GENERAL NOTES:

1. DO NOT SCALE FROM THE DRAWINGS. IF A REQUIRED DIMENSION IS NOT PROVIDED, CONSULT THE ENGINEER.

2. 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.

3. FIELD VERIFY ALL ELEVATIONS PRIOR TO THE START OF CONSTRUCTION. IF THERE ARE ANY DISCREPANCIES, CONSULT THE ENGINEER PRIOR TO PROCEEDING WITH THE WORK IN QUESTION.

THREE SIDED RIGID FRAME NOTES:

1. THREE SIDED RIGID FRAME SECTIONS ARE DESIGNED IN ACCORDANCE WITH AASHTO "LRFD BRIDGE DESIGN SPECIFICATIONS", 4TH EDITION AND ASTM C 1504–03, "STANDARD SPECIFICATION FOR MANUFACTURE OF PRECAST REINFORCED CONCRETE THREE–SIDED STRUCTURES FOR CULVERTS, STORM DRAINS". THE DESIGN LIVE LOAD IS AASHTO HL–93. THE DESIGN EARTH COVER IS 8.0 FT.

2. ALL RIGID FRAME CONCRETE SHALL HAVE A 28–DAY COMPRESSIVE STRENGTH OF 6,000 P.S.I. THE CONCRETE SHALL BE SELF CONSOLIDATING CONCRETE. THE AGGREGATE SHALL CONFORM TO ASTM C–33 SHALL HAVE A MAXIMUM DIAMETER OF 3/4".

3. UNLESS NOTED OTHERWISE, ALL REINFORCING SHALL MEET THE REQUIREMENTS OF ASTM A–615 GRADE 60 DEFORMED STEEL BARS FOR CONCRETE REINFORCING. EPOXY COATED REINFORCING SHALL CONFORM TO ASTM A–775. ALL BARS SHALL BE BENT COLD.

4. ALL SECTIONS EXCEPT THE END & SKEWED UNITS SHALL BE 5'–0" LONG. ALL EXPOSED EDGES EXCEPT WHERE NOTED SHALL BE CHAMFERED 3/4".

5. ALL BACKFILL FOR A MINIMUM DISTANCE OF 5'–0" BEYOND THE HORIZONTAL LIMITS OF THE STRUCTURE SHALL COMPLY WITH VAOT STANDARD SPECIFICATIONS FOR CONSTRUCTION, ITEM 204, GRANULAR BACKFILL FOR STRUCTURES.

6. EACH SECTION SHALL BE PROVIDED WITH BOLT POCKETS FOR ATTACHMENT TO ADJACENT SECTIONS. 7/8" DIA. GALV. THREADED ROD, WASHERS AND NUTS SHALL BE PROVIDED FOR ASSEMBLY IN THE FIELD. CLOSED CELL NEOPRENE JOINT SEALANT SHALL BE PROVIDED FOR ALL JOINTS.

7. A–ANCHORS (UEL 8 BY UNIVERSAL BUILDING PRODUCTS) SHALL BE CAST INTO EACH UNIT FOR HANDLING. VOIDS SHALL BE FILLED WITH HIGH–STRENGTH, LOW–SHRINK GROUT PRIOR TO BACKFILLING.

FABRICATION PLANT PRODUCTION SCHEDULE

1. DAILY PRODUCTION WILL PROCEED AT THE RATE OF APPROXIMATELY ONE CULVERT SECTION EVERY DAY IN ONE LOT. UNIT WILL BE CAST IN A SIMILAR SEQUENCE AS IT IS TO BE TRANSPORTED AND FIELD ERECTED AS ORDERED BY THE CONTRACTOR. A DETAILED PLANT PRODUCTION SCHEDULE WILL BE KEPT AT THE PRECASTER'S FABRICATING PLANT AND MADE AVAILABLE TO INSPECTORS AS REQUIRED.

PRECAST DESIGN CRITERIA

1. APPLICABLE CODES: VAOT STANDARD SPECIFICATION FOR CONSTRUCTION, 2006; CONCRETE STEEL REINFORCING INSTITUTE; BRIDGE DESIGN SPECIFICATIONS, AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 4TH EDITION, 2007.

2. DESIGN NOTES (TO BE VERIFIED BY E.O.R.):
   –LIVE LOAD: AASHTO HL–93
   –DESIGN EARTH FILL: 8.0'
   –UNIT WEIGHT OF SOIL: 140 PCF
   –6,430 PSF FACTORED BEARING RESISTANCE (12' WIDE)
   –5,809 PSF FACTORED BEARING RESISTANCE (10' WIDE)
   –5,497 PSF FACTORED BEARING RESISTANCE (9' WIDE)
   –5,185 PSF FACTORED BEARING RESISTANCE (8' WIDE)
   –34° SOIL FRICTION ANGLE.
   –0.60 SLIDING COEFFICIENT.
3. CONCRETE DESIGN STRENGTH:
   RIGID FRAMES AND HEADWALLS
   F'c = 6,000 PSI @ 28 DAYS
   F'ci = 2,500 PSI (STRIPPING)
   WINGWALLS, BRIDGE FOOTINGS, AND WINGWALL FOOTINGS
   F'c = 5,000 PSI @ 28 DAYS
   F'ci = 2,500 PSI (STRIPPING)
4. THESE PLANS ARE FOR SHOP PRODUCTION AND ARE NOT INTENDED TO REPLACE THE CONSTRUCTION REQUIREMENTS OF THE CONTRACT PLANS.

MATERIALS

1. ALL CONCRETE SHALL COMPLY WITH VAOT STANDARD SPECIFICATIONS 540.
2. REINFORCING STEEL SHALL CONFORM TO ASTM A–615 GRADE 60, UNCOATED.
ALL BARS ARE TO BE BENT COLD.
3. SUPPORTS FOR REINFORCEMENT SHALL COMPLY WITH CRSI RECOMMENDATIONS.
4. CASTING DATE SHALL BE SHOWN ON EACH PIECEMARK.

CURING

1. SHALL COMPLY WITH VAOT STANDARD SPECIFICATION 540.08.

PIECE MARKS

EACH PIECEMARK # WILL HAVE THE FOLLOWING STENCILED ONTO IT:

1. PIECEMARK NUMBER
2. DATE OF CASTING
3. LOT NUMBER – IF APPLICABLE
4. VT PROJECT NO. STP ST CULV(7)
5. MICHIE CORPORATION, INC.
6. CONTRACTORS NAME

TOLERANCES: PER AASHTO M259

PRODUCTION CONTROL PROCEDURES

1. CYLINDER SAMPLING AND CURING:
   A. A MINIMUM OF TWO (2) CYLINDERS PER LOT WILL BE MADE IN ACCORDANCE WITH ASTM C31. CYLINDERS WILL BE TESTED IN ACCORDANCE WITH ASTM C39.
   B. AIR CONTENT (ASTM C231), SPREAD PER SCC GUIDELINES, AND TEMPERATURE TESTS WILL BE TAKEN INITIALLY FOR FIRST LOAD. NOT TO EXCEED TEN (10) CUBIC YARDS.
   C. THE CYLINDERS SHALL BE KEPT WITH THE PIECE UNTIL STRIPPING STRENGTH IS MET. A SUFFICIENT NUMBER OF CYLINDERS SHALL BE PREPARED FOR STRIPPING AND 28 DAY STRENGTH TESTING.

NOTE: 1 AIR TEST 1ST LOAD

2. CYLINDER BREAKS:
   A. FOR EARLY STRENGTH VERIFICATION, CYLINDERS MAY BE BROKEN AT ANY TIME UP TO 28 DAYS AFTER CASTING. IF THE AVERAGE STRENGTH OF TWO (2) CYLINDERS MEETS OR EXCEEDS THE REQUIRED 28 DAY STRENGTH (WITH EACH CYLINDER HAVING A MINIMUM OF 95% OF THE REQUIRED 28 DAY STRENGTH), THE LOT SHALL BE ACCEPTED FOR STRENGTH.

3. QUALITY CONTROL TEST AND EQUIPMENT:
   CYLINDER TESTER: FORNEY 500 SERIES WITH DR–2 DIGITAL READOUT CALIBRATED ANNUALLY

   AIR METER: PRESSURE METER BY FORNEY (CALIBRATED MONTHLY)

   SLUMP CONE: STANDARD 8" BASE, 4" AT RIM, 12" IN HEIGHT MEASURED IN ACCORDANCE WITH SCC GUIDELINES

   SCALES FOR UNIT WEIGHT: MEASURED IN ACCORDANCE WITH ASTM C143 100 LBS. CAPACITY CALIBRATED TO THE NEAREST 1/10TH POUND YEARLY

   CYLINDER MOLDS: 4" DIAMETER X 8" PLASTIC

4. CONCRETE TESTING AND AIR METER CALIBRATION WILL BE DONE BY PLANT PERSONNEL (ACI GRADE I CERTIFIED) ALL TESTING PRODUCERS WILL BE OBSERVED BY VAOT INSPECTORS OR AUTHORIZED REPRESENTATIVES.

CASTING, STORAGE, SHIPPING, & ERECTING

WINGWALLS SHALL BE FABRICATED AS FOLLOWS:
–WING FACE SHALL BE FORMED FLAT ON CASTING PLATE. AFTER STRIPPING STRENGTH HAS BEEN ACHIEVED, WINGWALLS MAY BE REMOVED FROM THE CASTING PLATE AND TRANSPORTED TO A CURING AREA.
–WINGWALLS SHALL BE TRANSPORTED LYING ON FRONT FACE IN A MANNER AS TO NOT DAMAGE CAST–IN GEOGRID.
–WINGWALLS SHALL BE STOOD UP ON THE PROJECT SITE ON A SUBGRADE MATERIAL THAT WILL ALLOW FOR PRODUCT TO ROTATE ON BASE WITHOUT DAMAGE. THEY SHALL BE STOOD UP USING LIFTING ACHORS CAST IN TOP SURFACE.
–WINGWALLS SHALL BE MOVED INTO POSITION USING THE LIFTERS ON THE TOP SURFACE. THIS WILL REQUIRE TWO ROLLING BLOCKS.

RIGID FRAME UNITS SHALL BE FABRICATED AS FOLLOWS:
–EACH UNIT SHALL BE CAST UTILIZING A STANDARD STEEL RIGID FRAME FORM.
–EACH UNIT SHALL BE CAST IN THE SAME POSITION THAT IT WILL BE PLACED IN THE FIELD.
–AFTER STRIPPING STRENGTH HAS BEEN ACHIEVED, PRODUCT WILL BE MOVED AWAY FROM FORM UTILIZING AN OVERHEAD CRANE OR FORKLIFT CONNECTED TO EXTERIOR LIFTING ANCHORS. THE PRODUCT MAY BE MOVED TO A CURING AREA.

–HEADWALLS SHALL BE FABRICATED AS A SECONDARY CONCRETE PLACEMENT. WEATHER DEPENDING, THESE CASTINGS MAY BE PERFORMED OUT OF DOORS.

–RIGID FRAME UNITS SHALL BE STORED AND SHIPPED IN UPRIGHT POSITIONS.

–ALL PRODUCTS SHALL BE MOVED AND ERECTED UTILIZING CHAINS OR STRAPS ATTACHED TO PROVIDED UTILITY ANCHORS.

–IT IS THE RESPONSIBILITY OF THE ERECTOR TO PROVIDE THE PROPER EQUIPMENT, CABLES AND PULLEYS TO SAFELY AND PROPERLY HANDLE THE PRECAST PRODUCTS. DETAILED HANDLING REQUIREMENTS SHALL BE COORDINATED BETWEEN THE PRECAST FABRICATOR AND ERECTORS.

PRECAST CONCRETE RIGID FRAME FOOTING NOTES:

1. ALL FOUNDATION CONCRETE (INCLUDING PEDESTAL WALL) SHALL HAVE A 28–DAY COMPRESSIVE STRENGTH OF 5,000 P.S.I. CEMENT USED SHALL MEET THE REQUIREMENTS OF ASTM C–150.

3. UNLESS NOTED OTHERWISE, ALL REINFORCING SHALL MEET THE REQUIREMENTS OF ASTM A–615 GRADE 60 DEFORMED STEEL BARS FOR CONCRETE REINFORCING. ALL BARS SHALL BE BENT COLD.

4. ALL EXPOSED EDGES EXCEPT WHERE NOTED SHALL BE CHAMFERED 3/4".

5. ~~THE DESIGN BEARING CAPACITY IS 6,340 P.S.F. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SUBGRADE PREPARATION SUCH THAT THE DESIGN BEARING CAPACITY IS ACHIEVED. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IF THIS BEARING CAPACITY CANNOT BE MET.~~
ALL FOOTINGS SHALL BE PLACED ON 1'–0" OF ¾" CRUSHED STONE. ALL TOPSOIL, LOOSE FILL, AND DELETERIOUS MATERIALS SHALL BE REMOVED BEFORE PLACING BACKFILL.

6. EACH FOOTING SECTION SHALL BE PROVIDED WITH POLYOLEFIN POCKETS PER JOINT FOR ATTACHMENT TO ADJACENT SECTIONS. 7/8" DIA. THREADED ROD, WASHERS AND NUTS SHALL BE PROVIDED FOR ASSEMBLY IN THE FIELD.

7. EACH SECTION SHALL WEIGH AS SHOWN.

PREPARED BY:

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173 BUXTON INDUSTRIAL DRIVE-PO BOX 870
HENNIKER, NH 03242
PHONE: 603-428-3218
FAX: 603-428-7426

PROJECT:

VAOT # STP ST CULV(7)
CULVERT REPLACEMENT
RT 100 OVER JEWELL BROOK

LUDLOW, VT

LIST OF SHEETS:

C1.0- COVER SHEET

S1.0 - PLAN, ELEVATION & CONNECTION DETAILS

S2.0 - RF1 DETAILS

S3.0 - RF2 DETAILS

S4.0 - RF3 DETAILS

S5.0 - BRIDGE FOOTINGS BF1, BF2 & BF3 DETAILS

S6.0 - WINGWALL FOOTINGS WWF1, WWF2, & WWF4

S7.0 - WINGWALL FOOTINGS WWF3A & WWF3B

S8.0 - WINGWALLS WW1 & WW2

S9.0 - WINGWALLS WW3 & WW4

Check Set

RECEIVED
CK'D BY JS OK'D BY KSG
MAY 01 2009
RESUBMIT ____ APPROVED ✓
BY CPW DATE 5/12/09

No.	Date	Revision	By
1	04/29/2009	REVISED PER VAOT	TAF

STATE OF VERMONT
THOMAS A. FRENCH
NO. 8871
Revised
LICENSED
PROFESSIONAL ENGINEER
4/29/09

WHITE MOUNTAIN PRECAST, LLC
173 BUXTON INDUSTRIAL DRIVE-PO BOX 870
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PHONE: 603-428-3218
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25' Span x 6'-6" Rise Rigid Frame Bridge
Rte 100 Bridge Replacement
Ludlow, VT

Shop Drawings

Project No. 5166
Date: 2/18/2009
Designed by: TL
Drawn by: PDH
Checked by: TAF
Scale: AS SHOWN

Prepared for:
Miller Construction, Inc.
P.O. Box 86 Rte 5
Windsor, VT 05087

DWG NO.
C 1.0

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