STATE OF VERMONT
AGENCY OF TRANSPORTATION

Scoping Report

FOR

Craftsbury BO 1449(34)

Bridge #4 on Creek Rd (TH 4) over the Whitney Brook

September 12, 2013

I. Contents

I. Site Information

Bridge 4 is located along a rural section of Creek Rd (TH 4) approximately 2 miles from the intersection with South Craftsbury Rd in Craftsbury. This area is a mix of residential and agricultural properties with some open and wooded areas. The existing conditions were gathered from a combination of a Site Visit, the Inspection Report, the Route Log and the existing Survey. See correspondence in the Appendix for more detailed information.

Roadway Classification	Rural Minor Collector (Class 2 Town Highway)
Bridge Type	Concrete Deck on Rolled Beam
Bridge Span	41 feet long
Year Built	1929
Ownership	Town of Craftsbury

Need

The following are needs of Creek Rd (TH 4) near Bridge #4.

1. Bridge 4 is structurally deficient with full depth holes in the deck and major section loss in the beams.

2. The bridge and approach rail are substandard surrounding the bridge.

3. The roadway and bridge are too narrow for the roadway classification and design speed.

4. The vertical and horizontal alignment of Creek Rd (TH 4) is substandard near the bridge.

Traffic

A traffic study of this site was performed by the Vermont Agency of Transportation. The traffic volumes are projected for the years 2016 and 2036.

TRAFFIC DATA	2016	2036
AADT	200	210
DHV	50	50
ADTT	15	20
%T	1.5	2.0
%D	59	59

Design Criteria

The design standards for this bridge project are the Vermont State Standards, dated October 22, 1997. Minimum standards are based on an ADT < 400 and a design speed of 35 mph.

Design Criteria	Source	Existing Condition	Minimum Standard	Comment
Approach Lane and Shoulder Widths	VSS Table 5.3	9'/0.5' (19')	9'/2' (22')	Substandard
Bridge Lane and Shoulder Widths	VSS Table 5.3	8'/0.8' (17.7')	9'/3' (24')[1]	Substandard
Clear Zone Distance	VSS Table 5.5	none known	7' fill / 7' cut	
Banking	VSS Section 5.13	Normal Crown (NC)	6% (max)	
Speed		35 mph (Posted)	35 mph (Design)	
Horizontal Alignment	AASHTO Green Book Table 3-9	800'	R_{min}=4100' for NC	Substandard
Vertical Grade	VSS Table 5.6	14.10%	9% (max) for rolling terrain	Substandard
K Values for Vertical Curves	VSS Table 5.1	10 sag	40 crest / 50 sag	Substandard
Vertical Clearance Issues	VSS Section 5.8	none known	14'-3" (min)	
Stopping Sight Distance	VSS Table 5.1	85'	225'	Substandard
Bicycle/Pedestrian Criteria	VSS Table 5.8	0.5' Shoulder on Approach -0.2' on Bridge	2' Shoulder on Approach and 3' on Bridge	Substandard
Bridge Railing (and Approach Railing)	Structures Design Manual Section 13.2	Concrete Post w/ w-beam	TL-2	Substandard
Hydraulics	VTrans Hydraulic Manual	Meets standard	Pass Q_{25} storm event with 1.0' of freeboard	
Structural Capacity	S.M., Ch. 3.4.1	Structurally Deficient	Design Live Load: HL-93	Substandard

[1] - 1' added on the bridge to accommodate bicycles per VSS Section 5.14

Inspection Report Summary

Deck Rating	3 Serious
Superstructure Rating	3 Serious
Substructure Rating	5 Fair
Channel Rating	6 Satisfactory

6/25/2013 Update town has posted the structure for 3 Ton. However there is still a full depth hole in the deck. ~FRE/DAK

5/9/2013 The deck and superstructure are in very poor condition due to the full depth hole in the deck between beams 3 and 4 also the major section loss in beams 1 and 2 on abutment#2 sides. Town needs to repair hole in the deck and needs to post for 3ton or even possible closure. ~FRE/DAK

Hydraulics

The existing structure is hydraulically adequate.

Utilities

The utility information is shown in the Appendix. It is anticipated that no utility work will need to be performed for any option presented in this report.

Aerial:
"There are aerial electric and telephone facilities which extend along the west side of TH # 4 (Creek Road); these facilities are a substantial distance downstream from the existing bridge. The aerial facilities cross to the east side of TH # 4 approximately 400 feet north of the existing bridge, well out of the project area."

Underground:
"There are no buried utilities within the project area that I am aware of. FairPoint is the only provider in this area and they have stated that they have no buried plant within the project area. The Town of Strafford has also indicated that there are no buried facilities thru this project area."

Municipal:
"There are no municipal water or sewer facilities within this project area."

Right Of Way

The existing Right-of-Way is shown on the Layout sheet. The existing structure is outside of the Right of Way shown. Thus, it is anticipated that any option chosen will require the acquisition of additional temporary or permanent rights to take any corrective actions.

Resources

The resources present at this project are shown on the layout sheets.

Archaeological:
"Two areas of archaeological sensitivity were identified during the field visit. These areas are on high terraces to the NW and NE of the bridge but these areas appear well outside the immediate project area and should not pose a problem."

Historic:
"Bridge 4 is not a historic resource. There are no adjacent historic properties."

Natural Resources:
"A small wetland was observed to the south of the bridge and to the east of Town Highway 4, adjacent to the small pull-off. This wetland is approximately 100 feet away from the bridge, and although impacts are not anticipated, it was mapped so as to allow the contractor to avoid it during construction, as it is likely adjacent to where equipment and materials staging would occur.

Other resources such as agricultural soils, floodplains, and species/habitats of special concern are not in the project area, but the area is a wildlife travel corridor for wildlife traveling from the Black River floodplain to the west and the upland/farmland habitat to the east of the project.

As with many other brooks, Whitney Brook was destabilized during TS Irene and that has generated a lot of woody debris and trees to remain in the channel, and although this is a good thing from a habitat perspective, it does pose a risk due to debris jams in the future. Thus, I highly recommend completely spanning the channel of Whitney Brook, and ideally, the project should be designed to provide both wildlife shelf on one or both banks of the stream and additional insurance against future debris jams."

Hazardous Materials:
There are no known Hazardous Waste sites near the project area. The known sites are shown in the Appendix.

Stormwater:
No known issues.

II. Maintenance of Traffic

The Vermont Agency of Transportation has developed an Accelerated Bridge Program, which focuses on faster delivery of construction plans, permitting, and Right of Way, as well as faster construction of projects in the field. One practice that will help in this endeavor is closing bridges for portions of the construction period, rather than providing temporary bridges. In addition to saving money, the intention is to minimize the closure period with faster construction techniques and incentives to contractors to complete projects early. The Agency will consider the closure option on most projects where rapid reconstruction or rehabilitation is feasible. The use of prefabricated elements in new bridges will also expedite construction schedules. This can apply to decks, superstructures, and substructures. Accelerated Construction should provide enhanced safety for the workers and the travelling public while maintaining project quality. The following options have been considered:

Option 1: Temporary Bridge

Based on the design speed and traffic volume along this corridor, a one lane temporary bridge without signals and alternating traffic would be an appropriate method of maintaining traffic during construction at this site.

There are no sensitive resources in the project area which would preclude a temporary bridge. Both upstream and downstream locations would be suitable.

The advantage of a temporary bridge is that it allows traffic to continue to flow through the corridor during construction. The disadvantages of temporary bridges are numerous. While there are no sensitive resources, there are still impacts to adjacent properties where tress will be cut and banks will be reshaped. While temporary Right of Way will be required for any option, the amount of Right of Way required for a temporary bridge will be larger than that required without one. The length of time to design and construct a project is longer for a temporary bridge. This extra time entails extra expense. In addition, the work involved in supplying a bridge, creating a temporary roadway, and constructing the temporary detour cost more money than constructing a project without. A further consideration is the safety of the travelling public and any construction workers. Putting moving traffic and workers in close proximity is less safe than removing the traffic from the construction site.

The costs associated with a single lane temporary bridge in this location would run around $150,000. Impacts for an upstream and downstream temporary bridge are shown in the Appendix.

Option 2: Phased Construction

Phased construction is the maintenance of one lane of two-way traffic on the existing bridge while building one lane at a time of the proposed structure. This allows one to maintain traffic along the corridor during construction while mitigating the extra expense and impacts required by a temporary bridge.

Bridge 4 has a curb to curb width of 17.7 feet. In order to provide adequate width on a one lane temporary bridge, the specifications require a curb to curb width of 14 feet 6 inches. Thus, the existing bridge is already essentially a one lane bridge. In order to build a new bridge one lane at a time while maintaining traffic on the existing bridge, the centerline of the roadway would need

to be shifted. Since the existing horizontal and vertical alignments are substandard around the bridge, it would not be unreasonable to maintain traffic on the existing bridge while constructing an off-alignment structure to improve the final horizontal and vertical alignment.

The existing bridge is on an 800' radius horizontal curve. The alignment required to move the new bridge far enough away from the existing bridge to allow a lane of the new bridge to be constructed while traffic is on the existing bridge would include one of the following, in order of decreasing impacts: an approximately 3000' radius curve, a tangent section over the bridge and two smaller radius curves off the bridge, or several S curves off each end of the bridge. The 3000' curve would entail reconstructing around 1000' of Creek Rd because of the new alignment. The costs and impact for constructing this much road would easily exceed the costs and impact for a temporary bridge. This radius curve would still require 2% super-elevation to meet standards, while the existing curve could meet standards, i.e. be just as safe, with around 4% super-elevation. The construction of two smaller radius curves or two S curves to reduce the impacts and costs associated with this option would bring the construction costs in line with a temporary bridge. However, the final alignment would have the same tight curve as the existing, or worse with the S curves, than the existing alignment.

The advantage of providing phased construction in this location is similar to the temporary bridge option. It allows traffic to continue traveling along the corridor during construction. Typically, there are other advantages such as a reduced foot print and reduced Right of Way costs. However, by proposing to shift the alignment, the foot print and Right of Way cost would equal or exceed those for a temporary bridge. The same issues with safety are still present with traffic traveling through a construction site. Providing a new horizontal alignment to allow phased construction provides no benefit in time, cost and safety during construction and no benefit in the final condition versus providing a temporary bridge. Therefore, maintaining traffic by phasing construction will not be considered further in this report.

Option 3: Off-Site Detour

This option entails utilizing accelerated construction materials and methods to reduce the length of construction to one construction season and reduce the length of time that the road is closed to a 4 week period. Since the bridge is located on a Class 2 town highway, an official detour would be determined by the Town, who would also be responsible for installing, maintaining and paying for all necessary signing and traffic control. One option mentioned by the Town and shown in the Appendix is to divert traffic off of Creek Rd to Seaver Brook Rd to South Albany Rd to Ketchem Hill Rd and back to Creek Rd for a detour distance of 4.6 miles, or an additional 2.4 miles over the through route.

The disadvantage to providing an off-site detour is that traffic will not be maintained through the corridor during construction. The advantages, however, are numerous. The cost and time to develop and construct the project should be reduced, even though temporary or permanent rights will still need to be acquired for any construction project on the bridge. Impacts to the surrounding properties and trees should be reduced with this option. The construction project will be safer for both construction workers and the travelling public.

The Town has expressed that this is the preferred option and it will be considered further in this report.

III. Alternatives Discussion

Bridge 4 is structurally deficient with full depth holes in the deck and major section loss in the beams. The bridge and approach rail are substandard surrounding the bridge. The roadway and bridge are too narrow for the roadway classification and design speed, and the existing vertical and horizontal alignment of Creek Rd (TH 4) is substandard near the bridge.

No Action

This alternative would involve leaving the bridge in its current condition. A good rule of thumb for the "No Action" alternative is whether the bridge can stay in place without any work being performed on the bridge in the next 10 years. Since the bridge has been posted and is in serious condition, it is unlikely that the bridge will last another 10 years without performing some work on the structure. Thus, the No Action alternative will not be considered further in this report.

Alternative 1: Rehabilitation

The deck and superstructure need to be replaced. The existing substructures are laid up stone abutments which are at least 86 years old and are only in fair condition. The width of the existing bridge is substandard, thus a wider superstructure is proposed. The existing abutments would need to be widened to accommodate this. It does not make economic sense to place a brand new structure on top of 80+ year old abutments that are rated in fair condition and would need to be patched and widened. In addition, the existing hydraulic opening, bridge length and location along the vertical and horizontal curve would also need to be maintained with this option.

Based on the age and condition of the structure, costs and geometric constraints, no rehabilitation option will be considered in this report.

Alternative 2: Complete Replacement

Thus, the only remaining option is to replace the entire bridge at this location. The different considerations that can be evaluated for a new structure in this location are listed below.

a. Alignment

There is a fairly tight horizontal curve on Creek Rd going over Bridge #4. There is the possibility of flattening the curve in this location for some added expense and impacts. However, the existing curve would meet the standard with the proper super-elevation. Grading the curve at about 4% is not unreasonable and would facilitate drainage and provide the proper frictional resistance to sliding while traveling the posted speed on Creek Rd in this location.

The vertical grade off the north end of the bridge is 14+%. The Vermont State Standards suggest that the maximum grade for a rural collector in rolling terrain is 9% at 35 mph. The steepest grade appropriate on a rural collector is 11% for mountainous terrain and a design speed of 25 mph. Thus, the 14% grade is substandard for this road at any speed or terrain characterization. Excessive grades can cause issues with braking distances, require passing zones, and exacerbate erosion issues. Being a relatively short hill, the braking and passing should not be issues on Creek Rd. With some adequate fabric and stone lined ditches that include check dams, one should be able to mitigate the erosion issue as well.

Alternately, the grade could be modified to meet the standards. The current hill rises approximately 42 feet over a 300 foot length of road. One would need to excavate 12 feet of fill around 300 feet up the hill and extend the hill another 120 feet to the north in order to achieve a 10% grade (mountainous classification at 35 mph). Conversely, approximately 12 feet of fill could be added to Creek Rd near the bridge to extend the vertical curve another 100 feet to fix the grade. Fixing the vertical curve would also help with the headlight sight distance and K factor which is also substandard in this location. The length of curve would need to be extended from the existing 300 feet to approximately 500 to transition from a 10% grade to a flat grade and provide adequate sight distance.

The cost to excavate or fill that section of road would run around $100,000 and installing the additional roadway material would cost around $50,000. There would be additional costs to retain the cut or fill material or acquire additional rights to extend the cut or fill on to the adjacent properties. Retaining walls of this size and magnitude cost around $500,000, so the more economical route would be the acquisition of rights to clear and grub, remove trees, and construct sufficient side slopes to match the cut or fill with the existing ground. The costs associated with that work would run around $150,000. Engineering and contingency costs for this extra work are around 40% or $100,000. Thus, for an additional $400,000, it is estimated that the substandard vertical grade, curve and sight distance could be brought up to current standards.

Considering the extent of this extra cost and impact, it is proposed that the horizontal alignment remain in the current location and the vertical alignment is improved slightly by raising the finish grade to increase the sight distance provided over the bridge. Even with the improvement, the vertical alignment will remain substandard through this reach of road.

b. Bridge Width, Length, Type and Skew

The current rail to rail widths are 19’ off the bridge and 17.7’ on the bridge. There are no known restrictions to accommodating the standard width of 22’ off the bridge and 24’ on the bridge. Since no requirements were set forth to indicate that the bridge should be any wider than the standard width, the new bridge should be built to the standard width.

The existing 40’ long structure is hydraulically adequate. Requirements dictate that new bridges do not increase the water surface elevations during design floods, thus the minimum bridge length would need to remain 40’. Based on the steep banks, a 90’ long bridge could incorporate shallow pile caps on a single row of piles for each abutment, while maintaining close to the existing vertical alignment. This provides a reasonable upper limit for a new structure length and a structure length range from 40’ to 90’. In order to determine the most cost effective solution for this crossing, three options will be considered: a 42’ arch, an 85’ integral abutment bridge and a 68’ composite concrete on steel girder bridge with spread shallow foundations.

Since the Whitney Brook does not cross perpendicular to Creek Rd in this location, a 20° skew would be appropriate for any of the structures proposed. This would accommodate the flow of the brook and it does not provide too much of an angle to preclude any of the structural details.

IV. Alternatives Summary

Based on the existing site conditions, bridge condition, and gathered resource information, the alternatives being considered are:

Alternative 2a: Complete Replacement – 42’ Structure using a Temporary Bridge
Alternative 2b: Complete Replacement – 42’ Structure using an Offsite Detour
Alternative 2c: Complete Replacement – 68’ Structure using a Temporary Bridge
Alternative 2d: Complete Replacement – 68’ Structure using an Offsite Detour
Alternative 2e: Complete Replacement – 85’ Structure using a Temporary Bridge
Alternative 2f: Complete Replacement – 85’ Structure using an Offsite Detour

V. Cost Matrix

Craftsbury BO 1449(34)		Do Nothing	Alt 2a 42' Temp Bridge	Alt 2b 42' Offsite Detour	Alt 2c 68' Temp Bridge	Alt 2d 68' Offsite Detour	Alt 2e 85' Temp Bridge	Alt 2f 85' Offsite Detour
COST[1]	Bridge Cost	$0	$353,000	$353,000	$490,000	$490,000	$459,000	$459,000
	Removal of Structure	$0	$42,000	$42,000	$34,000	$34,000	$34,000	$34,000
	Roadway	$0	$330,000	$316,000	$343,000	$329,000	$340,000	$326,000
	Maintenance of Traffic	$0	$150,000	$15,000	$150,000	$15,000	$150,000	$15,000
	Construction Costs	$0	$875,000	$726,000	$1,017,000	$868,000	$983,000	$834,000
	Construction Engineering + Contingencies	$0	$236,300	$196,100	$274,600	$234,400	$265,500	$225,200
	Total Construction Costs w CEC	$0	$1,111,300	$922,100	$1,291,600	$1,102,400	$1,248,500	$1,059,200
	Preliminary Engineering[2]	$0	$218,800	$181,500	$254,300	$217,000	$245,800	$208,500
	Right of Way	$0	$51,000	$43,000	$51,000	$43,000	$51,000	$43,000
	Total Project Costs		$1,381,100	$1,146,600	$1,596,900	$1,362,400	$1,545,300	$1,310,700
	Town Share	$0	$138,110	$57,330	$159,690	$68,120	$154,530	$65,535
SCHEDULING	Project Development Duration[3]	N/A	4 years	4 years	4 years	4 years	4 years	4 years
	Construction Duration	N/A	18 months	6 months	18 months	6 months	18 months	6 months
	Closure Duration (If Applicable)	N/A	N/A	4 weeks	N/A	4 weeks	N/A	4 weeks
ENGINEERING	Typical Section - Roadway (feet)	0.5-9-9-0.5	2-9-9-2	2-9-9-2	2-9-9-2	2-9-9-2	2-9-9-2	2-9-9-2
	Typical Section - Bridge (feet)	0.8-8-8-0.8	3-9-9-3	3-9-9-3	3-9-9-3	3-9-9-3	3-9-9-3	3-9-9-3
	Geometric Design Criteria	No Change	Meets Criteria	Meets Criteria	Meets Criteria	Meets Criteria	Meets Criteria	Meets Criteria
	Traffic Safety	No Change	Improved	Improved	Improved	Improved	Improved	Improved
	Alignment Change	No	Slight	Slight	Slight	Slight	Slight	Slight
	Bicycle Access	No Change	Improved	Improved	Improved	Improved	Improved	Improved
	Hydraulic Performance	No Change	No Change	No Change	Improved	Improved	Improved	Improved
	Pedestrian Access	No Change	Improved	Improved	Improved	Improved	Improved	Improved
	Utility	No Change	No Change	No Change	No Change	No Change	No Change	No Change
OTHER	ROW Acquisition	No	Yes	Yes	Yes	Yes	Yes	Yes
	Road Closure	No	No	Yes	No	Yes	No	Yes
	Design Life	<10 years	80 years	80 years	80 years	80 years	80 years	80 years

[1] Costs are estimates only, used for comparison purposes.

[2] Preliminary Engineering Costs are estimated starting from the end of the Project Definition Phase.

[3] Project Development Durations start from the end of the Project Definition Phase.

VI. Conclusion

The recommendation is Alternative 2b: Complete Replacement with a 42’ rigid frame or arch structure with Traffic Maintained on an Offsite Detour.

Discussion:
The deck and superstructure are in poor condition and need to be replaced in the near future. The lane and shoulder widths are too narrow on the bridge as well. Since the substructure is only in fair condition, it is reasonable to replace the entire structure with a brand new structure of the appropriate width. The planning estimates indicate that all of the structure lengths are approximately the same cost. The precast arch was chosen because of the several advantages that it has over the other options. The future maintenance costs should be lower for a buried concrete structure because there are no beams to paint and the traffic impacts are further removed from the structure. Maintaining the road surface should be easier because the aggregate surface course will continue over the structure, and using precast segments should allow the construction to progress more quickly and inexpensively than the other bridge options. However, if the frame or arch sections are not chosen, the integral abutment bridge will provide a bridge which is faster to construct and less expensive to maintain than the similarly priced traditional bridge on a shallow spread footing.

Either a temporary bridge or offsite detour is possible in this location. The detour is cheaper, quicker, and safer and has fewer impacts than the temporary bridge, and therefore it is the preferred option in this location.

VII. Appendices

- Site Pictures
- Town Map
- Bridge Inspection Report
- Critical Maintenance Report
- Hydraulics Memo
- Preliminary Geotechnical Information
- Natural Resources Memo
- Hazardous Waste Sites
- Archaeology Memo
- Historic Memo
- Utility Information
- Local Input
- Crash Data
- Detour Route
- Plans
    - Existing Conditions
    - Proposal
        - Typical Sections
        - Layouts
        - Profile
    - Temporary Bridge Layouts

Girder and Deck Deterioration

Cracks in the Abutment cap and Gaps in the Stone work

Insufficient terminal section and unrepaired damaged section

Steep banks and steep channel looking upstream

Scale 1:53,249

N

- INTERSTATE
- STATE LONG
- STATE SHORT
- TOWN LONG
- FAS/FAU
- FAS/FAU HWY
- INTERSTATE
- STATE HIGHWAY
- CLASS 1
- CLASS 2
- CLASS 3
- CLASS 4
- LEGAL TRAIL
- PRIVATE
- DISCONTINUED
- DISTRICT
- POLITICAL BOUNDARY
- NAMED RIVERS-STREAMS
- UNNAMED RIVERS-STREAMS

CRAFTSBURY, TH-4, BR 4.

Produced by:
Mapping Unit
Vermont Agency of Transportation
August 2011

CRAFTSBURY
ORLEANS COUNTY
DISTRICT # 9

STRUCTURE INSPECTION, INVENTORY and APPRAISAL SHEET

Vermont Agency of Transportation ~ Structures Section ~ Bridge Management and Inspection Unit

Inspection Report for CRAFTSBURY **bridge no.:** 00004 **District:** 9

Located on: C2004 **ove** WHITNEY BROOK **approximately** 0.9 MI TO JCT W CL3 TH3 **Owner:** 03 TOWN-OWNED

CONDITION

Deck Rating: 3 SERIOUS

Superstructure Rating: 3 SERIOUS

Substructure Rating: 5 FAIR

Channel Rating: 6 SATISFACTORY

Culvert Rating: N NOT APPLICABLE

Federal Str. Number: 101006000410061

Federal Sufficiency Rating: 045.3

Deficiency Status of Structure: SD

AGE and SERVICE

Year Built: 1929 **Year Reconstructed:** 0000

Service On: 1 HIGHWAY

Service Under: 5 WATERWAY

Lanes On the Structure: 02

Lanes Under the Structure: 00

Bypass, Detour Length (miles): 07

ADT: 000140 **% Truck ADT:** 03

Year of ADT: 2007

GEOMETRIC DATA

Length of Maximum Span (ft): 0039

Structure Length (ft): 000041

Lt Curb/Sidewalk Width (ft): 0

Rt Curb/Sidewalk Width (ft): 0.5

Bridge Rdwy Width Curb-to-Curb (ft): 17.7

Deck Width Out-to-Out (ft): 20.2

Appr. Roadway Width (ft): 019

Skew: 00

Bridge Median: 0 NO MEDIAN

Min Vertical Clr Over (ft): 99 FT 99 IN

Feature Under: FEATURE NOT A HIGHWAY OR RAILROAD

Min Vertical Underclr (ft): 00 FT 00 IN

STRUCTURE TYPE and MATERIALS

Bridge Type: ROLLED BEAM

Number of Approach Spans 0000 **Number of Main Spans:** 001

Kind of Material and/or Design: 3 STEEL

Deck Structure Type: 1 CONCRETE CIP

Type of Wearing Surface: 6 BITUMINOUS

Type of Membrane 0 NONE

Deck Protection: 0 NONE

APPRAISAL *AS COMPARED TO FEDERAL STANDARDS

Bridge Railings: 0 DOES NOT MEET CURRENT STANDARD

Transitions: 0 DOES NOT MEET CURRENT STANDARD

Approach Guardrail 0 DOES NOT MEET CURRENT STANDARD

Approach Guardrail Ends: 0 DOES NOT MEET CURRENT STANDARD

Structural Evaluation: 3 INTOLERABLE, CORRECTIVE ACTION NEEDED

Deck Geometry: 2 INTOLERABLE, REPLACEMENT NEEDED

Underclearances Vertical and Horizontal: N NOT APPLICABLE

Waterway Adequacy: 7 SLIGHT CHANCE OF OVERTOPPING BRIDGE & ROADWAY

Approach Roadway Alignment: 7 BETTER THAN MINIMUM CRITERIA

Scour Critical Bridges: 3 SCOUR CRITICAL

DESIGN VEHICLE, RATING, and POSTING

Load Rating Method (Inv): 2 ALLOWABLE STRESS (AS)

Posting Status: A OPEN, NO RESTRICTION

Bridge Posting: 5 NO POSTING REQUIRED

Load Posting: 10 NO LOAD POSTING SIGNS ARE NEEDED

Posted Vehicle: POSTING NOT REQUIRED

Posted Weight (tons):

Design Load: 0 OTHER OR UNKNOWN

INSPECTION and CROSS REFERENCE

X-Ref. Route:

Insp. Date: 052013 **Insp. Freq. (months)** 12 **X-Ref. BrNum:**

INSPECTION SUMMARY and NEEDS

6/25/2013 Update town has posted the structure for 3 Ton. However there is still a full depth hole in the deck. ~FRE/DAK
5/9/2013 The deck and superstructure are i vary poor conditio due to the full depth hole in the deck between beams 3 and 4 also the majer sectionloss in beams 1 and 2 on abutment#2 side . Town needs to repair hole in the deck and needs to post for 3ton or even possible closure. ~FRE/DAK

06/06/11 Structure should be rehabbed in the near future. Holes in beams 1 and 2 should be repaired. Bank protection should be added to all banks. DCP & FRE

VERMONT

State of Vermont
Program Development - Structures Section
One National Life Drive [phone] 802-828-2621
Montpelier, VT 05633-5001 [fax] 802-828-3566
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Agency of Transportation

May 13, 2013

Mr. Bruce Urie, Selectboard Chair
Town Craftsbury
c/o Ms. Yvette Brown, Town Clerk
P.O. Box 55
Craftsbury, VT 05826

RE: Town Craftsbury, bridge #4 on TH #4 (Class 2) over Whitney Brook

Dear Mr. Urie:

The Federal National Bridge Inspection Standards require inspection of all publicly owned bridges over 20 feet in length on a 24 month cycle. A two-member team performs the inspection, with at least one member specially trained for this work. The Agency of Transportation provides this inspection in the interest of public safety and as a service to the municipalities with the cost shared between the Federal government and the State.

The above referenced structure is a single span rolled beam bridge spanning Whitney Brook. During a recent inspection, the following problems were noted which are in need of attention.

- The deck is in very poor condition. A hole has formed in the deck on abutment #2 side between beams #3 and #4 approximately 6 feet from the abutment. Due to the heavy saturation in the deck more holes could form at anytime.

- The superstructure is in poor condition. There is a hole in the web of beam #1 and 2 on abutment #2 side. There are areas of section loss measuring 43 inches long on beam#1 and 16 to 18 inch long on beam #2. There is also heavy section loss in the bottom flange of both beams in this area.

As discussed with your town road foreman on Friday, May 10th, based on these findings, it is recommended that the hole in the deck be covered with a steel plate as a temporary fix. Also, due to the section loss in beams #1 and #2, that the structure should be legally posted for a maximum gross weight limit of 3 tons and no trucks until beams have been repaired or structure has been replaced.

VTrans Working to Get You There
Vermont Agency of Transportation

This structure is owned by the town and as such is the responsibility of the town. **Failure to comply with the recommendations may compromise public safety, result in additional damage, and/or substantially reduce the service life of the structure**.

Even though a bridge is recommended for weight, width, or height posting or closure by the State, the decision to properly post or close the structure is the responsibility of municipal officials. However, it is in the best interest of the municipality to post or sign the bridges in accordance with these recommendations. A failure to warn motorists of potential bridge hazards may result in tort liability claims.

Also, we have been notified by the Federal Highway Administration (FHWA) that failure by the town/city to properly post or close the structure (in accordance with the Manual on Uniform Traffic Control Devices (MUTCD) standards) will jeopardize federal-aid highway funds for town-owned projects in your municipality. **Currently, this results in withholding authorization of funds for project, BO 1449(34) – scoping to evaluate alternatives for bridge #3 on TH 4 in Craftsbury of Whitney Brook**.

Please send WRITTEN notification of your intent to comply with, your compliance with, or reasons for non-compliance with these recommendations within 60 days from receipt of this letter. We are required by the Federal Highway Administration to report to them when the recommended posting, closure, and/or safety repairs have been implemented. A response form has been provided for your use.

If you have any questions concerning the matter, please contact your local District Transportation Administrator, Dale Perron at (802) 334-7934 or VTrans' Bridge Management and Inspection Engineer, Pamela M. Thurber at (802) 828-0041. A representative from the Bridge Management and Inspection Unit would be willing to meet with you at the site to discuss the contents of this letter.

Sincerely,

Wm. Michael Hedges, P.E.
Structures Program Manager

WMH: PMT: *FRE*
cc: Dale Perron, DTA District #9
NBIS Inspection Files via FRE
FHWA Design and Structures Engineer

Dufresne-Henry
1025 Airport Drive - P.O. Box 2246
South Burlington, Vermont 05407
ph 1-(802)-864-0223 fx: 1-(802)-864-0165

calc: TER

checked: VT USGS REPORT

Creek Road over Whitney Brook
Summary of Hydrologic Results

= updated 1/11/06

Hydrologic Results

#	Method	$Q_{1.2}$ (cms)	Q_2 (cms)	$Q_{2.33}$ (cms)	Q_5 (cms)	Q_{10} (cms)	Q_{25} (cms)	Q_{50} (cms)	Q_{100} (cms)	Q_{500} (cms)
1	NEHL					35.0		64.0		
2	USGS (FFF#2)		13.7		20.5	25.6	~~104.7~~	~~121.7~~	~~142.8~~	
3	Benson	8.1		14.9	22.0	32.2	45.8	65.6		
4	FHWA 3 Parameter			12.9		27.0		46.2	54.1	
6	USGS Olson - 2002		9.5		~~13.1~~	~~15.4~~	18.8	21.6	24.2	30.3
	Averages used for plotting gumbel best fit:				21	30		49		

Mean (Method 1-7) Used to Define Best Fit Line (other average pints shown on plot for reference)

~~ABC~~ line thru denotes that the number was not included in computing average b/c it was considered an outlier

Use the following data from the best fit on the Gumbel Probability Graph

	$Q_{2.33}$ (cms)	Q_5 (cms)	Q_{10} (cms)	Q_{25} (cms)	Q_{50} (cms)	Q_{100} (cms)	Q_{500} (cms)
Gumbel Prob. Graph	11.0	21.0	30.0	41.0	49.0	56.0	75.0

DESIGN FLOWS (Metric)		
$Q_{2.33}$ (cms)	=	11.0
Q_{10} (cms)	=	30.0
Q_{25} (cms)	=	41.0
Q_{50} (cms)	=	49.0
Q_{100} (cms)	=	56.0
~~Q_{500} (cms)~~	=	~~75.0~~

DESIGN FLOWS (USC)		
$Q_{2.33}$ (cfs)	=	400.0
Q_{10} (cfs)	=	1100.0
Q_{25} (cfs)	=	1400.0
Q_{50} (cfs)	=	1700.0
Q_{100} (cfs)	=	2000.0
~~Q_{500} (cfs)~~	=	~~2600.0~~

DESIGN FLOWS

DUFRESNE-HENRY

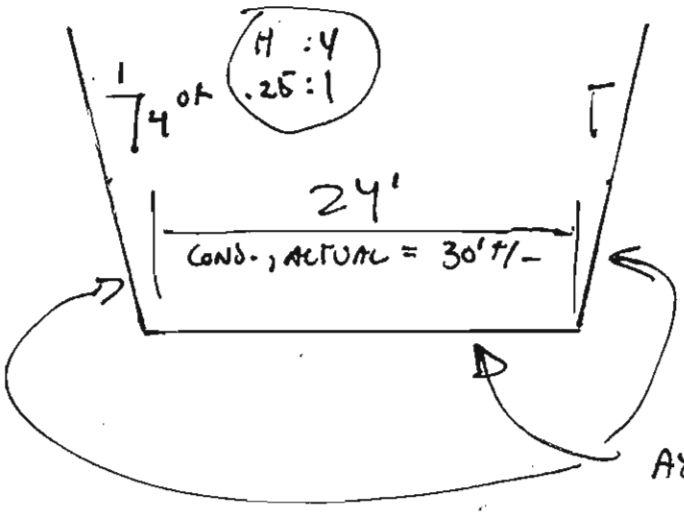
PREPARED BY _____ DATE _____ PROJECT NO. _____

CALCULATIONS CHECKED BY _____ DATE _____ SHEET NO. _____ OF _____

ASSUMPTIONS / METHODS CHECKED BY _____ DATE _____

SUBJECT _____

CONSIDER APPROXIMATE CROSS-SECTION @ NORMAL DEPTH TO CHECK MAGNITUDE OF HEC-RAS OUTPUT



← ADJ. TO BRIDGE

ASSUME .080 (COMPOSITE 'n' VALUE - CONSERVATIVE)

ASSUME CHANNE SLOPE OF 4.5% ← ACTUAL SLOPE IS GREATER

$Q = 2000$ CFS

$d = 7.01'$

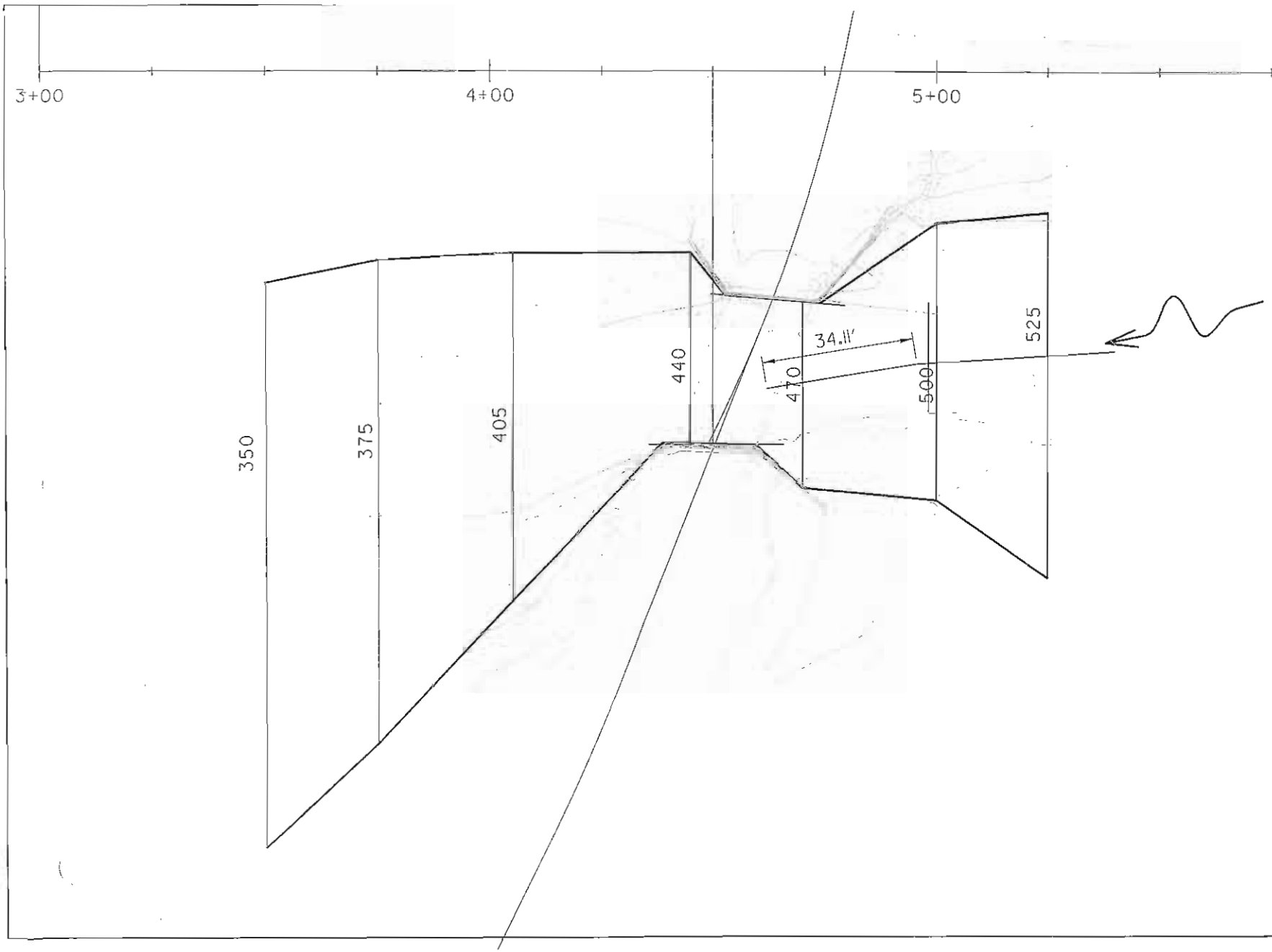
$V = 11.1$ FT/SEC

} SEE NEXT PAGE

CRAFTSBURY - HYDRAULICS

WHITNEY BRK
DN STR. OF CREEK RD

SECTIONS FOR HEC-RAS



Dufresne-Henry
SOUTH BURLINGTON, VT

REV.	DESCRIPTION	BY	DATE

PROJECT NO.
PROJ. MANAGER
PROJ. DESIGNER
DRAWN BY
CHECKED BY
SCALE
APPROVED
DATE

SHEET OF
01

GEODESIGN
INCORPORATED

GEOTECHNICAL ENGINEERS AND ENVIRONMENTAL CONSULTANTS

January 25, 2006

George Bogue, P.E.
Dufresne-Henry, Inc.
55 Green Mountain Drive
P.O. Box 2246
South Burlington, VT 05407

RE: Geotechnical Engineering Report - Craftsbury Bridge
Town Highway #4 (Bridge #4)
Craftsbury, VT
GeoDesign Project No: 783-38

Dear George:

This report includes the results of a subsurface exploration program and our geotechnical recommendations for the replacement of Bridge #4 in Craftsbury, VT.

Summary

The following summarizes key issues included in this report:

- Spread footings are suitable for foundation support. Soil conditions at the abutments need to be verified during construction as firm bearing soils consistent with our soil borings.
- Foundations may be designed for a maximum net allowable bearing pressure of 6,000 psf with less than one-half inch of settlement expected.
- GeoDesign, Inc. should review project plans and specifications and observe foundation subgrade conditions during construction.

Project Overview

The project consists of the replacement of the steel girder Bridge #4 on Town Highway #4 over Seaver Brook in Craftsbury, VT (as shown on Figure 1). The existing bridge has a stone block foundation/abutment walls capped with reinforced concrete. Foundation bearing elevation and type are unknown, although we expect foundations to be spread footings.

We understand that you propose to construct new abutments located approximately 13 feet behind (i.e. away from river) the existing abutments. The existing abutments will remain in place for scour protection.

Subsurface Conditions

We performed two borings (drilled by SJB Services, Inc.) on December 12 and 13, 2005 in locations shown on Figure 1 in Appendix 1. We were limited in how close we could drill near the bridge due to safety concerns resulting from limited roadway visibility and the icy conditions of the road at the time.

The borings were advanced with hollow stem augers to between about 25 to 31 feet below ground surface. The borings were observed and logged by Geo**Design**, Inc. personnel. Boring logs are included in Appendix 2.

The subsurface profile is generally as follows:

Gravelly Silty Sand/Silty Sand – A layer consisting of sand with lesser amounts of gravel and silt is present to between 5 and 15 feet below the ground surface. The SPT-N values in the stratum range from 15 blows per foot (bpf) to over 100 bpf (at the frozen surface). This appears to be fill placed for the bridge approaches.

Clayey Silt/Clay & Silt – We observed about a 5-foot thick layer of clayey silt soil starting at 5 feet below ground surface in boring B-2, and approximately 8-inches of Clay & Silt at 10 feet deep in boring B-1. This stratum consists of soft (at boring B-2) to very stiff (at boring B-1), plastic clay and silt soils. This stratum could be thicker than inferred in the logs since sampling intervals were 3 to 5 feet.

Glacial Till – Glacial Till composed primarily of silt with lesser amounts of sand and gravel was found below 15 feet deep at boring B-1 and below 10.5 feet deep in boring B-2. This stratum ranges from dense to very dense (split spoon sampler refusal). The borings were terminated in this stratum.

Groundwater – We observed groundwater levels in open boreholes to be at 5.5 feet below ground surface at boring B-1 (approximately river level at the time of the borings) to 11.5 below the ground surface at boring B-2 (approximately 13 feet above river level).

The depth to groundwater observed in the borings is likely to vary from conditions which will be encountered during construction, due to factors such as seasonal variations, temperature, rainfall, and other factors which differ from conditions at the time the subsurface explorations were made.

Geotechnical Issues / Implications of Subsurface Conditions

We have identified the following geotechnical engineering issues:

Foundation Bearing Conditions- We expect that soil conditions are consistent between the borings and that firm bearing soils are present at or above proposed bottom of footings near elevation 1010 feet. However, limited over-excavation to firm bearing soils and replacement with compacted fill up to the bottom of footings may be required if soils are soft or loose at subgrade elevation.

Construction Considerations – Foundation bearing soils are silty and are susceptible to disturbance in wet conditions. Dewatering will be required, particularly during construction of the northern abutment where the water table is anticipated to be several feet above the bottom of the excavation. Contractors must be aware of the requirement for limiting subgrade disturbance and they must be equipped to provide adequate dewatering for subgrade protection.

Recommendations

1. Foundation Type: We recommend that new abutments and wingwalls be constructed on spread footings bearing in the Glacial Till stratum at or below elevation 1010 feet (approximately at river bottom elevation).

2. Allowable Bearing Pressure: We recommend a maximum net allowable bearing pressure of 6,000 psf for footings bearing on firm native glacial till, compacted Granular Fill (per VAOT Item 704.08A), or crushed stone (per VAOT Item 704.02B).

   We calculate foundation settlements to be approximately one-half inch based on empirical correlations with SPT N-values.

3. Frost Protection – Footings should be founded a minimum of five feet below the ground surface for frost protection.

4. Scour Protection – Adequate scour protection must be provided for the new abutments. We understand that scour analysis and scour protection design will be performed by others.

5. Footing Subgrade Preparation: We recommend placing a minimum 12-inch thick crushed stone (per VAOT Item 704.02B) working mat enveloped in non-woven

geotextile fabric to protect silty glacial till soils from disturbance when they are wet. The geotextile fabric must meet the following requirements:

Property	Criteria	Test Method
Grab Strength (lbs)	Min. 80	ASTM D4632
Puncture Strength (lbs)	Min. 25	ASTM D4833
Burst Strength (psi)	Min. 130	ASTM D3786
Trapezoid Tear (lbs)	Min. 25	ASTM D4533
Apparent Opening Size	No. 70-100 U.S. Sieve Size	ASTM D4751
Fabric should be needle-punched non-woven material. Seams should be overlapped a minimum of 12 inches.		

Disturbed soil must be removed to firm bearing and evaluated by the geotechnical engineer prior to foundation placement.

Immediately upon exposure, the subgrade should be inspected, cleared of any loose material, and covered with the crushed stone layer for protection.

Soft or loose soils that are present at bottom of footing elevation must be removed within a 1H:1V (horizontal to vertical) influence zone from the bottom outside edge of the footing and replaced with compacted Granular Fill or crushed stone up to the bottom of footing elevation.

6. Seismic Design – For seismic design purposes, the project site meets the requirements set forth in the AASHTO Standard Specifications for Highway Bridges (17^{th} edition, 2002) for a Site Coefficient (S) of 1.2 based on the Type II Soil Profile conditions present at the site.

7. Earth pressure: Granular backfill must be used as backfill behind the abutments and wingwalls to control hydrostatic pressures and limit the lateral loads acting on the walls. Design active earth pressures may be computed using the following parameters:
   - Coefficient of Active Earth Pressure, $K_a = (1-\sin\varphi)/1+\sin\varphi) = 0.28$
   - Backfill Density, $\gamma = 140$ pcf
   - Friction angle, $\varphi = 34$ degrees
   - Coefficient of friction, (ultimate) **f**=
     mass footing concrete on crushed stone subgrade = 0.60
     formed concrete to granular backfill = 0.50

8. Factor of Safety Against Sliding: Minimum of 1.5.

9. Factor of Safety Against Overturning: Minimum of 2.0

Final Design and Construction

We understand that we will be involved during the design to review the earthwork and foundation specifications with respect to our recommendations.

We recommend Geo**Design** be retained during construction to observe footing subgrade preparation in order to provide continuity between interpretations made in design and the actual conditions present during construction.

Limitations

This report is subject to the limitations set forth in Appendix 3.

It has been a pleasure to assist you with this project.

Sincerely,
Geo**Design**, Inc.

Aaron Humphrey, P.E.
Senior Project Engineer

John E. Lens, P.E.
Principal

STATE OF VERMONT
JOHN E. LENS
NO. 5399
REGISTERED
PROFESSIONAL ENGINEER

Appendices:

1 – Exploration Location Plan
2- Borings Logs
3- Limitations

M:\CI\783-38\Report\1-25-06 Craftsbury Bridge Report f783-38.doc

AGENCY OF TRANSPORTATION **OFFICE MEMORANDUM**

TO: Jeff Ramsey, Environmental Specialist

FROM: John Lepore, Transportation Biologist

DATE: June 19, 2013

SUBJECT: CRAFTSBURY B_O 1449 (34)
Town Highway # 4, Bridge 4
Natural Resource ID & Comments

The initial resource identification for this project has been completed and the field work was conducted on June 17, 2013.

Based on this effort, a small wetland was observed to the south of the bridge and to the east of Town Highway 4, adjacent to the small pull-off. This area was picked up with a GPS and is now in the geodatabase. This wetland is approximately 100 feet away from the bridge, and although impacts are not anticipated, it was mapped so as to allow the contractor to avoid it during construction, as it is likely adjacent to where equipment and materials staging would occur.

Other resources such as agricultural soils, floodplains, and species/habitats of special concern are not in the project area, but the area is a wildlife travel corridor for wildlife traveling from the Black River floodplain to the west and the upland/farmland habitat to the east of the project.

As with many other brooks, Whitney Brook was destabilized during TS Irene and that has generated a lot of woody debris and trees to remain in the channel, and although this is a good thing from a habitat perspective, it does pose a risk due to debris jams in the future. Thus, I highly recommend completely spanning the channel of Whitney Brook, and ideally, the project should be designed to provide both wildlife shelf on one or both banks of the stream and additional insurance against future debris jams.

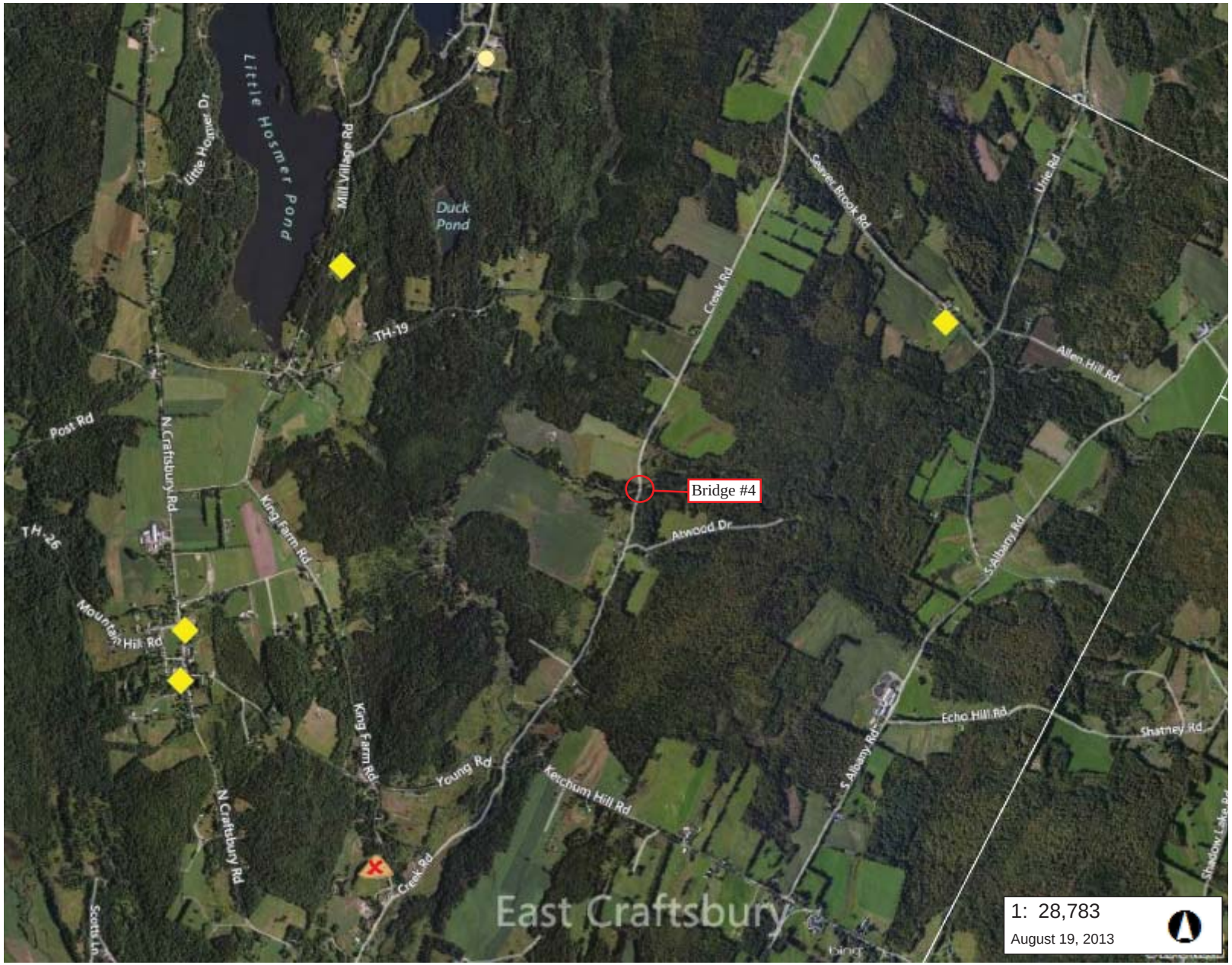
If you have any questions about this, call me at 828-3963.

VERMONT

Hazardous Waste Sites

Vermont Agency of Natural Resources

vermont.gov



LEGEND

- Landfills
  - OPERATING
  - CLOSED
- Hazardous Waste Site
- Hazardous Waste Generators
- Brownfields
- Underground Storage Tank (w
- Town Boundary

NOTES

Map created using ANR's Natural Resources Atlas

1,462.0 0 731.00 1,462.0 Meters

WGS_1984_Web_Mercator_Auxiliary_Sphere 1" = 2399 Ft. 1cm = 288 Meters

THIS MAP IS NOT TO BE USED FOR NAVIGATION

VERMONT

Jeannine Russell
VTrans Archaeology Officer
State of Vermont
Environmental Section
One National Life Drive
Montpelier, VT 05633-5001
www.aot.state.vt.us

Agency of Transportation

[phone] 802-828-3981
[fax] 802-828-2334
[ttd] 800-253-0191

To: Jeff Ramsey, Environmental Specialist

From: Jeannine Russell, VTrans Archaeology Officer

Date: June 3, 2013

Subject: Craftsbury BO 1449(34) – Archaeological Resource ID

This is a scoping study for Bridge 4 on TH 4 in Craftsbury. The project area is defined by a 200 foot radius adjacent to the bridge. A field visit was conducted on 5-22-13 for the above bridge project. Two areas of archaeological sensitivity were identified during the field visit. These areas are on high terraces to the NW and NE of the bridge but these areas appear well outside the immediate project area and should not pose a problem. They are noted on the attached map as areas to avoid and are logged into the geodatabase.

Please contact me if you have any questions.

Thank you,
Jen Russell
VTrans Archaeology Officer

VTrans Working to Get You There
Vermont Agency of Transportation


Craftsbury BO 1449(34)
N
0 0.01 0.02 0.04 0.06 0.08
Miles
1:4,027
Project Area
Map created by J. Russell
PDD-Environmental Section
on 6-3-13

Ramsey, Jeff

From: O'Shea, Kaitlin
Sent: Thursday, April 25, 2013 9:29 AM
To: Ramsey, Jeff
Cc: Newman, Scott; Williams, Chris
Subject: RE: CRAFTSBURY BO 1449(34) Resource ID request

Hi Jeff,

I have completed the historic resource ID for Craftsbury BO 1449(34). Bridge 4 is not a historic resource. There are no adjacent historic properties.

Thanks,
Kaitlin

Kaitlin O'Shea
Historic Preservation Specialist
Vermont Agency of Transportation

802-828-3962
Kaitlin.O'Shea@state.vt.us

From: Ramsey, Jeff
Sent: Wednesday, April 10, 2013 2:48 PM
To: Armstrong, Jon; Lepore, John; Russell, Jeannine; Gauthier, Brennan; O'Shea, Kaitlin; Newman, Scott
Cc: Williams, Chris
Subject: CRAFTSBURY BO 1449(34) Resource ID request

Hi all,
The PM would like resources identified for this project.

From: Jeff Ramsey, Environmental Specialist
Date: April 10, 2013
Project: CRAFTSBURY BO 1449(34)
PIN: 13J100 **EA**: 1449034 001

Project Manager: Chris Williams
Link to Photos: Z:\Projects-Engineering\CraftsburyBO1449(34)13j100\Structures\Pictures

The PM would like resources identified for this project.

If there aren't any resources present, please feel free to issue a Resource Clearance for the CE as well.

Folder Link:
Z:\Projects-Engineering\CraftsburyBO1449(34)13j100\Environmental

If you have any questions or need additional information please let me know.
Thanks,

Fillbach, Tim

From: Wheeler, Lawrence
Sent: Thursday, June 13, 2013 8:59 AM
To: Williams, Chris
Cc: Clancy, James; Symonds, Wayne
Subject: Craftsbury BO 1449(34) - Request for Utility Information
Attachments: craftsbury plan _0001.pdf

On 6/11/13 I conducted an on-site investigation of the existing utility locations within the referenced project area. Since that time I have been in contact with utility companies and the Town of Craftsbury to determine location and ownership of utilities within the project area. The following summarizes my observations and discussions:

Municipal Utilities

- There are no municipal water or sewer facilities within this project area.

Public Utilities

Underground:

- There are no buried utilities within the project area that I am aware of. FairPoint is the only provider in this area and they have stated that they have no buried plant within the project area. The Town of Strafford has also indicated that there are no buried facilities thru this project area.

Aerial:

- There are aerial electric and telephone facilities which extend along the west side of TH # 4 (Creek Road); these facilities are a substantial distance downstream from the existing bridge. The aerial facilities cross to the east side of TH # 4 approximately 400 feet north of the existing bridge, well out of the project area.

- Ownership of the aerial electric line changes at pole # 42A/64; to the north of this pole the electric lines are owned by Vermont Electric Cooperative (VEC); to the south of this the lines belong to Hardwick Village Electric. Pole 42A/64 belongs to VEC.

Following is a list of the contacts for this project:

Town of Craftsbury
Bruce Urie, Selectboard Chair

Telephone: (802) 586-2823

craftsbury@gmail.com

Address: P.O. Box 55 Craftsbury , VT 05826

(The Town has no municipal utilities; contact information provided just so you have it if needed)

Troy Reynolds
Vermont Electric Cooperative

Telephone: (802) 730-1141

treynolds@vermontelectric.coop

Address: 42 Wescom Road Johnson, VT 05656

N

VT STATE PLANE GRID

BENCHMARK
RAILROAD SPIKE
IN TREE
ELEV. = 1019.75'

COMB
42A
64

COMB
42A
63
143

POE
STA 52+00.00

WHITNEY BROOK
FLOW

52+00

EXISTING CURVE DATA
DELTA = 15°35'41"
D = 7°09'43"
R = 800.00'
T = 109.55'
L = 217.74'
E = 7.47'

POB
STA 40+00.00

PC
STA 41+13.69

TOWN HIGHWAY 4
TO CRAFTSBURY
TOWN HIGHWAY 1

CREEK ROAD

40+00

41+00

42+00

43+00

44+00

44+61

PT
STA 43+31.43

POE
STA 44+60.77

TOWN HIGHWAY 4
TO ALBANY

SIGN

GRAVEL
DRIVE

12" CPEP

IRON ROD
½" OF 8"

RAIL
FENCE

PI
STA 42+23.24

POB
STA 50+00.00

50+00

Aerial Single Phase E
w/ one black cable

This aerial Electric/Telephone Line crosses TH Approximately 400' North of Existing Bridge

There are no municipal water or sewer lines within this project area.

There are no known buried utilities-

EXISTING BRIDGE DATA
SINGLE SPAN ROLLED BEAM
BUILT 1929
41' SPAN, 17.7' CURB - CURB

LAYOUT SHEET

SCALE 1" = 20'-0"
20 0 20

PROJECT NAME:	CRAFTSBURY
PROJECT NUMBER:	BO 1449(34)
FILE NAME: 13J100/sl3J100border.dgn	PLOT DATE: 31-MAY-2013
PROJECT LEADER: C.P.WILLIAMS	DRAWN BY: D.D.BEARD
DESIGNED BY: ------	CHECKED BY: ------
LAYOUT SHEET	SHEET 1 OF 8

Fillbach, Tim

From: Bruce Urie [bruceurie@gmail.com]
Sent: Monday, February 11, 2013 10:46 AM
To: Williams, Chris
Subject: Re: Input from Town and RPC on Proposed Town Highway Bridge Project Funding

Good morning Chris,

The Town of Craftsbury welcomes the news of this email. Bridge 4 on Highway 4 has been a very dangerous bridge for many years. Most every person in town has a story about a close call in the bridge. We have had one fatality when a person went over the edge and ended up upside down in the river.

A few years ago we did work with our local transportation district who funded a private engineer to do a bridge plan for this bridge so we do have a plan that was done for us and paid for by the State. We would be happy to share the design if it is of use. We as a selectboard plan to close the road for the construction period in place of doing a temporary bridge. Our board would be happy to meet with anybody regarding the bridge.

THank you,

Bruce Urie
Select board chair
On 2/6/13, Craftsbury Town <craftsbury@gmail.com> wrote:
> ---------- Forwarded message ----------
> From: Williams, Chris <chris.williams@state.vt.us>
> Date: Wed, Feb 6, 2013 at 2:14 PM
> Subject: Input from Town and RPC on Proposed Town Highway Bridge
> Project Funding
> To: "lgaboriault@bartonvt.com" <lgaboriault@bartonvt.com>, "
> betheltownclerk@comcast.net" <betheltownclerk@comcast.net>, "
> craftsbury@gmail.com" <craftsbury@gmail.com>, "hgtownclerk@gmail.com"
> < hgtownclerk@gmail.com>, Barbara Elliott <townhunt@accessvt.com>, "
> choyt@montpelier-vt.org" <choyt@montpelier-vt.org>, "
> orloffice@myfairpoint.net" <orloffice@myfairpoint.net>, "
> sandgateclerk@live.com" <sandgateclerk@live.com>, "
> townofstockbridge@myfairpoint.net" <townofstockbridge@myfairpoint.net>, "
> townofstrafford@wavecomm.com" <townofstrafford@wavecomm.com>
> Cc: "Hedges, Mike" <Mike.Hedges@state.vt.us>, "Thurber, Pam" <
> Pam.Thurber@state.vt.us>, "Symonds, Wayne"
> <Wayne.Symonds@state.vt.us>, "Fillbach, Tim"
> <Tim.Fillbach@state.vt.us>, "manders@bcrcvt.org" <
> manders@bcrcvt.org>, Michele Boomhower <mboomhower@ccrpcvt.org>, Steve
> Gladczuk <gladczuk@cvregion.com>, Bethany Remmers
> <bethany@nrpcvt.com>, Doug Morton <morton@nvda.net>, Rita Seto
> <rseto@trorc.org>, "Bell, Amy" < Amy.Bell@state.vt.us>, "Riley, Greg"
> <Greg.Riley@state.vt.us>
>
>
> Hi Everyone,****
>
> ** **
>
> We are very close to requesting FHWA funds for the Scoping phase to
> allow us to begin working on the group of projects included in the attachment.

Local & Regional Input Questionnaire

Community Considerations

1. Are there any scheduled public events in the community that will generate increased traffic (e.g. vehicular, bicycles and/or pedestrians), or may be difficult to stage if the bridge is closed during construction? Examples include: a bike race, festivals, cultural events, farmers market, concerts, etc. that could be impacted? If yes, please provide date, location and event organizers' contact info. No
2. Is there a "slow season" or period of time from May through October where traffic is less? school bus does not run mid June - mid Aug.
3. Please describe the location of emergency responders (fire, police, ambulance) and emergency response routes. 2.5 miles west of bridge
4. Where are the schools in your community and what are their schedules? only effects one bus route
5. Is the proposed project on an established or planned school bus or public transit route(s)? yes
6. Are there any businesses (including agricultural operations) that would be adversely impacted either by a detour or due to work zone proximity? 1 Farm would be impacted for one hayfield
7. Are there any important public buildings (town hall or community center) or community facilities (recreational fields or library) in close proximity to the proposed project? No
8. Are there any town highways that might be adversely impacted by traffic bypassing the construction on another local road? No
9. Are there any other municipal operations that could be adversely impacted if the bridge is closed during construction? If yes, please explain. No
10. Please identify any local communication channels that are available—e.g. weekly or daily newspapers, blogs, radio, public access TV, Front Porch Forum, etc. Also include any unconventional means such as local low-power FM. Hardwick Gazette, Barton Chronicle WLVB Radio - Morrisville
11. Is there a local business association, chamber of commerce or other downtown group that we should be working with? Just the select board

Design Considerations

Select board would like to meet to discuss bridge replacement

1. Are there any concerns with the alignment of the existing bridge? For example, if the bridge is located on a curve, has this created any problems that we should be aware of? steep hill access from the north, width
2. Are there any concerns with the width of the existing bridge? yes - needs to be wider
3. What is the current level of bicycle and pedestrian use on the bridge? Limited

4. If a sidewalk or wide shoulder is present on the existing bridge, should the new structure have one? No sidewalk or wide shoulder

5. Is there a need for a sidewalk or widened shoulder if one does not currently exist? Please explain. No

6. Does the bridge provide an important link in the town or statewide bicycle or pedestrian network such that bicycle and pedestrian traffic should be accommodated during construction? No

7. Are there any special aesthetic considerations we should be aware of? No

8. Are there any traffic, pedestrian or bicycle safety concerns associated with the current bridge? If yes, please explain.

9. Does the location have a history of flooding? If yes, please explain. Floods but bridge is well above stream

10. Are you aware of any nearby Hazardous Material Sites? - No

11. Are you aware of any historic, archeological and/or other environmental resource issues? Built to replace bridge lost in 1927 flood

12. Are there any other comments you feel are important for us to consider that we have not mentioned yet? Select board would like to meet to discuss design and access

Land Use & Public Transit Considerations – to be filled out by the municipality or RPC.

1. Does your municipal land use plan reference the bridge in question? If so please provide a copy of the applicable section or sections of the plan.

2. Please provide a copy of your existing and future land use map, if applicable.

3. Are there any existing, pending or planned development proposal that would impact future transportation patterns near the bridge? If so please explain.

4. Is there any planned expansion of public transit service in the project area? If not known please contact your Regional Public Transit Provider.

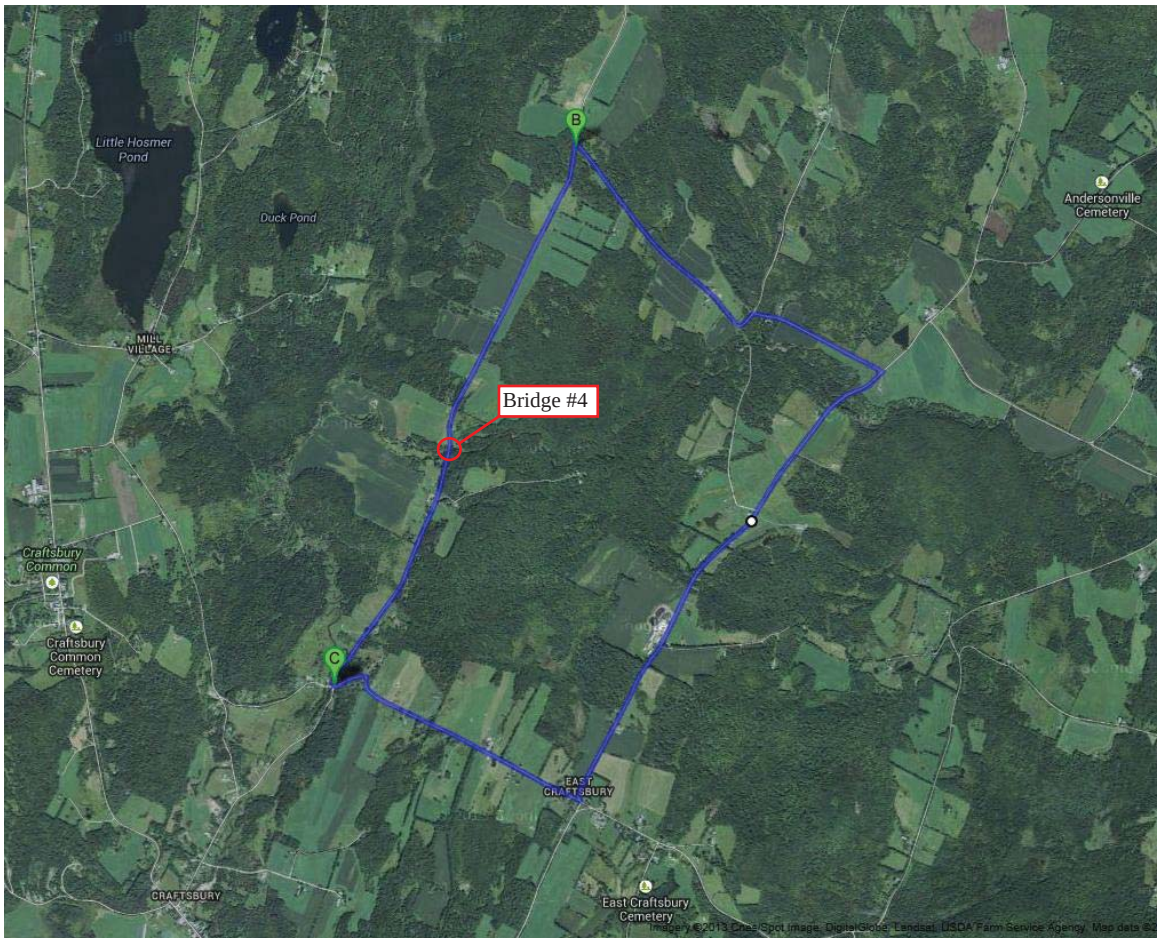
Vermont Agency of Transportation

General Yearly Summaries - Town Highway Crash Listing: Non-Federal Aid Highways-Local

From 01/01/07 To 12/31/11 General Yearly Summaries Information

Reporting Agency/ Number	County	Town	Route	Date MM/DD/YY	Time	Weather	Contributing Circumstances	Direction Of Collision	Number Of Injuries	Number Of Fatalities	Location
VTVSP0800/11 B200398	Orleans	Coventry	T0045	02/08/2011	11:54	Snow	Swerving or avoiding due to wind, slippery surface, vehicle, object, non-motorist in roadway etc	Single Vehicle Crash	0	0	TH-45 (Airport Road) at Coventry Station
VTVSP0800/11 B201439	Orleans	Coventry	T0046	05/20/2011	18:04	Clear	Driving too fast for conditions	Single Vehicle Crash	0	0	TH-46 at Webster Rd
1007/10257-07	Orleans	Coventry	T0048	06/26/2007	16:34	Clear	No improper driving	Single Vehicle Crash	0	0	TH-48 (626 Webster Road) at Airport Road
VTVSP0800/11 B201359	Orleans	Coventry	T0057	05/14/2011	03:23	Cloudy	Driving too fast for conditions, Under the influence of medication/drugs/alcohol	Single Vehicle Crash	0	0	TH-57 (223 Lawson Ridge) at Maple Ridge
1007/3402-07	Orleans	Craftsbury	T0007	03/05/2007	15:38	Snow	No improper driving	Head On	1	0	TH-7 Mill Village Road at Cole Dr.
1007/15080-07	Orleans	Craftsbury	T0020	10/26/2007	18:27	Clear	Exceeded authorized speed limit	Single Vehicle Crash	1	0	TH-20 (593 East Craftsbury Rd) at Danles Rd
VTVSP0800/08 B202998	Orleans	Craftsbury	T0021	09/06/2008	02:28	Clear	Under the influence of medication/drugs/alcohol, Fatigued, asleep	Single Vehicle Crash	0	0	TH-21 Collinsville Road at Griggs Road
1007/12734-07	Orleans	Craftsbury	T0025	08/16/2007	00:10	Cloudy	Driving too fast for conditions	Single Vehicle Crash	2	0	Th 25 (400 Post Rd) at 400 Post Rd
1007/17732-07	Orleans	Craftsbury	T0025	12/06/2007	10:00	Clear	Unknown	Opp Direction Sideswipe	0	0	TH-25 (Post Rd) at North Craftsbury Rd
1007/1184-07	Orleans	Craftsbury	T0033	01/28/2007	10:44	Clear	Operating vehicle in erratic, reckless, careless, negligent, or aggressive manner, No improper driving	Opp Direction Sideswipe	0	0	TH 33 (Ketchum Hill) at 866 Ketchum Hill
VTVSP0800/08 B202863	Orleans	Craftsbury	T0033	08/28/2008	06:30	Fog, Smog, Smoke	Driving too fast for conditions, Failure to keep in proper lane	Single Vehicle Crash	2	0	TH-33 (Ketchum Hill Road) at Creek Road
VT0080000/11 LC02308	Orleans	Craftsbury	T0051	08/18/2011	07:02	Clear	Failure to keep in proper lane	Opp Direction Sideswipe	0	0	TH-51 (2316 West Hill Road) at Town Hill Rd. Wolcott
VTVSP0800/09 B200866	Orleans	Craftsbury	T0059	03/22/2009	21:36	Clear	Distracted, Failure to keep in proper lane	Single Vehicle Crash	0	0	TH-59 Black River Road
1007/995-07	Orleans	Derby	0000	01/23/2007	17:05	Clear	Inattention, Distracted	Rear End	0	0	104 Lynwood Drive at Joseph St.
VTVSP0800/09 B201691	Orleans	Derby	0000	06/04/2009	16:34	Clear	Failure to keep in proper lane, No improper driving	Opp Direction Sideswipe	0	0	West Street at Joseph Street
VTVSP0800/11 B201350	Orleans	Derby	0000	05/13/2011	18:40	Clear	Unknown, No improper driving	Same Direction Sideswipe	0	0	56 Commons Drive at Shattuck Hill Road
VTVSP0800/09 B201205	Orleans	Derby	T0001	04/24/2009	20:56	Clear	No improper driving	Single Vehicle Crash	0	0	2 Herrick Road at Herrick Road
VTVSP0800/11 B200353	Orleans	Derby	T0006	02/04/2011	07:32	Clear	No improper driving, Driving too fast for conditions, Failure to keep in proper lane	Head On	0	0	TH-6 at Darling Hill
1007/4764-07	Orleans	Derby	T0007	03/13/2007	22:53	Rain	Operating vehicle in erratic, reckless, careless, negligent, or aggressive manner, Driving too fast for conditions	Single Vehicle Crash	2	0	TH-7 Shattuck Hill Rd at Bartlett Willey rd
1007/8136-07	Orleans	Derby	T0007	03/17/2007	14:50	Snow	Failure to keep in proper lane	Single Vehicle Crash	0	0	TH 7 (Shatuck Hill) at Darling Hill
VTVSP0800/08 B200034	Orleans	Derby	T0007	01/04/2008	07:35	Clear	Driving too fast for conditions, Failed to yield right of way	Left Turn and Thru, Broadside v<--	0	0	TH-7 Shattuck Hill Road at Us Route 5
VTVSP0800/08 B200108	Orleans	Derby	T0007	01/11/2008	11:05	Rain	Driving too fast for conditions, No improper driving	Head On	1	2	TH-7 (Shattuck Hill Road) at Bartley Willey Road
VTVSP0800/08 B200264	Orleans	Derby	T0007	01/28/2008	13:25	Clear	Failed to yield right of way, No improper driving	Left Turn and Thru, Broadside v<--	0	0	TH-7 (Shattuck Hill Road)
VTVSP0800/08 B200463	Orleans	Derby	T0007	02/17/2008	19:25		Driving too fast for conditions	Single Vehicle Crash	0	0	TH-7 Shattuck Hill Road at 224 Shattuck Hill Road
VTVSP0800/08 B200484	Orleans	Derby	T0007	02/19/2008	18:08	Clear	No improper driving	Single Vehicle Crash	0	0	TH-7 Shattuck Hill at Ridge Hill Drive
VTVSP0800/08 B200504	Orleans	Derby	T0007	02/21/2008	00:40	Clear	Exceeded authorized speed limit, Operating vehicle in erratic, reckless, careless, negligent, or aggressive manner	Left Turn and Thru, Same Direction Sideswipe/Angle Crash vv--	0	0	TH-7 Shattuck Hill Road at Ridge Hill Drive
VTVSP0800/09 B201168	Orleans	Derby	T0007	04/23/2009	14:54	Rain	Inattention, Followed too closely, Other improper action	Rear End	2	0	TH-7 (1051 Shattock Hill Rd) at Darling Hill Rd
VTVSP0800/09 B204011	Orleans	Derby	T0007	12/09/2009	12:10	Snow	No improper driving	Opp Direction Sideswipe	0	0	TH-7 (Shattuck Hill Road) at Darling HIll Road
VTVSP0800/11 B200901	Orleans	Derby	T0007	04/01/2011	17:55	Snow	Driving too fast for conditions	Single Vehicle Crash	0	0	TH-7 (Shattuck Hill) at Willey Road
VTVSP0800/11 B201558	Orleans	Derby	T0007	05/28/2011	08:00	Clear	Failure to keep in proper lane, No improper driving	Opp Direction Sideswipe	1	0	TH-7 at Hayward Hollow
VTVSP0800/09 B203383	Orleans	Derby	T0017	10/21/2009	12:20	Cloudy	Failure to keep in proper lane	Single Vehicle Crash	1	0	TH-17 Eagle Point Rd at North Derby Rd
VTVSP0800/08 B200583	Orleans	Derby	T0022	02/28/2008	13:38	Clear	Made an improper turn, No improper driving	Same Direction Sideswipe	0	0	TH-22 Nelson Hill Road at Hidden Pines Drive
VTVSP0800/10 B201974	Orleans	Derby	T0022	07/01/2010	23:03	Clear	Distracted, Failure to keep in proper lane	Single Vehicle Crash	0	0	TH-22 (1255 Nelson Hill Road) at 100 South Of 1255 North Hill

Source: SQL Server VCSG



Detour Route – Creek Rd to Seaver Brook Rd to South Albany Rd to Ketchem Hill Rd to Creek Rd

B to C on Through Route: 2.2 Miles (about 5 minutes)
B to C on Detour Route: 4.6 Miles (about 12 minutes)
Added Miles: 2.4 Miles
End to End Distance: 6.8 Miles

N

VT STATE PLANE GRID

ARCH

NELSON FARMS

BENCHMARK
RAILROAD SPIKE
IN TREE
ELEV. = 1019.75'

COMB
42A
64

WHITNEY BROOK
FLOW

POE
STA 52+00.00

52+00

EXISTING CURVE DATA
DELTA = 15°35'41"
D = 7°09'43"
R = 800.00'
T = 109.55'
L = 217.74'
E = 7.47'

COMB
42A
63
14

POE
STA 44+60.77

PT
STA 43+31.43

POB
STA 40+00.00

PC
STA 41+13.69

TOWN HIGHWAY 4
TO CRAFTSBURY
TOWN HIGHWAY 1

SIGN
OM3-R

44+61

44+00

43+00

40+00

41+00

51+00

42+00

GRAVEL
DRIVE

12" DEEP

IRON ROD
½" DIA. UP 8"
RAIL FENCE

PAVED
DRIVE

STA 42+23.24
PJ

POB
STA 50+00.00

50+00

GOTTWICK, PAULA

ATWOOD, EUGENE R. & JEANNETTE I.

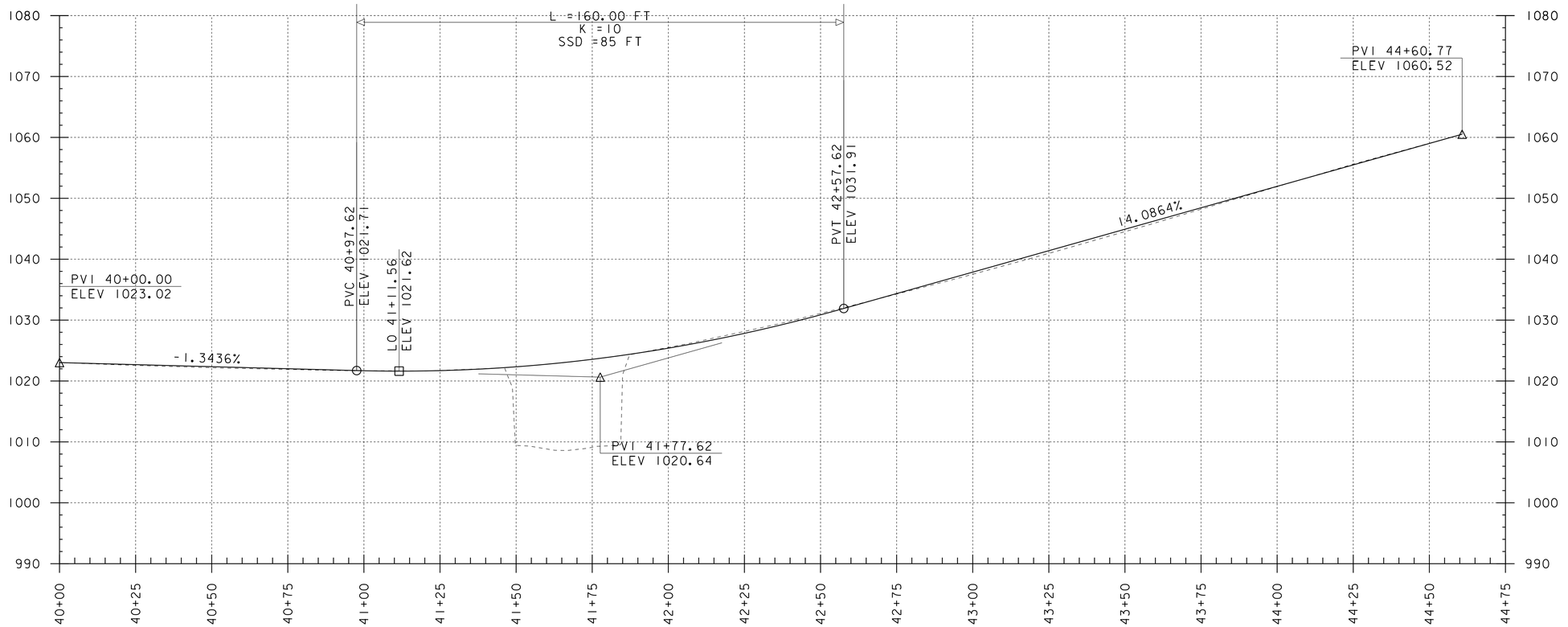
GOODWIN, DENNIS A. & LAURA Q.

EXISTING BRIDGE DATA
SINGLE SPAN ROLLED BEAM
BUILT 1929
41' SPAN, 17.7' CURB - CURB

EXISTING CONDITIONS

SCALE 1" = 20'-0"
20 0 20

PROJECT NAME:	CRAFTSBURY
PROJECT NUMBER:	BO 1449(34)
FILE NAME: 13J100/sl3J100border.dgn	PLOT DATE: 06-SEP-2013
PROJECT LEADER: C.P.WILLIAMS	DRAWN BY: D.D.BEARD
DESIGNED BY: ------	CHECKED BY: ------
EXISTING CONDITIONS	SHEET 1 OF 19



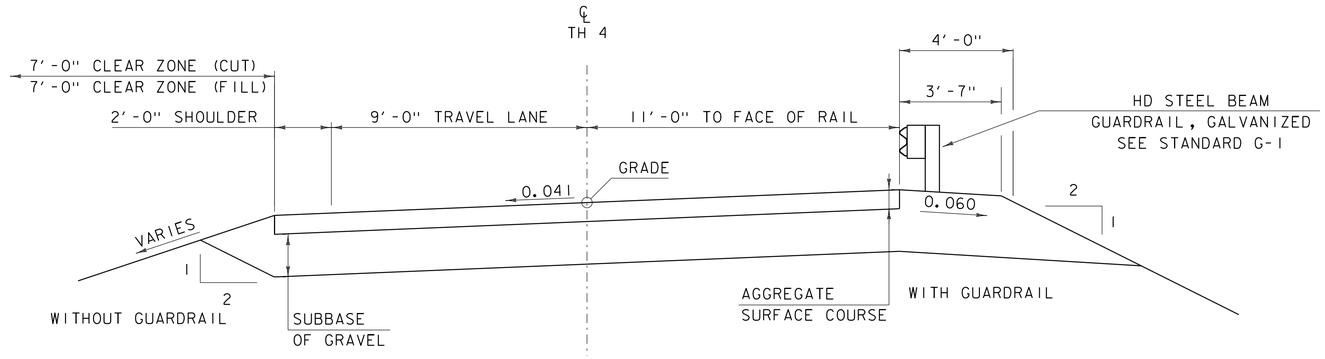
TH 4 EXISTING PROFILE

NOTE:

GRADES SHOWN TO THE NEAREST TENTH ARE EXISTING GROUND ALONG L

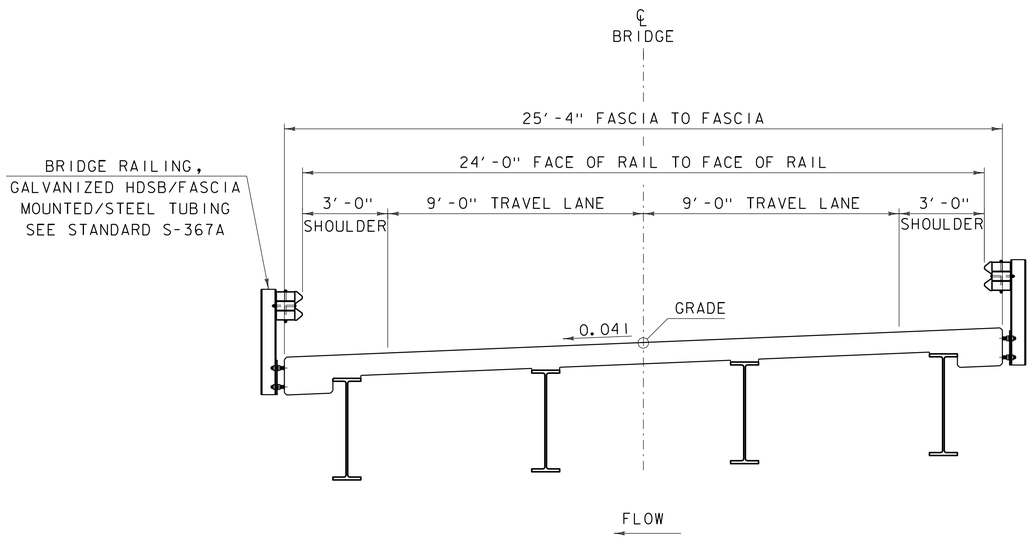
GRADES SHOWN TO THE NEAREST HUNDREDTH ARE FINISH GRADE ALONG L

PROJECT NAME: CRAFTSBURY	
PROJECT NUMBER: BO 1449(34)	
FILE NAME: 13J100/s13J100profile.dgn	**PLOT DATE:** 06-SEP-2013
PROJECT LEADER: C.P.WILLIAMS	**DRAWN BY:** O.M.DARISSE
DESIGNED BY: ------	**CHECKED BY:** ------
EXISTING PROFILE SHEET	**SHEET** 2 **OF** 19



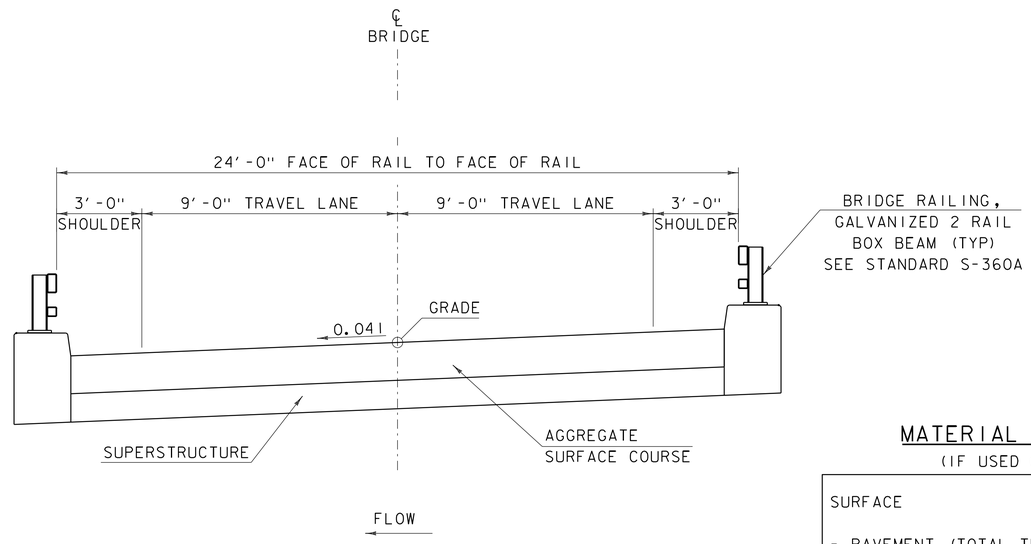
PROPOSED TH 4 TYPICAL SECTION

SCALE 3/8" = 1′-0"



68′ AND 85′ PROPOSED BRIDGE TYPICAL SECTION

SCALE 3/8" = 1′-0"



42′ PROPOSED BRIDGE TYPICAL SECTION

SCALE 3/8" = 1′-0"

MATERIAL TOLERANCES

(IF USED ON PROJECT)

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

PROJECT NAME: CRAFTSBURY
PROJECT NUMBER: BO 1449(34)

FILE NAME: 13J100\s13J100typical.dgn
PROJECT LEADER: C.P.WILLIAMS
DESIGNED BY: ----------
TYPICAL SECTIONS

PLOT DATE: 06-SEP-2013
DRAWN BY: O.M.DARISSE
CHECKED BY: ------

N

VT STATE PLANE GRID

NELSON FARMS

BENCHMARK
RAILROAD SPIKE
IN TREE
ELEV. = 1019.75'

COMB
42A
64

WHITNEY BROOK
FLOW

POE
STA 52+00.00

52+00

COMB
42A
63
14

CURVE (1)
DELTA = 18° 37' 16"
D = 5° 43' 46"
R = 1000.00'
T = 163.95'
L = 325.00'
E = 13.35'

PT
STA 14+50.00

POE
STA 15+25.00

POB
STA 10+00.00

BEGIN APPROACH
STA 10+00.00

BEGIN PROJECT
STA 10+50.00

PC
STA 11+25.00

END BRIDGE
STA 12+67.35

BEGIN BRIDGE
STA 12+23.00

TOWN HIGHWAY 2
TO CRAFTSBURY
TOWN HIGHWAY

TOWN HIGHWAY 2
TO ALBANY

10+00

11+00

12+00

13+00

14+00

15+00

15+25

END APPROACH
STA 14+50.00

END PROJECT
STA 14+00.00

IRON ROD
W/ CAP
RAIL-X
FENCE

GRAVEL
DRIVE

PAVED
DRIVE

20' JEEP TRAIL

PROPOSED PROJECT
IMPACT BOUNDARY

GOTTWICK, PAULA

ATWOOD, EUGENE R. & JEANNETTE I.

GOODWIN, DENNIS A. & LAURA Q.

STA 12+88.95
PI
50+00

POB
STA 50+00.00

ARCH

EXISTING BRIDGE DATA
SINGLE SPAN ROLLED BEAM
BUILT 1929
41' SPAN, 17.7' CURB - CURB

42' BRIDGE LAYOUT

SCALE 1" = 20'-0"
20 0 20

PROJECT NAME:	CRAFTSBURY
PROJECT NUMBER:	BO 1449(34)
FILE NAME:	13j100/sl3j100border.dgn
PROJECT LEADER:	C.P.WILLIAMS
DESIGNED BY:	T.C.FILLBACH
42' BRIDGE LAYOUT	
PLOT DATE:	06-SEP-2013
DRAWN BY:	O.M.DARISSE
CHECKED BY:	------
SHEET	4 OF 19

NELSON FARMS

BENCHMARK
RAILROAD SPIKE
IN TREE
ELEV. = 1019.75'

COMB
42A
64

WHITNEY BROOK
FLOW

POE
STA 52+00.00

52+00

COMB
42A
63
14

CURVE (1)
DELTA = 18° 37' 16"
D = 5° 43' 46"
R = 1000.00'
T = 163.95'
L = 325.00'
E = 13.35'

PT
STA 14+50.00

POE
STA 15+25.00

POB
STA 10+00.00

BEGIN APPROACH
STA 10+00.00

BEGIN PROJECT
STA 10+50.00

PC
STA 11+25.00

BEGIN BRIDGE
STA 12+10.61

END BRIDGE
STA 12+79.00

TOWN HIGHWAY 42
TO CRAFTSBURY
TOWN HIGHWAY

TOWN HIGHWAY 42
TO ALBANY

SIGN
OM3-1

10+00

11+00

12+00

13+00

14+00

15+00

15+25

END APPROACH
STA 14+50.00

END PROJECT
STA 14+00.00

IRON ROD
W/CAP
RAIL-X
FENCE

GRAVEL
DRIVE

PAVED
DRIVE

10' DEEP
DITCH

PROPOSED PROJECT
IMPACT BOUNDARY

ATWOOD, EUGENE R. & JEANNETTE I.

GOTTWICK, PAULA

GOODWIN, DENNIS A. & LAURA Q.

STA 12+88.95
PI
50+00

POB
STA 50+00.00

ARCH

VT STATE PLANE GRID

N

EXISTING BRIDGE DATA
SINGLE SPAN ROLLED BEAM
BUILT 1929
41' SPAN, 17.7' CURB - CURB

68' BRIDGE LAYOUT

SCALE 1" = 20'-0"
20 0 20

PROJECT NAME: CRAFTSBURY
PROJECT NUMBER: BO 1449(34)

FILE NAME: 13j100/sl3j100border.dgn
PROJECT LEADER: C.P.WILLIAMS
DESIGNED BY: T.C.FILLBACH
68' BRIDGE LAYOUT

PLOT DATE: 06-SEP-2013
DRAWN BY: O.M.DARISSE
CHECKED BY: ------
SHEET 5 OF 19

N

VT STATE PLANE GRID

ARCH

NELSON FARMS

BENCHMARK
RAILROAD SPIKE
IN TREE
ELEV. = 1019.75'

COMB
42A
64

WHITNEY BROOK
FLOW

POE
STA 52+00.00

52+00

COMB
42A
63
14

CURVE (1)
DELTA = 18° 37' 16"
D = 5° 43' 46"
R = 1000.00'
T = 163.95'
L = 325.00'
E = 13.35'

PT
STA 14+50.00

POE
STA 15+25.00

POB
STA 10+00.00

BEGIN APPROACH
STA 10+00.00

BEGIN PROJECT
STA 10+50.00

PC
STA 11+25.00

BEGIN BRIDGE
STA 12+05.00

END BRIDGE
STA 12+90.00

SIGN
OMTR

TOWN HIGHWAY
TO CRAFTSBURY
TOWN HIGHWAY

TOWN HIGHWAY
TO ALBANY

10+00

11+00

12+00

13+00

14+00

15+00

15+25

END APPROACH
STA 14+50.00

END PROJECT
STA 14+00.00

IRON ROD
W/CAP
RAIL-X
FENCE

GRAVEL
DRIVE

PAVED
DRIVE

12" DEP

POB
STA 50+00.00

PI
STA 12+88.95
50+00

PROPOSED PROJECT
IMPACT BOUNDARY

GOTTWICK, PAULA

ATWOOD, EUGENE R. & JEANNETTE I.

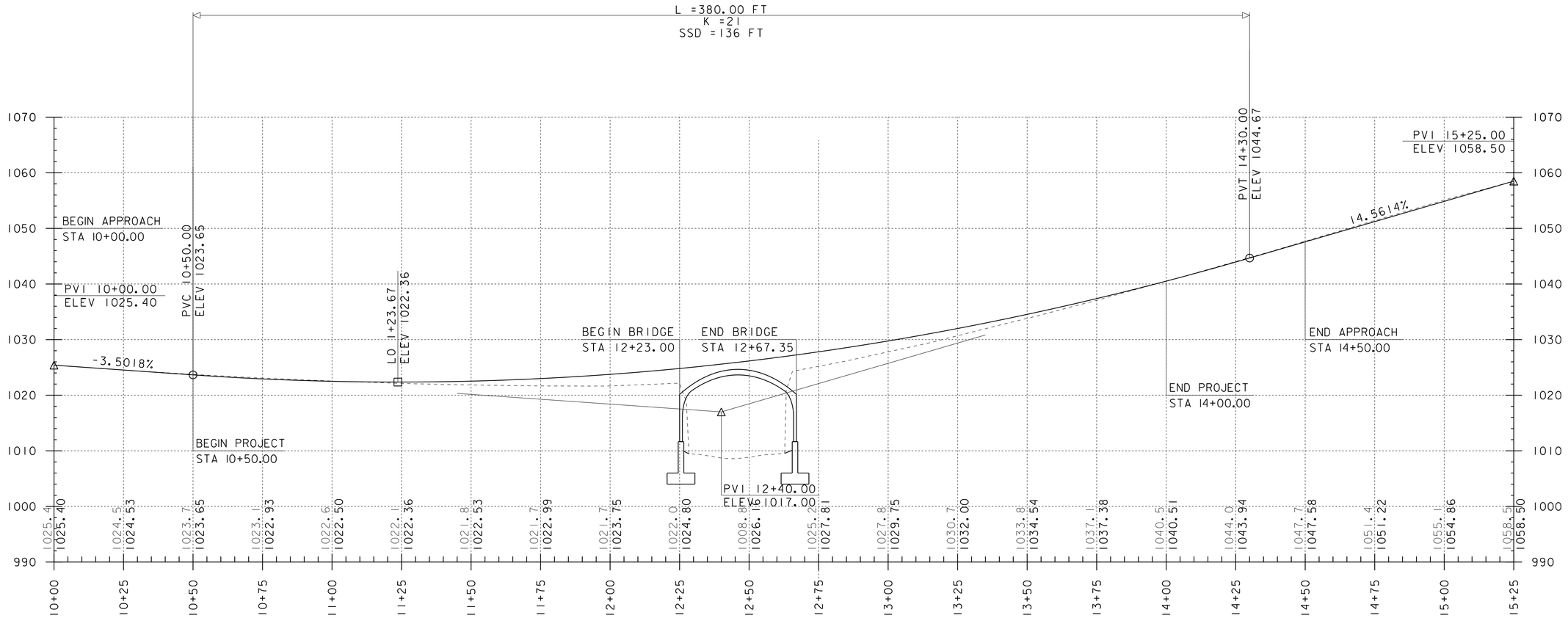
GOODWIN, DENNIS A. & LAURA Q.

EXISTING BRIDGE DATA
SINGLE SPAN ROLLED BEAM
BUILT 1929
41' SPAN, 17.7' CURB - CURB

85' BRIDGE LAYOUT

SCALE 1" = 20'-0"
20 0 20

PROJECT NAME:	CRAFTSBURY
PROJECT NUMBER:	BO 1449(34)
FILE NAME:	13j100/sl3j100border.dgn
PROJECT LEADER:	C.P.WILLIAMS
DESIGNED BY:	T.C.FILLBACH
85' BRIDGE LAYOUT	
PLOT DATE:	06-SEP-2013
DRAWN BY:	O.M.DARISSE
CHECKED BY:	------
SHEET	6 OF 19



TH4 42' BRIDGE PROFILE

LINE	SURFACE	OFFSET
---------	x13j100og	0.00
Scaled	2.0000	Times Ver.
Scaled	1.0000	Times Hor.

NOTE:

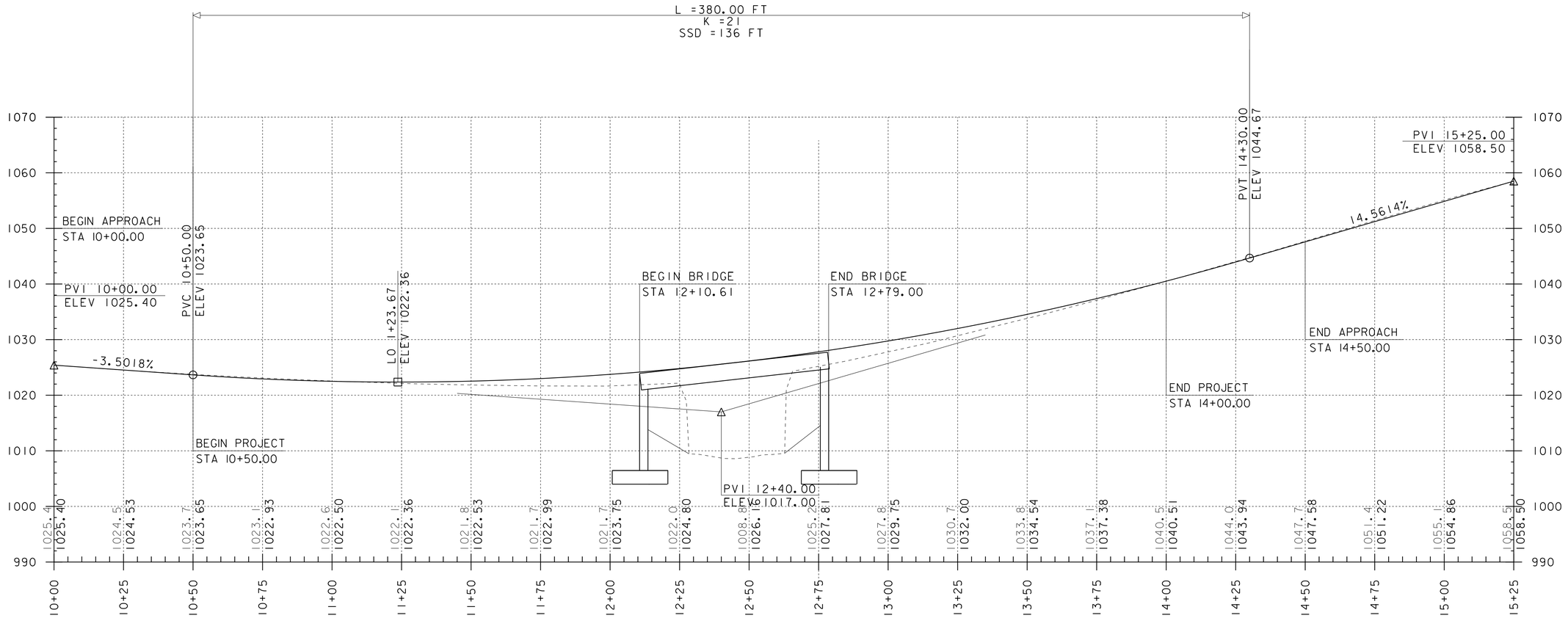
GRADES SHOWN TO THE NEAREST TENTH ARE EXISTING GROUND ALONG ℄

GRADES SHOWN TO THE NEAREST HUNDREDTH ARE FINISH GRADE ALONG ℄

PROJECT NAME: CRAFTSBURY
PROJECT NUMBER: BO 1449(34)

FILE NAME: 13j100/sl3j100profile
PROJECT LEADER: C.P.WILLIAMS
DESIGNED BY: T.C.FILLBACH
42' BRIDGE PROFILE SHEET

PLOT DATE: 06-SEP-2013
DRAWN BY: O.M.DARISSE
CHECKED BY: ------
SHEET 7 OF 19



TH 4 68' BRIDGE PROFILE

LINE	SURFACE	OFFSET
---------	x13j100og	0.00
Scaled	2.0000	Times Ver.
Scaled	1.0000	Times Hor.

NOTE:

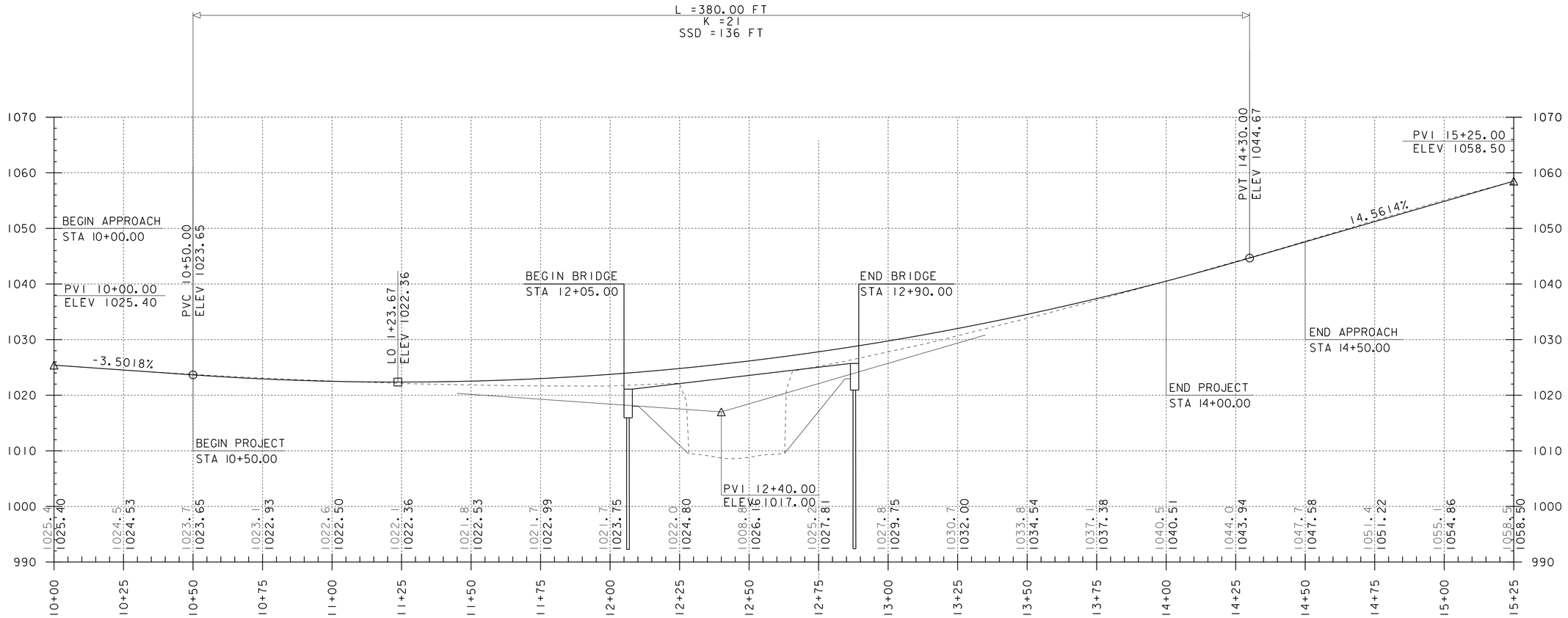
GRADES SHOWN TO THE NEAREST TENTH ARE EXISTING GROUND ALONG L

GRADES SHOWN TO THE NEAREST HUNDREDTH ARE FINISH GRADE ALONG L

PROJECT NAME: CRAFTSBURY
PROJECT NUMBER: BO 1449(34)

FILE NAME: 13j100/s13j100profile.dgn
PROJECT LEADER: C.P.WILLIAMS
DESIGNED BY: T.C.FILLBACH
68' BRIDGE PROFILE SHEET

PLOT DATE: 06-SEP-2013
DRAWN BY: O.M.DARISSE
CHECKED BY: ------
SHEET 8 **OF** 19



TH 4 85' BRIDGE PROFILE

LINE	SURFACE	OFFSET
---------	x13j100og	0.00
Scaled	2.0000	Times Ver.
Scaled	1.0000	Times Hor.

NOTE:

GRADES SHOWN TO THE NEAREST
TENTH ARE EXISTING GROUND ALONG L

GRADES SHOWN TO THE NEAREST
HUNDREDTH ARE FINISH GRADE ALONG L

PROJECT NAME: CRAFTSBURY
PROJECT NUMBER: BO 1449(34)

FILE NAME: 13j100/s13j100profile.dgn
PROJECT LEADER: C.P.WILLIAMS
DESIGNED BY: T.C.FILLBACH
85' BRIDGE PROFILE SHEET

PLOT DATE: 06-SEP-2013
DRAWN BY: O.M.DARISSE
CHECKED BY: ------
SHEET 9 **OF** 19

N

VT STATE PLANE GRID

ARCH

NELSON FARMS

BENCHMARK
RAILROAD SPIKE
IN TREE
ELEV. = 1019.75'

COMB
42A
64

WHITNEY BROOK
FLOW

POB
STA 40+00.00

PC
10+22.98

PRC
STA 10+82.44

PT
STA 10+95.06

PC
STA 41+13.69

PROPOSED IMPACT
BOUNDARY

POE
STA 52+00.00

PI
STA 12+23.06

EXISTING CURVE DATA
DELTA = 15°35'41"
D = 7°09'43"
R = 800.00'
T = 109.55'
L = 217.74'
E = 7.47'

14.6' LANE

65'

PT
STA 13+52.55
STA 43+31.43

POE
STA 13+90.48

POE
STA 44+60.77

44+61

TOWN HIGHWAY 4
TO CRAFTSBURY
TOWN HIGHWAY 1

TOWN HIGHWAY 4
TO ALBANY

40+00
41+00
42+00
43+00
44+00
50+00
51+00
12+00
13+00
13+90

SIGN
OM3-R

PT
STA 11+01.56

PC
STA 51+72.55

PRC
STA 42+96.10

PI
STA 42+23.24

PI
STA 10+53.52

PI
STA 13+12.23

POE
STA 50+00.00

IRON ROD
½" WP
FOUND

RAIL
FENCE

GRAVEL
DRIVE

EDGE OF WATER

ATWOOD, EUGENE R. & JEANNETTE I.

GOTTWICK, PAULA

GOODWIN, DENNIS A. & LAURA Q.

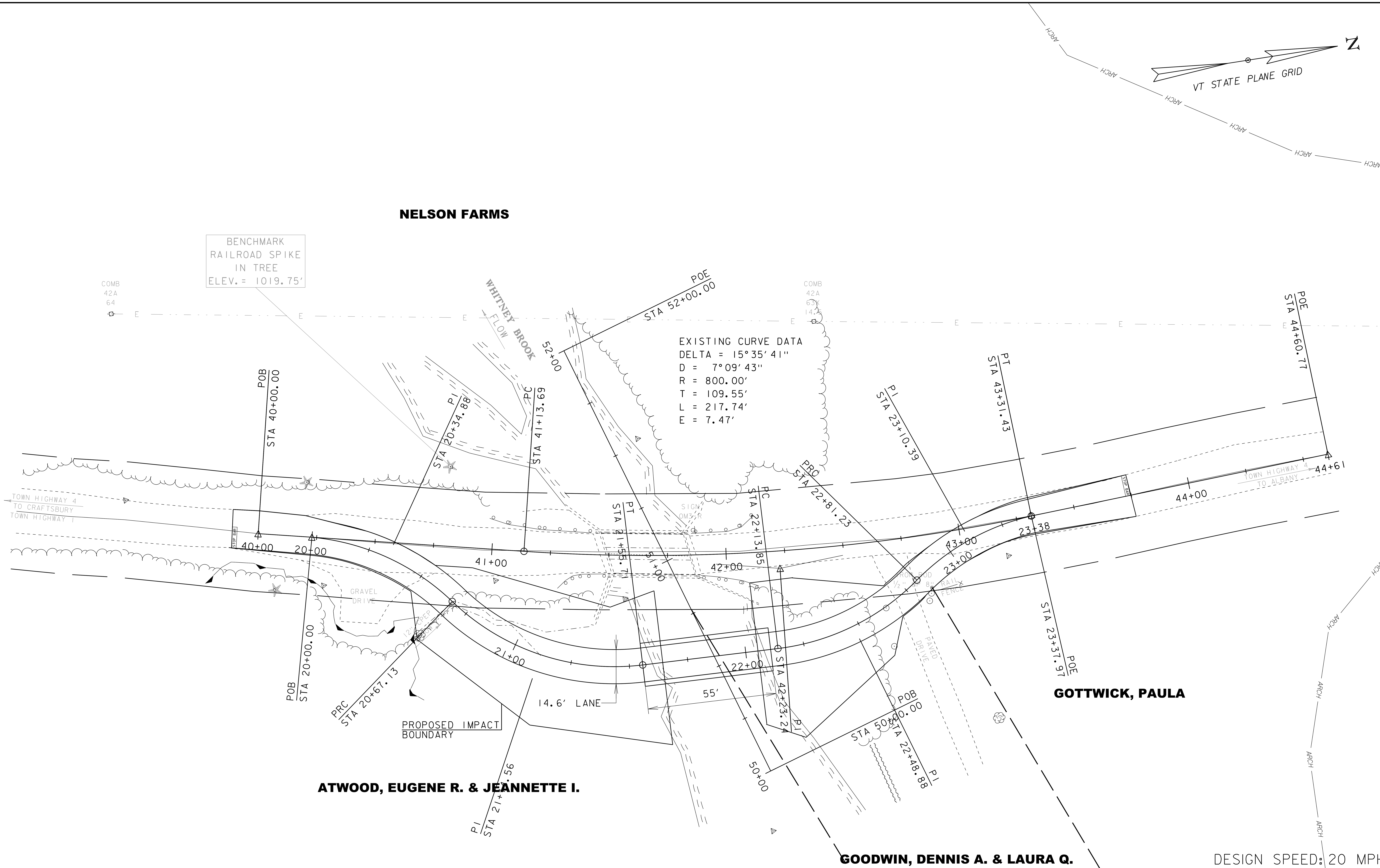
DESIGN SPEED: 20 MPH
SEE STANDARD E-107

EXISTING BRIDGE DATA
SINGLE SPAN ROLLED BEAM
BUILT 1929
41' SPAN, 17.7' CURB - CURB

DOWNSTREAM ONE-LANE TEMPORARY BRIDGE

SCALE 1" = 20'-0"
20 0 20

PROJECT NAME:	CRAFTSBURY
PROJECT NUMBER:	BO 1449(34)
FILE NAME: 13J100/sl3J100border.dgn	PLOT DATE: 06-SEP-2013
PROJECT LEADER: C.P.WILLIAMS	DRAWN BY: O.M.DARISSE
DESIGNED BY: O.M.DARISSE	CHECKED BY: ------
DOWNSTREAM ONE-LANE TEMPORARY BRIDGE	SHEET 10 OF 19



DESIGN SPEED: 20 MPH
SEE STANDARD E-107

EXISTING BRIDGE DATA
SINGLE SPAN ROLLED BEAM
BUILT 1929
41' SPAN, 17.7' CURB - CURB

UPSTREAM ONE-LANE TEMPORARY BRIDGE

SCALE 1" = 20'-0"
20 0 20

PROJECT NAME: CRAFTSBURY	
PROJECT NUMBER: BO 1449(34)	
FILE NAME: 13j100/sl3j100border.dgn	PLOT DATE: 06-SEP-2013
PROJECT LEADER: C.P.WILLIAMS	DRAWN BY: O.M.DARISSE
DESIGNED BY: O.M.DARISSE	CHECKED BY: ------
UPSTREAM ONE-LANE TEMPORARY BRIDGE	SHEET 12 OF 19