

**GENERAL**

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO STATE OF VERMONT AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 2011, WITH ITS LATEST REVISIONS AND THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 6TH EDITION WITH INTERIMS THROUGH 2012.
2. ALL PRECAST CONCRETE ELEMENTS SHALL BE FABRICATED TO THE SPECIFIED DIMENSIONS AND 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. THE EXISTING STEEL IS PAINTED WITH A MATERIAL THAT MAY CONTAIN LEAD. THE CONTRACTOR SHALL FOLLOW ALL APPLICABLE REGULATIONS WHEN HANDLING AND WORKING WITH THIS STEEL. THE REMOVED STRUCTURAL STEEL IS THE PROPERTY OF THE CONTRACTOR. THE CONTRACTOR SHALL INDEMNIFY AND HOLD THE STATE AND ITS OFFICERS AND EMPLOYEES HARMLESS CONCERNING THE CONTRACTOR'S USE OR DISPOSAL OF THE REMOVED EXISTING STRUCTURAL STEEL.
4. THE EXISTING PIER SHALL BE REMOVED TO APPROXIMATELY ELEVATION 758.0 TO BECOME FLUSH WITH OR NOMINALLY COVERED BY THE STREAMBED. ANY VOIDS CREATED AS A RESULT OF PIER REMOVAL SHALL BE BACKFILLED WITH STONE FILL, TYPE I MEETING THE REQUIREMENTS OF SECTION 613. THIS WORK WILL BE CONSIDERED INCIDENTAL TO ITEM 529.15, "REMOVAL OF STRUCTURE." THE EXISTING SUPERSTRUCTURE, ABUTMENTS, AND ANY GROUT, CONCRETE, OR STONE FOUND BENEATH THE ABUTMENTS THAT INTERFERES WITH PROPOSED ABUTMENT OR PILE INSTALLATION SHALL BE REMOVED IN ITS ENTIRETY.
5. THE CONTRACTOR IS NOTIFIED THAT A VERMONT AGENCY OF TRANSPORTATION PAVING PROJECT (CAVENDISH-WEATHERSFIELD STP 0146(14)) IS SCHEDULED FOR CONSTRUCTION DURING A SIMILAR TIMEFRAME. EXISTING GRADES, SIGNAGE, AND OTHER MINOR SURVEY RELATED ASPECTS NOTED WITHIN THESE PLANS MAY DIFFER FROM FIELD CONDITIONS IF THE PAVEMENT PROJECT COMMENCES AND/OR COMPLETES PRIOR TO BRIDGE CLOSURE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COSTS ASSOCIATED WITH CHANGED FIELD CONDITIONS AND/OR COORDINATION WITH THE POTENTIALLY CONCURRENT PROJECT.
6. THE CONTRACTOR IS NOTIFIED THAT EXISTING WATER LINES ARE WITHIN THE CONSTRUCTION LIMITS. SEE THE UTILITY SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COSTS ASSOCIATED WITH COORDINATION WITH THE WATER LINE, IF NEEDED.
7. ALL DIMENSIONS SHOWN IN THE PLANS ARE HORIZONTAL OR VERTICAL AT 70°F, UNLESS NOTED OTHERWISE.
8. NO PROVISIONS HAVE BEEN MADE FOR THE CONTRACTOR TO PERFORM WORK OR SET UP STAGING OUTSIDE THE EXISTING RIGHT-OF-WAY.

**EARTHWORK AND RELATED ITEMS**

9. ITEM "STONE FILL, TYPE IV" UNDER THE BRIDGE AS SHOWN IN THE PLANS SHALL BE PLACED BEFORE THE SUPERSTRUCTURE IS SET.
10. TEMPORARY CONSTRUCTION FILLS USED FOR ANY PURPOSE WITHIN THE WATERCOURSE SHALL CONSIST OF CLEAN STONE FILL ONLY. NO OTHER FILLING IN THE STREAM SHALL OCCUR WITHOUT THE APPROVAL OF THE STREAM ALTERATION ENGINEER.

**CONCRETE**

11. WATER REPELLENT, SILANE SHALL BE APPLIED TO ALL EXPOSED CONCRETE SURFACES EXCEPT THE UNDERSIDE OF THE PREFABRICATED BRIDGE UNITS BETWEEN DRIP NOTCHES.
12. ALL REINFORCING STEEL SHALL BE DETAILED AND FABRICATED USING PROCEDURES AND TOLERANCES IN ACCORDANCE WITH APPLICABLE PUBLICATIONS OF THE "CONCRETE REINFORCING STEEL INSTITUTE".
13. ALL REINFORCING STEEL SHALL BE LEVEL II IN ACCORDANCE WITH SECTION 507 OF THE GENERAL SPECIAL PROVISIONS. MINIMUM CLEAR COVER SHALL BE AS FOLLOWS:
 

ALONG BACK FACES OF WALLS AGAINST EARTH	2.0 INCHES
ALONG TOP SURFACE OF DECK SLAB	2.5 INCHES
ALONG BOTTOM SURFACE OF DECK SLAB	1.5 INCHES
ELSEWHERE, UNLESS NOTED OTHERWISE	2.0 INCHES

**PILE FOUNDATIONS**

14. THE PILES SHALL BE HP 12 X 74.
15. PILE SHOES ARE REQUIRED AND SHALL CONFORM TO SUBSECTION 505.04(F) OF THE STANDARD SPECIFICATIONS.

16. DIFFICULT DRIVING CONDITIONS EXIST. THE CONTRACTOR SHALL DESCRIBE TO THE SATISFACTION OF THE RESIDENT ENGINEER HOW THE INSTALLATION TOLERANCES WILL BE MET REGARDLESS OF INSTALLATION METHOD AND BEFORE CLOSING THE BRIDGE TO TRAFFIC.
17. THE PILES SHALL BE DRIVEN TO A NOMINAL RESISTANCE OF 390 KIPS AS DETERMINED BY THE RESULTS OF DYNAMIC TESTING, AS INTERPRETED BY THE RESIDENT ENGINEER. PILES SHALL BE DRIVEN TO A MINIMUM OF 18 FT BELOW THE BOTTOM OF THE ABUTMENT ELEVATIONS, REGARDLESS IF REQUIRED DRIVING RESISTANCE HAS BEEN MET.
18. FOR ESTIMATING PURPOSES, THE PILE TIP ELEVATIONS WERE ASSUMED AS SHOWN ON THE BORING LOGS. THE ACTUAL LENGTHS MAY VARY.
19. TO ENSURE THAT THE NOMINAL RESISTANCE HAS BEEN ATTAINED AND TO PREVENT THE OVERSTRESSING OF THE PILES DURING DRIVING OPERATIONS, DYNAMIC TESTING SHALL BE PERFORMED IN ACCORDANCE WITH SUBSECTION 505.04(d)-2 OF THE STANDARD SPECIFICATIONS. ONE PILE TEST SHALL BE CONDUCTED ON THE FIRST PILE DRIVEN AT EACH ABUTMENT, FOR A TOTAL OF 2 TESTS. MORE TESTS MAY BE REQUIRED BY THE RESIDENT ENGINEER.
20. ADDITIONAL SUBSURFACE CONDITION INFORMATION CAN BE FOUND IN THE PROJECT GEOTECHNICAL REPORT, INCLUDED WITH THE CONTRACT DOCUMENTS.

**PRECAST ABUTMENTS AND POST-TENSIONING**

21. ABUTMENT DESIGNS PROVIDED HEREIN ARE DETAILED ASSUMING VERTICAL JOINTS WILL BE USED TO FACILITATE SHIPPING AND INSTALLATION. IF VERTICAL CONSTRUCTION JOINTS ARE USED, THEN THE SECTIONS SHALL BE KEYS, EPOXY GROUTED, AND MATCH CAST. A JOINT DETAIL SHALL BE SHOWN ON THE FABRICATION DRAWINGS. IF VERTICAL CONSTRUCTION JOINTS ARE NOT USED, THE ABUTMENTS SHALL BE PRECAST AS MONOLITHIC UNITS AND MILD REINFORCEMENT SHOWN SHALL BE CONTINUOUS THROUGH THE PLAN-DETAILED CONSTRUCTION JOINTS. POST-TENSIONING STRANDS SHALL BE USED REGARDLESS OF THE USE OR NON-USE OF VERTICAL CONSTRUCTION JOINTS.
22. POST-TENSIONING STRANDS AND CONDUIT SHALL ADHERE TO THE REQUIREMENTS OF SECTION 510 OF THE STANDARD SPECIFICATIONS.
23. CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND DETAILING OF POST-TENSIONING ELEMENTS IN THE ANCHORAGE ZONE, INCLUDING BLOCK OUT DETAILS FOR JACK ENTRANCE, ANCHOR PLATES, AND/OR ADDITIONAL REINFORCEMENT WITHIN THE LOCAL ZONE (REGION IMMEDIATELY SURROUNDING THE POST-TENSIONING ANCHOR ASSEMBLY). DESIGN SHALL CONFORM TO AASHTO LRFD.
24. ALL COSTS ASSOCIATED WITH DETAILING AND INSTALLING THE ANCHOR PLATES, CONDUIT, POST-TENSIONING STRANDS, AND RELATED ITEMS SHALL BE INCIDENTAL TO ITEM 540.10, "PRECAST CONCRETE STRUCTURE (ABUTMENT NO. 1)" AND/OR ITEM 540.10, "PRECAST CONCRETE STRUCTURE (ABUTMENT NO. 2)".
25. OTHER THAN STONE FILL PLACEMENT BENEATH THE SUPERSTRUCTURE, THE ABUTMENTS SHALL NOT BE BACKFILLED UNTIL THE SUPERSTRUCTURE UNITS HAVE BEEN ERECTED. ABUTMENT BACKFILL OPERATIONS SHALL OCCUR SIMULTANEOUSLY AT EACH ABUTMENT, WITH NO MORE THAN 3 FT OF DIFFERENTIAL BACKFILL DEPTH.
26. DESIGN VALUES
  - A. PRECAST CONCRETE COMPRESSIVE STRENGTH:  $f'c = 5,000$  PSI.
  - B. POST-TENSIONING STRANDS: 0.6 INCH DIAMETER, 270 KSI, LOW RELAXATION 7-WIRE STRANDS, SINGLE STRAND PER CONDUIT.
  - C. APPARENT MODULUS OF ELASTICITY: 28,500 KSI.
  - D. JACKING FORCE PER STRAND = 44 KIPS.
27. THE CONCRETE FOR ABUTMENT PILE CAVITIES SHALL MEET THE REQUIREMENTS OF ITEM 900.608, "SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET)".
28. PROPOSED SEQUENCE OF CONSTRUCTION
  - A. PREPARE AND GRADE FOUNDATION TO REQUIRED ELEVATION.
  - B. DRIVE PILES.
  - C. PLACE PRECAST ABUTMENTS, EPOXY BOND VERTICAL SHEAR KEYS, AND INSTALL TRANSVERSE STRANDS. USE A CALIBRATED JACK TO TENSION STRANDS TO 3 KIPS EACH TO REMOVE SAG.
  - D. FILL PILE CAVITIES WITH ITEM 900.608, "SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET)".
  - E. STRESS POST-TENSIONING STRANDS USING A CALIBRATED JACK, OPERATED BY QUALIFIED PERSONNEL WHO HAVE PREVIOUS EXPERIENCE IN POST-TENSIONING.

ALTERNATE CONSTRUCTION SEQUENCES MAY BE SUBMITTED TO THE VTRANS PROJECT MANAGER FOR APPROVAL AND SHALL BE SUBMITTED WITH THE FABRICATION PLANS.

**PREFABRICATED BRIDGE UNITS (PBU'S)**

29. THE WEB AND BOTTOM FLANGE PLATES OF THE GIRDERS SHALL BE CHARPY V-NOTCH (CVN) TESTED IN ACCORDANCE WITH SUBSECTION 714.01.
30. BOLTS USED IN FIELD CONNECTIONS SHALL BE ASTM A325 TYPE 3, 7/8" DIA., AND MEET THE REQUIREMENTS OF SUBSECTION 714.05. HOLE DIAMETERS SHALL BE 15/16".
31. AFTER SUPERSTRUCTURE STEEL HAS BEEN ERECTED AT THE DECK CASTING SITE, AND BEFORE ANY FORMWORK OR OTHER LOADS ARE ADDED TO THE GIRDERS, ELEVATIONS ALONG THE TOP OF THE GIRDERS SHALL BE TAKEN AS DIRECTED BY THE ENGINEER FOR USE IN DETERMINING DECK FORMWORK ELEVATIONS.
32. ANY BOLT HOLES IN THE WEBS OF FASCIA GIRDERS NOT OTHERWISE FILLED SHALL BE FILLED WITH BUTTON HEAD OR HEX HEAD TYPE 3 BOLTS. THE BOLTS SHALL BE TIGHTENED IN ACCORDANCE WITH SUBSECTION 506.19 OF THE STANDARD SPECIFICATIONS.
33. ENDS OF GIRDERS SHALL BE VERTICAL IN THEIR FINAL POSITION.
34. PBU DECKS SHALL MEET THE REQUIREMENTS OF "CONCRETE, HIGH PERFORMANCE CLASS A".
35. DECK EDGES IN CONTACT WITH HPC RAPID SET CONCRETE SHALL BE WIRE BRUSHED TO REMOVE ALL CEMENTITIOUS FILM FROM THE KEY PRIOR TO DELIVERY AND POWER WASHED WITH WATER PRIOR TO ERECTION OF THE BEAMS.
36. FILL DECK CLOSURE POURS WITH HPC RAPID SET CONCRETE IN ACCORDANCE WITH ITEM 900.608, "SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET)". CONCRETE SHALL HAVE A 28 DAY MINIMUM COMPRESSIVE STRENGTH OF 7000 PSI.
37. METHOD OF FORMING THE DECK CLOSURE POUR SHALL BE DETERMINED BY THE CONTRACTOR. THE FORMS SHALL BE REMOVABLE AND ABLE TO ACCOMMODATE DIFFERENTIAL CAMBER AND SETTING TOLERANCES. FORM SUPPORTS SHALL NOT PENETRATE THROUGH THE TOP OF THE POUR UNLESS APPROVED BY THE ENGINEER.
38. PROPOSED SEQUENCE OF CONSTRUCTION
  - A. LAY OUT WORKING LINES FOR THE ENTIRE BRIDGE WIDTH ALONG CENTERLINE OF BEARING AT EACH ABUTMENT MEASURED FROM A SINGLE WORK POINT.
  - B. VERIFY BEARING ASSEMBLY ELEVATIONS AND TAKE CORRECTIVE ACTION IF NECESSARY.
  - C. ERECT THE PBU'S ALONG WORKING LINES DETERMINED IN STEP A.
  - D. CONSTRUCT FORMS FOR THE FLANGE CONNECTIONS AND BACKWALL/DIAPHRAGMS.
  - E. PLACE ALL HPC, RAPID SET IN ONE CONTINUOUS POUR AND CURE.
  - F. BACKFILL AND PREPARE GRADE FOR APPROACH SLABS.
39. ALTERNATE CONSTRUCTION SEQUENCES MAY BE SUBMITTED TO THE VTRANS PROJECT MANAGER FOR APPROVAL AND SHALL BE SUBMITTED WITH THE FABRICATION PLANS.

**ABUTMENT CLOSURE/END DIAPHRAGM**

40. THE ABUTMENT CLOSURE POUR SHALL BE MADE WITH HPC RAPID SET CONCRETE IN ACCORDANCE WITH ITEM 900.608, "SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET)". CONCRETE SHALL HAVE A 28 DAY MINIMUM COMPRESSIVE STRENGTH OF 7000 PSI.

**APPROACH SLABS**

41. PRECAST CONCRETE COMPRESSIVE STRENGTH:  $f'c = 5,000$  PSI.
42. SLAB EDGES IN CONTACT WITH HPC RAPID SET CONCRETE SHALL BE WIRE BRUSHED TO REMOVE ALL CEMENTITIOUS FILM FROM THE KEY PRIOR TO DELIVERY AND POWER WASHED WITH WATER PRIOR TO INSTALLATION.
43. FILL CLOSURE POURS WITH HPC RAPID SET CONCRETE IN ACCORDANCE WITH ITEM 900.608, "SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET)". CONCRETE SHALL HAVE A 28 DAY MINIMUM COMPRESSIVE STRENGTH OF 7000 PSI.
44. PRIOR TO PAVING, ANY TRANSVERSE GAPS BETWEEN THE APPROACH SLAB AND SUPERSTRUCTURE DECK SHALL BE FILLED WITH MORTAR, TYPE IV MEETING THE REQUIREMENTS OF SECTION 707.03. PAYMENT SHALL BE INCIDENTAL TO RELATED CONTRACT ITEMS.

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