

GENERAL

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE STATE OF VERMONT, AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 2006, AND ITS LATEST REVISIONS, THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOURTH EDITION, AND ITS LATEST REVISIONS AND THE AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS, SECOND EDITION, AND ITS LATEST REVISIONS.
2. THE BRIDGE IS DESIGNED FOR HL-93 LIVE LOAD WITH AN ALLOWANCE FOR 2 INCHES OF FUTURE PAVEMENT.
3. ALL DIMENSIONS SHOWN IN THE PLANS ARE HORIZONTAL OR VERTICAL AND ARE GIVEN AT 68 DEGREES FAHRENHEIT, UNLESS NOTED OTHERWISE.
4. ANY STRUCTURE SUCH AS STEEL PANELS OR WOOD PANELS USED TO BRIDGE EXCAVATIONS SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER.
5. ITEM 529.15 "REMOVAL OF STRUCTURE" IS FOR THE REMOVAL OF THE EXISTING MABEY BRIDGE SUPERSTRUCTURE AND ANY EXISTING SUBSTRUCTURE COMPONENTS REQUIRED TO COMPLETE THE PROPOSED WORK. SEE SPECIAL PROVISIONS FOR REQUIREMENTS ON THE REMOVAL AND DELIVERY OF THE MABEY BRIDGE COMPONENTS.
6. THE BID PRICE FOR ITEM 620.55 REMOVAL OF EXISTING FENCE SHALL INCLUDE STOCKPILING THE FENCE IN A LOCATION ACCEPTABLE TO THE PROPERTY OWNER.
7. SEE THE UTILITY SPECIAL PROVISIONS FOR A DESCRIPTION OF WHEN AND WHERE ITEM 204.22 TRENCH EXCAVATION OF EARTH, EXPLORATORY (N.A.B.I.) MAY BE REQUIRED.

CONCRETE

8. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1 INCH X 1 INCH.
9. ITEM 514.10 "WATER REPELLENT, SILANE", SHALL BE APPLIED TO ALL EXPOSED CONCRETE SURFACES, EXCEPT THE UNDERSIDE OF THE DECK BETWEEN DRIP NOTCHES.
10. JOINTS AND SCORE MARKS IN CONCRETE SHALL BE CONSTRUCTED AS SHOWN IN THE PLANS OR AS DIRECTED BY THE RESIDENT ENGINEER.

PRESTRESSED BOX BEAMS & PRECAST ABUTMENTS

11. ITEM 510.21 "PRESTRESSED CONCRETE BOX BEAMS" SHALL:
 - A. CONFORM TO SECTION 510 "PRESTRESSED CONCRETE".
 - B. HAVE THE ENDS OF THE STRANDS RECESSED AND GROUTED ACCORDING TO STANDARD PRACTICE.
 - C. INCLUDE COLD POURED JOINT FILLER, AND TRANSVERSE TENDONS.
 - D. GALVANIZE TRANSVERSE TENDONS PLATES AND CHUCKS AFTER FABRICATION ACCORDING TO AASHTO M 232M/M 232.
12. ITEM 510.24 "GROUTING SHEAR KEYS": FILL THE JOINTS BETWEEN THE BEAMS WITH MORTAR, TYPE IV, AS DESCRIBED IN SUBSECTION 510.13.
13. DESIGN VALUES
 - A. CONCRETE: $f_c = 7$ ksi AND $f_c = 5.5$ ksi
 - B. LIVE LOAD: AASHTO HL-93
 - C. PRESTRESSING STRANDS: 0.6" DIAMETER, 270 ksi, LOW-RELAXATION 7-WIRE STRANDS PULLED TO 75% OF THEIR YIELD STRENGTH
 - D. POST-TENSIONING STRANDS: 0.5" DIAMETER, 270 ksi, LOW-RELAXATION 7-WIRE STRANDS.
 - E. THE ASSUMED MODULUS OF ELASTICITY FOR THE STRAND IS 28,500 KSI.
 - F. THERE SHALL BE TWO (2) STRANDS PER POST-TENSION DUCT.
 - G. TRANSVERSE TENDONS SHALL BE COVERED BY SEAMLESS POLYPROPYLENE SHEATH (WITH CORROSION INHIBITOR GREASE BETWEEN SHEATH AND STRAND) FOR THE LENGTH OF THE STRAND. TIES SHALL BE TENSIONED TO 33 KIPS FOR EACH 0.5" DIAMETER STRAND AND 47 KIPS FOR EACH 0.6" DIAMETER STRAND.
 - H. SERVICE LOADS

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| MEMBER MOMENT | 523 & 635 K-FT |
| SUPERIMPOSED DEAD LOAD MOMENT | 66 K-FT |
| LIVE LOAD & IMPACT MOMENT | 860 K-FT |
| DEAD LOAD REACTION | 35 & 42 K |
| LIVE LOAD & IMPACT REACTION | 56 K |
| TOTAL REACTION | 91 & 98 K |
| FINAL CAMBER | 1.2 & 1.7 IN |
14. THE FABRICATOR MAY, WITH THE APPROVAL OF THE PROJECT MANAGER, ALTER THE DESIGN AS DETAILED TO MEET THE PLANT'S PRESTRESSING OPERATION AND MATERIAL REQUIREMENTS. ALTERNATE STRAND, TRANSVERSE TIE AND CROSS-SLOPE CONFIGURATIONS MAY BE SUBMITTED TO THE ENGINEER FOR APPROVAL. ANY DESIGN CHANGES SHALL MEET ALL OF THE APPLICABLE DESIGN CRITERIA, LOADINGS AND CODES AND SHALL BE STAMPED AND SIGNED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF VERMONT.

15. THE PRECASTER SHALL SANDBLAST SHEAR KEY FACES PRIOR TO DELIVERY.
16. IF THE SUBSTRUCTURE UNITS ARE PROVIDED IN MULTIPLE PIECES, THE SHEAR KEYS SHALL BE PROVIDED AT THE JOINTS AND THE PIECES SHALL BE MATCH CAST BY THE FABRICATOR.
17. ALL TIES AND STIRRUPS IN THE BOX BEAMS SHALL BE EPOXY COATED.
18. 1/2" SACRIFICIAL WEARING SURFACE HAS BEEN ADDED TO THE TOP OF THE BOX BEAMS. SEE THE SPECIAL PROVISIONS FOR DETAILS ON PROVIDING TEXTURING.

PROPOSED CONSTRUCTION SEQUENCE FOR PRECAST ABUTMENTS

19. PREPARE AND GRADE FOUNDATION TO REQUIRED ELEVATION.
20. PLACE SUBSTRUCTURE UNIT(S) OVER PILES.
 - A. PLUG GROUT HOLES
 - B. CONSTRUCTION JOINTS (IF REQUIRED) SHALL BE KEYED AND MATCH CAST.
21. INSTALL TRANSVERSE TENDONS (IF USING MORE THAN ONE SUBSTRUCTURE UNIT)
 - A. FEED TWO TENDONS THROUGH EACH OF THE SIX DUCTS.
 - B. USING A CALIBRATED JACK, POST-TENSION TO 3 KIPS TO REMOVE SAG IN THE TENDON
22. GROUT SHEAR KEY
23. POST-TENSION TRANSVERSE TENDONS:
 - A. GROUT SHALL ATTAIN A MINIMUM COMPRESSIVE STRENGTH OF 1500 psi, BASED ON THE MANUFACTURER'S RECOMMENDATIONS, PRIOR TO STRESSING. THE GROUT NEED NOT BE CURED FOR THREE DAYS PRIOR TO THE COMMENCING OF POST-TENSIONING.
 - B. PROVIDE APPROPRIATE CUBE MOLDS AS DESCRIBED IN AASHTO T106 FOR 3 SETS OF 3 DAY CUBES, 3 SETS OF 28 DAY CUBES AND AT A MINIMUM OF 3 MORE CUBES TO TEST FOR THE 1500 psi MINIMUM COMPRESSIVE STRENGTH.
 - C. POST-TENSION TENDONS TO 33 KIPS USING A CALIBRATED JACK OPERATED BY QUALIFIED PERSONNEL.
24. GROUT PILE CAVITIES
 - A. UNCOVER DUCTS
 - B. PLACE THE CONCRETE THROUGH FILL DUCTS INTO PILE CAVITIES.
 - C. MONITOR THE QUALITY OF THE GROUT THROUGH THE VENT DUCT.
 - D. CONTINUE GROUTING UNTIL THE CONCRETE COMPLETELY FILLS THE CAVITY AND BOTH DUCTS.
 - E. THE GROUT FOR FILLING THE PILE CAVITIES SHALL MEET THE REQUIREMENTS OF SELF-CONSOLIDATING CONCRETE. SEE THE SPECIAL PROVISIONS FOR DETAILS. ALL COSTS ASSOCIATED WITH GROUTING THE PILE CAVITIES SHALL BE INCLUDED IN THE BID PRICE FOR ITEMS 540.10 PRECAST CONCRETE STRUCTURE (ABUTMENT #1) AND 540.10 PRECAST CONCRETE STRUCTURE (ABUTMENT #2).

BACKFILL ABUTMENT

PROPOSED CONSTRUCTION SEQUENCE FOR PRESTRESSED BOX BEAMS

25. BACKFILL ABUTMENT
26. LAY OUT WORKING LINES:
 - A. LAY OUT WORKING LINES FOR THE ENTIRE BRIDGE WIDTH ON THE BEAM SEAT.
 - B. MEASURE ALL WORKING LINES FROM A COMMON WORKING POINT.
 - C. BASE THE WORKING LINES ON THE NOMINAL BEAM WIDTHS.
27. VERIFY BEAM SEAT ELEVATIONS:
 - A. MEASURE ELEVATIONS AT BEAM SEATS.
 - B. IF SEATS ARE HIGH OR LOW, TAKE CORRECTIVE ACTION.
 - C. INSTALL BEARINGS.
28. ERECT BEAMS:
 - A. PLACE BEAMS TO FIT WITHIN THE WORKING LINES.
 - B. AS WORK PROGRESSES, INSTALL HARDWOOD WEDGES BETWEEN ADJACENT BEAMS TO MAINTAIN PROPER JOINT OPENING (A MINIMUM OF ONE WEDGE AT EACH TRANSVERSE TENDON).
 - C. DRILL ANCHOR BOLT HOLES.
 - D. PLACE ANCHOR BOLTS.
29. INSTALL BACKER ROD: PLACE FILLER BELOW THE KEYWAY BOTTOM, AS SHOWN ON THE PLANS.
30. INSTALL TRANSVERSE TENDONS:
 - A. FEED TENDONS THROUGH DUCTS.
 - B. VERIFY THAT HARDWOOD WEDGES ARE IN PLACE AS REQUIRED TO PREVENT SLIPPAGE OF BEAMS.
 - C. USING A CALIBRATED JACK, POST-TENSION TENDONS TO APPROXIMATELY 3 KIPS TO REMOVE SAG IN THE TENDON AND TO SEAT THE CHUCK.

31. GROUT SHEAR KEYS:
 - A. CLEAN JOINTS WITH AN OIL FREE AIR-BLAST IMMEDIATELY BEFORE GROUT PLACEMENT. VERIFY THAT THE BACKER ROD IS STILL IN PLACE.
 - B. FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR ADDITIONAL JOINT PREPARATION AND GROUT PLACEMENT.
 - C. CAREFULLY ROD JOINTS TO ELIMINATE ANY POSSIBILITY OF VOIDS.
32. POST-TENSION TRANSVERSE TENDONS:
 - A. GROUT SHALL ATTAIN A MINIMUM COMPRESSIVE STRENGTH OF 1500 psi, BASED ON THE MANUFACTURER'S RECOMMENDATIONS, PRIOR TO STRESSING. THE GROUT NEED NOT BE CURED FOR THREE DAYS PRIOR TO THE COMMENCING OF POST-TENSIONING.
 - B. PROVIDE APPROPRIATE CUBE MOLDS AS DESCRIBED IN AASHTO T106 FOR 3 SETS OF 3 DAY CUBES, 3 SETS OF 28 DAY CUBES AND AT A MINIMUM OF 3 MORE CUBES TO TEST FOR THE 1500 psi MINIMUM COMPRESSIVE STRENGTH.
 - C. POST-TENSION TENDONS TO 30 KIPS USING A CALIBRATED JACK OPERATED BY QUALIFIED PERSONNEL.
33. END DETAILS:
 - A. GROUT ANCHOR BOLTS INTO THE SLEEVES IN THE PRESTRESSED UNITS AT THE FIXED ENDS. BEFORE THE GROUT CURES, PLACE THE WASHER PLATE, AND INSTALL THE NUT ON TOP AND TIGHTEN.
 - B. PLACE THE COLD POURED JOINT SEALER IN THE SLEEVES IN THE PRESTRESSED UNITS AT THE EXPANSION ENDS. PLACE THE WASHER PLATE AND INSTALL THE NUT ON TOP. HAND TIGHTEN AND THEN LOOSEN 1/2 TURN.
 - C. GROUT OVER THE NUT AND BOLT IN THE ANCHOR BOLT BLOCK OUTS ON THE FIXED ENDS. FILL THE ANCHOR BOLT BLOCK OUTS ON THE EXPANSION ENDS WITH COLD POURED JOINT SEALER.
34. FINISH WORK: REMOVE WEDGES, AND PATCH SURFACE AND FASCIA BEAMS AT TRANSVERSE TENDONS.

PILES

35. THE PILES SHALL BE HP 12 X 53.
36. PILES SHALL BE DRIVEN TO A NOMINAL RESISTANCE OF 465 KIP. TO PREVENT DAMAGE TO THE PILES, PILE SHOES SHALL BE REQUIRED AND SHALL CONFORM TO SECTION 505.
37. FOR ESTIMATING PURPOSES, THE PILE TIP ELEVATIONS WERE ASSUMED AS SHOWN ON THE BORING LOGS. THE ACTUAL IN PLACE LENGTHS MAY VARY.
38. NO DYNAMIC LOAD TESTING IS REQUIRED FOR THIS PROJECT. THUS, PER SUBSECTION 505.04(C)(3) "THE ENGINEER WILL DETERMINE THE ULTIMATE CAPACITY BASED ON THE AGENCY'S WAVE EQUATION ANALYSIS". PER SUBSECTION 504.02(A) THE CONTRACTOR WILL STILL HAVE TO SUBMIT THE PILE AND DRIVING EQUIPMENT DATA FORM 14 DAYS PRIOR TO DRIVING.

TRAFFIC CONTROL

39. FOR ADDITIONAL SIGNING INSTRUCTIONS SEE STANDARDS E-100, E-100A, E-107, & E-107A.
40. THE CONTRACTOR WILL BE PERMITTED TO CLOSE THE BRIDGE TO TRAFFIC FOR THE FIRST 20 CALENDAR DAYS THAT THE PROJECT IS UNDER CONSTRUCTION. DURING THIS TIME, MENARD ROAD SHALL REMAIN OPEN TO VEHICULAR TRAFFIC WHEN THE CONTRACTOR IS NOT ON-SITE.
41. THE TRAFFIC CONTROL PLAN SHALL INCLUDE PROVISIONS TO ALLOW EMERGENCY VEHICLE ACCESS TO THE PROPERTIES ON MENARD ROAD WITHIN 15 MINUTES OF RECEIVING NOTICE THAT EMERGENCY VEHICLES ARE ON ROUTE OR FROM WHEN THE EMERGENCY VEHICLE ARRIVES ON SITE WITHOUT PRIOR NOTICE, EVEN DURING ANY BRIDGE CLOSURES. AN EXCEPTION, TO THE EMERGENCY VEHICLE PROVISION, SHALL BE ALLOWED FOR THE TIME WHEN THE EXISTING BRIDGE IS BEING REMOVED AND THE NEW SUPERSTRUCTURE IS BEING PLACED.
42. A SCHEDULE OF CLOSURE TIMES AND EXPECTED DURATIONS SHALL BE SUBMITTED TO THE RESIDENT ENGINEER, PROPERTY OWNERS AND EMERGENCY PERSONNEL 14 DAYS PRIOR TO ANY CLOSURES. THE RESIDENT ENGINEER SHALL HAVE 7 DAYS TO APPROVE THOSE TIMES.
43. ALL WORK ASSOCIATED WITH PROVIDING VEHICULAR ACCESS WHEN THE CONTRACTOR IS NOT ON-SITE AND PROVIDING EMERGENCY VEHICLE ACCESS SHALL BE INCIDENTAL TO ITEM 900.645 (TRAFFIC CONTROL, ALL-INCLUSIVE).
44. WORK OUTSIDE THE RIGHT OF WAY AND INSIDE THE TEMPORARY EASEMENT SHALL BE CONDITIONED UPON RESTORING THE PROPERTY TO ITS ORIGINAL CONDITION. THE COST FOR ANY RESTORATION SHALL BE INCLUDED IN THE BID PRICE FOR ITEM 900.645 (TRAFFIC CONTROL, ALL-INCLUSIVE).
45. THE CONTRACTOR SHALL REFER TO SECTION 900 - TRAFFIC CONTROL (ALL-INCLUSIVE) OF THE SPECIAL PROVISIONS FOR ADDITIONAL TRAFFIC CONTROL REQUIREMENTS.

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| PROJECT NAME: | BRAINTREE |
| PROJECT NUMBER: | BRO 1444(36) |
| FILE NAME: | s95J292gennot.e.dgn |
| PROJECT LEADER: | K. HIGGINS |
| DESIGNED BY: | T. FILLBACH |
| GENERAL NOTES | |
| PLOT DATE: | 31-DEC-2009 |
| DRAWN BY: | T. FILLBACH |
| CHECKED BY: | J. LACROIX |
| SHEET | 3 OF 26 |