

**GENERAL**

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO STATE OF VERMONT AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 2011, AND THE 2012 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, AND THEIR LATEST REVISIONS.
2. ALL DIMENSIONS ARE HORIZONTAL OR VERTICAL, AND ARE GIVEN AT 68°F, UNLESS OTHERWISE NOTED.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING CONSISTENCY BETWEEN THE FABRICATOR'S SHOP DRAWINGS AND ENSURING THAT ALL PRECAST AND RAIL COMPONENTS FIT TOGETHER.
4. NO ADJUSTMENTS TO THE BITUMINOUS WEARING SURFACE ON THE BRIDGE SHALL BE MADE TO ACCOUNT FOR THE DIFFERENCE BETWEEN BEAM CAMBER AND THE THEORETICAL ROADWAY PROFILE. THE WEARING SURFACE ON THE BRIDGE SHALL BE SHIMMED TRANSVERSELY AS NECESSARY TO ACCOUNT FOR POTENTIAL DIFFERENTIAL CAMBER OF ADJACENT BEAMS.
5. ITEM 519.20, "SHEET MEMBRANE WATERPROOFING, TORCH APPLIED" SHALL BE APPLIED TO THE BRIDGE DECK AND EXTEND ON TO THE APPROACH SLABS TWO FEET BEYOND THE BEGIN/END OF BRIDGE LIMITS.
6. THE CONTRACTOR SHALL LOCATE UNDERGROUND SEWER AND WATER LINES AHEAD OF THE BRIDGE CLOSURE PERIOD. PAYMENT WILL BE MADE UNDER ITEM 204.22, "TRENCH EXCAVATION OF EARTH, EXPLORATORY." PLEASE SEE THE UTILITIES SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

**EARTHWORK AND RELATED ITEMS**

7. PETROLEUM CONTAMINATED SOILS ARE PRESENT WITHIN THE APPROACH EMBANKMENTS SOUTH OF THE CHANNEL. THE PROJECT IS WITHIN A DOCUMENTED HAZARDOUS WASTE SITE, IDENTIFIED AS SITE NUMBER 20053433 – REDINGTON GARAGE. PAYMENT FOR EXCAVATION EFFORTS OF ANY SOILS SOUTH OF THE CHANNEL SHALL BE MADE UNDER RESPECTIVE STANDARD EXCAVATION ITEMS. SAFE HANDLING AND OTHER PROVISIONS RELATED TO CONTAINMENT AND DISPOSAL OF CONTAMINATED SOILS WILL BE MADE UNDER ITEM 900.608, "SPECIAL PROVISION (MANAGEMENT OF PETROLEUM CONTAMINATED SOILS)."
8. MULTIPLE MONITORING WELLS AND OXYGEN RELEASE COMPOUND (ORC) WELLS ARE PRESENT WITHIN THE ANTICIPATED WORK LIMITS. PAYMENT FOR REPLACEMENT OF WELLS THAT ARE DAMAGED OR DISTURBED BETWEEN STATIONS 12+25 AND 13+25 AND TRANSVERSELY BOUND BY THE LIMITS OF THE PROJECT DEMARCATION FENCE SHOWN ON THE EPSC CONSTRUCTION SITE PLAN SHEET WILL BE MADE UNDER ITEM 900.620, "SPECIAL PROVISION (MONITORING WELL)." BASED UPON AVAILABLE SURVEY, IT APPEARS THREE MONITORING WELLS AND TWO ORC WELLS WILL REQUIRE REPLACEMENT. REPLACEMENT OF WELLS DAMAGED OR DISTURBED OUTSIDE THESE LIMITS SHALL BE AT THE CONTRACTOR'S EXPENSE AT NO COST TO THE STATE. MONITORING WELL INSTALLATION SHALL OCCUR WITHIN A 14 DAY PERIOD IMMEDIATELY FOLLOWING THE BRIDGE CLOSURE PERIOD UTILIZING DAILY LANE CLOSURES.
9. THE APPROACHES MAY BE UNDERLAIN BY OR CONTAIN REMNANTS FROM A PREEXISTING CONCRETE WEARING SURFACE. PAYMENT FOR EXCAVATION AND REMOVAL WILL BE MADE UNDER THE APPROPRIATE EXCAVATION ITEM IDENTIFIED ON THE "TYPICAL SECTIONS AND DETAILS 2" SHEET.
10. THE EXISTING SUPERSTRUCTURE SHALL BE REMOVED IN ITS ENTIRETY. THE EXISTING SOUTHERN ABUTMENT SHALL BE PARTIALLY REMOVED TO LIMITS SHOWN ON "TYPICAL SECTIONS AND DETAILS 2". THE EXISTING PIER AND NORTHERN ABUTMENT SHALL BE REMOVED TO THE LOWER OF THE STREAMBED ELEVATION OR THE LIMITS NEEDED FOR STONE FILL, TYPE II PLACEMENT. ANY VOIDS RESULTING FROM PIER REMOVAL SHALL BE FILLED WITH STONE FILL, TYPE I. PAYMENT FOR REMOVAL AND ANY NECESSARY FILL MATERIAL WILL BE MADE UNDER ITEM 529.20, "PARTIAL REMOVAL OF STRUCTURE (BRIDGE 20)."
11. THE "STONE FILL, TYPE I" AND "STONE FILL, TYPE II" UNDER THE BRIDGE AS SHOWN IN THE PLANS SHALL BE PLACED BEFORE THE PRESTRESSED SLABS ARE SET.

**CONCRETE**

12. CONCRETE FOR THE BRIDGE RAILING SHALL BE CAST ONSITE AFTER FULLY POST-TENSIONING BEAMS TOGETHER AND WET CURED FOR SEVEN DAYS. FORMWORK AND REINFORCING STEEL MAY BE ASSEMBLED PRIOR TO ERECTING BEAMS. CONCRETE FOR THE BRIDGE RAILING SHALL ATTAIN A STRENGTH OF 4,000 PSI PRIOR TO BEING USED ADJACENT TO TRAFFIC.
13. WATER REPELLENT, SILANE SHALL BE APPLIED TO ALL CONCRETE SURFACES EXPOSED IN THE FINAL CONDITION, EXCEPT THE UNDERSIDE OF THE SUPERSTRUCTURE BETWEEN DRIP NOTCHES. APPLICATION OF THE SEALER SHALL BE COMPLETED WITHIN 40 DAYS OF ORIGINAL CONCRETE PLACEMENT.
14. ALL REINFORCING STEEL SHALL MEET THE REQUIREMENTS FOR LEVEL II CORROSION RESISTANCE IN ACCORDANCE WITH SECTION 507.
15. MINIMUM CLEAR COVER SHALL BE AS FOLLOWS:
 

- ALONG TOP SURFACE OF SUPERSTRUCTURE:	2 ½ INCH
- ALONG BOTTOM SURFACE OF SUPERSTRUCTURE:	1 ¾ INCH
- ALONG BACK FACES OF WALLS AGAINST EARTH:	2 INCH
- ELSEWHERE UNLESS OTHERWISE INDICATED:	3 INCH

16. 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 WILL BE INCLUDED IN THE UNIT PRICE BID FOR THE APPROPRIATE PRECAST ITEM.
17. MECHANICAL BAR CONNECTORS, GROUTED BAR CONNECTORS, AND ANY OTHER REINFORCING STEEL CONNECTORS REQUIRED OF THE PROJECT SHALL MEET THE REQUIREMENTS OF SUBSECTION 713.02, BE ASSEMBLED IN THE FIELD BY THE CONTRACTOR, AND WITNESSED BY THE ENGINEER. THE CONTRACTOR SHALL ALSO PROVIDE 3 ASSEMBLED CONNECTORS PER SIZE FOR TESTING IN ACCORDANCE WITH SUBSECTION 713.02. ALL COSTS ASSOCIATED WITH FURNISHING AND INSTALLING BAR CONNECTORS AND FOR PROVIDING BAR CONNECTORS FOR TESTING WILL BE INCLUDED IN THE UNIT PRICE BID FOR THE APPROPRIATE PRECAST ITEM.
18. ALL COSTS ASSOCIATED WITH FURNISHING AND FIELD-INSTALLING THE APPROACH SLAB CLOSURE POUR REINFORCING BARS AND WINGWALL NO. 2 REINFORCING BARS WILL BE PAID UNDER THE APPROPRIATE PRECAST CONCRETE PAY ITEM.
19. CONCRETE FOR LONGITUDINAL APPROACH SLAB CLOSURE POURS, ABUTMENT PILE CAVITIES, AND WINGWALL NO. 2 CONSTRUCTION SHALL MEET THE REQUIREMENTS OF ITEM 900.608, "SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET) (FPQ)."

**H-PILES**

20. THE CONTRACTOR SHALL SUBMIT A GROUTING PROCEDURE PROPOSAL TO THE ENGINEER, INCLUDING THE PREMIX BRAND NAME FOR APPROVAL.
21. THE PILES SHALL BE HP 12 X 74.
22. TO PREVENT DAMAGE TO THE PILES, PILE SHOES ARE REQUIRED AND SHALL CONFORM TO SUBSECTION 505.04(F).
23. THE PILES SHALL BE DRIVEN TO A NOMINAL RESISTANCE OF 190 KIPS AND TO A MINIMUM DEPTH OF 28 FT BELOW THE BOTTOM OF ABUTMENT.
24. A MINIMUM OF ONE DYNAMIC PILE LOADING TEST SHALL BE CONDUCTED AT EACH ABUTMENT. PAYMENT WILL BE MADE UNDER ITEM 505.45, "DYNAMIC PILE LOADING TEST." MORE TESTS MAY BE REQUIRED BY THE ENGINEER.
25. FOR ESTIMATING PURPOSES, THE PILE TIP ELEVATIONS WERE ASSUMED AS SHOWN ON THE BORING LOGS. THE ACTUAL IN PLACE LENGTHS MAY VARY.
26. IN ADDITION TO PILE INSTALLATION TOLERANCES IDENTIFIED IN SUBSECTION 505.04(B), THE TOPS OF THE PILES AFTER DRIVING SHALL NOT VARY FROM THE POSITION SHOWN ON THE PLANS BY MORE THAN 3 INCHES. THE CONTRACTOR SHALL DEMONSTRATE HOW THE TOLERANCES WILL BE MET TO THE SATISFACTION OF THE ENGINEER. THESE MEASURES SHALL BE DEMONSTRATED IN A SUBMITTAL TO BE ACCEPTED BEFORE PILE DRIVING COMMENCES.
27. DUE TO POTENTIAL CONFLICTS BETWEEN PROPOSED PILE INSTALLATION AND THE EXISTING SOUTHERLY MASONRY ABUTMENT TO REMAIN, THE PILE LOCATIONS AT ABUTMENT NO. 1 SHALL BE PRE-EXCAVATED TO A MINIMUM DEPTH OF 8 FEET BELOW THE BOTTOM OF PROPOSED ABUTMENT. AFTER PILE INSTALLATION, THE RESULTING ANNULAR SPACE BETWEEN PILE AND PRE-EXCAVATED HOLE SHALL BE FILLED WITH A 2 FT THICK PLUG OF CONCRETE, CLASS C AT THE BOTTOM OF THE EXCAVATED LIMIT AND SAND CONFORMING TO SUBSECTION 703.03 FOR THE REMAINING PRE-EXCAVATED VOID. PAYMENT FOR PRE-EXCAVATION, CONCRETE, CLASS C AND SAND WILL BE MADE UNDER ITEM 900.640, "SPECIAL PROVISION (PRE-EXCAVATION FOR INTEGRAL ABUTMENT PILES, ROCK)."

**PRECAST ABUTMENTS**

28. DESIGN VALUES
  - a. CONCRETE COMPRESSIVE STRENGTH:  $f'c = 5,000$  PSI.
  - b. POST-TENSIONING STRANDS: 0.6 INCH DIAMETER, 270 KSI, LOW RELAXATION, 7-WIRE STRANDS.
  - c. JACKING FORCE PER STRAND = 47 KIPS.
  - d. THERE SHALL BE 1 POST-TENSIONING STRAND PER DUCT.
  - e. APPARENT MODULUS OF ELASTICITY = 28,500 KSI.
29. 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 PROVIDED ON THE FABRICATION DRAWINGS. EACH JOINT SHALL NOT BE LOCATED CLOSER THAN 1'-0" FROM THE EDGE OF A PILE CAVITY. NO LESS THAN TWO PILES SHALL SUPPORT EACH PRECAST ABUTMENT SECTION.
30. JOINT SEALER, POLYURETHANE SHALL BE APPLIED TO FILL FACE OF ALL VERTICAL MATCH CAST JOINTS. PAYMENT WILL BE CONSIDERED INCIDENTAL TO THE APPROPRIATE PRECAST ABUTMENT PAY ITEM.

31. 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. GALVANIZE ANCHOR ASSEMBLIES AFTER FABRICATION IN ACCORDANCE WITH AASHTO M 232. PAYMENT FOR FURNISHING AND INSTALLING GALVANIZED ANCHOR ASSEMBLIES, DUCTS, AND POST-TENSIONING STRANDS WILL BE MADE UNDER THE APPROPRIATE PRECAST CONCRETE PAY ITEM.
32. CORRUGATED STEEL PIPES IN THE PRECAST ABUTMENTS FOR PILE AND ANCHOR BOLT CAVITIES SHALL MEET THE REQUIREMENTS OF SUBSECTION 711.01, COATED IN ACCORDANCE WITH AASHTO M 218, TYPE 1. ALL COSTS ASSOCIATED WITH FURNISHING AND PLACING THE CORRUGATED STEEL PIPES WILL BE PAID UNDER THE APPROPRIATE PRECAST CONCRETE PAY ITEM.
33. THE SEQUENCE OF CONSTRUCTION SHALL BE SUBMITTED BY THE CONTRACTOR FOR APPROVAL BY THE ENGINEER.

**PRESTRESSED SOLID SLABS**

34. DESIGN VALUES
  - a. CONCRETE COMPRESSIVE STRENGTH:  $f'c = 9,000$  PSI.
  - b. CONCRETE COMPRESSIVE STRENGTH AT RELEASE:  $f'ci = 6,000$  PSI.
  - c. PRESTRESSING AND POST-TENSIONING STRANDS: 0.6 INCH DIAMETER, 270 KSI, LOW RELAXATION, 7-WIRE STRANDS.
  - d. JACKING FORCE PER PRESTRESSING STRAND = 44 KIPS.
  - e. JACKING FORCE PER POST-TENSIONING STRAND = 47 KIPS.
  - f. THERE SHALL BE 2 POST-TENSIONING STRANDS PER DUCT.
  - g. APPARENT MODULUS OF ELASTICITY = 28,500 KSI.
  - h. ANTICIPATED CAMBER
 

MIDSPAN CAMBER AT RELEASE	0.98 INCH
MIDSPAN CAMBER AT END OF CONSTRUCTION	1.41 INCH
LONG-TERM MIDSPAN CAMBER	1.23 INCH
35. POST-TENSIONING STRAND SHALL CONFORM TO THE REQUIREMENTS OF SECTION 510 – PRESTRESSED CONCRETE. PAYMENT FOR FURNISHING AND INSTALLING GALVANIZED ANCHOR ASSEMBLIES, DUCTS, AND POST-TENSIONING STRANDS WILL BE MADE UNDER ITEM 900.640, "SPECIAL PROVISION (PRESTRESSED CONCRETE SOLID SLABS)(15" x 48")."
36. 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 THE BRIDGE CLOSURE PERIOD. UNDER NO CIRCUMSTANCES SHALL A BRIDGE CLOSURE PERIOD BEGIN PRIOR TO HAVING AN ACCEPTED ERECTION PLAN.
37. 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.
38. THE SEQUENCE OF CONSTRUCTION SHALL BE SUBMITTED BY THE CONTRACTOR FOR APPROVAL BY THE ENGINEER.

**PRECAST APPROACH SLABS**

39. CONCRETE COMPRESSIVE STRENGTH:  $f'c = 5,000$  PSI.
40. CONCRETE RETARDING ADMIXTURE SHALL BE APPLIED TO FORMWORK FOR SLAB EDGES TO BECOME IN CONTACT WITH HIGH PERFORMANCE CONCRETE, RAPID SET TO PROVIDE A ROUGHENED SURFACE. ALTERNATE METHODS OF ACHIEVING A ROUGHENED SURFACE, GENERALLY CONSISTENT WITH SAND BLASTED SURFACES, MAY BE PROPOSED. ALL SUCH SURFACES SHALL BE POWER WASHED WITH WATER PRIOR TO INSTALLATION. SLAB EDGE PREPARATION WILL BE CONSIDERED INCIDENTAL TO THE APPROPRIATE PRECAST CONCRETE APPROACH SLAB PAY ITEM.

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