

TOWN OF ST. ALBANS VT ROUTE 104, CULVERT #19 ST. ALBANS, VT

10'-0" x 7'-0" BOX CULVERT

PREPARED FOR:
CAMP PRECAST CONCRETE PRODUCTS
78 PRECAST ROAD
MILTON, VT 05468

PREPARED BY:
ENGINEERING VENTURES, PC
208 FLYNN AVENUE SUITE 2A
BURLINGTON, VT 05401

- DESIGN IN ACCORDANCE WITH AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 7TH EDITION, 2014, WITH LATEST INTERIM REVISIONS.
- THE FOLLOWING CRITERIA WAS USED FOR DESIGN:

LIVE LOAD:	HL-93 + LANE LOAD OR TANDEM + LANE LOAD VARIES 6 FT TO 7.5 FT
EARTH COVER:	3 INCHES
FUTURE WEARING SURFACE:	140 LBS/CF
SOIL WEIGHT:	34"
BACKFILL ANGLE OF INTERNAL FRICTION:	3,500 PSI
MINIMUM LIFTING/HANDLING CONCRETE STRENGTH:	5,000 PSI
28 DAY CONCRETE STRENGTH (f _c):	60,0000 PSI
STEEL REINFORCEMENT YIELD STRENGTH:	
- ENGINEER OF RECORD TO VERIFY CULVERT AND WINGWALL SUITABILITY TO SITE CONDITIONS INCLUDING HYDRAULIC CAPACITY, EFFECTS OF FROST, SCOUR, SETTLEMENT, GLOBAL STABILITY OF WINGWALL, RETAINED SOIL, FOUNDATION SOIL AND SITE GRADING.
- PRECAST CULVERT AND WINGWALL NOT DESIGNED FOR HYDROSTATIC PRESSURE. CONTRACTOR TO USE RAPID DRAINING MATERIAL MEETING REQUIREMENTS OF VTRANS STANDARD SPECIFICATION SECTION 704.16. E.O.R. TO FIELD VERIFY RAPID DRAINING MATERIAL INSTALLED.
- ALL REINFORCING STEEL SHALL BE GRADE 60 DEFORMED BARS CONFORMING TO ASTM A-615 EPOXY COATED IN ACCORDANCE WITH ASTM A 934. REPAIR DAMAGED EPOXY COATING WITH EPOXY REPAIR COATING ACCORDING TO ASTM D 3963. USE EPOXY-COATED STEEL WIRE TIES TO FASTEN EPOXY-COATED REINFORCING
- CLEAR COVER TO REINFORCING STEEL SHALL BE 2", UNLESS NOTED OTHERWISE.
- ALL EXPOSED CONCRETE EDGES SHALL BE CHAMFERED 3/4-INCH.
- APPLY WATER REPELLENT, SILANE IN ACCORDANCE WITH VTRANS STANDARD SPECIFICATION SECTION 514 TO ALL EXPOSED EXTERIOR SURFACES OF PRECAST CONCRETE.
- EACH SECTION SHALL BE DRAWN TOGETHER WITH DRAW CONNECTORS AS SHOWN IN DRAWINGS. FILL ALL RECESSES & LIFTING VOIDS WITH 5,000 PSI (28-DAY) NON-SHRINK GROUT MEETING REQUIREMENTS OF ITEM 707.03 MORTAR, TYPE IV IN THE LATEST EDITION OF THE VTRANS STANDARD SPECIFICATION FOR CONSTRUCTION AND LISTED ON VTRANS APPROVED PRODUCTS LIST.
- DESIGN BASED ON INFORMATION IN THE FOLLOWING RESOURCES:

DRAWINGS TITLED "ST. ALBANS TOWN, BF 0279(5)" PREPARED BY STATE OF VERMONT AGENCY OF TRANSPORTATION AND LAST DATED JANUARY 10, 2017.
- IF ANY OF THE WORK TO BE DONE AS SHOWN ON THE DRAWINGS DOES NOT CORRESPOND WITH THE EXISTING FIELD CONDITIONS, CONTACT THE ENGINEER PRIOR TO PROCEEDING WITH THE WORK IN QUESTION.
- LIFTING INSERTS ASSUME SLING ANGLE 60 DEGREES OR GREATER FROM HORIZONTAL. PROVIDE SPREADER BEAMS AND ROLLING BLOCKS AS REQUIRED TO LOAD INSERTS EQUALLY.

CURING, HANDLING & STORAGE PRACTICES AND PROCEDURES:

- THE CONCRETE UTILIZED WILL BE PRODUCED, INSPECTED, HANDLED, PLACED, FINISHED AND REPAIRED AS PER SECTIONS 540.05 THROUGH 540.07 OF THE VERMONT STANDARD SPECIFICATIONS FOR CONSTRUCTION. THE SPECIFIC MIX DESIGN WAS APPROVED ON 4-12-17 BY VTAOT STRUCTURAL CONCRETE ENGINEER, JAMES WILD.
- AFTER REACHING A MINIMUM STRIPPING STRENGTH OF 3,500 PSI THE CULVERT SECTION MAY BE REMOVED FROM THE FORM. ALL STRUCTURAL PIECES SHALL BE CURED UNTIL ATTAINING DESIGN STRENGTH OF 5,000 PSI.
- IMMEDIATELY AFTER THE STRIPPING PROCESS IS COMPLETE, THE CULVERT SECTION WILL BE PLACED INTO A WOOD AND STEEL STRUCTURE TO BEGIN ITS CURING PERIOD.
- CURING PROCEDURES SHALL FOLLOW SECTIONS 501.17 AND 540.08 OF THE VERMONT STANDARD SPECIFICATIONS FOR CONSTRUCTION EXCEPT AS FOLLOWS:
 - SECTION 501.17 (b) WATER CURING, SHALL BE MODIFIED TO INCLUDE CONTINUOUS MISTING AND OR FOGGING TO MAINTAIN, AS NEAR AS POSSIBLE, AN ATMOSPHERE OF 100% HUMIDITY.
- WHEN THE CULVERT SECTION ATTAINS DESIGN STRENGTH AS EVIDENCED BY TEST CYLINDER BREAKS CURED WITH THE PRECAST BOX SECTION, CURING PROCEDURES WILL END AND THE CONTAINMENT BUILDING WILL BE REMOVED.
- AT THIS POINT, SECONDARY POURS (FISH BAFFLES, HEADWALLS) CAN BE PERFORMED.
- STRUCTURAL SECONDARY POURS SHALL BE CURED IN ACCORDANCE WITH VERMONT STANDARD SPECIFICATIONS FOR CONSTRUCTION SECTION 501.17 (5).
- AS PER SECTION 540.09 THE CULVERT SECTIONS "SHALL BE HANDLED, STORED, AND SHIPPED IN SUCH A MANNER AS TO MINIMIZE CHIPPING, CRACKS, FRACTURES, DISCOLORATION, AND EXCESSIVE BENDING STRESSES. UNITS DAMAGED BY HANDLING, STORAGE, OR SHIPPING SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE."
- AS PER SECTION 540.09 "PRECAST CONCRETE WILL NOT BE CONSIDERED FOR SHIPMENT UNTIL IT HAS BEEN ACCEPTED." (BY VTAOT OR IT'S REPRESENTATIVE). "THIS ACCEPTANCE SHALL INCLUDE VERIFICATION THAT PIECES ARE FREE FROM DEFECTS AND ALL SPECIFICATION REQUIREMENTS INCLUDING THE COMPRESSIVE STRENGTH AND TOLERANCE REQUIREMENTS HAVE BEEN ACHIEVED. IN ADDITION, PRECAST CONCRETE WILL NOT BE CONSIDERED FOR SHIPMENT FOR A MINIMUM OF 72 HOURS FOLLOWING THE COMPLETION OF CASTING."

Vermont Agency of Transportation

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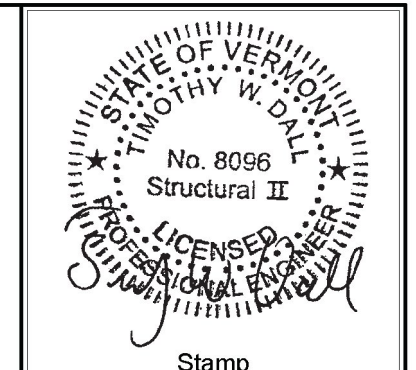
CK'D BY J. B. McCarthy OK'D BY J. B. McCarthy

May 17, 2017

RESUBMIT No Approved
BY J. B. McCarthy DATE 05/18/17

INDEX OF SHEETS:

- TITLE SHEET
- CULVERT PLAN AND OUTLET ELEVATION
- CULVERT ELEVATION AND SECTION
- CULVERT REINFORCING SECTION
- OUTLET WINGWALL PLANS, ELEVATIONS AND SECTION
- INLET WINGWALL PLANS, ELEVATIONS AND SECTION
- CUTOFF WALL PLANS AND ELEVATIONS
- DETAILS
- CUTOFF WALL LAYOUT PLAN



No.	Description	Date
1	SUBMITTAL REVIEW COMMENTS	04/26/17
2	CURING, HANDLING & STORAGE PRACTICES AND PROCEDURES ADDED	05/09/17
3	SUBMITTAL REVIEW COMMENTS	05/15/17

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TITLE SHEET
Project Title:
**TOWN OF ST. ALBANS
VT ROUTE 104, CULVERT #19**
ST. ALBANS, VERMONT

Designed By: CPA
Checked By: TWD
Drawn: JTM
Scale: AS NOTED
Date: 04/04/2017

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EV Project #17022.02