

GENERAL NOTES

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1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO: THE STATE OF VERMONT AGENCY OF TRANSPORTATION 2006 STANDARD SPECIFICATIONS FOR CONSTRUCTION, THE 2006 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, AND THEIR LATEST REVISIONS.

2. DIMENSIONS ARE HORIZONTAL OR VERTICAL IN FEET & INCHES AT 68 DEG F, UNLESS NOTED OTHERWISE.

DESIGN

1. THE BRIDGE IS DESIGNED FOR HS 25-44 LIVE LOAD WITH NO ALLOWANCE FOR FUTURE PAVEMENT.

CONSTRUCTION

1. WATER QUALITY. PREVENT POLLUTION, AND DISCHARGE OF SILT OR RAW CONCRETE IN TO THE WATERWAY AS DIRECTED BY THE RESIDENT ENGINEER.

2. IN-STREAM CONSTRUCTION. PERMITS DESIGNATE AND LIMIT THE PERIOD FOR IN-STREAM CONSTRUCTION. THE AGENCY OF NATURAL RESOURCES MUST APPROVE ANY DEVIATION FROM THIS PERIOD IN WRITING.

3. SLOPE STABILITY. THE HILLSIDE STARTING AT STA 402+25 LEFT HAD SLIDES IN THE 1960'S. IT IS POTENTIALLY UNSTABLE.

EARTHWORK

1. ITEM 529.20 "PARTIAL REMOVAL OF STRUCTURE". REMOVE THE ENTIRE SUPERSTRUCTURE. REMOVE ABUTMENTS TO THE LOWER LIMITS OF CHANNEL STONE FILL. REMOVE PARTS OF ABUTMENTS THAT WILL INTERFERE WITH DRIVING FILES.

2. ABUTMENT STONE FILL. PLACE STONE FILL UNDER THE BRIDGE BEFORE PLACING THE PRESTRESS UNITS.

STEEL

1. STEEL PILING. NO SUBSTITUTIONS FOR THE NUMBER, SIZE AND GRADE OF THE PILES WILL BE ALLOWED.

2. PILE HEAD TOLERANCE: DRIVE OR CUT OFF THE PILE HEAD TO WITHIN 1 INCH VERTICALLY AND 3 INCHES HORIZONTALLY OF THE POSITION SHOWN IN THE PLANS. IF A PILE IS DAMAGED DURING INSTALLATION OR DRIVEN OUT OF ITS PROPER LOCATION, WITHDRAW AND REPLACE IT WITH A NEW AND IF NECESSARY LONGER FILE, AS DESCRIBED IN VTRANS 505.04(A)(1).

STRUCTURAL CONCRETE

1. ITEM 501.32 "CONCRETE, HIGH PERFORMANCE CLASS AA". USE HFC AA FOR THE DECK OVERLAY AND CURBS.

2. ITEM 501.34 "CONCRETE, HIGH PERFORMANCE CLASS B". USE HFC B FOR THE APPROACH SLABS, ABUTMENTS, AND ALL OTHER COMPONENTS. INCLUDE INSTALLATION OF THE BRIDGE PLAQUE PROVIDED BY THE AGENCY.

3. ITEM 507.17 "EPOXY COATED REINFORCING STEEL". USE COATED REINFORCEMENT FOR THE DECK OVERLAY, CURBS, AND APPROACH SLABS.

4. ITEM 507.15 "REINFORCING STEEL". USE UNCOATED REINFORCEMENT FOR THE ABUTMENTS.

5. DETAIL AND FABRICATION. DETAIL AND FABRICATE ALL REINFORCING STEEL USING PROCEDURES AND TOLERANCES IN ACCORDANCE WITH APPLICABLE PUBLICATIONS OF THE CONCRETE REINFORCING STEEL INSTITUTE (CRSI).

6. REINFORCEMENT PLACEMENT TOLERANCE. PLACE REINFORCEMENT TO WITHIN 1 INCH OF THE SPACING AND 1/4 INCH OF THE CONCRETE COVER SHOWN IN THE PLANS.

7. MINIMUM CONCRETE COVER. THE MINIMUM CONCRETE COVER FOR REINFORCING STEEL IS: 2 INCHES ON THE FACES OF WALLS AGAINST EARTH; AND 3 INCHES ELSEWHERE UNLESS OTHERWISE NOTED.

8. CONCRETE JOINTS. 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.

9. CHAMFERS. CHAMFER ALL EXPOSED EDGES OF CONCRETE WITH 1 BY 1 INCH CHAMFERS, UNLESS OTHERWISE NOTED. ROUND THE TOP INSIDE CORNER OF CURBS WITH A 5/8 INCH RADIUS.

10. SCORE MARKS. CONSTRUCT SCORE MARKS AS INDICATED ON THE PLANS OR AS DIRECTED BY THE RESIDENT ENGINEER.

11. ITEM 900.625 "SPECIAL PROVISION (WATER REPELLENT, SILANE)". APPLY REPELLENT TO ALL EXPOSED SURFACES OF CONCRETE ON THE BRIDGE, EXCEPT THE BOTTOM OF THE SUPERSTRUCTURE BETWEEN THE DRIP NOTCHES.

PRESTRESSED CONCRETE

1. ITEM 510.22 "PRESTRESSED CONCRETE VOIDED SLABS". PRESTRESSED PRECAST MEMBERS SHALL:

- A. CONFORM TO SECTION 510 "PRESTRESSED CONCRETE".
- B. BE 21 X 36 AND 21 X 48 INCH VOIDED SLABS.
- C. USE CONCRETE WITH $f'c = 6,000$ PSI AND $f_c = 4,000$ PSI.
- D. BE DESIGNED FOR AN AASHTO HS 25-44 LIVE LOAD.
- 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.
- I. HAVE THE TOP SURFACE RAKED TO UNIFORM ROUGHNESS WITH AVERAGE AMPLITUDE OF 1/4 INCH.
- J. INCLUDE COLD POURED JOINT FILLER, AND TRANSVERSE TENDONS AS DESCRIBED IN VTRANS 510.16.

2. THE FABRICATOR MAY, WITH THE APPROVAL OF THE STRUCTURES ENGINEER, ALTER THE DESIGN, AS DETAILED, 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.

3. THE CONTRACTOR SHALL NOTIFY THE VTRANS MATERIALS & RESEARCH STRUCTURAL CONCRETE ENGINEER TWO WEEKS BEFORE THE PRESTRESS FABRICATOR CONSTRUCTS THE UNITS.

4. ITEM 510.22 "PRESTRESSED CONCRETE VOIDED SLABS". TRANSVERSE TENDONS.

- A. THE 1/2 INCH DIAMETER TRANSVERSE TENDONS SHALL BE POLYSTRAND OR EQUIVALENT.
- B. COVER TENDONS WITH A SEAMLESS POLYPROPYLENE SHEATH WITH CORROSION INHIBITOR GREASE BETWEEN SHEATH AND TENDON).
- C. THE 3/4 INCH TENDON PLATES SHALL CONFORM TO AASHTO M270/M270M GR 50.
- D. GALVANIZE PLATES AND CHUCKS AFTER FABRICATION ACCORDING TO AASHTOM232/M232M.
- E. INSTALL TRANSVERSE TENDONS BEFORE PLACING MORTAR AND CASTING THE CONCRETE DECK OVERLAY.

5. ITEM 510.24, "GROUTING SHEAR KEYS". FILL THE JOINTS BETWEEN THE VOIDED SLABS WITH MORTAR, TYPE IV, AS DESCRIBED IN VTRANS 510.13. INCLUDE MATERIALS, WORK, ETC. AS DESCRIBED IN VTRANS 510.16.

ASPHALTIC PLUG BRIDGE JOINT

1. INSTALLATION

- A. THE JOINT SHALL BE LOCATED CENTRALLY OVER THE DECK OVERLAY EXPANSION GAP OR FIXED JOINT MARKED OUT TO THE MANUFACTURER'S RECOMMENDED WIDTH.
- B. THE JOINT SHALL BE EXCAVATED AS SHOWN ON THE PLANS BY USE OF SAWS AND PNEUMATIC HAMMER OR A HAMMER AND CHISEL.
- C. THE JOINT AREA SHALL BE BLAST CLEANED OF DEBRIS AND ASPHALT. THE JOINT AREA SHALL BE THOROUGHLY DRIED USING HOT COMPRESSED AIR PRIOR TO APPLYING BINDER MATERIAL.
- D. SPALLED AND DEFECTIVE CONCRETE SHALL BE REPAIRED WITH AN APPROVED MATERIAL AS AGREED UPON BY THE ENGINEER.
- E. PROPERLY SIZED HEAT RESISTANT BACKER ROD SHALL BE PLACE IN THE MOVEMENT GAP ALLOWING FOR 1 INCH +/- OF BINDER ABOVE THE ROD.
- F. THE BINDER MATERIAL SHALL BE HEATED AND PLACED AS RECOMMENDED BY THE MANUFACTURER.
- G. PLACE 1/4 INCH THICK BY 8 INCH WIDE SECTIONS OF STEEL PLATE OVER THE CENTER OF THE MOVEMENT GAP. SECURE PLATES FROM MOVING BY INSERTING LOCATING PINS THROUGH THE PRESTAMPED HOLES INTO BACKER ROD AND COVER WITH HOT BINDER. THE STEEL PLATES MAY BE OMITTED WHERE THE APPROACH SLAB IS COVERED WITH A STONE BASE OR BITUMINOUS PAVEMENT AND VERTICAL MOVEMENT OF THE PLATES MIGHT OCCUR.
- H. THE BINDER MATERIAL AND AGGREGATE SHALL BE HEATED AND MIXED AS RECOMMENDED BY THE MANUFACTURER.
- I. THE INSTALLATION OF MATERIAL, COMPACTION, AND TOP COATING SHALL BE AS RECOMMENDED BY THE MANUFACTURER.
- J. IMMEDIATELY AFTER TOP COATING, AN ANTI-SKID MATERIAL SHALL BE CAST OVER THE JOINT TO REDUCE THE RISK OF TRACKING.
- K. JOINT SHALL BE PROTECTED FROM TRAFFIC UNTIL THE MATERIAL HAS COOLED TO 125 DEG F +/-.

2. WEATHER LIMITATIONS. BINDER MATERIAL SHALL BE APPLIED ONLY WHEN THE FOLLOWING CONDITIONS PREVAIL:

- A. THE AMBIENT AIR TEMPERATURE IS AT LEAST 50 DEG F AND RISING.
- B. THE ROAD SURFACE IS SUFFICIENTLY DRY.
- C. WEATHER CONDITIONS OR OTHER CONDITIONS ARE FAVORABLE AND ARE EXPECTED TO REMAIN SO FOR THE PERFORMANCE OF SATISFACTORY WORK.

CONSTRUCTION SEQUENCE FOR PRESTRESSED VOIDED SLABS

- 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.
 - D. 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 TRANSVERSE TENDON).
 - C. DRILL ANCHOR BOLT HOLES.
 - D. PLACE ANCHOR BOLTS.
 - E. GROUT ANCHOR BOLTS IN ABUTMENT.

- 4. INSTALL BACKER ROD
 - A. PLACE FILLER BELOW THE KEY'S BOTTOM AS SHOWN ON THE PLANS.

- 5. INSTALL TRANSVERSE TENDONS
 - A. FEED TENDONS THROUGH DUCTS.
 - B. VERIFY THAT HARDWOOD WEDGES ARE IN PLACE AS REQUIRED TO PREVENT SLIPPAGE OF BEAMS.
 - C. POST-TENSION TENDONS USING A CALIBRATED JACK TO APPROXIMATELY 5,000 KIP TO REMOVE SAG IN THE TENDON AND TO SEAT THE CHUCK.

- 6. 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.

- 7. POST-TENSION TRANSVERSE TENDONS
 - A. GROUT SHALL ATTAIN A MINIMUM COMPRESSIVE STRENGTH OF 1,500 PSI, BASED ON THE MANUFACTURER'S RECOMMENDATIONS, PRIOR TO STRESSING.
 - 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 1,500 PSI MINIMUM COMPRESSIVE STRENGTH.
 - C. POST-TENSION TENDONS TO 30 KIP USING A CALIBRATED JACK OPERATED BY QUALIFIED PERSONNEL.

- 8. END DETAILS
 - A. GROUT ANCHOR BOLT ENDS AT THE FIXED ENDS AT BRIDGE SEATS.
 - B. BEFORE GROUT CURES, PLACE WASHER PLATE AND INSTALL HOLD DOWN NUTS.
 - C. ON THE FIXED END, TIGHTEN NUT.
 - D. ON THE EXPANSION END, HAND TIGHTEN NUT AND LOOSEN BY 1/2 TURN.
 - E. GROUT OVER NUT AND BOLT ON FIXED END, PLACE COLD POURED JOINT SEALER OVER NUT AND BOLT ON EXPANSION END.
 - F. PLACE COLD POURED JOINT SEALER AT EXPANSION END

- 9. FINISH WORK
 - A. REMOVE WEDGES, AND PATCH DECK OVERLAY AND FASCIA BEAMS AT TRANSVERSE TENDONS.
 - B. SATURATE THE PRESTRESSED UNITS WITH WATER FOR TWELVE HOURS PRIOR TO PLACING OF THE CONCRETE DECK OVERLAY.
 - C. REMOVE ANY FREESTANDING WATER IMMEDIATELY BEFORE PLACING THE DECK OVERLAY.

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