

GENERAL

- ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE STATE OF VERMONT AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2006, AND ITS LATEST REVISIONS, AND THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, DATED 2007, AND ITS LATEST REVISIONS.
- THE BRIDGE WAS DESIGNED FOR THE HL-93 LIVE LOAD WITH NO ALLOWANCE FOR FUTURE PAVEMENT.
- EXISTING SIGNS NOT REUSED SHALL REMAIN PROPERTY OF THE STATE OF VERMONT. THESE SIGNS SHALL BE STOCKPILED ON THE PROJECT SITE AND THEN LOADED ON A TRUCK SUPPLIED BY DISTRICT 2. CONTACT D.T.A. TAMMY ELLIS AT (802) 254-5011 TO ARRANGE REMOVAL FROM THE PROJECT SITE.
- ALL DIMENSIONS SHOWN IN THE PLANS ARE HORIZONTAL OR VERTICAL AND ARE GIVEN AT 68 DEGREES FAHRENHEIT, UNLESS NOTED OTHERWISE
- ITEM 529.15 "REMOVAL OF STRUCTURE" SHALL BE USED FOR REMOVAL OF THE EXISTING STRUCTURE INCLUDING THE SUPERSTRUCTURE, PIER, AND ABUTMENTS OUTSIDE THE LIMITS OF STRUCTURE EXCAVATION OR UNCLASSIFIED CHANNEL EXCAVATION. THE PIER SHALL BE REMOVED TO ELEVATION 570.00 FEET, ABUTMENT #1 SHALL BE REMOVED TO ELEVATION 582.00 FEET, AND ABUTMENT #2 SHALL BE REMOVED TO ELEVATION 574.00 FEET.
- THE CONTRACTOR SHALL BE MADE AWARE THAT EXISTING WATER AND SEWER LINES ARE WITHIN THE CONSTRUCTION LIMITS OF BRIDGE 9. SEE SPECIAL PROVISIONS.

EARTHWORK AND RELATED ITEMS

- TEMPORARY CONSTRUCTION FILLS WITHIN THE WATERCOURSE FOR ANY PURPOSE SHALL CONSIST OF CLEAN STONE FILL ONLY. NO OTHER FILLING IN THE STREAM SHALL OCCUR WITHOUT THE APPROVAL OF THE STREAM ALTERATION ENGINEER.
- THE "STONE FILL, TYPE IV" UNDER THE BRIDGE AS SHOWN IN THE PLANS SHALL BE PLACED BEFORE THE NEW STEEL GIRDERS ARE SET.
- "STONE FILL, TYPE I" SHALL BE USED FOR EROSION CONTROL AS SHOWN IN THE PLANS AND/OR AT THE DISCRETION OF THE RESIDENT ENGINEER. PAYMENT FOR MATERIAL AND PLACEMENT SHALL BE MADE UNDER ITEM 613.10, "STONE FILL, TYPE I".

PILES

- THE PILES SHALL BE HP 12 x 84.
- PILE SHOES SHALL BE REQUIRED AND SHALL CONFORM TO SECTION 505.04(e).
- PILES SHALL BE DRIVEN WITHIN 3 INCHES OF THE LOCATION SHOWN ON THE PLANS. THE PILE ORIENTATION SHALL NOT VARY BY MORE THAN 5 DEGREES. THE CONTRACTOR SHALL DEMONSTRATE HOW THE TOLERANCE WILL BE MET TO THE SATISFACTION OF THE RESIDENT ENGINEER.
- TO ENSURE THAT THE NOMINAL CAPACITY HAS BEEN ATTAINED AND TO PREVENT THE OVERSTRESSING OF THE PILES DURING DRIVING OPERATIONS, DYNAMIC TESTING SHALL BE PERFORMED IN ACCORDANCE WITH SUBSECTION 505.04 (c) - 2 OF THE STANDARD SPECIFICATIONS. PAYMENT FOR PILE TESTING SHALL BE MADE UNDER ITEM 505.45 "DYNAMIC PILE LOADING TEST". A MINIMUM OF ONE DYNAMIC PILE TEST SHALL BE CONDUCTED ON THE FIRST PILE DRIVEN FOR EACH SUBSTRUCTURE UNIT, FOR A TOTAL OF 2 TESTS. MORE TESTS MAY BE REQUIRED BY THE RESIDENT ENGINEER.
- THE PILES SHALL BE DRIVEN TO A NOMINAL RESISTANCE OF 555 KIPS, AS DETERMINED BY THE RESULTS OF DYNAMIC TESTING, AS INTERPRETED BY THE RESIDENT ENGINEER. HOWEVER, THE PILES SHALL BE DRIVEN TO A MINIMUM DEPTH OF 23 FEET BELOW THE BOTTOM OF THE PILE CAP ELEVATION.
- FOR ESTIMATING PURPOSES, THE PILE TIP ELEVATIONS WERE ASSUMED TO BE AS SHOWN ON THE BORING LOGS. THE ACTUAL IN PLACE LENGTH MAY VARY.

STEEL

- THE EXISTING STRUCTURAL STEEL IS PAINTED WITH A MATERIAL THAT MAY CONTAIN LEAD. THE CONTRACTOR SHALL FOLLOW ALL APPLICABLE REGULATIONS WHEN HANDLING AND WORKING WITH THIS STEEL. THE REMOVED STRUCTURAL STEEL IS THE PROPERTY OF THE CONTRACTOR, THE CONTRACTOR SHALL INDEMNIFY AND HOLD THE STATE, ITS OFFICERS, AND EMPLOYEES HARMLESS CONCERNING THE CONTRACTOR'S USE OR DISPOSITION OF THE REMOVED EXISTING STRUCTURAL STEEL.

CONCRETE

- CONCRETE USED FOR THE DECK CLOSURE POUR AND CURTAIN WALL SHALL BE SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, CLASS A LOW CEMENT).
- WATER REPELLENT, SILANE, SHALL BE APPLIED TO ALL EXPOSED CONCRETE SURFACES, EXCEPT THE UNDERSIDE OF THE DECK BETWEEN DRIP NOTCHES.
- FLEMING BRACKETS OR SIMILAR FALSEWORK SHALL BE SPACED AS REQUIRED BY DESIGN, BUT SHALL BE LIMITED TO A MAXIMUM SPACING OF 4 FEET. THE DESIGN OF FALSEWORK SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- ALL SUPERSTRUCTURE REINFORCING STEEL SHALL BE EPOXY COATED.
- REINFORCING STEEL PLACEMENT TOLERANCES SHALL BE:
SPACING: +/- 1 INCH
CLEARANCE: +/- 1/4 INCH

PRECAST CONCRETE DECK SLABS AND POST-TENSIONING

- DESIGN VALUES
 - CONCRETE COMPRESSIVE STRENGTH: $f'c = 5000$ psi.
 - POST-TENSIONING STRANDS: 0.5 INCH DIAMETER, 270 ksi, LOW RELAXATION 7-WIRE STRANDS.
 - ASSUMED MODULUS OF ELASTICITY IS 28,500 Ksi.
 - THERE SHALL BE 3 STRANDS PER CONDUIT.
 - DESIGN BASED ON THE FOLLOWING POST-TENSION CONDUIT PARAMETERS:
COEFFICIENT OF FRICTION = 0.23
WOBBLE FRICTION COEFFICIENT = 0.0002/FT
IF THE PROPOSED CONDUIT DOES NOT MEET THESE VALUES, THEN THE CONTRACTOR SHALL ADJUST THE JACKING FORCE TO PRODUCE THE FINAL POST-TENSIONING FORCE LISTED BELOW.
 - THE JACKING FORCE PER STRAND = 32 KIPS
 - THE FINAL FORCE PER STRAND = 29 KIPS (AFTER ALL LOSSES DUE TO FRICTION, ANCHORAGE SET AND ELASTIC SHORTENING).
- ALL DECK PANELS SHALL BE CAST FOR A MINIMUM OF 56 DAYS PRIOR TO POST TENSIONING.
- DECK PANELS MUST BE ALLOWED TO SLIDE ON GIRDERS DURING POST TENSIONING.
- CONDUIT SHALL BE GROUTED AFTER POST-TENSIONING. THE GROUT SHALL BE A NON-BLEEDING GROUT MEETING THE REQUIREMENTS OF ASTM C 1107 (GRADE C).
- POST-TENSIONING AND GROUTING SHALL BE PERFORMED BY QUALIFIED PERSONEL WITH PREVIOUS EXPERIENCE IN PRE-CAST DECK PLACEMENT.
- SHEAR KEY FACES SHALL BE SANDBLASTED PRIOR TO DELIVERY AND PRESSURE WASHED WITH WATER PRIOR TO ERECTION OF THE SLABS.
- BEGIN POST TENSIONING AT THE CENTER OF PANELS. DO NOT ALLOW MORE THAN 12.5% OF THE POST TENSIONING FORCE TO BE ECCENTRIC AT ANY TIME. SUBMIT STRESSING SEQUENCE TO THE PROJECT MANAGER AS PART OF THE ERECTION PLAN.
- THE CONTRACTOR IS RESPONSIBLE FOR DESIGN OF ALL LIFTING POINTS, POST TENSIONING ELEMENTS IN THE ANCHORAGE ZONE AND ADDITIONAL REINFORCEMENT IN THE ANCHORAGE ZONE (REQUIRED FOR SPLITTING, BURSTING, SPALLING, ETC.) INCLUDING THE LOCAL ZONE (REGION IMMEDIATELY SURROUNDING THE POST TENSIONING DEVICE). THE CONTRACTOR IS RESPONSIBLE FOR CONSIDERATION OF ADDITIONAL STRESSES DUE TO HANDLING. DESIGN MUST CONFORM TO AASHTO LRFD SPECIFICATIONS.
- GALVANIZE BEARING PLATE ANCHOR HEADS AND METAL TRUMPETS AT ANCHORAGES ACCORDING TO MANUFACTURER'S RECOMMENDATIONS. DO NOT GALVANIZE STRAND GRIPPING WEDGES.
- POST-TENSIONING STRANDS AND CONDUIT SHALL MEET THE REQUIREMENTS OF SECTION 510.
- ANCHOR ASSEMBLIES, CONDUIT, GROUT FOR THE CONDUIT, MECHANICAL CONNECTORS, AND POST-TENSIONING STRANDS SHALL BE INCLUDED IN ITEM 540.10, "PRECAST CONCRETE STRUCTURE (8" DECK SLABS)."

33. PROPOSED SEQUENCE OF CONSTRUCTION:

- ERECT DECK SLABS.
- ADJUST SLABS TO GRADE USING LEVELING DEVICES. ALL LEVELING BOLTS SHALL BE TORQUED TO APPROXIMATELY THE SAME VALUE WITHIN 20 PERCENT
- INSTALL POST-TENSIONING STRANDS LOOSE IN CONDUIT AND SEAL CONDUIT.
- PLACE GROUT IN TRANSVERSE JOINTS ONLY. THE GROUT SHALL BE RODDED OR VIBRATED TO ENSURE ALL VOIDS ARE FILLED.

- GROUT SHALL ATTAIN A MINIMUM COMPRESSIVE STRENGTH OF 1000 psi BASED ON MANUFACTURER'S RECOMMENDATIONS, PRIOR TO STRESSING. THE GROUT NEED NOT BE CURED FOR THREE DAYS PRIOR TO THE COMMENCING OF POST-TENSIONING.
- PROVIDE APPROPRIATE CUBE MOLDS AS DESCRIBED IN AASHTO T106 FOR 3 SETS OF 3 DAY CUBES, 3 SETS OF 28 DAY CUBES, AND A MINIMUM OF 3 MORE CUBES TO TEST FOR THE 1000 psi MINIMUM.
- STRESS POST-TENSIONING STRANDS USING A CALIBRATED JACK.
- INSTALL SHEAR CONNECTORS.
- GROUT POST-TENSIONING CONDUIT, SHEAR CONNECTOR POCKETS, AND HAUNCHES BETWEEN GIRDERS AND THE BOTTOM OF THE DECK.
- POUR THE CLOSURE POUR CONCRETE.
- LEVELING BOLTS MAY BE REMOVED. GROUT BOLT RECESS.

ALTERNATE SEQUENCE OF CONSTRUCTION MAY BE SUBMITTED FOR APPROVAL BY THE PROJECT MANAGER.

PRECAST ABUTMENTS AND POST-TENSIONING

- 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 SHOWN ON THE FABRICATION DRAWINGS.
- ANY POST-TENSIONING STRANDS AND CONDUIT SHALL ADHERE TO THE REQUIREMENTS OF SECTION 510. ANCHOR ASSEMBLIES, CONDUIT, AND POST-TENSIONING STRANDS SHALL BE INCLUDED IN ITEM 540.10, "PRECAST CONCRETE STRUCTURE (ABUTMENT #1 BRIDGE 9)" AND 540.10, "PRECAST CONCRETE STRUCTURE (ABUTMENT #2 BRIDGE 9)."
- GALVANIZE POST-TENSIONING ANCHOR ASSEMBLIES AFTER FABRICATION ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
- DESIGN VALUES
 - CONCRETE COMPRESSIVE STRENGTH: $f'c = 5000$ psi.
 - POST-TENSIONING STRANDS: 0.5 INCH DIAMETER, 270 ksi, LOW RELAXATION 7-WIRE STRANDS.
 - ASSUMED MODULUS OF ELASTICITY IS 28,500 Ksi.
 - THERE SHALL BE 2 STRANDS PER CONDUIT.
 - THE JACKING FORCE PER STRAND = 33 KIPS
 - REINFORCING STEEL SHALL BE EPOXY COATED.
- GROUT FOR THE ABUTMENT CAVITIES SHALL MEET THE REQUIREMENTS OF SELF-CONSOLIDATING CONCRETE. SEE SPECIAL PROVISIONS. ALL COSTS ASSOCIATED WITH GROUTING THE CAVITIES SHALL BE INCLUDED IN THE BID PRICE FOR ITEM 540.10, "PRECAST CONCRETE STRUCTURE (ABUTMENT #1 BRIDGE 9)" AND 540.10, "PRECAST CONCRETE STRUCTURE (ABUTMENT #2 BRIDGE 9)."
- PROPOSED SEQUENCE OF CONSTRUCTION
 - PREPARE AND GRADE FOUNDATION TO REQUIRED ELEVATION.
 - DRIVE PILES
 - PLACE PRECAST ABUTMENTS AND INSTALL TRANSVERSE STRANDS (IF MORE THAN ONE SUBSTRUCTURE UNIT). USE A CALIBRATED JACK TO TENSION TO 3 KIPS TO REMOVE SAG.
 - GROUT VERTICAL SHEAR KEY
 - GROUT SHALL ATTAIN A MINIMUM COMPRESSIVE STRENGTH OF 1000 psi BASED ON MANUFACTURER'S RECOMMENDATIONS, PRIOR TO STRESSING. THE GROUT NEED NOT BE CURED FOR THREE DAYS PRIOR TO COMMENCING OF POST-TENSIONING.
 - PROVIDE APPROPRIATE CUBE MOLDS AS DESCRIBED IN AASHTO T106 FOR 3 SETS OF 3 DAY CUBES, 3 SETS OF 28 DAY CUBES, AND A MINIMUM OF 3 MORE CUBES TO TEST FOR THE 1000 psi MINIMUM.
 - STRESS POST-TENSIONING STRANDS USING A CALIBRATED JACK OPERATED BY QUALIFIED PERSONNEL WITH PVIOUS EXPERIENCE IN POST-TENSIONING.
 - GROUT PILE CAVITIES.
 - BACKFILL ABUTMENTS IN COORDINATION WITH RETAINING WALL BACKFILL.

ALTERNATE SEQUENCE OF CONSTRUCTION MAY BE SUBMITTED FOR APPROVAL BY THE PROJECT MANAGER.

PROJECT NAME: CHESTER
PROJECT NUMBER: BRF 025-1(37)

FILE NAME: 95b168\95b168gennotes.dgn PLOT DATE: 20-SEP-2010
PROJECT LEADER: C.P.WILLIAMS DRAWN BY: D.D.BEARD
DESIGNED BY: R.S.YOUNG CHECKED BY: R.S.YOUNG
BRIDGE 9 GENERAL NOTES SHEET 59 OF 124