U.S. Department of Homeland Security
FEMA/Joint Field Office/
DR-4140-VT
135 Allen Brook Lane
Williston, VT 05495

FEMA

December 2, 2013

Kimberly Canarecci
Public Assistance Officer
Emergency Management and Homeland Security
State of Vermont Department of Public Safety
103 South Main Street
Waterbury, Vermont 05671-2101

Subject: Town of Lowell Scope Change Request for PW-PA-01-VT-4066-PW-00027; Mines Road

Reference: your letter on same subject to Mr. Sterling Bridges dated November 20, 2013

Dear Ms. Canarecci:

We have reviewed the Scope Change Request expressed in your referenced letter, the accompanying Town letter, supporting information in the letters, VAOT Hydrology Report, Ruggiano Engineering Memo, Plans and Cost Estimate, and the subject Project Worksheet (PW) and determined the following findings and conclusions:

1. PW 00027 was written to address the removal and disposal of the existing 72in x 65ft CMP and replacement with 69in x 98in x 65ft Corrugated Metal Multiplate Arch Culvert as an "in-kind" cost effective replacement structure upgraded in accordance with eligible codes and standards. Included was the Hazard Mitigation Proposal for construction of concrete Class B, steel reinforced head wall and wing-walls at the culvert entrance and outlet.
2. The referred to VAOT Hydrology Report in the Ruggiano Engineering memo is the same Hydrology Report that was in the original PW. That Hydrology Report noted the existing structure is not adequate hydraulically where the headwater to depth ratios exceed the allowable values and water overtops the roadway below the design Q25. Recommended was a concrete box with a 14' wide by 6' high inside opening or similar structure with a minimum clear span of 14' and at least 70-sq. ft. of waterway area. The Report further noted that the sizing of a new structure took into account meeting the hydraulic standards, fitting the natural channel width, the roadway grade and other site conditions. Site measurements taken and noted in the report were an upstream channel width of 8' – 12' and downstream channel width of approximately 15' – 20'

3. The Ruggiano Engineering memo included an Engineer's Construction Cost Estimate for the Precast Concrete Box Culvert and Headwalls of $216,040. Your memo states the project worksheet should be revised to $216,400 (replacement structure), $8,400 (engineering and design), and $2,600 (construction engineering) for an additional approximately $144,469 to complete the design, permitting and construction phases of the proposed project.
4. PW 00027 included a Culvert Sizing Evaluation which in part states *FEMA's reimbursement for replacement culverts and bridges is limited to an in-kind replacement structure that meets* (and) *that is sized appropriately to meet the VAOT hydraulic design standards. While changes to design for the purposes constructability may be considered eligible, as of the date of this analysis, FEMA does not recognize upgrades to structures in Vermont that include the burial of the culvert inverts, resizing to accommodate the bank full width of the stream or upgrading to open-bottomed culverts as being an eligible standards for the purposes of reimbursement.* The evaluation further went on to conclude *that the following in-kind replacement structures are appropriately sized to accept the Q25 and meet VAOT limits for headwater depths: * A 78-inch diameter CMP installed with the invert at the stream bed surface; * An elliptical CMP installed with the invert at the stream bed surface and an equivalent open area of at least 37 SF; and, * A CMP Arch Culvert with a span of 98 inches and a rise of 69-inches or with similar dimensions and an equivalent cross-sectional area.*
5. Categorically nothing new has been presented in the subject scope change request that substantiates the installation of 14ft wide by 6ft high concrete box culvert structure.
6. FEMA's Public Assistance Program is limited to repairing or replacing a damaged facility to its pre-disaster condition, with upgrades that may be required by the applicable codes and standards.

Based on the findings discussed above, the discretionary scope change to a 14ft. wide by 6 ft high concrete box culvert structure has been determined to be an Improved Project.

We await your direction as to whether we should move ahead with an Improved Project Amendment to the subject project worksheet.

It should be noted in accordance with FEMA Public Assistance Guide 322, pages 11 0 - 111, an Improved Project will be capped at the project worksheet estimate which in this case is $82,930.50

Sincerely,

Robert Melillo
FEMA Public Assistance
Project Specialist

Email copy: Sterling Bridges, Brian Minns, Fred Costello, Ken Pinkham, Brett Pierce and Ben Rose

Emergency Management and Homeland Security
Department of Public Safety
103 South Main Street
Waterbury, VT 05671-2101
http://vem.vermont.gov • **http://hsu.vermont.gov**

Toll free 800-347-0488
phone 802-244-8721
fax 802-241-5556

November 20, 2013

Mr. Sterling Bridges
Infrastructure Branch Director
FEMA-JFO
135 Allen Brook Lane
Williston, VT. 05495

Re: Scope Change Request – DR-4066 PW #00027 (0) – Town of Lowell, VT – Mines Road

Dear Sterling,

The State has received the attached Scope Change Request and back up documentation for the PW referenced above.

A 72 inch by 65 foot corrugated metal pipe culvert was damaged more than 50 percent. In accordance with the Town of Lowell's codes and standards, the Vermont Agency of Transportation (VTrans) conducted a hydraulic report, which shows the 72 inch pipe not to be hydraulically adequate. In the original project worksheet, FEMA considered a corrugated metal multi-arch culvert measuring 69 inches x 98 inches tall to be a cost effective replacement; however, the arch option does not comply with the findings of the VTrans hydraulic report.

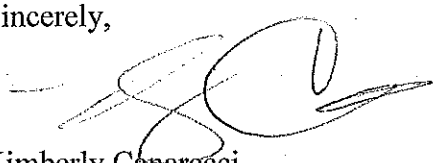
After reviewing the data, we believe that the original PW cost should be reviewed and reconsidered due to additional required cost associated with this large project. Following town codes and standards and State hydraulic reports, the stream alterations permit requires that the applicant construct a new 14 foot wide by 6 foot tall concrete box. The estimate for replacing the structures as a concrete box is $216,400.

In addition, the Project Worksheet does not include the costs of engineering and design. The town accepted Ruggiano Engineering's bid for $8,400 to provide survey, engineering, design, permitting, cost estimation and construction bidding, and an additional $2,600 for construction oversight. The project worksheet should be revised to $216,400 (replacement structure), $8,400 (engineering and design), and $2,600 (construction engineering). The Town is requesting approximately $144,469.50 in additional funds to complete the design, permitting and construction phases of the proposed project.

As soon as judgment is made, please notify us in writing with your decision, so we can discuss with the Applicant how to proceed.

Thank you for your consideration and support.

Sincerely,



Kimberly Canarecci
Public Assistance Officer

Chris Enclosure

TOWN OF LOWELL

2170 VT RTE 100
LOWELL, VT 05847

Telephone 802-744-6559
Fax 802-744-2357

November 14, 2013

Ben Rose
Recovery and Mitigation Section Chief
Division of Emergency Management and Homeland Security
103 South Main Street
Waterbury, VT 05671-4719

PA-01-VT-4066-PW-00027(0), Town of Lowell, Mines Road

Dear Ben,

This letter is to formally request a scope of work change for the Town of Lowell's Mines Road project. The structure that FEMA determined should be installed and cost estimated in the PW does not meet the Town's Codes and Standards as it does not meet the requirements of the hydraulics report or ANR's permit requirements.

The stream crossing at the intersection of Burgess and Mines road consists of a 72 inch x 65 foot corrugated metal pipe (CMP) culvert. Heavy rain water flow caused the stream to run under the culvert damaging more than 50% of the culvert.

In accordance with the codes and standards of the Town of Lowell, hydraulic reports were run by the state for the 72" CGMP, and it was found to not be of hydraulic adequacy.

In the project worksheet, FEMA considered a corrugated metal multi-plate arch culvert measuring 69in wide x 98in tall to be a cost-effective replacement. In contradiction to this, a hydraulics report run by the state does not comply with the arch option. A meeting took place with a stream alterations representative, and the stream alterations permit requires the concrete box option from the hydro report. The proposed change is for a new 14' wide by 6' tall concrete box. A scope change is requested to alter the replacement structure type and cost to meet the hydraulic and stream alterations standards.

If this scope of work change is not accepted under these conditions then we would like to submit this as an improved project request.

The original amount of the project worksheet was $82,930.50. The estimate for replacing the structures described above is $216,400. The town put out to bid and accepted Ruggiano Engineering's bid for $8,400 to provide survey, engineering, design, permitting, cost estimation, and construction bidding. This firm has also proposed an additional $2,600 for construction oversight. We believe that the PW cost total should be revised to include these costs. We believe the PW cost should be revised to $216,400 (replacement structure) + $8400 (engineering and design) + $2600 (construction engineering) for a total of $227,400.

Sincerely,

Richard Pion

Richard Pion, Select Board Chairman

RUGGIANO
engineering, inc.
Civil Engineers • Land Use Planners

September 25, 2013

Town of Lowell Select Board
Attn: Karen Clinger
2170 Vermont Route 100
Lowell, Vermont 05847

Re: Burgess Branch Culvert Replacement **Project #13062**
Mines Road, Lowell, Vermont

Dear Karen:

We appreciate the opportunity to work with the Town of Lowell on this project. Ruggiano Engineering, Inc. has conducted a topographic survey of the project site and completed the attached preliminary site plan for a replacement culvert along Mines Road at the Burgess Branch stream crossing. Also attached is an engineer's cost estimate of the anticipated construction costs, based on the preliminary site design. The design of the culvert is based on the hydraulic study by the Vermont Agency of Transportation (VTrans), attached, and direction of the Vermont Agency of Natural Resources (ANR) Streams Alteration Division.

Please be aware that the plans and cost estimate are preliminary at this time. The Site Plans will still need to be submitted to the Vermont ANR Stream Alterations Division for review and approval, as well as the Army Corps of Engineers (ACOE) for review under the Vermont General Permit. The intention of these preliminary plans and cost estimate are to provide support for the Town of Lowell to submit a Change of Scope request to the Federal Emergency Management Agency (FEMA) for funding of the project. It is our understanding that the Town is working with VTrans to complete this submittal; they have been copied on this transmittal.

Please review these documents and let us know if you need any additional information. We look forward to working with you toward a successful project. If you have any questions, please do not hesitate to contact meet at 802-888-9923.

Sincerely,
Ruggiano Engineering, Inc.

Tyler R. Mumley, P.E.

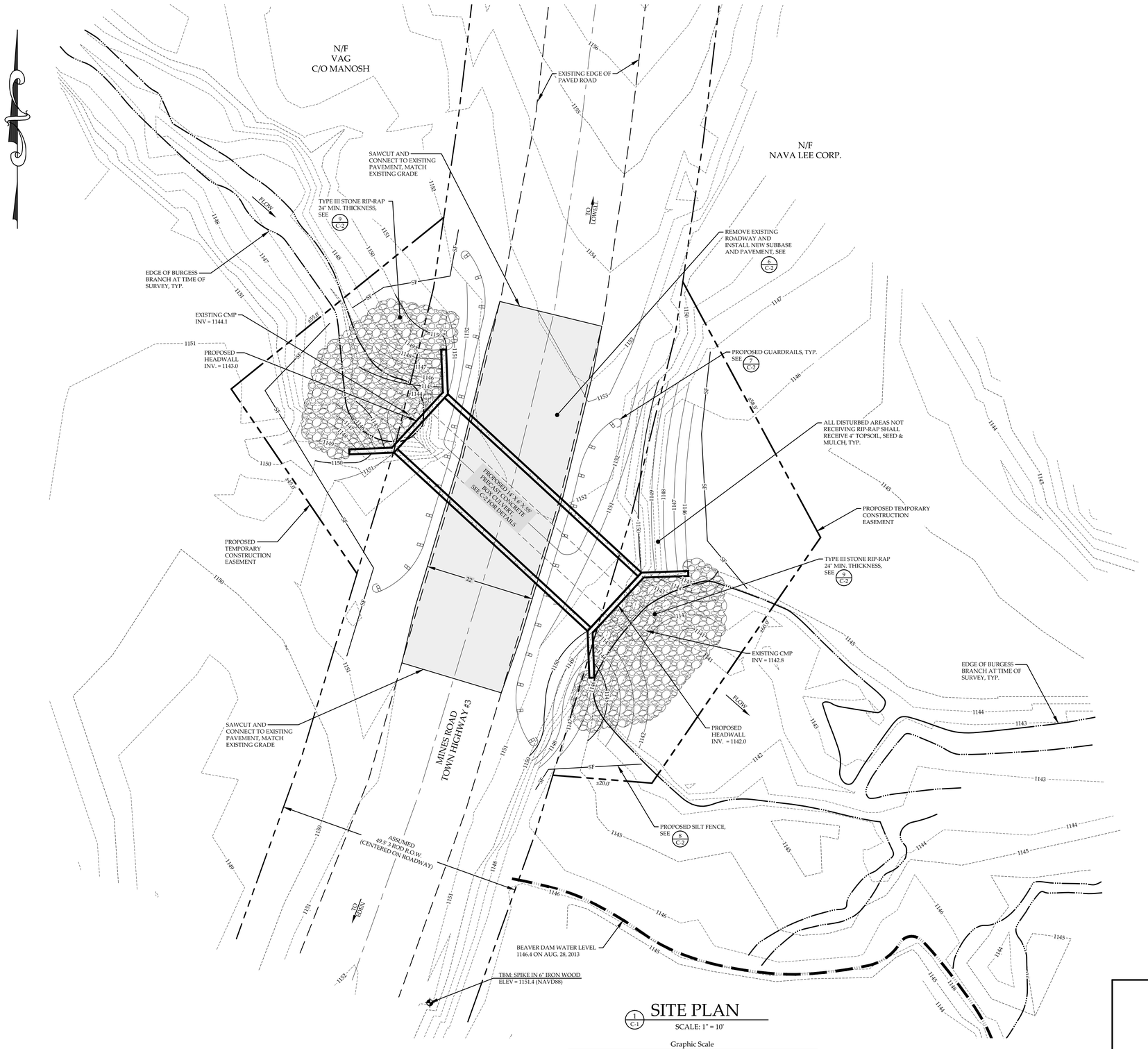
Encl: Engineer's Cost Estimate, Preliminary Site Plans, VTrans Hydraulic Study
Cc: Christine Emmons (District 7, Vermont Agency of Transportation)

Town of Lowell, Vermont
Mines Road Culvert Replacement (Burgess Branch)

Project 13062
September 25, 2013

ENGINEER'S CONSTRUCTION COST ESTIMATE

Item Description	Estimated Unit Quantity	Unit	Unit Price	Extended Amount
Mobilization, Survey & Layout, Site Prep	1	LS	$25,000	$25,000
Excavation and Disposal (includes existing culvert)	800	CY	$10	$8,000
Crushed Stone Under Culvert (12")	35	CY	$80	$2,800
Pre-cast Concrete Box Culvert & Headwalls (includes material and installation)	1	LS	$100,000	$100,000
Type II Rip-Rap	30	CY	$60	$1,800
Type III Rip-Rap	100	CY	$60	$6,000
Granular Backfill Over Culvert	400	CY	$20	$8,000
Roadway Sand Cushion (6")	35	CY	$30	$1,050
Roadway Gravel Subbase (18")	100	CY	$50	$5,000
Roadway Pavement (3")	30	TONS	$250	$7,500
Guardrail	150	LF	$35	$5,250
Topsoil (4"), Seed & Mulch	400	SY	$15	$6,000
Erosion Control	1	LS	$5,000	$5,000
Dewatering and Stream Control	1	LS	$5,000	$5,000
Traffic Control	1	LS	$5,000	$5,000
Contractor Bond	1	LS	$5,000	$5,000
Miscellaneous & Contingency	1	10%	$196,400	$19,640
			Total =	**$216,040**

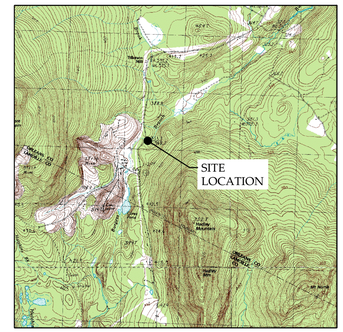


1 / C-1 SITE PLAN

SCALE: 1" = 10'

Graphic Scale

10 0 10 20 40 feet



NORTH

SITE LOCATION MAP

NOT TO SCALE

LIST OF DRAWINGS

C-1 PRELIMINARY SITE PLAN
C-2 DETAILS

LEGEND

N/F	NOW OR FORMERLY OWNED BY
◆	ELEVATION BENCHMARK
	EXISTING RIGHT OF WAY / EASEMENT
	PROPOSED RIGHT OF WAY / EASEMENT
	EXISTING EDGE OF STREAM
500	EXISTING CONTOUR
500	PROPOSED CONTOUR
SF	PROPOSED SILT FENCE

CONSTRUCTION NOTES:

1) THE CONTRACTOR SHALL PROVIDE APPROPRIATE SIGNAGE INDICATING ROAD CLOSURE DURING CONSTRUCTION AND DETOURING VEHICULAR TRAFFIC AWAY FROM THE SITE, PRIOR TO ANY EXCAVATION OF THE ROADWAY. THE CONTRACTOR SHALL ALSO PROVIDE ADEQUATE SAFETY BARRIERS TO BLOCK THE ROADWAY AT THE LIMITS OF CONSTRUCTION. A SIGNAGE AND SAFETY PLAN SHALL BE APPROVED BY THE TOWN OF LOWELL ROAD FOREMAN OR SELECTBOARD PRIOR TO THE START OF CONSTRUCTION.

2) THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PREVENT SILTATION OR POLLUTION OF THE BROOK, INCLUDING UNCURED CONCRETE, AUTOMOTIVE , OR MACHINERY FLUIDS, ETC.

PLAN REFERENCES:

1) EXISTING FEATURES AND TOPOGRAPHY RECEIVED FROM DIGITAL FILE ENTITLED "LOWE0002-GRID-WS-TO REI 090313.DWG" ON 09-03-13 BY BUTTON PROFESSIONAL LAND SURVEYORS, PC. OF SOUTH BURLINGTON, VERMONT.

2) PROPERTY BOUNDARIES, ABUTTER INFORMATION FROM TAX MAP PROVIDED BY TOWN OF LOWELL, VERMONT.

NOTES:

1) THIS DRAWING IS NOT A BOUNDARY SURVEY PLAT. BOUNDARY LINE INFORMATION SHOWN IS BASED ON PLAN REFERENCE #1 AND #2. THE PROPERTY LINES, EASEMENTS AND OTHER REAL PROPERTY DESCRIPTIONS PROVIDED ON THIS DRAWING ARE FOR ILLUSTRATION PURPOSES ONLY. THEY DO NOT DEFINE LEGAL RIGHTS OR MEET LEGAL REQUIREMENTS FOR A LAND SURVEY AS DESCRIBED IN V.S.A.TITLE 27 SECTION 1403 AND SHALL NOT BE USED IN LIEU OF A SURVEY AS THE BASIS OF ANY LAND TRANSFER OR ESTABLISHMENT OF ANY PROPERTY RIGHT.

2) THE CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING AND DETERMINING THE LOCATION, SIZE, AND ELEVATION OF ALL EXISTING UTILITIES PRIOR TO THE START OF CONSTRUCTION. THE ENGINEER SHALL BE NOTIFIED IN WRITING OF ANY DISCREPANCIES OR UTILITIES FOUND INTERFERING WITH THE PROPOSED CONSTRUCTION. APPROPRIATE REMEDIAL ACTION SHALL BE TAKEN BEFORE PROCEEDING WITH THE WORK.

3) THIS TOPOGRAPHIC SURVEY WAS CONDUCTED WITHOUT THE BENEFIT OF "DIG SAFE" MARKINGS. UTILITY LOCATIONS SHOWN ARE APPROXIMATE AND ARE NOT WARRANTED TO BE EXACT OR COMPLETE. THE CONTRACTOR SHALL CONTACT "DIG SAFE" BEFORE COMMENCING ANY WORK AND SHALL PRESERVE ALL EXISTING UTILITIES NOT SPECIFIED TO BE REMOVED OR ABANDONED AS PART OF THE PROJECT.

4) NORTH ORIENTATION IS BASED ON SURVEY GRADE STATIC GPS OBSERVATIONS MADE ON JUNE 5, 2013. THE RESULTANT HORIZONTAL DATUM IS NAD 83. THIS REALIZATION IS CALLED NAD 83(2011) EPOCH 2010.0. GEOID MODEL (GEOID12A). THE RESULTING ORTHOMETRIC HEIGHT IS NAVD 88 (GEOID12A).

5) THE PREMISES SHOWN AND DESCRIBED HEREON MAYBE SUBJECT TO EXISTING BURIED UTILITIES, EASEMENTS, RIGHTS-OF-WAY, RESTRICTIONS, COVENANTS, PERMITS, REGULATIONS, AND/OR SETBACK LINES. CLEAR EVIDENCE OF STRUCTURES THAT ARE READILY APPARENT FROM A CASUAL ABOVE GROUND VIEW ARE DELINEATED HEREON. NO LAND RECORD RESEARCH HAS BEEN PERFORMED BY THIS OFFICE IN THE ACQUISITION OF THIS TOPOGRAPHY.

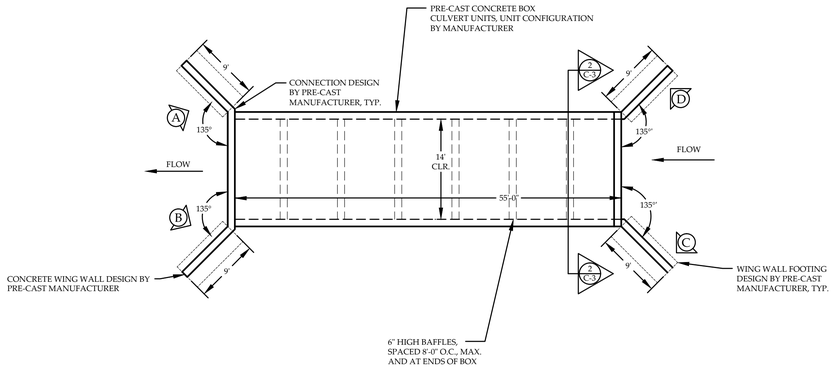
6) THE TOPOGRAPHIC SURVEY WAS CONDUCTED ON 6/5/13. EXISTING CONDITION MAY HAVE CHANGED SINCE TIME OF SURVEY. CONTRACTOR TO VERIFY EXISTING CONDITIONS AND INFORM ENGINEER IN WRITING ON ANY SIGNIFICANT DEVIATIONS.

PRELIMINARY SITE PLAN
TOWN OF LOWELL
BURGESS BRANCH CULVERT REPLACEMENT
MINES ROAD, LOWELL, VERMONT

RUGGIANO engineering, inc.
5 LAKE STREET
ST. ALBANS, VERMONT 05478
PHONE - (802) 524-9300 FAX - (802) 524-9700

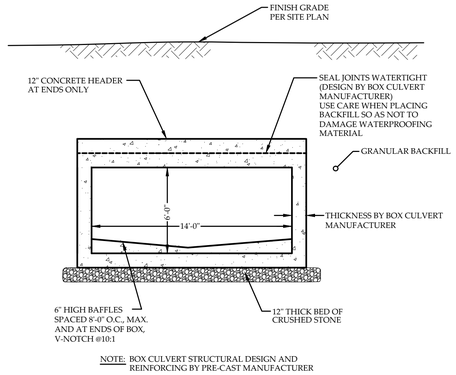
PROJECT NO.....13062
DRAWN BY.....DJL
CHECKED BY.....TRM
SCALE.....1" = 10'
DATE.....09/23/13

SHEET NO.
C-1
1 OF 2 SHEETS



1 C-2 BOX CULVERT PLAN VIEW DETAIL

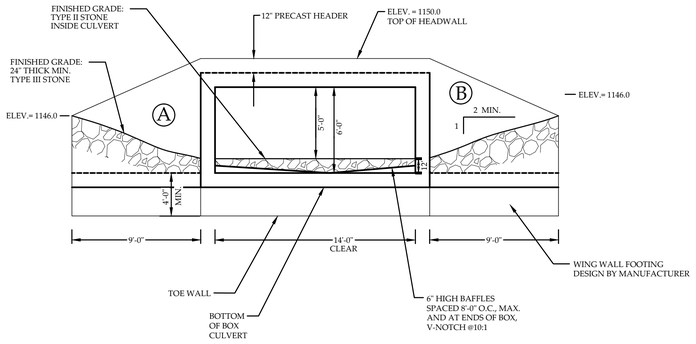
SCALE: 1" = 10'



NOTE: BOX CULVERT STRUCTURAL DESIGN AND REINFORCING BY PRE-CAST MANUFACTURER

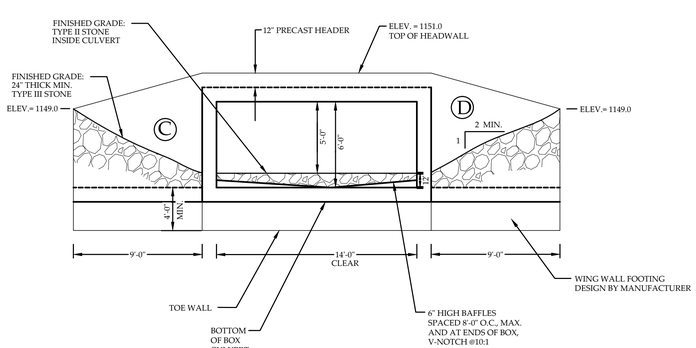
2 C-2 TYPICAL BOX CULVERT SECTION

SCALE: 1" = 5'



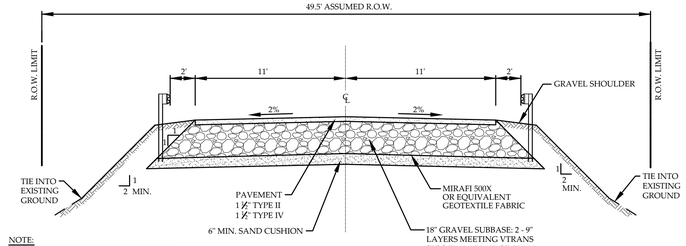
4 C-2 EAST END ELEVATIONS

SCALE: 1" = 5'



5 C-2 WEST END ELEVATIONS

SCALE: 1" = 5'



NOTE:
ALL DISTURBED AREAS NOT RECEIVING ROAD FINISH COURSE OR RIP-RAP SHALL BE RESTORED USING 4" TOPSOIL, SEED & MULCH

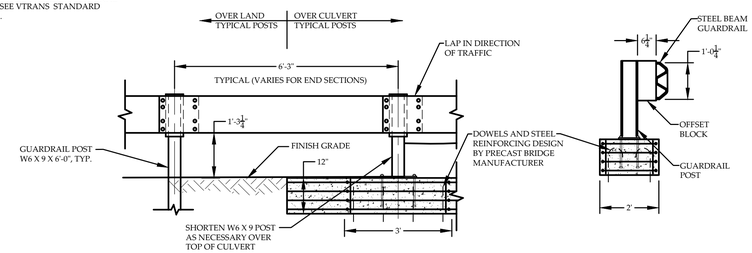
6 C-2 TYPICAL ROAD CROSS SECTION

NOT TO SCALE

NOTES:

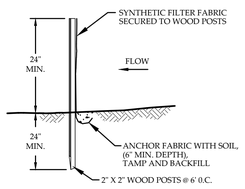
1) SEE SHEET G-1d IN VTRANS STANDARD CONSTRUCTION DETAILS.

2) CONTRACTOR SHALL INSTALL 16' RADIUS TERMINAL ON ALL APPROACHES - SEE VTRANS STANDARD DETAIL G-1d AND PLAN.



7 C-2 STEEL BEAM GUARDRAIL

NOT TO SCALE



8 C-2 SILT FENCE

NOT TO SCALE

TYPE III STONE SHALL CONFORM TO THE SPECIFICATIONS WRITTEN IN THE 2011 STANDARD SPECIFICATIONS FOR CONSTRUCTION ISSUED BY THE VERMONT AGENCY OF TRANSPORTATION, SECTION 706.04, WHICH STATE:

"STONE FOR STONE FILL SHALL BE APPROVED, HARD, BLASTED, ANGULAR ROCK OTHER THAN SERPENTINE ROCK CONTAINING THE FIBROUS VARIETY CHRYSOTILE (ASBESTOS). THE LEAST DIMENSION OF THE STONE SHALL BE GREATER THAN 33 PERCENT OF THE LONGEST DIMENSION. THE STONE FILL SHALL BE REASONABLY WELL GRADED FROM THE SMALLEST TO THE MAXIMUM SIZE STONE SPECIFIED SO AS TO FORM A COMPACT MASS WHEN IN PLACE. THE LONGEST DIMENSION OF THE STONE SHALL VARY FROM 75 TO 1200 MM (3 TO 48 INCHES), AND AT LEAST 50 PERCENT OF THE VOLUME OF THE STONE IN PLACE SHALL HAVE A LEAST DIMENSION OF 400 MM (16 INCHES)."

VISIBLY SMALLER OR LARGER STONE WILL NOT BE ACCEPTED.

9 C-2 TYPE III STONE SPECIFICATIONS

TYPE II STONE SHALL CONFORM TO THE SPECIFICATIONS WRITTEN IN THE 2011 STANDARD SPECIFICATIONS FOR CONSTRUCTION ISSUED BY THE VERMONT AGENCY OF TRANSPORTATION, SECTION 706.04, WHICH STATE:

"STONE FOR STONE FILL SHALL BE APPROVED, HARD, BLASTED, ANGULAR ROCK OTHER THAN SERPENTINE ROCK CONTAINING THE FIBROUS VARIETY CHRYSOTILE (ASBESTOS). THE LEAST DIMENSION OF THE STONE SHALL BE GREATER THAN 33 PERCENT OF THE LONGEST DIMENSION. THE STONE FILL SHALL BE REASONABLY WELL GRADED FROM THE SMALLEST TO THE MAXIMUM SIZE STONE SPECIFIED SO AS TO FORM A COMPACT MASS WHEN IN PLACE. THE LONGEST DIMENSION OF THE STONE SHALL VARY FROM 50 TO 900 MM (2 TO 36 INCHES), AND AT LEAST 50 PERCENT OF THE VOLUME OF THE STONE IN PLACE SHALL HAVE A LEAST DIMENSION OF 300 MM (12 INCHES)."

VISIBLY SMALLER OR LARGER STONE WILL NOT BE ACCEPTED.

10 C-2 TYPE II STONE SPECIFICATIONS

DETAILS
TOWN OF LOWELL
BURGESS BRANCH CULVERT REPLACEMENT
MINES ROAD, LOWELL, VERMONT

RUGGIANO Engineering, inc.
5 LAKE STREET
ST. ALBANS, VERMONT 05478
PHONE - (802) 524-9300 FAX - (802) 524-9700

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SHEET NO.
C-2
2 OF 2 SHEETS