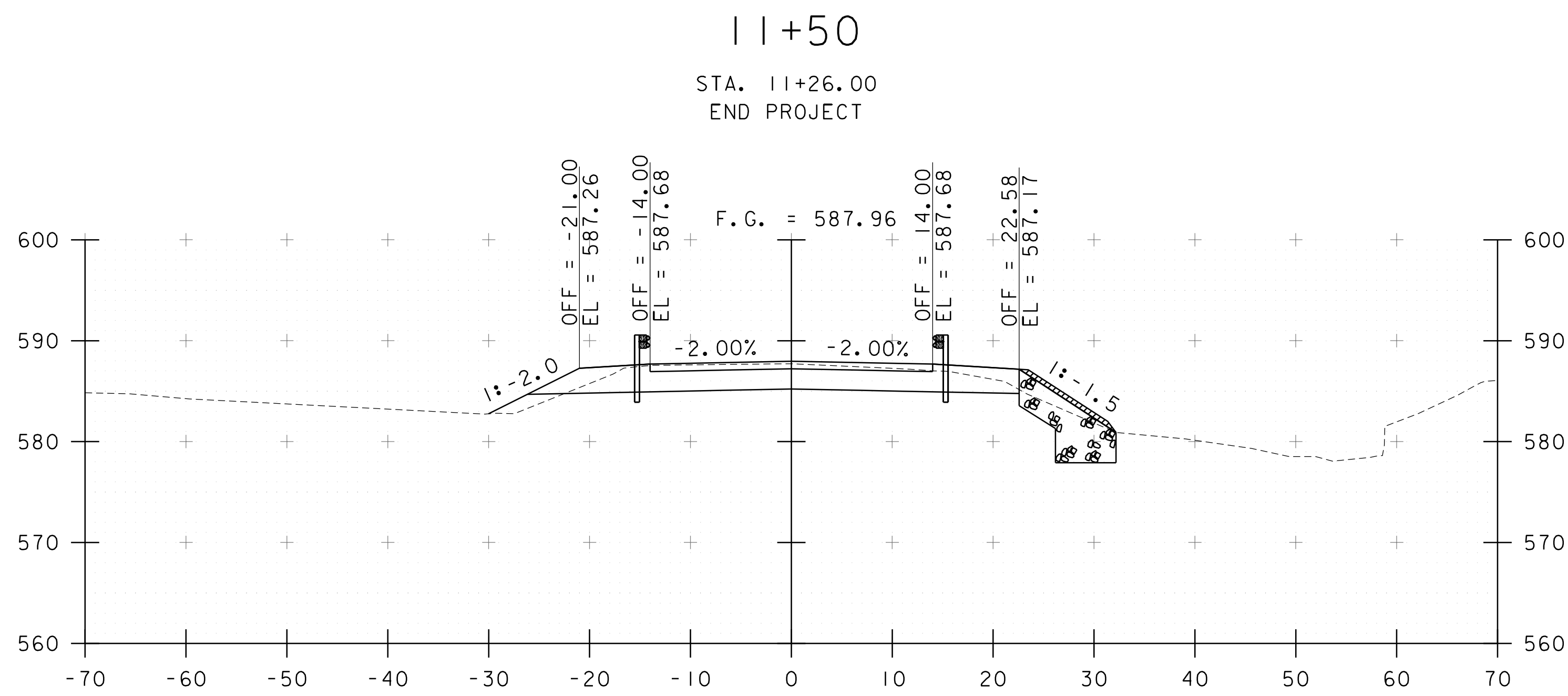
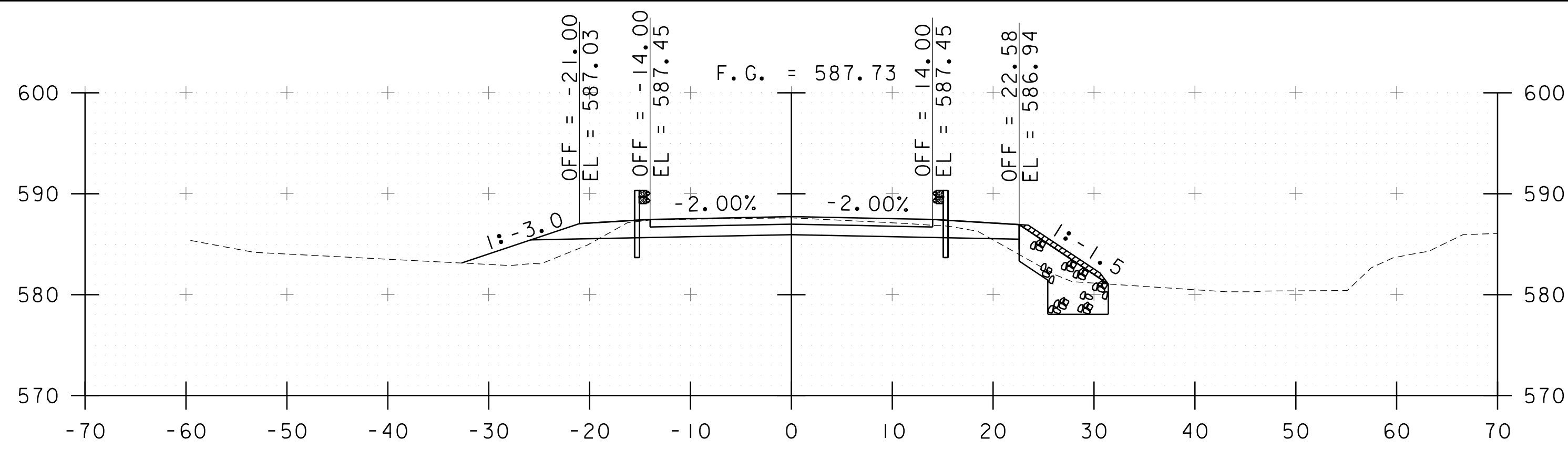
PROJECT NAME:	WALLINGFORD		
PROJECT NUMBER:	ER CULV(39)		
FILE NAME:	z12b380_PROJECT.IMPACTS.dgn	PLOT DATE:	3/8/2016
PROJECT LEADER:	G. BOGUE	DRAWN BY:	L. BUXTON
DESIGNED BY:	T. KNIGHT	CHECKED BY:	T. KNIGHT
PROJECT IMPACTS PLAN		SHEET	33 OF 36



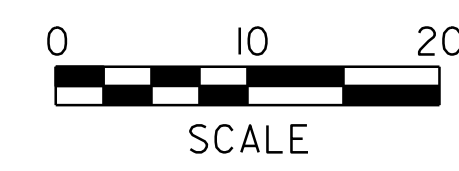
STA. 10+00 TO STA. 11+00



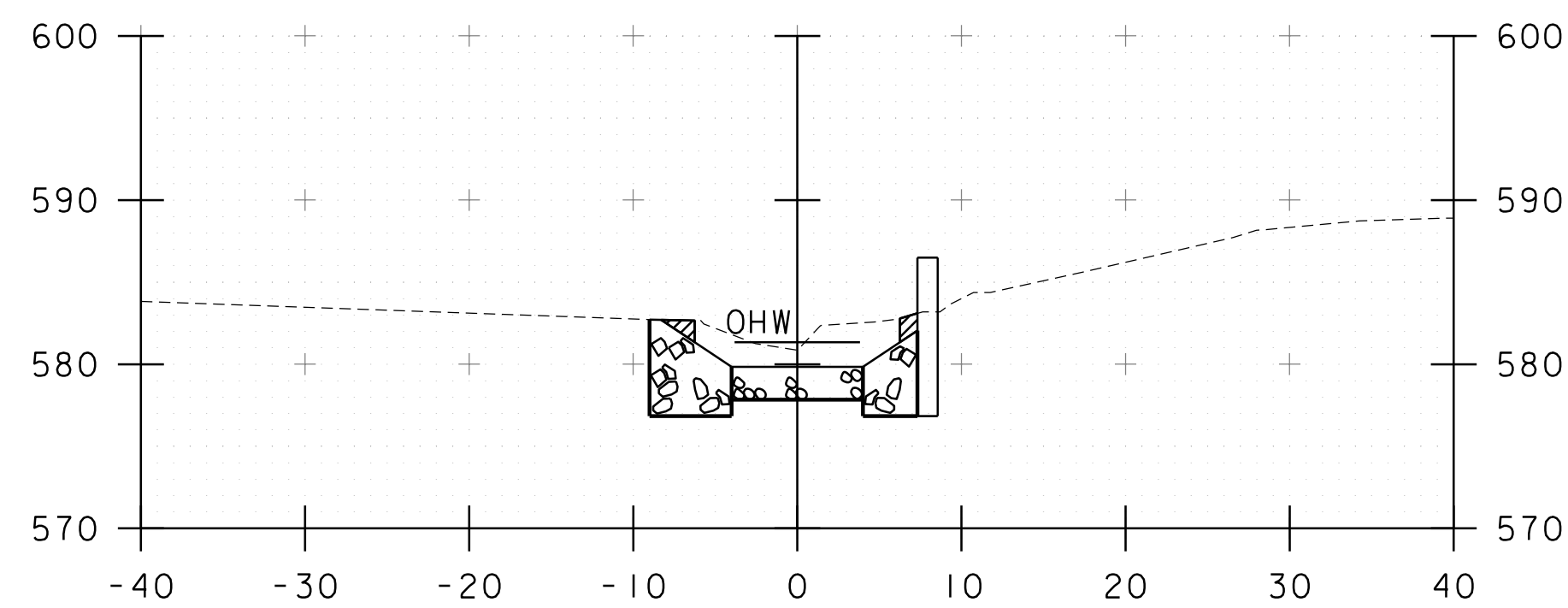
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PROJECT NUMBER:	ER CULV(39)	DRAWN BY:	I. MAYNARD
FILE NAME:	...drawing\z12b380_xs.dgn	DESIGNED BY:	I. MAYNARD
PROJECT LEADER:	G. BOGUE	CHECKED BY:	G. SANTY
US ROUTE 7 CROSS SECTIONS 1		SHEET	24 OF 36



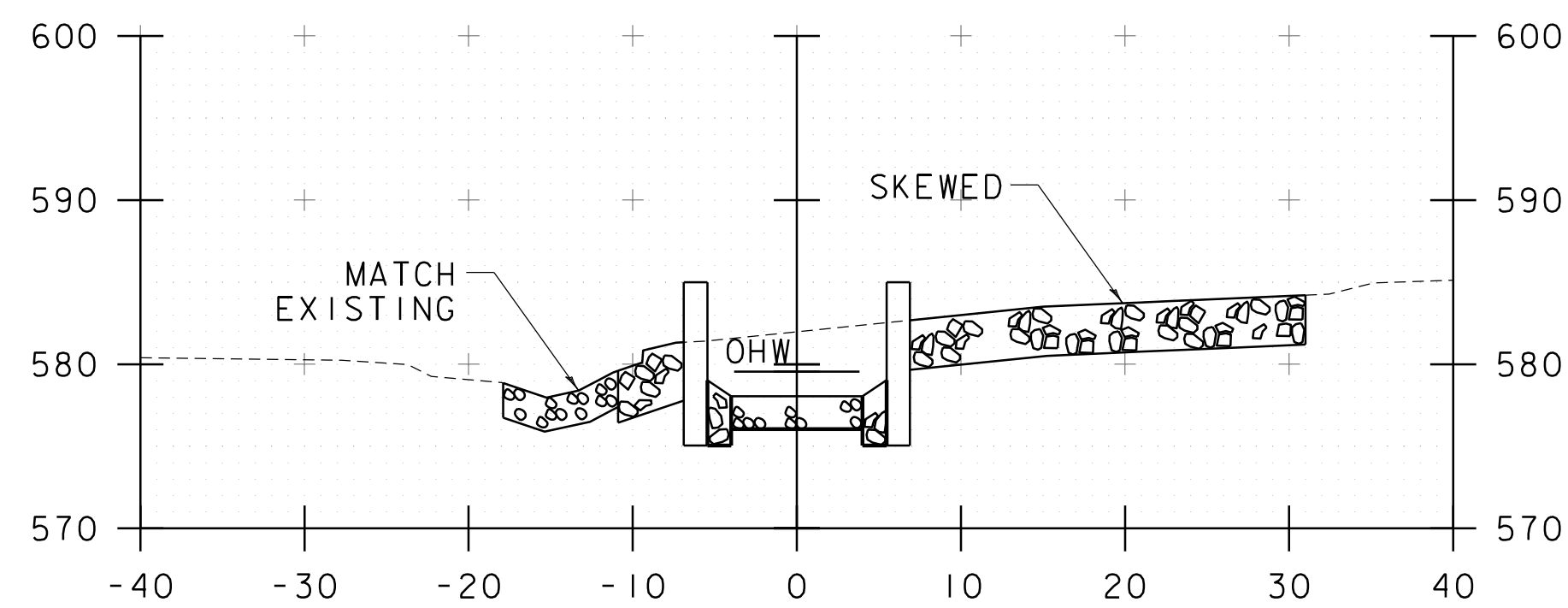
STA. 11+07 TO STA. 12+00



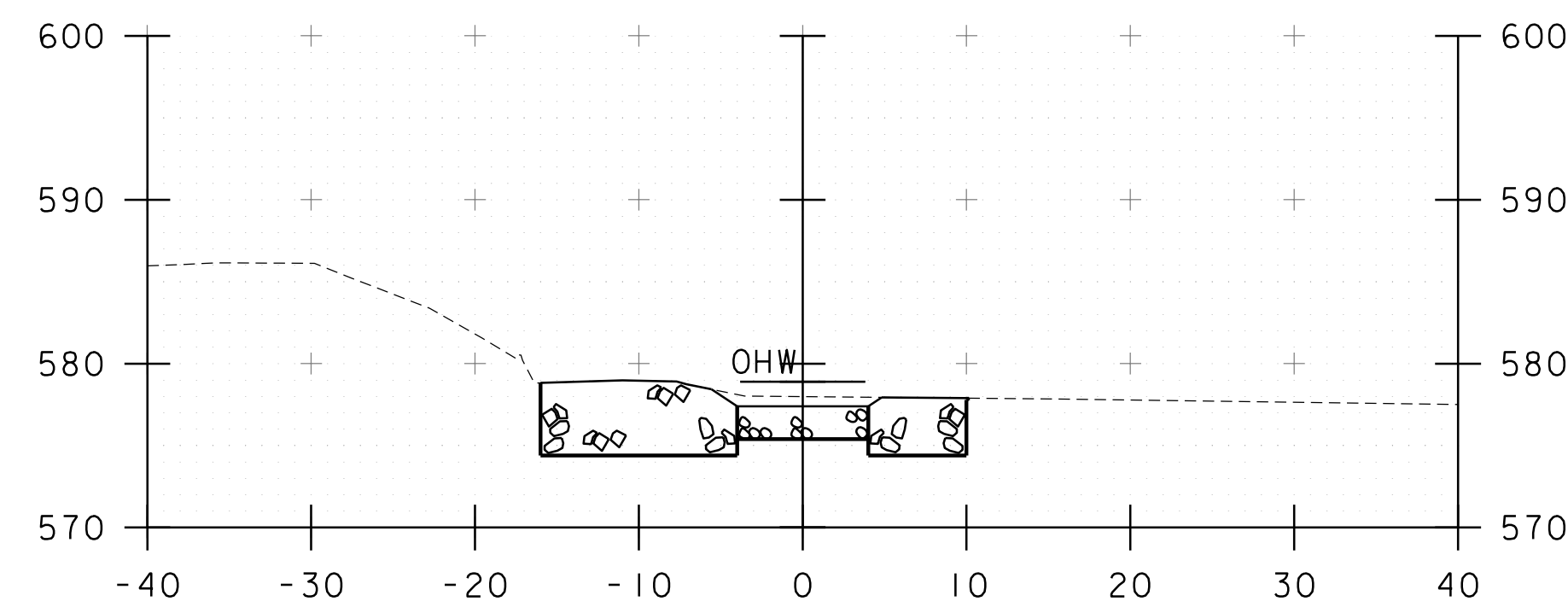
PROJECT NAME: WALLINGFORD	PLOT DATE: 3/8/2016
PROJECT NUMBER: ER CULV(39)	DRAWN BY: I. MAYNARD
FILE NAME: ...drawing\z12b380_xs.dgn	CHECKED BY: G. SANTY
PROJECT LEADER: G. BOGUE	SHEET 25 OF 36
DESIGNED BY: I. MAYNARD	
US ROUTE 7 CROSS SECTIONS 2	



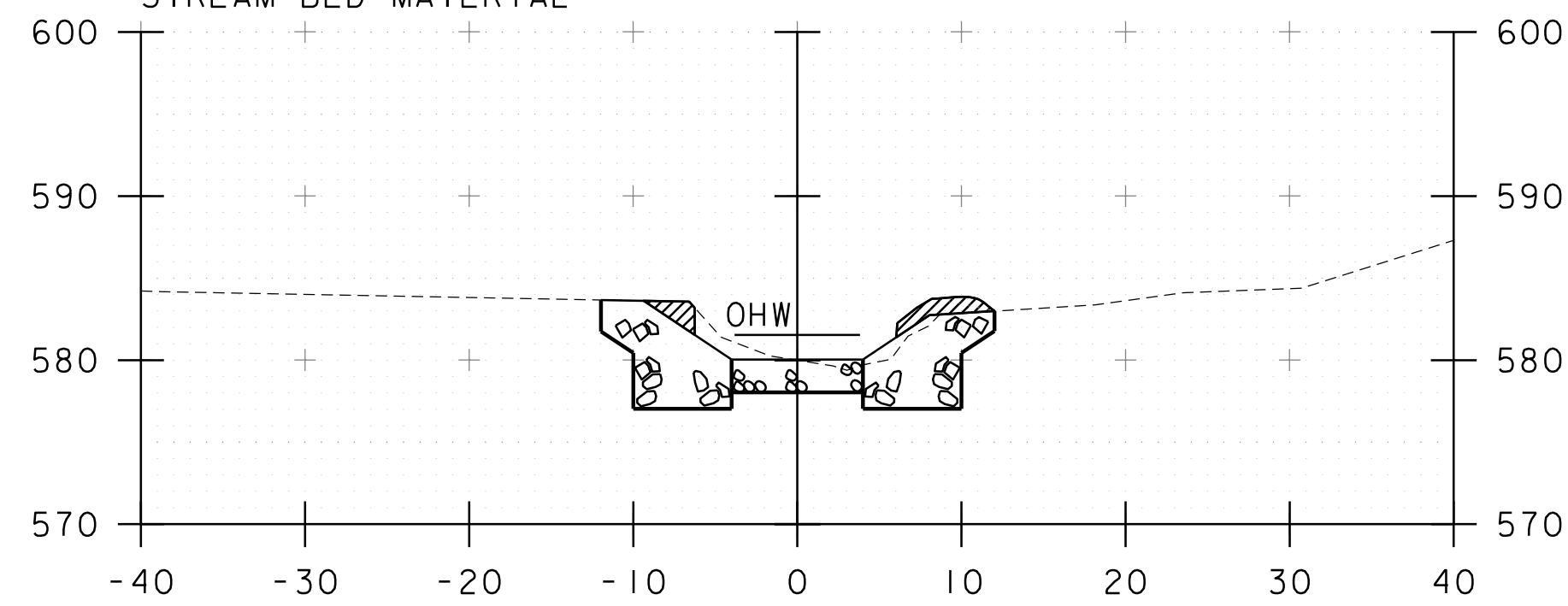
STA. 5+96
 BEGIN BRIDGE
 STOP STONE FILL STREAM
 BED MATERIAL
 UNCLASSIFIED CHANNEL EXCAVATION



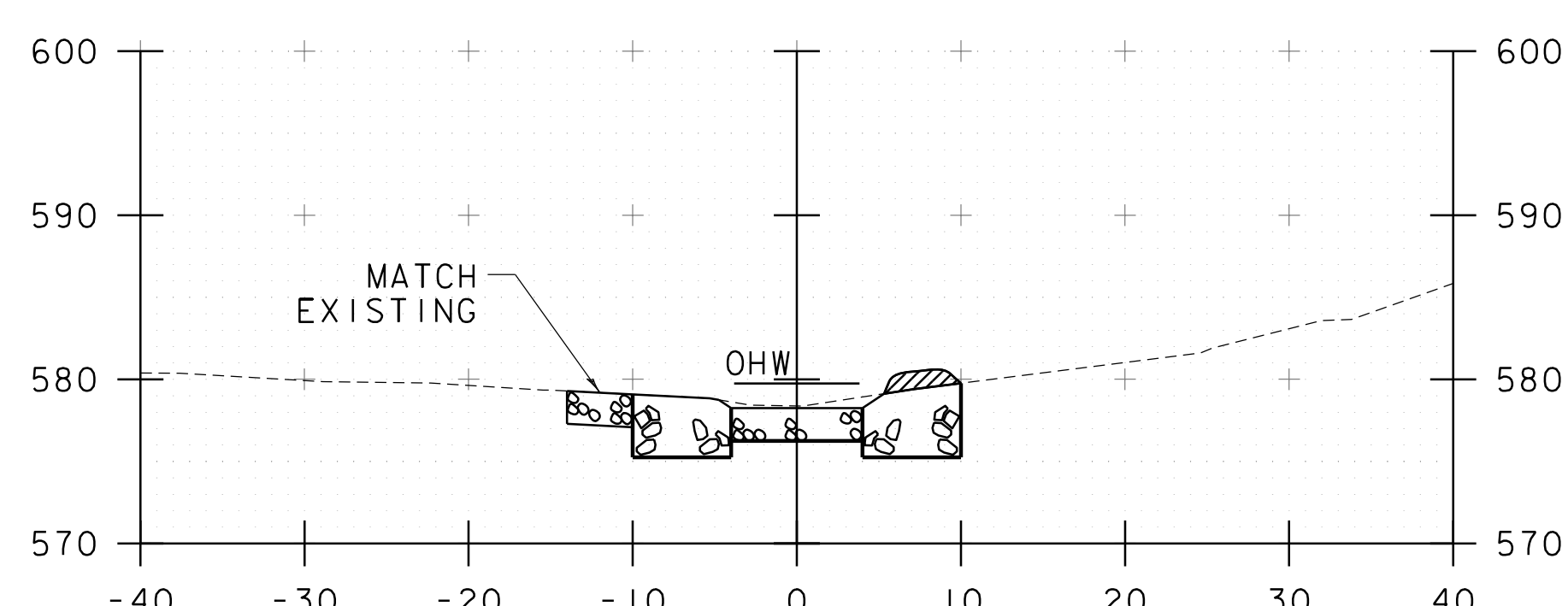
STA. 6+83
 BEGIN BRIDGE
 STOP STONE FILL STREAM
 UNCLASSIFIED CHANNEL EXCAVATION



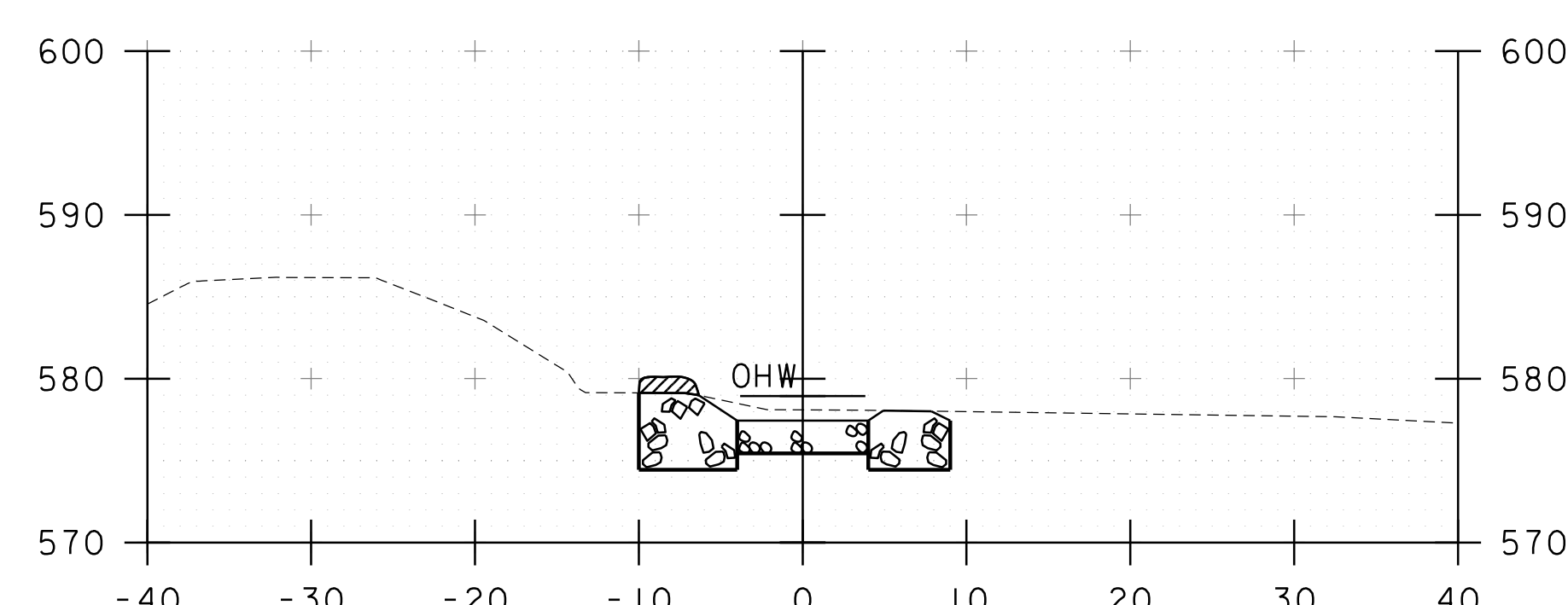
7+40



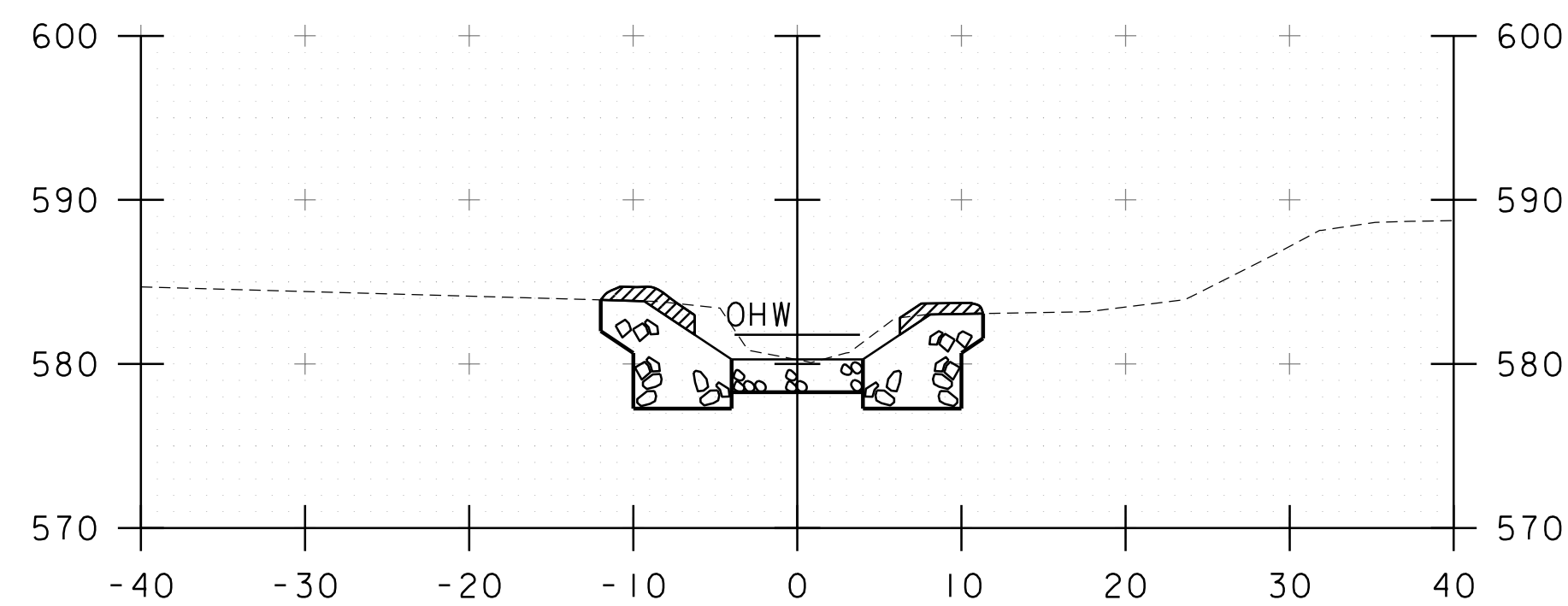
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6+70

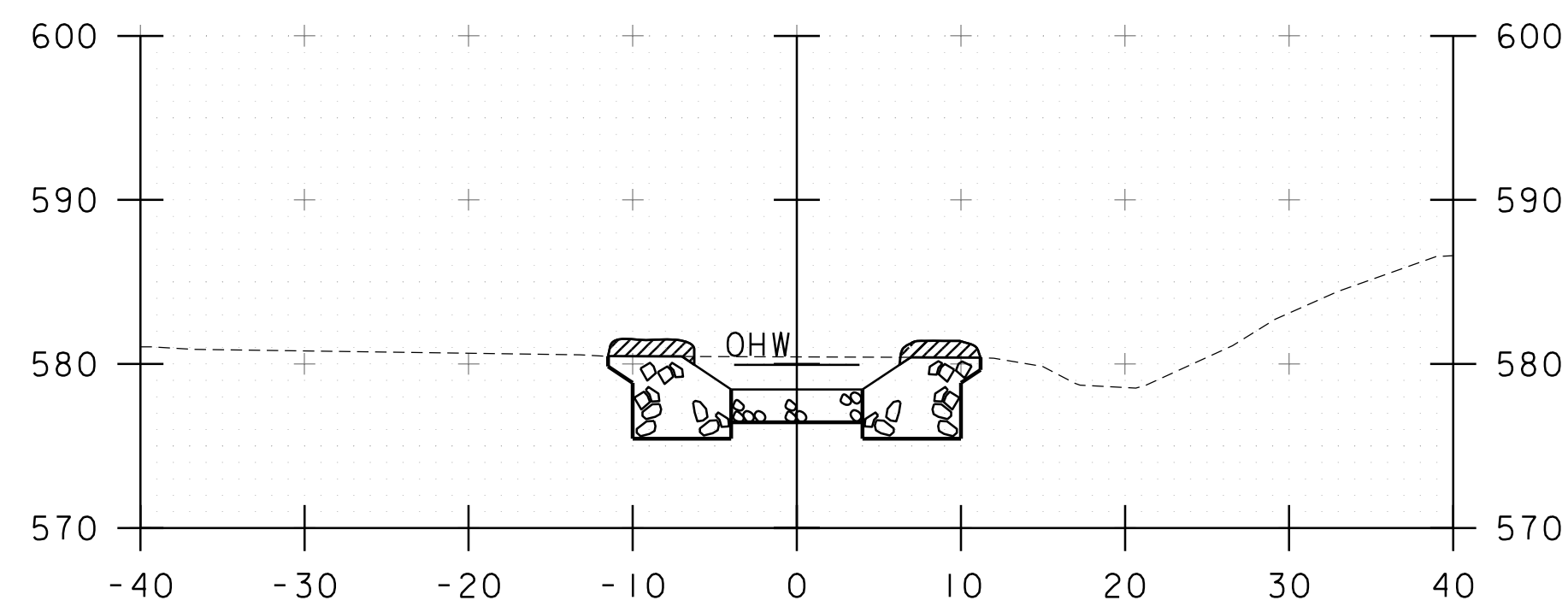


7+30



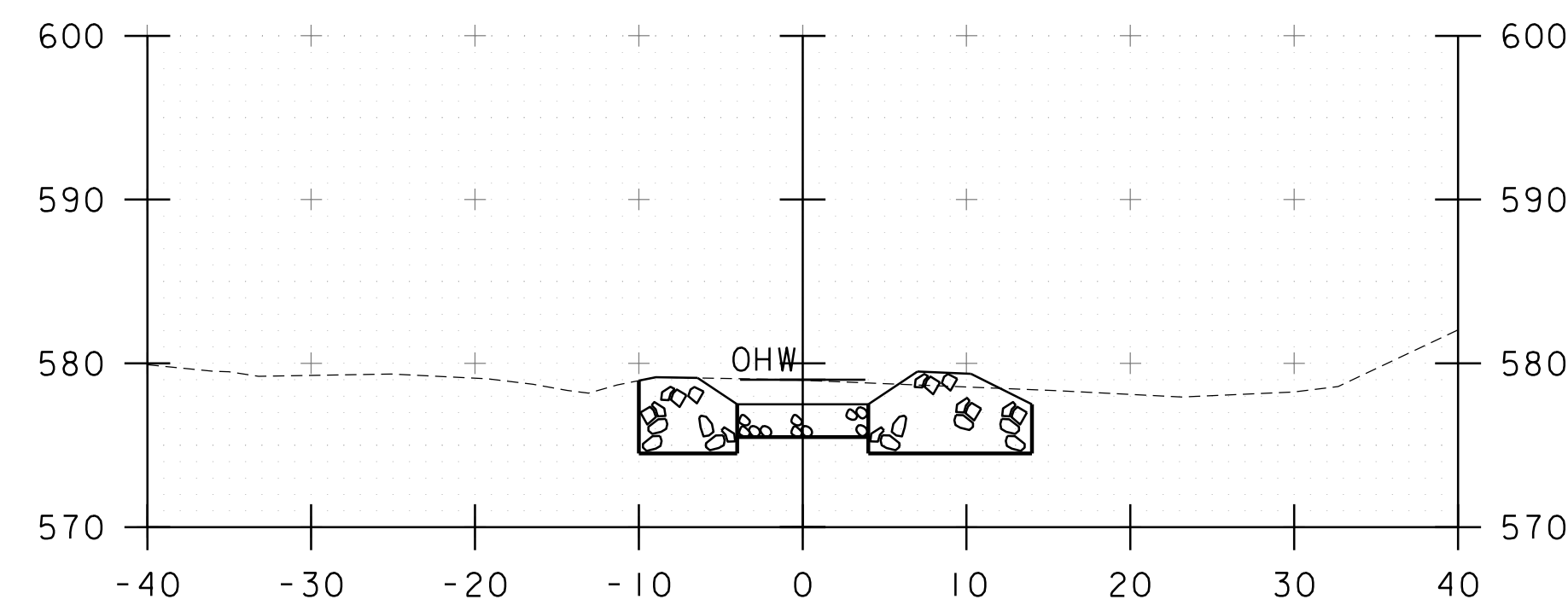
5+74

STA. 5+74 LT & RT
 BEGIN UNCLASSIFIED CHANNEL EXCAVATION
 GEOTEXTILE UNDER STONE FILL
 STONE FILL, TYPE III
 GRUBBING MATERIAL



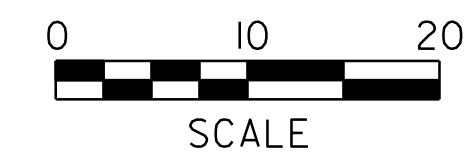
6+60

STA. 6+56
 END BRIDGE
 RESUME STONE FILL STREAM
 BED MATERIAL
 UNCLASSIFIED CHANNEL EXCAVATION



7+20

STA. 7+20
 END BRIDGE
 RESUME STONE FILL STREAM
 UNCLASSIFIED CHANNEL EXCAVATION



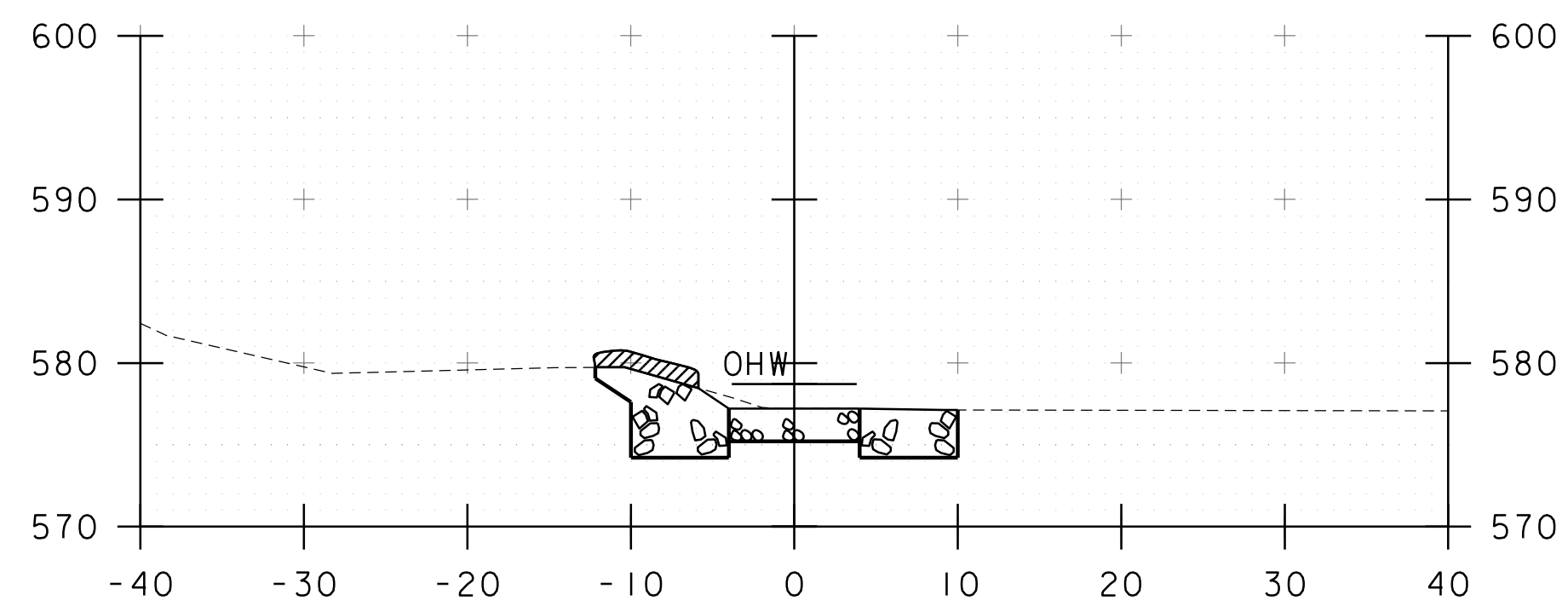
REFER TO TYPICAL FOR SECTIONS WITHIN CULVERT



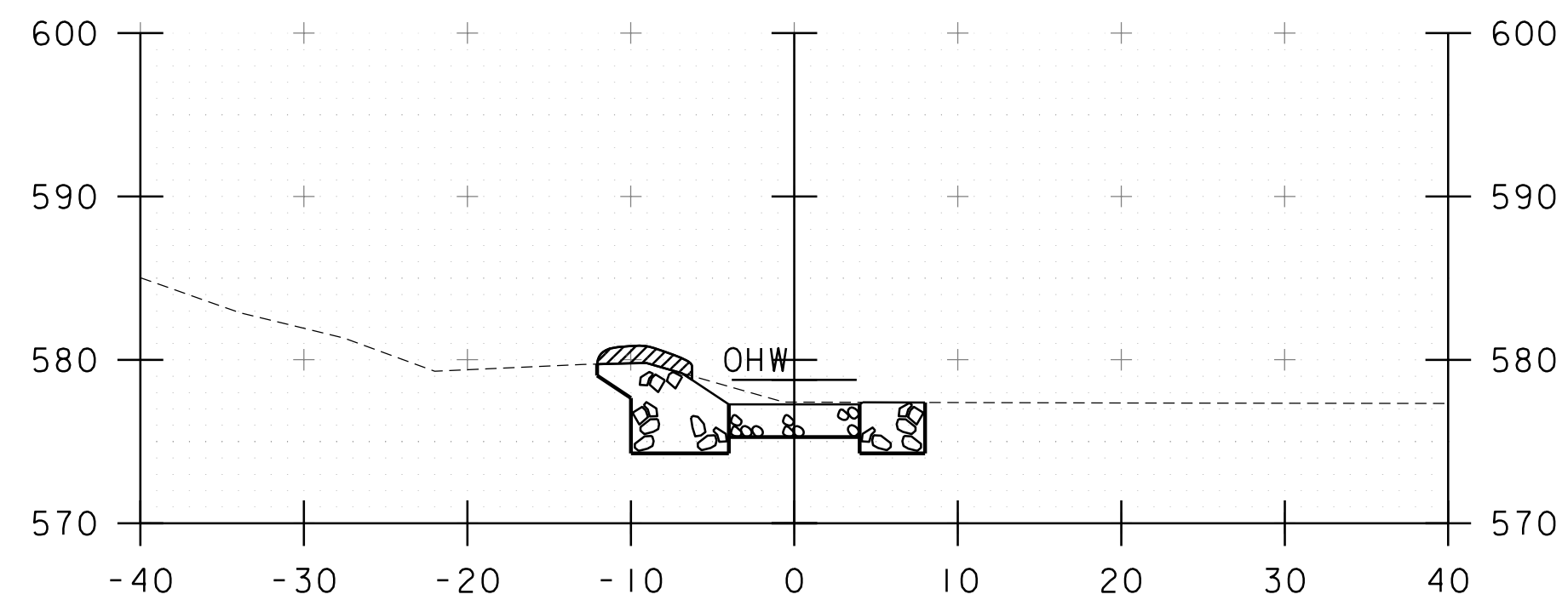
PROJECT NAME: WALLINGFORD
 PROJECT NUMBER: ER CULV(39)

FILE NAME: ...drawing\z12b380_xs.dgn
 PROJECT LEADER: G. BOGUE
 DESIGNED BY: T. KNIGHT
 STREAM CROSS SECTIONS I

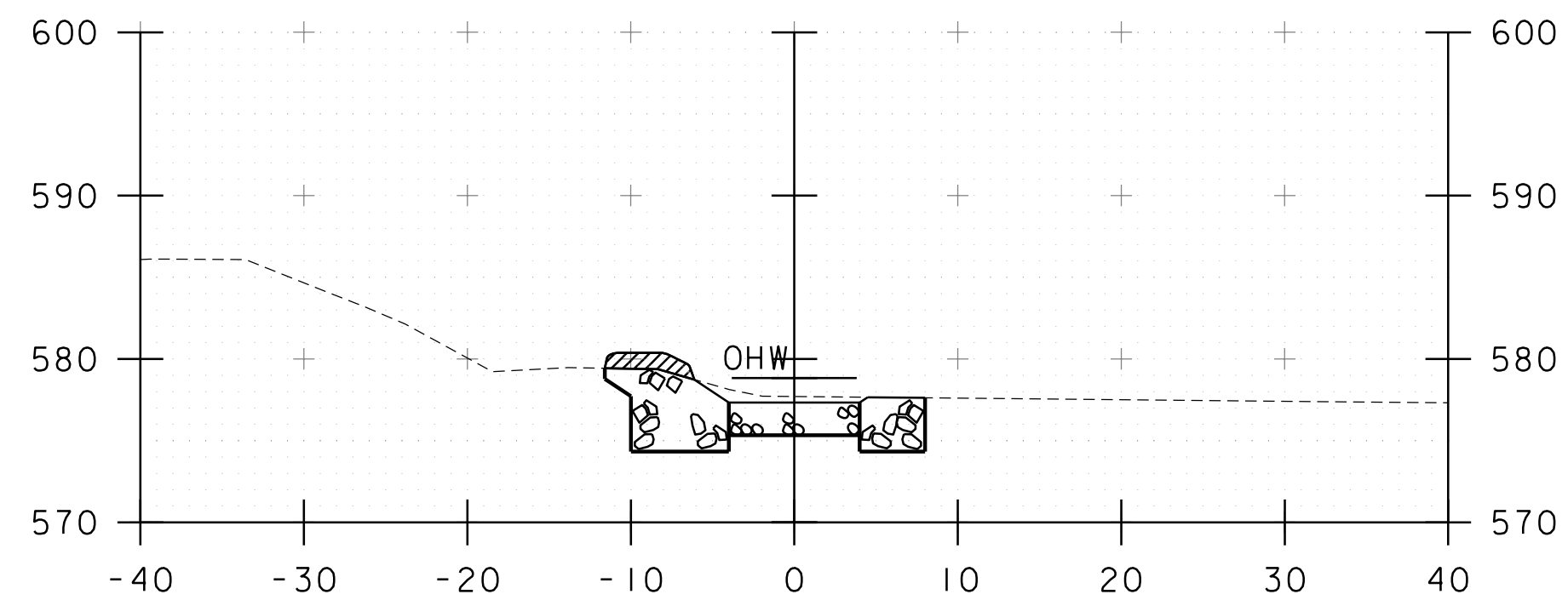
PLOT DATE: 3/8/2016
 DRAWN BY: J. SOTER
 CHECKED BY: N. TIRK
 SHEET 27 OF 36



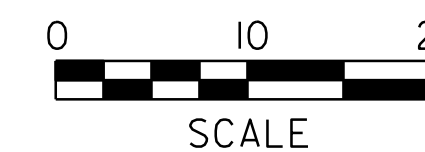
STA. 7+75
 END UNCLASSIFIED CHANNEL EXCAVATION
 7+70 GEOTEXTILE UNDER STONE FILL
 STONE FILL, TYPE III
 GRUBBING MATERIAL
 STONE FILL STREAM BED MATERIAL




7+60



7+50



REFER TO TYPICAL FOR SECTIONS WITHIN CULVERT 

PROJECT NAME: WALLINGFORD	PLOT DATE: 3/8/2016
PROJECT NUMBER: ER CULV(39)	DRAWN BY: J. SOTER
FILE NAME: ...drawing\z12b380_xs.dgn	CHECKED BY: N. TIRK
DESIGNED BY: T. KNIGHT	SHEET 28 OF 36
STREAM CROSS SECTIONS 2	

EPSC PLAN NARRATIVE

1.1 PROJECT DESCRIPTION

THIS PROJECT INVOLVES THE REPLACEMENT OF CULVERT UNDER U.S. ROUTE 7 AND THE VTR RAILROAD WITH CONCRETE BOX CULVERTS, RELATED CHANNEL WORK AND INCIDENTALS. THE CROSSING UNDER ROUTE 7 IS A DOUBLE CULVERT WITH A 24" CPEP AND A 20" CMP, WHICH WILL BE REPLACED WITH AN 8' X 5' PRECAST CONCRETE BOX CULVERT. THE EXISTING CULVERT UNDER THE VTR RAILROAD IS BEING REPLACED WITH AN 8' X 5' PRECAST CONCRETE BOX CULVERT. THE NEW CULVERTS WILL CONVEY THE UNNAMED TRIBUTARY TO OTTER CREEK UNDER U.S. ROUTE 7 AND THE RAILROAD TO OTTER CREEK APPROXIMATELY 300' DOWNSTREAM.

NOTE: AREA OF DISTURBANCE INCLUDES LIMITS OF EARTH DISTURBANCE WITHIN THE PROJECT AREA, AS WELL AS WASTE, BORROW AND STAGING AREAS, AND OTHER EARTH DISTURBING ACTIVITIES WITHIN OR DIRECTLY ADJACENT TO THE PROJECT LIMITS AS SHOWN ON THE ATTACHED EPSC PLAN.

TOTAL AREA OF DISTURBANCE AS SHOWN ON THE ATTACHED EPSC PLAN IS APPROXIMATELY 0.65 ACRES.

IT IS ANTICIPATED THAT THIS PROJECT WILL LAST ONE CONSTRUCTION SEASON.

1.2 SITE INVENTORY

1.2.1 TOPOGRAPHY

THE TOPOGRAPHY OF THE PROJECT SITE IS A LOW LYING WITH GRASSY UNDERGROWTH. US ROUTE 7 AND THE VTR RAILROAD ARE WITHIN THE PROJECT SITE. THERE IS ADJACENT AGRICULTURAL FARMLAND. GRASS AND UNDERGROWTH BUFFERS THE AGRICULTURAL FARMLAND FROM THE PROJECT SITE. THERE ARE OVERHEAD UTILITIES THAT SHOULD NOT BE IMPACTED BY THE PROJECT.

1.2.2 DRAINAGE, WATERWAYS, BODIES OF WATER, AND PROXIMITY TO NATURAL OR MAN-MADE WATER FEATURES

DUE TO THE NATURE OF THE SURROUNDING TERRAIN THE PROJECT SITE COULD RECEIVE RUNOFF FROM THE SURROUNDING SLOPES, ROADWAY DITCHES AND THE ROADWAY OVER TOP OF CULVERT.

1.2.3 VEGETATION

THE VEGETATION IN THE PROJECT AREA CONSISTS OF OPEN GRASSED AREAS, AND UNDERGROWTH ON THE BANKS OF THE BROOK. THE IMPACT TO VEGETATION WILL BE LIMITED TO THAT WHICH IS RELATED TO THE EXCAVATION REQUIRED FOR THE INSTALLATION OF THE CULVERT, HEADWALLS, WINGWALLS, STONE FILL, AND TEMPORARY ACCESS. UPON PROJECT COMPLETION, THE CHANNEL AND DISTURBED AREAS WITH SLOPES GREATER THAN 2:1 WILL BE ARMORED WITH STONE FILL TYPE III AS SPECIFIED ON THE PLANS. DISTURBED VEGETATION WILL BE REESTABLISHED WITH STANDARD SEED AND MULCH PRACTICES.

1.2.4 SOILS

ALL SOIL DATA CAME FROM THE U.S. DEPARTMENT OF AGRICULTURE SOIL CONSERVATION SERVICE FOR THE COUNTY OF RUTLAND, VERMONT. SOILS ON THE PROJECT SITE ARE PAWLING SILT LOAM, "K FACTOR" = 0.37. THE SOIL IS CONSIDERED HIGHLY ERODIBLE DUE TO K-VALUE.

NOTE: K-VALUES GENERALLY INDICATE THE FOLLOWING:
0.0-0.23 = LOW EROSION POTENTIAL
0.24-0.36 = MODERATE EROSION POTENTIAL
0.37 AND HIGHER = HIGH EROSION POTENTIAL

1.2.5 SENSITIVE RESOURCE AREAS

CRITICAL HABITATS: NO
HISTORICAL OR ARCHEOLOGICAL AREAS: NO
PRIME AGRICULTURAL LAND: NO
THREATENED AND ENDANGERED SPECIES: NO
WATER RESOURCE: UNNAMED TRIBUTARY TO OTTER CREEK
WETLANDS: NO

1.3 RISK EVALUATION

SINCE THIS PROJECT DOES NOT DISTURB MORE THAN 1 ACRE THIS PROJECT DOES NOT FALL UNDER THE JURISDICTION OF GENERAL PERMIT 3-9020 FOR STORMWATER RUNOFF FROM CONSTRUCTION SITES. SHOULD CHANGES PRIOR TO OR DURING CONSTRUCTION RESULT IN ONE OR MORE ACRES OF EARTH DISTURBANCE OR SHOULD THE PROJECT BECOME PART OF A LARGER PLAN OF DEVELOPMENT, THE CONTRACTOR WILL BE RESPONSIBLE FOR ANY ADDITIONAL PERMITTING.

1.4 EROSION PREVENTION AND SEDIMENT CONTROL

THE EROSION CONTROL PLANS ARE MEANT AS A GUIDELINE FOR PREVENTING EROSION AND CONTROLLING SEDIMENT TRANSPORT. THE PRINCIPLES OUTLINED IN THIS NARRATIVE CONSIST OF APPLYING MEASURES THROUGHOUT CONSTRUCTION OF THE PROJECT IN ORDER TO MINIMIZE SEDIMENT TRANSPORT TO THE RECEIVING WATERS. THE MEASURES INCLUDE STABILIZATION AND STRUCTURAL PRACTICES, STORM WATER CONTROLS AND OTHER POLLUTION PREVENTION PRACTICES. THEY HAVE BEEN PROPOSED BY THE DESIGNER AS A BASIS FOR PROTECTING RESOURCES AND WILL NEED TO BE BUILT UPON BASED ON THE SPECIFIC MEANS AND METHODS OF THE CONTRACTOR. REFER TO THE LOW RISK SITE HANDBOOK AND APPROPRIATE DETAIL SHEETS FOR SPECIFIC GUIDANCE AND CONSTRUCTION DETAILING. THE CONTRACTOR IS RESPONSIBLE FOR DEVELOPING AND SUBMITTING AN EPSC PLAN IN ACCORDANCE WITH SECTION 652 OF THE SPECIAL PROVISIONS.

IN ADDITION, THE CONTRACTOR SHALL DESIGN AND IMPLEMENT A TEMPORARY STREAM DIVERSION, INCLUDING EPSC MEASURES IN ACCORDANCE WITH ITEM 900.645, SPECIAL PROVISION (TEMPORARY RELOCATION OF STREAM).

ALL MEASURES SHALL BE REGULARLY MAINTAINED AND SHALL BE CHECKED FOR SEDIMENT BUILD-UP. SEDIMENT SHALL BE DISPOSED OF AT AN APPROVED SITE WHERE IT WILL NOT BE SUBJECT TO EROSION.

1.4.1 MARK SITE BOUNDARIES

SITE BOUNDARIES AND AREAS CONSTRUCTION EQUIPMENT CAN ACCESS SHALL BE DELINEATED.

PROJECT DEMARCATION FENCING (PDF) SHALL BE USED TO PHYSICALLY MARK SITE BOUNDARIES.

1.4.2 LIMIT DISTURBANCE AREA

PREVENTING INITIAL SOIL EROSION BY MINIMIZING THE EXPOSED AREA IS MUCH MORE EFFECTIVE THAN TREATING ERODED SEDIMENT. EARTH DISTURBANCE CAN BE MINIMIZED THROUGH CONSTRUCTION PHASING BY ONLY OPENING UP EARTH AS NECESSARY. THIS CAN LIMIT THE AREA THAT WILL BE DISTURBED AND EXPOSED TO EROSION. EMPLOY TEMPORARY CONSTRUCTION STABILIZATION PRACTICES IN INCREMENTAL STAGES AS PHASES CHANGE. FOR PROJECTS WHICH FALL UNDER THE CONSTRUCTION GENERAL PERMIT, ONLY THE ACREAGE LISTED ON THE PERMIT AUTHORIZATION MAY BE EXPOSED AT ANY GIVEN TIME.

MAINTAINING VEGETATED BUFFERS ALONG STREAM BANKS, WETLANDS OR OTHER SENSITIVE AREAS IS A CRUCIAL EROSION AND SEDIMENT CONTROL MEASURE THAT SHOULD BE ESTABLISHED WHEREVER POSSIBLE.

1.4.3 SITE ENTRANCE/EXIT STABILIZATION

TRACKING OF SEDIMENT ONTO PUBLIC HIGHWAYS SHALL BE MINIMIZED TO REDUCE THE POTENTIAL FOR RUNOFF ENTERING RECEIVING WATERS. INSTALLATION SHALL COINCIDE WITH THE CONTRACTOR'S PROGRESS SCHEDULE.

STABILIZED CONSTRUCTION ENTRANCES SHALL BE INSTALLED AS PROPOSED ON THE EPSC PLAN AND ANYWHERE EQUIPMENT WILL BE GOING FROM AREAS OF EXPOSED SOILS TO PAVED SURFACES.

1.4.4 INSTALL SEDIMENT BARRIERS

SEDIMENT BARRIERS SHALL BE UTILIZED TO INTERCEPT RUNOFF AND ALLOW SUSPENDED SEDIMENT TO SETTLE OUT. THEY SHALL BE INSTALLED PRIOR TO ANY UP SLOPE WORK.

SILT FENCE WILL BE INSTALLED AS PROPOSED ON THE EPSC PLAN.

1.4.5 DIVERT UPLAND RUNOFF

DIVERSIONARY MEASURES SHALL BE USED TO INTERCEPT RUNOFF FROM ABOVE THE CONSTRUCTION AND DIRECT IT AROUND THE DISTURBED AREA SO THAT CLEAN WATER DOES NOT BECOME MUDDIED WHILE TRAVELING OVER EXPOSED SOILS ON THE CONSTRUCTION SITE.

THE PROJECT AREA IS RELATIVELY FLAT WITH MINIMAL OFF-SITE RUNOFF FLOWING THROUGH THE SITE. THEREFORE DIVERSION MEASURES WILL NOT BE NECESSARY.

1.4.6 SLOW DOWN CHANNELIZED RUNOFF

CHECK STRUCTURES SHALL BE UTILIZED TO REDUCE THE VELOCITY, AND THUS THE EROSION POTENTIAL, OF CONCENTRATED FLOW IN CHANNELS.

STONE CHECK DAMS WILL BE INSTALLED AS NEEDED AND AS DIRECTED BY THE ENGINEER.

1.4.7 CONSTRUCT PERMANENT CONTROLS

THERE ARE NO PERMANENT STORMWATER TREATMENT DEVICES TO BE INSTALLED WITH THIS PROJECT.

1.4.8 STABILIZE EXPOSED SOILS DURING CONSTRUCTION

ALL AREAS OF DISTURBANCE MUST HAVE TEMPORARY STABILIZATION IN PLACE WITHIN 48 HOURS OF DISTURBANCE OR IN ACCORDANCE WITH THE CONSTRUCTION GENERAL PERMIT 3-9020 AUTHORIZATION.

SURFACE ROUGHENING OF ALL EXPOSED SLOPES, COMBINED WITH TEMPORARY MULCHING, SHALL BE UTILIZED ON A REGULAR BASIS. BIODEGRADABLE EROSION CONTROL MATTING OR AN EQUIVALENT SHALL BE USED TO STABILIZE ALL SLOPES STEEPER THAN 1:3.

THE FORECAST OF RAINFALL EVENTS SHALL TRIGGER IMMEDIATE PROTECTION OF EXPOSED SOILS.

1.4.9 WINTER STABILIZATION

VARIOUS MEASURES SPECIFIC TO WINTER MAY BE NECESSARY SHOULD THE PROJECT EXTEND INTO WINTER (OCTOBER 15 THROUGH APRIL 15). REFER TO THE LOW RISK SITE HANDBOOK FOR GUIDANCE.

1.4.10 STABILIZE SOIL AT FINAL GRADE

EXPOSED SOIL MUST BE STABILIZED WITHIN 48 HOURS OF REACHING FINAL GRADE.

SEED, MULCH, FERTILIZER AND LIME SHALL BE USED TO ESTABLISH PERMANENT VEGETATION. FOR SLOPES STEEPER THAN 1:3, BIODEGRADABLE EROSION CONTROL MATTING OR AN EQUIVALENT SHALL BE USED INSTEAD OF MULCH.

1.4.11 DE-WATERING ACTIVITIES

DISCHARGE FROM DEWATERING ACTIVITIES THAT FLOWS OFF OF THE CONSTRUCTION SITE MUST NOT CAUSE OR CONTRIBUTE TO A VIOLATION OF THE VERMONT WATER QUALITY STANDARDS.

SEDIMENT CONTAINMENT BAGS (FILTER BAGS) FOR HEADWALL WORK SHALL BE USED AS NECESSARY AND AS DIRECTED BY THE ENGINEER. SEE SHEET 30 FOR DETAIL.

1.4.12 INSPECT YOUR SITE

INSPECT THE PROJECT SITE BASED ON SPECIAL PROVISION REQUIREMENTS.

1.5 SEQUENCE AND STAGING

THIS SECTION WILL BE DEVELOPED BY THE CONTRACTOR USING THE GUIDANCE OUTLINED IN THE VTRANS EPSC PLAN CONTRACTOR CHECKLIST.

1.5.1 OFF-SITE ACTIVITIES

IN ADDITION TO THE CONTRACTOR CHECKLIST ANY ACTIVITIES OUTSIDE THE CONSTRUCTION LIMITS SHALL FOLLOW SUBSECTIONS 105.25- 105.29 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION.

PROJECT NAME: WALLINGFORD

PROJECT NUMBER: ER CULV(39)

FILE NAME: z12b380_ero_def.dgn

PROJECT LEADER: G. BOGUE

DESIGNED BY: I. MAYNARD

EPSC NARRATIVE

PLOT DATE: 3/8/2016

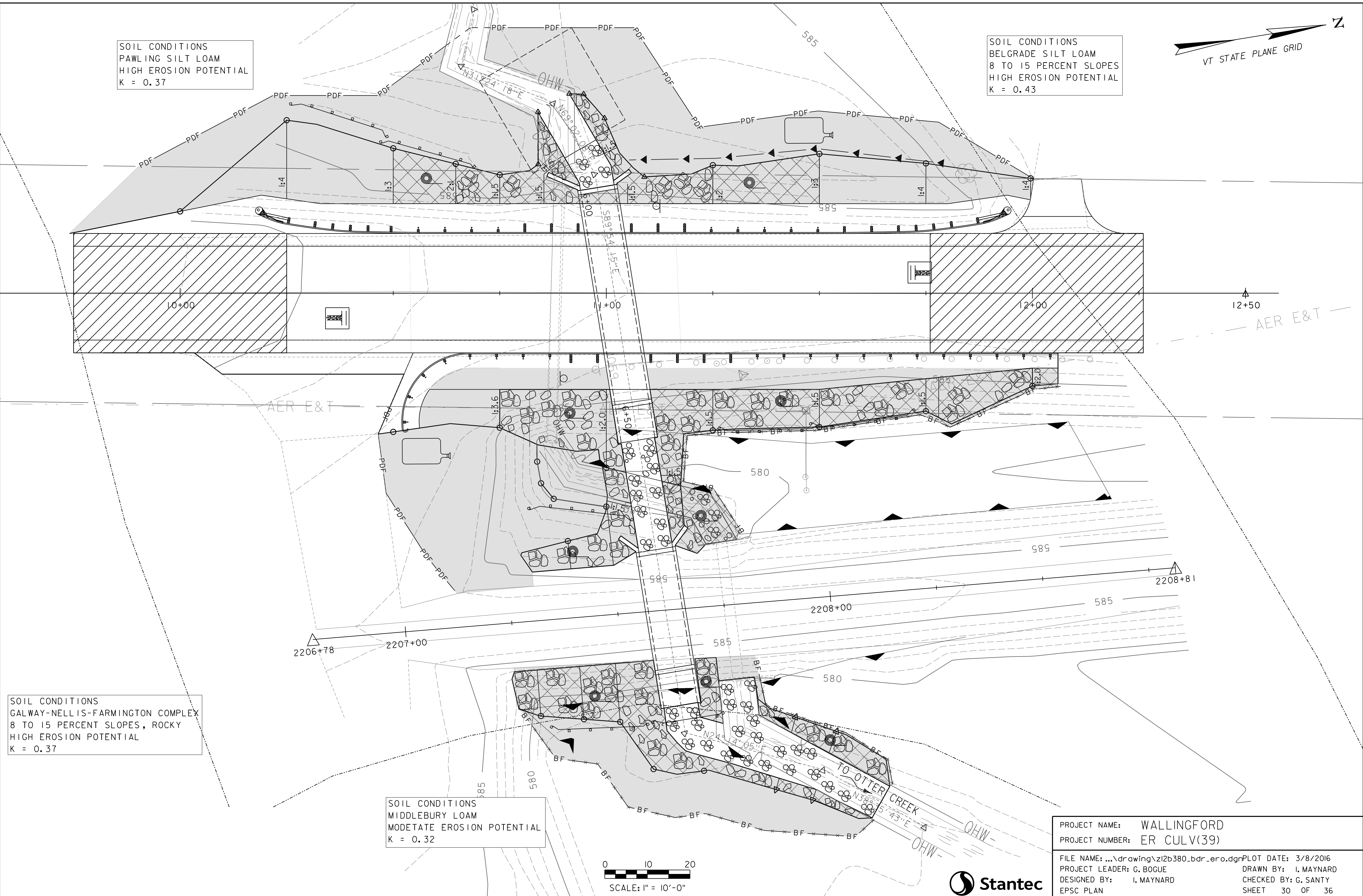
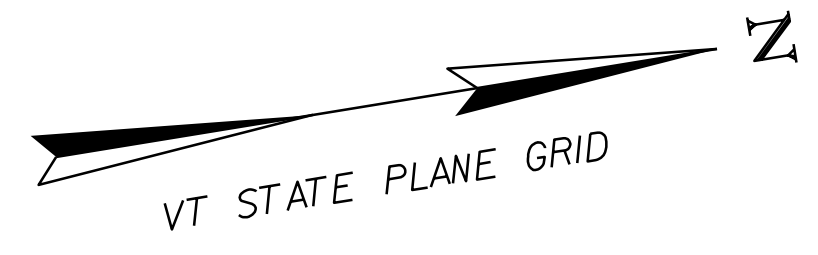
DRAWN BY: I. MAYNARD

CHECKED BY: G. SANTY

SHEET 29 OF 36

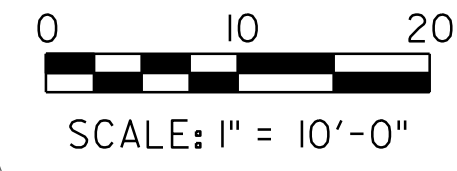
SOIL CONDITIONS
PAWLING SILT LOAM
HIGH EROSION POTENTIAL
K = 0.37

SOIL CONDITIONS
BELGRADE SILT LOAM
8 TO 15 PERCENT SLOPES
HIGH EROSION POTENTIAL
K = 0.43

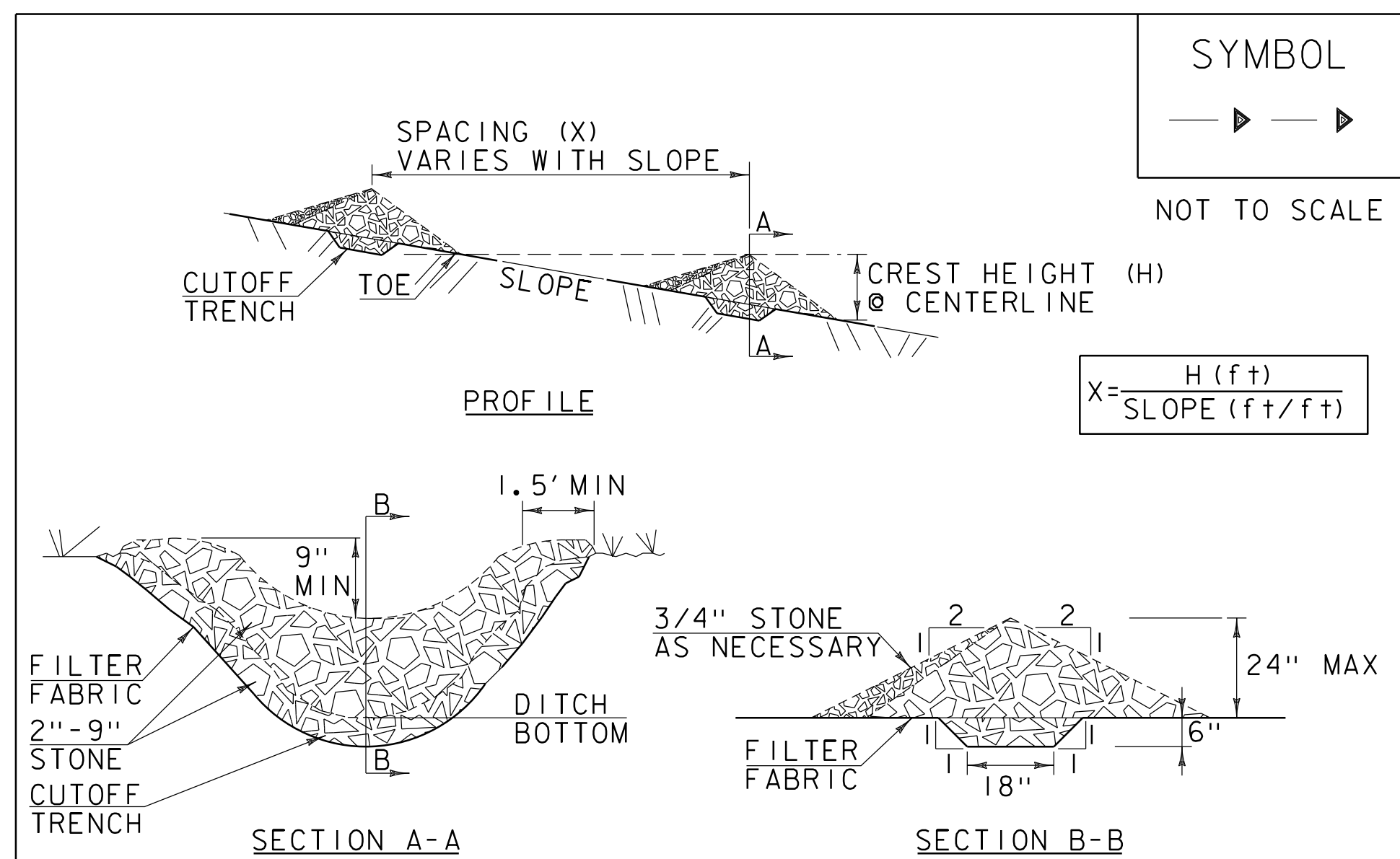


SOIL CONDITIONS
GALWAY-NELLIS-FARMINGTON COMPLEX
8 TO 15 PERCENT SLOPES, ROCKY
HIGH EROSION POTENTIAL
K = 0.37

SOIL CONDITIONS
MIDDLEBURY LOAM
MODERATE EROSION POTENTIAL
K = 0.32



PROJECT NAME:	WALLINGFORD
PROJECT NUMBER:	ER CULV(39)
FILE NAME: ...drawing\z12b380_bdr_ero.dgn	PLOT DATE: 3/8/2016
PROJECT LEADER: G. BOGUE	DRAWN BY: I. MAYNARD
DESIGNED BY: I. MAYNARD	CHECKED BY: G. SANTY
EPSC PLAN	SHEET 30 OF 36



CONSTRUCTION SPECIFICATIONS

1. STONE WILL BE PLACED ON A FILTER FABRIC FOUNDATION.
2. CHECK DAMS SHALL BE SPACED SO THAT THE ELEVATION OF THE CREST OF THE DOWNSTREAM DAM IS AT THE SAME ELEVATION AS THE TOE OF THE UPSTREAM DAM.
3. 3/4" FILTERING STONE MAY BE ADDED TO THE FACE OF THE CHECK DAM AS NECESSARY.
4. EXTEND THE STONE A MINIMUM OF 1.5' BEYOND THE DITCH BANKS TO PREVENT CUTTING AROUND THE DAM.
5. PROTECT CHANNEL DOWNSTREAM OF THE LOWEST CHECK DAM FROM SCOUR AND EROSION WITH STONE OR LINER AS APPROPRIATE.
6. ENSURE THAT CHANNEL APPURTENANCES SUCH AS CULVERT ENTRANCES BELOW CHECK DAMS ARE NOT SUBJECT TO DAMAGE OR BLOCKAGE FROM DISPLACED STONE.
7. MAXIMUM DRAINAGE AREA 2 ACRES.

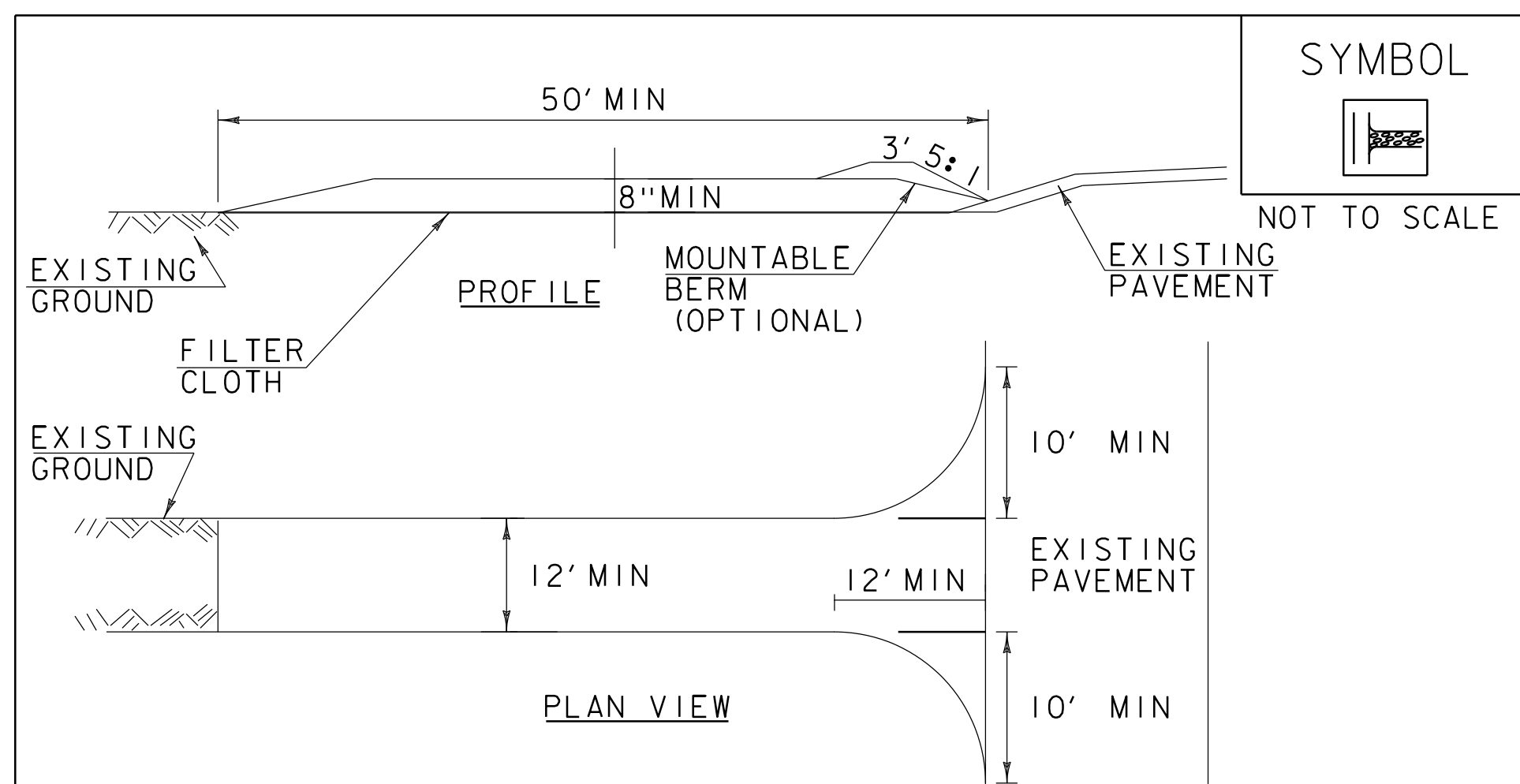
ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

CHECK DAM

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006-" FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 FOR TEMPORARY STONE CHECK DAM, TYPE I (PAY ITEM 653.25)

REVISIONS	
MARCH 21, 2008	WHF
JANUARY 8, 2009	WHF



CONSTRUCTION SPECIFICATIONS

1. STONE SIZE- USE 1-4" STONE, RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH- NOT LESS THAN 50' (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30' MINIMUM LENGTH APPLIES).
3. THICKNESS- NOT LESS THAN 8".
4. WIDTH- 12' MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. 24' IF SINGLE ENTRANCE TO SITE.
5. GEOTEXTILE MUST BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING STONE.
6. SURFACE WATER- ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED ACCORDING TO PERMIT REQUIREMENTS.

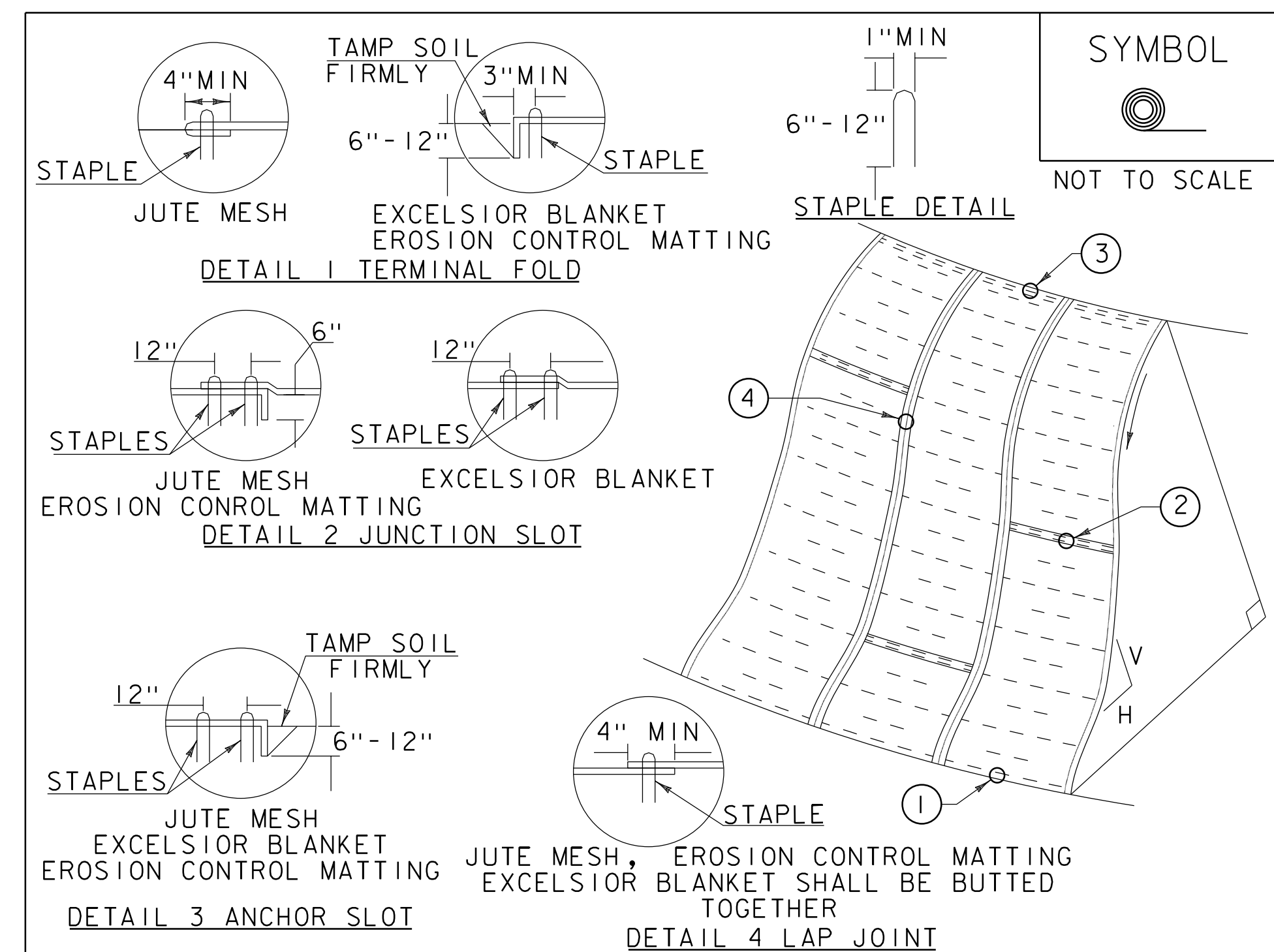
ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

STABILIZED CONSTRUCTION ENTRANCE

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006-" FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 FOR VEHICLE TRACKING PAD (PAY ITEM 653.35) OR AS SPECIFIED IN THE CONTRACT.

REVISIONS	
MARCH 24, 2008	WHF
JANUARY 13, 2009	WHF



CONSTRUCTION SPECIFICATIONS

1. APPLY TO SLOPES GREATER THAN 3H:1V OR WHERE NECESSARY TO AID IN ESTABLISHING VEGETATION.
2. APPLY FERTILIZER, LIME SEED PRIOR TO PLACING MATTING.
3. STAPLES ARE TO BE PLACED ALTERNATELY, IN COLUMNS APPROXIMATELY 2' APART AND IN ROWS APPROXIMATELY 3' APART. APPROXIMATELY 175 STAPLES ARE REQUIRED PER 4' X 225' ROLL OF MATERIAL AND 125 STAPLES ARE REQUIRED PER 4' X 150' ROLL OF MATERIAL.
4. DISTURBED AREAS SHALL BE SMOOTHLY GRADED. EROSION CONTROL MATERIAL SHALL BE PLACED LOOSELY OVER GROUND SURFACE. DO NOT STRETCH.
5. ALL TERMINAL ENDS AND TRANSVERSE LAPS SHALL BE STAPLED AT APPROXIMATELY 12" INTERVALS.

ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

ROLLED EROSION CONTROL PRODUCT (RECP) SIDE SLOPE

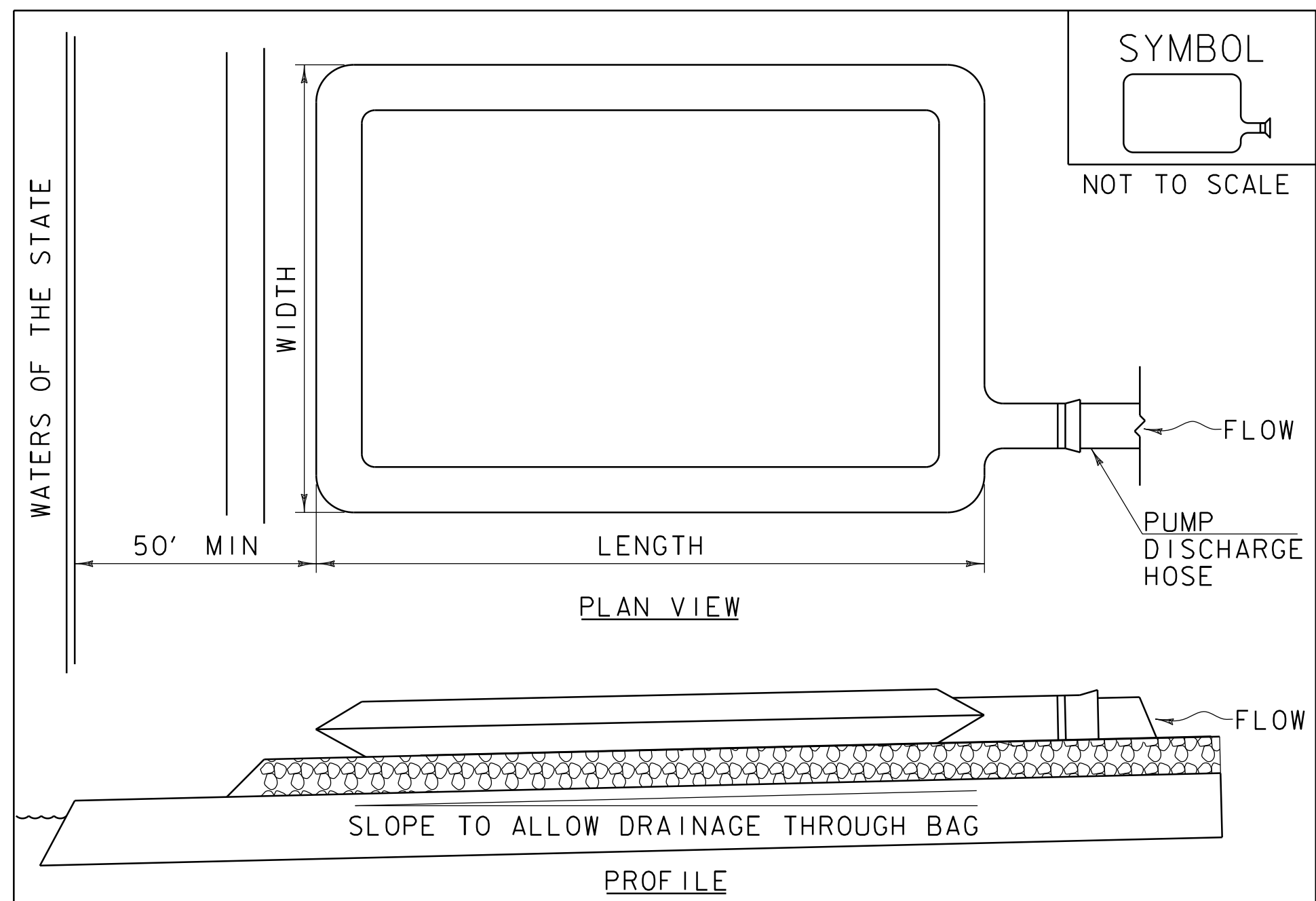
NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006-" FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.
THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 AND AS SHOWN IN THE PLANS FOR TEMPORARY EROSION MATTING (PAY ITEM 653.20) OR PERMANENT EROSION MATTING (PAY ITEM 653.21).

REVISIONS	
APRIL 16, 2007	JMF
JANUARY 13, 2009	WHF

PROJECT NAME: WALLINGFORD
PROJECT NUMBER: ER CULV(39)

FILE NAME: z12b380_ero_det.dgn
PROJECT LEADER: G. BOGUE
DESIGNED BY: VAOT
EPSC DETAILS I

PLOT DATE: 3/8/2016
DRAWN BY: VAOT
CHECKED BY: VAOT
SHEET 31 OF 36



CONSTRUCTION SPECIFICATIONS

1. THE PRIMARY PURPOSE OF FILTER BAG IS TO RETAIN SILT, SAND, AND FINES DURING DEWATERING OPERATIONS.
2. FILTER BAGS SHALL BE INSTALLED ON A VEGETATED SLOPE GRADED TO ALLOW INCOMING WATER TO FLOW THROUGH THE BAG.
3. FILTER BAGS MAY ALSO BE PLACED ON COARSE AGGREGATE, STONE, OR HAYBALES TO INCREASE FILTRATION EFFICIENCY.
4. FILTER BAGS SHALL BE LOCATED A MINIMUM OF 50' FROM WATERS OF THE STATE UNLESS OTHERWISE APPROVED BY THE ENGINEER.
5. THE NECK OF THE FILTER BAG SHALL BE STRAPPED TIGHTLY TO THE DISCHARGE HOSE.
6. A FILTER BAG IS FULL WHEN IT NO LONGER CAN EFFICIENTLY FILTER SEDIMENT OR ALLOW WATER TO PASS AT A REASONABLE RATE.
7. FILTER BAG SHALL BE DISPOSED OF AS APPROVED IN THE EPSC PLAN OR AS DIRECTED BY THE ENGINEER.

FILTER BAG

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- "FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 FOR FILTER BAG (PAY ITEM 653.45) AND AS SPECIFIED IN THE CONTRACT.

REVISIONS	
MARCH 24, 2008	WHF
JANUARY 13, 2009	WHF

VAOT LOW GROW/FINE FESCUE MIX						
WEIGHT	LBS/AC		NAME	LATIN NAME	GERM	PURITY
	BROADCAST	HYDROSEED				
38%	57	95	CREeping RED FESCUE	FESTUCA RUBRA VAR. RUBRA	90%	98%
29%	43.5	72.5	HARD FESCUE	FESTUCA LONGIFOLIA	85%	95%
15%	22.5	37.5	CHEWINGS FESCUE	FESTUCA RUBRA VAR. COMMUTATA	87%	95%
15%	22.5	37.5	ANNUAL RYEGRASS	LOLIUM MULTIFLORUM	90%	95%
3%	4.5	7.5	INERTS			
100%	150	250				

VAOT RURAL AREA MIX						
WEIGHT	LBS/AC		NAME	LATIN NAME	GERM	PURITY
	BROADCAST	HYDROSEED				
37.5%	22.5	45	CREeping RED FESCUE	FESTUCA RUBRA VAR. RUBRA	85%	98%
37.5%	22.5	45	TALL FESCUE	FESTUCA ARUNDINACEA	90%	95%
5.0%	3	6	RED TOP	AGROSTIS GIGANTEA	90%	95%
15.0%	9	18	WHITE FIELD CLOVER	TRIFOLIUM REPENS	85%	98%
5.0%	3	6	ANNUAL RYE GRASS	LOLIUM MULTIFLORUM	85%	95%
100%	60	120				

GENERAL AMENDMENT GUIDANCE

FERTILIZER	LIME	
10/20/10	AG LIME	PELLITIZED
500 LBS/AC	2 TONS/AC	1 TONS/AC

CONSTRUCTION GUIDANCE

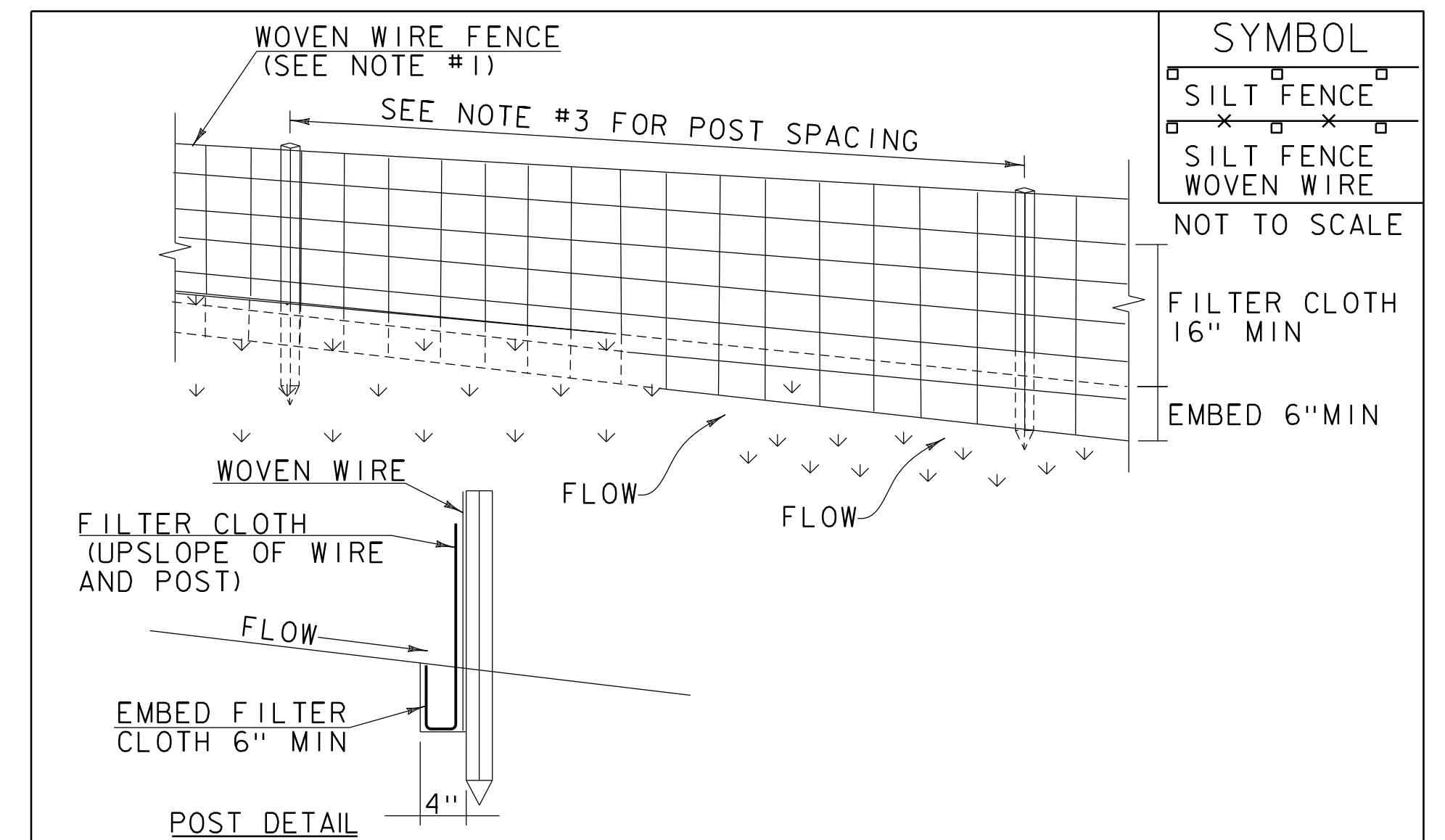
1. SEED MIX: THE CONTRACTOR SHALL COORDINATE WITH THE RESIDENT ENGINEER ON WHICH SEED MIX TO USE.
2. SEED MIX: USE AS INDICATED IN THE PLANS AND/OR FOR ALL ESTABLISHED UPLAND (NON WETLAND) AREAS DISTURBED BY THE CONTRACTOR.
3. ALL SEED MIXTURES: SHALL NOT HAVE A WEED CONTENT EXCEEDING 0.40% BY WEIGHT AND SHALL BE FREE OF ALL NOXIOUS SEED.
4. FERTILIZER AND LIMESTONE: SHALL FOLLOW RATES SHOWN ON PLAN OR AS DIRECTED BY THE ENGINEER.
5. HAY MULCH: TO BE PLACED ON EARTH SLOPES AT THE RATE OF 2 TONS/ACRE, ACHIEVE 90% GROUND COVER OR AS DIRECTED BY THE ENGINEER.
6. HYDROSEEDING: ALTHOUGH GUIDANCE IS GIVEN ABOVE THE SITE CONDITIONS AND THE TYPE OF HYDROSEED PROPOSED FOR USE WILL ULTIMATELY DICTATE THE AMOUNTS AND TYPES OF SOIL AMENDMENTS TO BE APPLIED.
7. TURF ESTABLISHMENT: PLACING SEED, FERTILIZER, LIME AND MULCH PRIOR TO SEPTEMBER 15 AND AFTER APRIL 15 CAN BETTER ENSURE A VIGOROUS GROWTH OF GRASS.

ADAPTED FROM VTRANS TECHNICAL LANDSCAPE MANUAL FOR ROADWAYS AND TRANSPORTATION FACILITIES

TURF ESTABLISHMENT

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 651 FOR SEED (PAY ITEM 651J5)

REVISIONS	
JANUARY 12, 2015	WHF



CONSTRUCTION SPECIFICATIONS

1. WOVEN WIRE REINFORCED FENCE IS REQUIRED WITHIN 100' UPSLOPE OF RECEIVING WATERS WHEN THE PROJECT FALLS UNDER A CONSTRUCTION STORMWATER PERMIT. WOVEN WIRE SHALL BE A MIN. 14 GAUGE WITH A 6" MAX. MESH OPENING.
2. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAF1100X, STABILINKA T140N OR APPROVED EQUIVALENT.
3. POST SPACING FOR WIRE-BACKED FENCE SHALL BE 10' MAXIMUM. FOR FILTER-CLOTH FENCE, WHEN ELONGATION IS >50%, POST SPACING SHALL NOT EXCEED 4' AND WHEN ELONGATION IS <50%, POST SPACING SHALL NOT EXCEED 6'.
4. WOVEN WIRE FENCE IS TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES. FILTER CLOTH IS TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY 6" AND FOLDED.
6. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN SEDIMENT REACHES HALF OF FABRIC HEIGHT.

ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SILT FENCE

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- "FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 649 AND AS SHOWN IN THE PLANS FOR GEOTEXTILE FOR SILT FENCE (PAY ITEM 649.51) OR GEOTEXTILE FOR SILT FENCE, WOVEN WIRE REINFORCED (PAY ITEM 649.515).

REVISIONS	
MARCH 21, 2008	WHF
DECEMBER 11, 2008	WHF
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PROJECT NUMBER: ER CULV(39)

FILE NAME: z12b380_ero_det.dgn
PROJECT LEADER: G. BOGUE
DESIGNED BY: VAOT
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PLOT DATE: 3/8/2016
DRAWN BY: VAOT
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SHEET 32 OF 36