

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. THE EXISTING STRUCTURE SHALL BE REMOVED IN ITS ENTIRETY. GRANITE BLOCKS SHALL BE REMOVED BY A MEANS THAT AVOIDS DAMAGE TO THE GRANITE. ALL REMOVED GRANITE BLOCKS FROM THE EXISTING STRUCTURE SHALL BE DELIVERED TO THE LYONS PROPERTY AT 127 ROARING BROOK RD. COORDINATE THE DELIVERY WITH MR. LYONS BY CALLING 802-525-4724. ALL REMAINING PORTIONS OF THE REMOVED EXISTING STRUCTURE SHALL BECOME THE PROPERTY OF THE CONTRACTOR. THE EXISTING PIER AND ABUTMENTS SHALL BE REMOVED TO THE LOWER OF THE STREAMBED ELEVATION OR THE LIMITS NEEDED FOR STONE FILL, TYPE III PLACEMENT. ANY VOIDS RESULTING FROM PIER REMOVAL SHALL BE FILLED WITH STONE FILL, TYPE I. PAYMENT FOR REMOVAL, ANY NECESSARY FILL MATERIAL, AND DELIVERY OF GRANITE BLOCKS WILL BE MADE UNDER ITEM 529.15, "REMOVAL OF STRUCTURE."
8. EXISTING BRIDGE REMOVAL SHALL BE PERFORMED PRIOR TO PLACEMENT OF STONE FILL WITHIN THE CHANNEL IN ORDER TO MAINTAIN EXISTING WATERWAY WIDTH DURING CONSTRUCTION.
9. THE "STONE FILL, TYPE III" UNDER THE BRIDGE AS SHOWN IN THE PLANS SHALL BE PLACED BEFORE THE PRESTRESSED SLABS ARE SET.
10. THE CONTRACTOR MAY SUBSTITUTE SUBBASE MATERIAL FOR THE SAND BORROW SHOWN ON THE PLANS. THE SUBBASE MATERIAL SHALL MEET THE TYPE SPECIFIED IN THE CONTRACT AND PLACED TO MEET THE SUBBASE SPECIFICATIONS. ALL COSTS ASSOCIATED WITH THE SUBSTITUTION WILL BE PAID UNDER ITEM 203.31, "SAND BORROW".
11. JAPANESE KNOTWOOD PLANTS HAVE BEEN IDENTIFIED WITHIN THE PROJECT SITE LIMITS. WHEN THIS PLANT IS LOCATED WITHIN EXCAVATION LIMITS REQUIRED OF THE PROJECT, EXCAVATION SHALL EXTEND TO A MINIMUM OF 6 FT BELOW ORIGINAL GROUND SURFACE. REFER TO THE SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION REGARDING DISPOSAL OF EXCAVATED MATERIAL AND EQUIPMENT CLEANING. ANY REQUIRED EXCAVATION BEYOND PAY LIMITS IDENTIFIED ON THE PLANS TO ACHIEVE THE 6 FT DEPTH IN AREAS CONTAINING THE PLANT WILL BE PAID AS ITEM 203.15, "COMMON EXCAVATION" AND REQUIRED BACKFILL WILL BE PAID AS ITEM 203.31, "SAND BORROW" OR ITEM 204.30, "GRANULAR BACKFILL FOR STRUCTURES" AS DIRECTED BY THE ENGINEER. ALL EXCAVATION, DISPOSAL, AND EQUIPMENT CLEANING NECESSARY TO COMPLETE THE REMOVAL OF JAPANESE KNOTWOOD WITHIN PROJECT EXCAVATION LIMITS WILL BE PAID UNDER THE APPROPRIATE EXCAVATION ITEM.

CONCRETE

12. WATER REPELLENT, SILANE SHALL BE APPLIED TO ALL EXPOSED CONCRETE SURFACES IN THE FINAL CONDITION, EXCEPT FOR THE UNDERSIDE OF THE SUPERSTRUCTURE BETWEEN DRIP NOTCHES. APPLICATION OF THE SEALER SHALL BE COMPLETED WITHIN 40 DAYS OF ORIGINAL CONCRETE PLACEMENT.
13. ALL REINFORCING STEEL SHALL MEET THE REQUIREMENTS FOR LEVEL II CORROSION RESISTANCE IN ACCORDANCE WITH SECTION 507.
14. 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
15. 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.
16. ALL COSTS ASSOCIATED WITH FURNISHING AND FIELD-INSTALLING THE APPROACH SLAB LONGITUDINAL CLOSURE POUR REINFORCING BARS WILL BE INCLUDED IN THE BID PRICE FOR THE APPROPRIATE PRECAST CONCRETE APPROACH SLAB PAY ITEM.
17. CONCRETE FOR APPROACH SLAB LONGITUDINAL CLOSURE POURS AND ABUTMENT PILE CAVITIES SHALL MEET THE REQUIREMENTS OF ITEM 900.608, "SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET) (FPQ)."
18. THE CONTRACTOR SHALL SUBMIT A GROUTING PROCEDURE PROPOSAL TO THE ENGINEER, INCLUDING THE PREMIX BRAND NAME FOR APPROVAL.
19. THE PILES SHALL BE HP 12 X 74.
20. TO PREVENT DAMAGE TO THE PILES, PILE SHOES ARE REQUIRED AND SHALL CONFORM TO SUBSECTION 505.04(F).
21. THE PILES SHALL BE DRIVEN TO A NOMINAL RESISTANCE OF 320 KIPS AND TO A MINIMUM DEPTH OF 25 FT BELOW THE BOTTOM OF ABUTMENT.
22. 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.
23. FOR ESTIMATING PURPOSES, THE PILE TIP ELEVATIONS WERE ASSUMED AS SHOWN ON THE BORING LOGS. THE ACTUAL IN PLACE LENGTHS MAY VARY.
24. 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.

H-PILES

PRECAST ABUTMENTS

25. 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.
26. 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.
27. 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.
28. 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.
29. 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.
30. THE SEQUENCE OF CONSTRUCTION SHALL BE SUBMITTED BY THE CONTRACTOR FOR APPROVAL BY THE ENGINEER.

PRESTRESSED SOLID SLABS

31. ALL PRESTRESSED CONCRETE SOLID SLABS, REGARDLESS OF WIDTH, WILL BE PAID FOR UNDER ITEM 900.640, "SPECIAL PROVISION (PRESTRESSED CONCRETE SOLID SLABS) (21" x 36")."
32. DESIGN VALUES
 - f. CONCRETE COMPRESSIVE STRENGTH: $f_c = 9,000$ PSI.
 - g. CONCRETE COMPRESSIVE STRENGTH AT RELEASE: $f_{ci} = 6,000$ PSI.
 - h. PRESTRESSING AND POST-TENSIONING STRANDS: 0.6 INCH DIAMETER, 270 KSI, LOW RELAXATION, 7-WIRE STRANDS.
 - i. JACKING FORCE PER PRESTRESSING STRAND = 44 KIPS.
 - j. JACKING FORCE PER POST-TENSIONING STRAND = 47 KIPS.
 - k. THERE SHALL BE 2 POST-TENSIONING STRANDS PER DUCT.
 - l. APPARENT MODULUS OF ELASTICITY = 28,500 KSI.
 - m. ANTICIPATED CAMBER

MIDSPAN CAMBER AT RELEASE	1.63 INCH
MIDSPAN CAMBER AT END OF CONSTRUCTION	2.36 INCH
LONG-TERM MIDSPAN CAMBER	1.96 INCH
33. 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) (21" x 36")."
34. 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.
35. THE SEQUENCE OF CONSTRUCTION SHALL BE SUBMITTED BY THE CONTRACTOR FOR APPROVAL BY THE ENGINEER.

PRECAST APPROACH SLABS

36. CONCRETE COMPRESSIVE STRENGTH: $f_c = 5,000$ PSI.
37. 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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