

## PROJECT NOTES

### GENERAL

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE STATE OF VERMONT AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 2011, AND ITS LATEST REVISIONS, AND THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 6<sup>TH</sup> EDITION, AND ITS LATEST REVISIONS.
2. ALL PRECAST CONCRETE ELEMENTS TO BE FABRICATED TO THE SPECIFIED DIMENSIONS WITHIN THE TOLERANCES DICTATED IN THE PRECAST/PRESTRESSED CONCRETE INSTITUTE TOLERANCE MANUAL FOR PRECAST AND PRESTRESSED CONCRETE CONSTRUCTION, MNL 135-00, AND ITS LATEST REVISIONS.
3. ALL DIMENSIONS ARE HORIZONTAL OR VERTICAL, AND ARE GIVEN AT 68 DEGREES FAHRENHEIT, UNLESS NOTED OTHERWISE.
4. NO ADJUSTMENTS TO THE BITUMINOUS WEARING SURFACE ON THE BRIDGE SHALL BE MADE TO ACCOUNT FOR THE DIFFERENCE BETWEEN THE ACTUAL BEAM CAMBER AND THE THEORETICAL ROADWAY PROFILE. THE WEARING SURFACE SHALL BE SHIMMED TRANSVERSELY AS NECESSARY TO ACCOUNT FOR POTENTIAL DIFFERENTIAL CAMBER OF THE ADJACENT BEAMS.
5. REMOVAL OF EXISTING BRIDGE PAVEMENT SHALL BE PAID AS ITEM 529.10, "REMOVAL OF BRIDGE PAVEMENT".
6. ITEM 529.15, "REMOVAL OF STRUCTURE", SHALL INCLUDE THE COMPLETE REMOVAL AND DISPOSAL OF THE EXISTING BRIDGE SUBSTRUCTURE AND SUPERSTRUCTURE, INCLUDING ALL BRIDGE RAIL, PIERS, BEARINGS AND ANCHOR BOLTS, WHERE THE REMOVAL IS OUTSIDE OF THE AREAS COVERED BY THE CONTRACT EXCAVATION ITEMS.
7. NO SUBSTITUTION FOR PRECAST CONCRETE WILL BE PERMITTED.
8. USE OF TEMPORARY BRIDGE WILL NOT BE PERMITTED.
9. THE CONTRACTOR SHALL CONTACT THE TOWN TO VERIFY THE LOCATION OF THE SEWER PIPE WITHIN THE PROJECT LIMITS. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTING THE PIPE AT ALL TIMES DURING CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PUMPING SEWAGE FROM THE MANHOLE ON THE NORTH SIDE OF THE BRIDGE TO THE SEWER TREATMENT PLANT IN THE EVENT THE SEWER LINE IS DAMAGED DURING CONSTRUCTION. DAMAGE TO THE SEWER LINE AS A RESULT OF THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED OR REPLACED TO THE SATISFACTION OF THE ENGINEER AND TOWN OF CASTLETON AT THE CONTRACTOR'S EXPENSE.
10. DUE TO STABILITY CONCERNS AT THE ABUTMENTS DURING THE ERECTION OF THE SUPERSTRUCTURE, THE CONTRACTOR SHALL SUBMIT THE ERECTION PLAN A MINIMUM OF 30 WORKING DAYS PRIOR TO ERECTING THE SUPERSTRUCTURE.
11. THE METHOD OF FORMING FOR SUBSEQUENT POURS AFTER PLACING PRECAST/PRESTRESSED SUPERSTRUCTURE UNITS SHALL BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR IS ENCOURAGED TO WORK WITH THE FABRICATOR IF ADDITIONAL SUPPORTS MAY BE REQUIRED. IN NO CASE SHALL THE CONTRACTOR ATTACH ADDITIONAL FORM OR SCREED SUPPORTS BY DRILLING OR SIMILAR MEANS INTO ANY PRECAST/PRESTRESSED SUPERSTRUCTURE UNIT.
12. SEE THE SPECIAL PROVISIONS FOR REQUIREMENTS OF SPECIAL PROVISION ITEM 900.650, "SPECIAL PROVISION (LOCAL ROADWAY MAINTENANCE)" FOR MAINTENANCE ON MAIN, COLLEGE, AND YORK STREETS.

### TRAFFIC CONTROL

13. THE CONTRACTOR SHALL IMPLEMENT THE ROAD CLOSURE, TRAFFIC CONTROL, AND DETOUR AS SHOWN ON THE PLANS.
14. THE CONTRACTOR SHALL NOTIFY THE TOWN A MINIMUM OF SIX (6) WEEKS PRIOR TO CLOSING VT ROUTE 30. THE CONTRACTOR SHALL NOTIFY THE VT STATE POLICE DISPATCHER AT 802-468-5355, EXT 212; AND NEW YORK STATE WASHINGTON COUNTY DISPATCHER'S OFFICE AT 518-747-3325 A MINIMUM OF TWO (2) WEEKS PRIOR TO CLOSING VT ROUTE 30, IMMEDIATELY ONCE VT ROUTE 30 IS CLOSED AND AGAIN WHEN IT IS OPENED.
15. FULL ACCESS TO ALL DRIVES WITHIN THE PROJECT LIMITS SHALL BE MAINTAINED AT ALL TIMES. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO ITEM 641.10, "TRAFFIC CONTROL".
16. UNLESS COVERED UNDER INDIVIDUAL PAY ITEMS OR NOTED OTHERWISE, ALL COSTS FOR WORK SHOWN ON THE TRAFFIC CONTROL SHEETS AND FOR TEMPORARY TRAFFIC CONTROL DEVICES WILL BE INCLUDED IN THE CONTRACT LUMP SUM PRICE FOR ITEM 641.10, "TRAFFIC CONTROL". THIS INCLUDES, BUT IS NOT LIMITED TO, THE FOLLOWING ITEMS:
  - TEMPORARY TRAFFIC BARRIERS
  - RETROREFLECTIVE DRUMS & CONES
  - SIGNS
  - SIGN POSTS
  - INSTALLATION OF SIGNS AND SIGN POSTS

TEMPORARY TRAFFIC BARRIER SHALL BE FURNISHED IN ACCORDANCE WITH SECTION 621.
17. ALL SIGNS SHALL BE IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) AND THE "STANDARD HIGHWAY SIGNS AND MARKINGS" BOOK (SHSM) PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION (FHWA).

### EARTHWORK

18. THE CONTRACTOR'S ATTENTION IS DIRECTED TO SUBSECTION 301.06 REGARDING THE COMPACTION OF THE SUBBASE MATERIAL.
19. THE "STONE FILL, TYPE I" UNDER THE BRIDGE AS SHOWN IN THE PLANS SHALL BE PLACED BEFORE THE NEW BEAMS ARE SET.

### CONCRETE AND REINFORCING STEEL

20. ITEM 514.10, "WATER REPELLENT, SILANE", SHALL BE APPLIED TO ALL EXPOSED CONCRETE ON THE BRIDGE SUPERSTRUCTURE AND SUBSTRUCTURE, WITH THE EXCEPTION OF THE BOTTOM OF THE PRECAST NEXT BEAMS BETWEEN THE DRIP NOTCHES.
21. ALL CONCRETE PLACED INTEGRALLY WITH THE SUPERSTRUCTURE SHALL BE ITEM 900.608, "SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET)(FPQ)". ALL PRECAST SUBSTRUCTURE AND APPROACH SLAB CONCRETE SHALL MEET THE REQUIREMENTS OF THE APPROPRIATE PRECAST ITEM.
22. THE CONNECTION BETWEEN APPROACH SLAB UNITS SHALL MEET THE REQUIREMENTS OF ITEM 900.608, "SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET)(FPQ)".
23. ALL REINFORCING STEEL SHALL BE DETAILED AND FABRICATED USING PROCEDURES AND TOLERANCES IN ACCORDANCE WITH APPLICABLE PUBLICATIONS OF THE CONCRETE REINFORCING STEEL INSTITUTE (CRSI).
24. TEST BARS SHALL BE PROVIDED IN ACCORDANCE WITH THE "VERMONT AGENCY OF TRANSPORTATION MATERIAL SAMPLING MANUAL" AVAILABLE ON THE AGENCY WEBSITE. A MINIMUM OF TWO TEST SECTIONS ARE REQUIRED FOR EACH SIZE, BRAND, AND GRADE OR TYPE OF REINFORCING. SEE THE MANUAL FOR ACCEPTABLE DIMENSIONS OF TEST SECTIONS. ALL COSTS ASSOCIATED WITH PROVIDING BARS FOR TESTING SHALL BE INCLUDED IN THE UNIT BID PRICE FOR THE APPROPRIATE PRECAST ITEM.
25. ALL REINFORCEMENT SHALL MEET THE REQUIREMENTS OF LEVEL II REINFORCING STEEL IN ACCORDANCE WITH SECTION 507. PAYMENT FOR STEEL REINFORCEMENT IN NEXT D BEAMS, INCLUDING REINFORCING FOR THE CLOSURE POUR AND PRECAST CONCRETE BRIDGE CURBS WILL BE INCLUDED IN THE UNIT PRICE BID FOR CONTRACT ITEM 900.640, "SPECIAL PROVISION (PRESTRESSED CONCRETE NEXT D BEAMS)(NEXT 28D)". PAYMENT FOR STEEL REINFORCEMENT IN PRECAST SUBSTRUCTURE UNITS AND APPROACH SLABS, INCLUDING REINFORCING FOR THE CLOSURE POUR, WILL BE INCLUDED IN THE APPROPRIATE PRECAST CONTRACT ITEM.
26. MINIMUM CLEAR COVER FOR REINFORCING STEEL SHALL BE AS FOLLOWS:
 

ALONG BACK FACES OF WALLS AGAINST EARTH:	2 INCH
ALONG TOP SURFACE OF DECK SLAB:	2½ INCH
ALONG BOTTOM SURFACE OF DECK SLAB:	1¾ INCH
ELSEWHERE UNLESS OTHERWISE NOTED:	3 INCH

### PRECAST ABUTMENTS AND POST-TENSIONING

27. IF VERTICAL CONSTRUCTION JOINTS ARE REQUIRED BY THE CONTRACTOR FOR SHIPMENT OF THE ABUTMENTS, THEN THE SECTIONS SHALL BE KEYED AND MATCH CAST. A JOINT DETAIL SHALL BE SHOWN ON THE FABRICATION DRAWINGS. NO LESS THAN TWO PILES SHALL SUPPORT EACH PRECAST ABUTMENT SECTION.
28. EPOXY BONDING COMPOUND SHALL BE APPLIED TO ALL VERTICAL MATCH CAST CONSTRUCTION JOINTS. SEE AGENCY WEBSITE FOR LIST OF APPROVED EPOXY BONDING COMPOUNDS. PAYMENT FOR EPOXY WILL BE INCLUDED IN THE UNIT PRICE BID FOR THE APPROPRIATE PRECAST ITEM.
29. POST-TENSIONING AND ASSOCIATED ITEMS ARE ONLY REQUIRED IF THE PILE CAP IS CONSTRUCTED OF MORE THAN ONE UNIT. ANY POST-TENSIONING STRANDS AND CONDUIT SHALL ADHERE TO THE REQUIREMENTS OF SECTION 510 - PRESTRESSED CONCRETE. GALVANIZED ANCHOR ASSEMBLIES, CONDUIT AND POST-TENSIONING STRANDS SHALL BE INCLUDED UNDER ITEM 540.10, "PRECAST CONCRETE STRUCTURE (ABUTMENT NO. 1)" OR "PRECAST CONCRETE STRUCTURE (ABUTMENT NO. 2)" AS APPROPRIATE. POST-TENSIONING STRANDS SHALL BE COVERED WITH SEAMLESS POLYPROPYLENE SHEATH (WITH CORROSION INHIBITOR GREASE BETWEEN SHEATH AND STRAND) FOR THE LENGTH OF THE STRAND, EXCEPT AT ANCHORAGE LOCATIONS.
30. GALVANIZE ANCHOR ASSEMBLIES AFTER FABRICATION ACCORDING TO AASHTO M232M/M232.
31. DESIGN VALUES
  - A. CONCRETE COMPRESSIVE STRENGTH:  $f'c = 5,000$  PSI.
  - B. POST-TENSIONING STRANDS: 0.5 INCH DIAMETER, 270 KSI, LOW RELAXATION 7-WIRE STRANDS.
  - C. ASSUMED MODULUS OF ELASTICITY IS 28,500 KSI.
  - D. THERE SHALL BE 2 STRANDS PER CONDUIT.
  - E. JACKING FORCE PER STRAND = 32 KIPS.
32. THE CONCRETE FOR THE ABUTMENT NO. 1 AND ABUTMENT NO. 2 PILE CAVITIES SHALL MEET THE REQUIREMENTS OF ITEM 900.608, "SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET)(FPQ)".
33. THE CORRUGATED STEEL PIPE SHALL MEET THE REQUIREMENTS OF SUBSECTION 711.01. ALL COSTS ASSOCIATED WITH FURNISHING AND PLACING THE CORRUGATED STEEL PIPE SHALL BE INCLUDED IN THE UNIT PRICE BID FOR THE APPROPRIATE PRECAST ITEM.

34. PROPOSED SEQUENCE OF CONSTRUCTION
  - A. PREPARE AND GRADE FOUNDATION TO REQUIRED ELEVATION.
  - B. DRIVE PILES.
  - C. PLACE PRECAST ABUTMENTS AND INSTALL TRANSVERSE STRANDS (IF MORE THAN ONE UNIT).
  - D. APPLY EPOXY BONDING COMPOUND TO MATCH CAST FACES OF VERTICAL CONSTRUCTION JOINT.
  - E. USE A CALIBRATED JACK TO TENSION 3 KIPS TO REMOVE SAG IN STRANDS.
  - F. CHECK ALIGNMENT OF PILE CAP ELEMENTS.
  - G. STRESS POST-TENSIONING STRANDS USING A CALIBRATED JACK.
  - H. FILL PILE CAVITIES WITH ITEM 900.608, "SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET)(FPQ)".
  - I. PLACE PRECAST WINGWALLS AND GROUT SPLICE CONNECTORS.
  - J. BACKFILL MAY BE COMPLETED AFTER SPLICE CONNECTOR GROUT HAS REACHED 85% OF 5,000 PSI. BACKFILL SHALL NOT EXCEED BRIDGE SEAT ELEVATIONS UNTIL NEXT BEAMS ARE SET AND THE CLOSURE POUR IS CAST.
35. ALTERNATE SEQUENCE OF CONSTRUCTION MAY BE SUBMITTED FOR APPROVAL BY THE PROJECT MANAGER.

### NEXT D BEAMS

36. NEXT D BEAMS ARE A NON-PROPRIETARY SHAPE DEVELOPED BY PCI NORTHEAST ("PCINE"). STANDARDIZED SECTION PROPERTIES AND DETAILS MAY BE FOUND AT <http://www.pcine.org>
37. DESIGN VALUES
  - A. CONCRETE COMPRESSIVE STRENGTH:  $f'c = 10,000$  PSI.
  - B. CONCRETE COMPRESSIVE STRENGTH AT RELEASE:  $f'ci = 7,500$  psi.
  - C. PRESTRESSING STRANDS: 0.6 INCH DIAMETER, 270 KSI, LOW-RELAXATION 7-WIRE STRANDS
  - D. ASSUMED MODULUS OF ELASTICITY = 28,500 KSI
  - E. PRESTRESSING STRANDS SHALL EACH BE PULLED TO HAVE A NET TENSION FORCE OF 44.0 KIPS AFTER ACCOUNTING FOR CHUCK SLIPPAGE.
  - F. SERVICE LOADS
 

MEMBER MOMENT	803 K-FT
NON-COMPOSITE SUPERIMPOSED DEAD LOAD MOMENT	177 K-FT
COMPOSITE SUPERIMPOSED DEAD LOAD MOMENT	275 K-FT
LIVE LOAD AND IMPACT MOMENT	1,297 K-FT
DEAD LOAD REACTION	75 KIPS
LIVE LOAD AND IMPACT REACTION	92 KIPS
TOTAL REACTION	167 KIPS
FINAL CAMBER AT ERECTION	3 ¼ INCHES
38. FORMING FOR ENDS OF FLANGES ALONG LONGITUDINAL CLOSURE POURS MAY BE TREATED WITH CONCRETE SURFACE RETARDER OR SIMILAR, TO PROVIDE A ROUGHENED SURFACE; AND SHALL BE POWER WASHED WITH WATER PRIOR TO ERECTION OF THE BEAMS.
39. FILL THE FLANGE TO FLANGE CONNECTION WITH ITEM 900.608, "SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET)(FPQ)".
40. METHOD OF FORMING FLANGE CONNECTION SHALL BE DETERMINED BY THE CONTRACTOR. THE FORMS SHALL BE REMOVABLE AND ABLE TO ACCOMMODATE DIFFERENTIAL CAMBER. FORM SUPPORTS SHALL NOT BE ATTACHED TO ANY PREFABRICATED SUPERSTRUCTURE ELEMENT BY DRILLING OR SIMILAR MEANS.
41. THE FABRICATOR MAY ALTER THE DESIGN AS DETAILED IN THESE PLANS TO ACCOMMODATE THEIR SPECIFIC OPERATION. THIS ALTERATION SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF VERMONT TO MEET THE ABOVE CRITERIA AND SHALL BE APPROVED BY THE PROJECT MANAGER.
42. NEXT BEAMS SHALL BE PAID FOR AS ITEM 900.640, "SPECIAL PROVISION (PRESTRESSED CONCRETE NEXT D BEAMS)(NEXT 28 D)".
43. THE PRECAST CONCRETE CURBS ON NEXT D BEAMS SHALL BE POURED PRIOR TO THE ERECTION OF NEXT BEAMS.
44. PROPOSED SEQUENCE OF CONSTRUCTION
  - A. LAYOUT WORKING LINES THE ENTIRE WIDTH OF THE BRIDGE ALONG CENTERLINE OF BEARING, MEASURED FROM A SINGLE WORKING POINT. THE WORKING LINES SHALL BE BASED ON THE NOMINAL BEAM WIDTHS.
  - B. VERIFY THE BEAM SEAT ELEVATIONS AND TAKE CORRECTIVE ACTION IF NECESSARY.
  - C. INSTALL BEARINGS.
  - D. ERECT THE BEAMS TO FIT WITHIN THE WORKING LINES.
  - E. ADJUST FASCIA BEAM TO FIT SNUG AGAINST ½" CORK ON INTERIOR OF CHEEKWALL.
  - F. CONSTRUCT FORMS FOR THE FLANGE AND CURTAIN WALL CONNECTION POURS.
  - G. GROUT CONNECTIONS BETWEEN BEAM FLANGES AND CURE.
  - H. COMPLETE BEAM-END CLOSURE POUR TO BOTTOM OF DECK ALLOWING FOR APPROACH SLAB BRACKET.
  - I. COMPLETE PLACEMENT OF BACKFILL AND PREPARE GRADE FOR APPROACH SLABS.
  - J. PLACE APPROACH SLABS.
  - K. GROUT REBAR DOWELS IN APPROACH SLAB.
  - L. COMPLETE LONGITUDINAL CLOSURE POURS OF APPROACH SLAB.
  - M. COMPLETE BEAM-END CLOSURE POUR TO TOP OF DECK AND APPROACH SLABS.
45. ALTERNATE SEQUENCE OF CONSTRUCTION MAY BE SUBMITTED FOR APPROVAL BY THE PROJECT MANAGER.

REV.	DESCRIPTION	DATE	PROJECT NAME: CASTLETON
▲	CONTRACTOR-FABRICATED PRECAST	12/01/2014	PROJECT NUMBER: BRF 015-2(10)
			FILE NAME: z12b138pn.dgn
			PLOT DATE: 12/1/2014
			PROJECT LEADER: S.E. BURBANK
			DRAWN BY: M.C. SCOTT
			DESIGNED BY: E.A. FIALA
			CHECKED BY: S.E. BURBANK
			PROJECT NOTES (1 OF 2)
			SHEET 7 OF 82

**Vanasse Hangen Brustlin, Inc.**