

**GENERAL NOTES:**

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE STATE OF VERMONT AGENCY OF TRANSPORTATION 2006 STANDARD SPECIFICATIONS FOR CONSTRUCTION, THE 2002 AASHTO BRIDGE DESIGN SPECIFICATIONS AND THEIR LATEST REVISIONS.
2. DIMENSIONS ARE HORIZONTAL OR VERTICAL IN FEET & INCHES AT 68 DEGREES FAHRENHEIT, UNLESS NOTED OTHERWISE.
3. THE BRIDGE IS DESIGNED FOR HS 25-44 LIVE LOAD WITH NO ALLOWANCE FOR FUTURE LOADS.
4. WATER QUALITY. PREVENT POLLUTION, AND DISCHARGE OF SILT OR RAW CONCRETE INTO THE WATERWAY AS DIRECTED BY THE RESIDENT ENGINEER.
5. IN-STREAM CONSTRUCTION. PERMITS DESIGNATE AND LIMIT THE PERIOD FOR IN-STREAM CONSTRUCTION FROM JUNE 1 TO OCTOBER 1. THE AGENCY OF NATURAL RESOURCES MUST APPROVE ANY DEVIATION FROM THIS PERIOD IN WRITING.

**TRAFFIC CONTROL**

6. TRAFFIC SHALL BE MAINTAINED DURING THE CONSTRUCTION OF THE NEW BRIDGE BY PHASED CONSTRUCTION. SEE SHEETS 10-12 AND SPECIAL PROVISION 900.645 FOR MORE INFORMATION.

**EARTH & CHANNEL WORK**

7. THE EXISTING CULVERT, HEADWALLS AND ANY APPURTENANCES WILL BE REMOVED UNDER PAY ITEM, 529.15, REMOVAL OF STRUCTURE.
8. PLACE STONE FILL UNDER THE BRIDGE BEFORE PLACING THE PRESTRESS UNITS.
9. THE CONTRACTOR WILL BE RESPONSIBLE FOR DEVELOPING METHODS OF CONSTRUCTION TO MAINTAIN STREAM FLOW DURING THE CONSTRUCTION OF THIS PROJECT. METHODS MUST COMPLY WITH SOUND ENVIRONMENTAL PRACTICES AND BE APPROVED BY THE ENGINEER PRIOR TO IMPLEMENTATION. IF A TEMPORARY PIPE IS USED, IT MUST BE A MINIMUM OF 60" DIAMETER. ALL COSTS ASSOCIATED WITH THIS WORK WILL BE CONSIDERED INCIDENTAL TO ALL OTHER CONTRACT ITEMS.
10. TEMPORARY SHEET PILING IS INCLUDED TO SEPARATE PHASE II AND III CONSTRUCTION. THE TOP LIMIT FOR MEASUREMENT WILL BE A MAXIMUM OF 3.5 FEET ABOVE THE ADJACENT ROADWAY SURFACE AND THE BOTTOM LIMIT WILL BE AS SHOWN IN THE SUBMITTED DESIGN UNLESS DRIVING CONDITIONS PROHIBIT DRIVING TO THE DESIGN DEPTH, IN WHICH CASE, THE BOTTOM LIMIT WILL BE THE ACTUAL DEPTH REACHED.
11. THE UNDERDRAIN FLUSHING BASIN LOCATED AT STATION 15+25 LT SHALL BE REMOVED AND REPLACED IN A NEW LOCATION TO BE DETERMINED BY THE RESIDENT ENGINEER. TWENTY FEET OF 6" UNDERDRAIN IS INCLUDED IN THE QUANTITIES TO BE USED TO CONNECT THE NEW UNDERDRAIN FLUSHING BASIN WITH THE EXISTING UNDERDRAIN.

**STRUCTURAL CONCRETE**

12. ITEM 501.34 "CONCRETE, HIGH PERFORMANCE CLASS B" WILL BE USED FOR ALL NON-PRESTRESSED CONCRETE. THE COST OF INSTALLING THE AGENCY PROVIDED BRIDGE PLAQUE WILL BE CONSIDERED INCIDENTAL TO THIS ITEM.
13. EPOXY COATED REINFORCING STEEL SHALL BE USED IN THE HEADWALLS.
14. UNCOATED REINFORCEMENT SHALL BE USED FOR ALL OTHER NON-PRESTRESSED CONCRETE.
15. THE TOLERANCE FOR PLACEMENT OF REINFORCEMENT WILL BE WITHIN 1 INCH OF THE SPACING AND 1/4 INCH OF THE CONCRETE COVER SHOWN IN THE PLANS.
16. THE MINIMUM CONCRETE COVER FOR REINFORCING STEEL IS 2 INCHES ON THE FACES OF WALLS AGAINST EARTH AND 3 INCHES ELSEWHERE UNLESS OTHERWISE NOTED.
17. CONSTRUCT CONCRETE JOINTS AS INDICATED ON THE PLANS OR DIRECTED BY THE RESIDENT ENGINEER. CONSTRUCT SHEAR KEYS MONOLITHICALLY AND CONTINUOUSLY UNLESS OTHERWISE INDICATED. TERMINATE SHEAR KEYS 6 INCHES FROM ENDS OF JOINTS. PLACE SHEAR KEYS UPWARD IN HORIZONTAL JOINTS.
18. UNLESS OTHERWISE NOTED, ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1 INCH BY 1 INCH.
19. CONSTRUCT SCORE MARKS AS INDICATED ON THE PLANS OR AS DIRECTED BY THE RESIDENT ENGINEER.

20. APPLY WATER REPELLENT, SILANE TO ALL EXPOSED SURFACES OF WINGWALLS AND HEADWALLS. ALSO APPLY TO EXPOSED SURFACES OF PRESTRESSED FASCIA UNITS INCLUDING THE BOTTOM SURFACE AND THE ABUTMENT BETWEEN THE FASCIA AND A VERTICAL LINE DEFINED BY THE JOINT BETWEEN THE PRESTRESSED FASCIA UNITS AND THE FIRST INTERIOR UNIT.

**PRESTRESSED CONCRETE**

21. **ITEM 510.21 "PRESTRESSED CONCRETE BOX BEAMS"**. PRESTRESSED PRECAST MEMBERS SHALL:
  - A. CONFORM TO SECTION 510 "PRESTRESSED CONCRETE".
  - B. BE 33" X 48" BOX BEAMS.
  - C. USE CONCRETE WITH F'C = 6,000 PSI AND FC = 4,000 PSI.
  - D. BE DESIGNED FOR COMBINATIONS OF AASHTO HS 25-44 LIVE LOAD AND DEAD LOADS INCLUDING VARYING DEPTHS OF ROADWAY FILL MATERIAL UP TO AND INCLUDING FINISH GRADE.
  - E. CONTAIN CONTINUOUS VOIDS EXCEPT AS SHOWN IN THE PLAN DETAIL.
  - F. HAVE VOID DRAINS AT THE ENDS OF EACH VOID. THE VOID DRAINS SHALL BE 3/4 INCH DIAMETER, NON-FERROUS, AND CLEANED AFTER ERECTION.
  - G. CONTAIN PRESTRESSING STRANDS WHICH ARE 0.6 INCH DIAMETER, 270 KSI, LOW RELAXATION STRANDS PULLED TO 75% OF THEIR YIELD.
  - H. HAVE THE ENDS OF THE STRANDS RECESSED AND GROUTED ACCORDING TO STANDARD PRACTICE.
22. THE FABRICATOR MAY, WITH THE APPROVAL OF THE STRUCTURES ENGINEER, ALTER THE DESIGN TO MEET THE PLANT'S PRESTRESSING OPERATION AND MATERIAL REQUIREMENTS. AN ALTERNATE STRAND CONFIGURATION MAY BE SUBMITTED FOR APPROVAL PROVIDED THAT THE DESIGN IS STAMPED AND SIGNED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF VERMONT AND THAT THE DESIGN MEETS ALL OF THE APPLICABLE DESIGN CRITERIA, LOADINGS AND CODES.
23. THE CONTRACTOR SHALL NOTIFY THE STRUCTURAL CONCRETE ENGINEER AT THE VAOT MATERIALS AND RESEARCH SECTION TWO WEEKS PRIOR TO THE PRESTRESS FABRICATOR CONSTRUCTING THE UNITS.
24. TRANSVERSE TIES.
  - A. THE 1/2 INCH DIAMETER TRANSVERSE STRANDS SHALL BE POLYSTRAND OR EQUIVALENT.
  - B. THE STRANDS SHALL BE COVERED WITH A SEAMLESS POLYPROPYLENE SHEATH WITH CORROSION INHIBITOR GREASE BETWEEN SHEATH AND STRAND.
  - C. THE 3/4 INCH TIE PLATES SHALL CONFORM TO AASHTO M270/M270M GR 50.
  - D. THE PLATES AND CHUCKS SHALL BE GALVANIZED AFTER FABRICATION ACCORDING TO AASHTOM232/M232M.
  - E. INSTALL TRANSVERSE STRANDS BEFORE PLACING MORTAR.
25. FILL THE JOINTS BETWEEN THE BOX BEAMS WITH MORTAR, TYPE IV, AS DESCRIBED IN SECTION 510.13. THE CONTRACTOR SHALL SUPPLY ENOUGH GROUT CUBE MOLDS TO MAKE 3 SETS OF 3 DAY CUBES, 3 SETS OF 28 DAY CUBES AND A MINIMUM OF 3 MORE CUBES TO TEST FOR THE 1500 PSI MINIMUM COMPRESSIVE STRENGTH REQUIRED FOR POST TENSIONING. PAYMENT SHALL BE BY ITEM 510.24, "GROUTING SHEAR KEYS".

**26. PROPOSED CONSTRUCTION SEQUENCE FOR BOX BEAMS (PHASE II)**

**PHASE II**

1. LAYOUT 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.
2. VERIFY BEAM SEAT ELEVATIONS
  - A. MEASURE ELEVATIONS AT BEAM SEATS.
  - B. IF SEATS ARE HIGH, GRIND TO CORRECT ELEVATIONS.
  - C. IF SEATS ARE LOW, SHIM TO CORRECT ELEVATIONS. INSTALL BEARINGS.
3. 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 LATERAL TIE).
  - C. DRILL ANCHOR BOLT HOLES.
  - D. PLACE ANCHOR BOLTS.
  - E. GROUT ANCHOR BOLTS IN ABUTMENT.
4. INSTALL BACKER ROD
  - A. PLACE FILLER BELOW THE KEYS BOTTOM AS SHOWN ON THE PLANS.

5. INSTALL PHASE II TRANSVERSE TIES
  - A. FEED TIES THROUGH DUCTS.
  - B. VERIFY THAT HARDWOOD WEDGES ARE IN PLACE AS REQUIRED TO PREVENT SLIPPAGE OF BEAMS.
  - C. POST-TENSION TIES USING A CALIBRATED JACK TO APPROXIMATELY 5,000 LBS TO REMOVE SAG IN THE TIE AND TO SEAT THE CHUCK.
6. GROUT SHEAR KEYS
  - A. CLEAN JOINTS WITH AN OIL FREE AIR-BLAST IMMEDIATELY BEFORE
  - B. GROUT PLACEMENT. VERIFY THAT THE BACKER ROD IS STILL IN PLACE.
  - C. FOLLOW MANUFACTURER'S RECOMMENDATIONS FOR ADDITIONAL JOINT PREPARATION AND GROUT PLACEMENT.
  - D. CAREFULLY ROD JOINTS TO ELIMINATE ANY POSSIBILITY OF VOIDS.
7. POST-TENSION TRANSVERSE TIES
  - A. GROUT SHALL ATTAIN A MINIMUM COMPRESSIVE STRENGTH OF 1,500 PSI, BASED ON THE MANUFACTURER'S RECOMMENDATIONS, PRIOR TO STRESSING.
  - B. POST-TENSION TIES TO 30 KIP USING A CALIBRATED JACK OPERATED BY QUALIFIED PERSONNEL.
8. END DETAILS
  - A. GROUT ANCHOR BOLT ENDS IN BOX BEAMS TO BRIDGE SEATS.
  - B. BEFORE GROUT CURES, PLACE WASHER PLATE AND INSTALL HOLD DOWN NUTS.
  - C. TIGHTEN NUT AND GROUT OVER NUT AND BOLT

**9. FINISH WORK**

- A. REMOVE WEDGES AND PATCH DECK.

**27. PROPOSED CONSTRUCTION SEQUENCE FOR BOX BEAMS (PHASE III)**

1. REPEAT STEPS 1-4 FROM PHASE II CONSTRUCTION SEQUENCE.
2. INSTALL PHASE III TRANSVERSE TIES:
  - A. FEED TIES THROUGH DUCTS FROM DOWNSTREAM FASCIA (PHASE II CONSTRUCTION) THROUGH TO UPSTREAM FASCIA (PHASE III).
  - B. VERIFY THAT HARDWOOD WEDGES ARE IN PLACE AS REQUIRED PREVENTING SLIPPAGE OF BEAMS.
  - C. POST-TENSION TIES USING A CALIBRATED JACK TO APPROXIMATELY 5,000 LBS TO REMOVE SAG IN THE TIE AND TO SEAT THE CHUCK.
3. REPEAT STEPS 6-9 FROM PHASE II CONSTRUCTION SEQUENCE.
4. FINISH WORK:
  - A. REMOVE WEDGES, PATCH DECK AND FASCIA BEAMS AT TRANSVERSE TIES (BOTH UPSTREAM AND DOWNSTREAM FASCIAS).

**PROJECT NOTES**

PROJECT NAME: SPRINGFIELD	
PROJECT NUMBER: ST CULV(5)	
FILE NAME: /04cl78/str/s04cl78pn.dgn	PLOT DATE: 23-MAY-2007
PROJECT LEADER: R. WHITCOMB	DRAWN BY: G. ROY
DESIGNED BY: C. CARLSON	CHECKED BY: C. CARLSON
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