**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, DATED 2007, AND ITS LATEST REVISIONS, AND PCI NORTHEAST'S NEXT D STANDARDS DATED JANUARY 2010.

2. THE BRIDGE IS DESIGNED FOR HL-93 LIVE LOAD.

3. 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 DTA. TAMMY ELLIS AT (802) 254-5011 TO ARRANGE REMOVAL FROM THE PROJECT SITE.

4. ITEM 529.15 "REMOVAL OF STRUCTURE" SHALL BE USED FOR REMOVAL OF THE EXISTING STRUCTURE INCLUDING THE SUPERSTRUCTURE, AND ANY PORTION OF THE ABUTMENTS OUTSIDE THE LIMITS OF STRUCTURE EXCAVATION OR UNCLASSIFIED CHANNEL EXCAVATION. THE ABUTMENTS SHALL BE REMOVED TO ELEVATION 573 FEET.

5. ALL DIMENSIONS SHOWN IN THE PLANS ARE HORIZONTAL OR VERTICAL AND ARE GIVEN AT 68 DEGREES FAHRENHEIT, UNLESS NOTED OTHERWISE.

6. THE LARGE PINE TREE AT STATION 25+55 LEFT SHALL BE REMOVED. THE BRANCHES OF THE TWO ASH TREES AT STATION 26+06 LEFT SHALL BE TRIMMED BACK BEHIND THE R.O.W. LINE. THIS WORK SHALL BE PAID UNDER ITEM 201.10 "CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS".

7. THE SIDEWALK AND RAMPS LOCATED OFF THE BRIDGE SHALL BE CONSTRUCTED ACCORDING TO STANDARD C-2A. SIDEWALK AND RAMPS SHALL BE PAID FOR UNDER THE ITEM 618.10, "PORTLAND CEMENT CONCRETE SIDEWALK, 5 INCH."

8. THE CONTRACTOR SHALL BE MADE AWARE THAT EXISTING WATER AND SEWER LINES ARE WITHIN THE CONSTRUCTION LIMITS OF BRIDGE 8. SEE SPECIAL PROVISIONS.

**EARTHWORK AND RELATED ITEMS**

9. THE "STONE FILL, TYPE III" UNDER THE BRIDGE AS SHOWN IN THE PLANS SHALL BE PLACED BEFORE THE NEW BEAMS ARE SET.

10. "STONE FILL, TYPE I" SHALL BE USED FOR EROSION CONTROL AS SHOWN ON THE PLANS AND/OR AT THE DISCRETION OF THE RESIDENT ENGINEER.

**PILES**

11. THE PILES SHALL BE HP 12 X 84.

12. PILE SHOES SHALL BE REQUIRED AND SHALL CONFORM TO SECTION 505.04(e).

13. THE TOPS OF THE PILES AFTER DRIVING SHALL NOT VARY FROM THE POSITION SHOWN ON THE PLANS BY MORE THAN 3 INCHES. THE PILE ORIENTATION SHALL NOT VARY BY MORE THAN 5 DEGREES. THE CONTRACTOR SHALL DEMONSTRATE HOW THE TOLERANCES WILL BE MET TO THE SATISFACTION OF THE ENGINEER REGARDLESS OF INSTALLATION METHOD.

14. THE PILES SHALL BE EMBEDDED IN THE GROUND A MINIMUM OF 18 FEET BELOW THE BOTTOM OF PILE CAP OR TO BEDROCK. THE PILES SHALL BE DRIVEN TO A NOMINAL RESISTANCE OF 245 KIPS AS DETERMINED BY THE RESULTS OF DYNAMIC TESTING, AS INTERPRETED BY THE RESIDENT ENGINEER.

15. FOR ESTIMATING PURPOSES, THE PILE TIP ELEVATIONS WERE ASSUMED AS SHOWN ON THE BORING LOGS. THE ACTUAL IN PLACE LENGTHS MAY VARY.

16. TO ENSURE THAT THE NOMINAL RESISTANCE 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 ABUTMENT NO. 1, FOR A TOTAL OF 1 TEST. MORE TESTS MAY BE REQUIRED BY THE RESIDENT ENGINEER.

17. DUE TO THE PRESENCE OF BOULDERS THE CONTRACTOR MAY PRE-EXCAVATE MATERIAL TO BEDROCK PRIOR TO DRIVING PILES.

    - IF PILES ARE DRIVEN AFTER PRE-EXCAVATION THEN THE DYNAMIC TESTING NEED NOT BE PERFORMED.
    - IF PILES ARE DRIVEN WITHOUT PRE-EXCAVATION, THE CONTRACTOR SHALL DEMONSTRATE AN INCREASED ABILITY TO STAY WITHIN THE LOCATION, ROTATION, AND VERTICALLY TOLERANCES.

18. PAYMENT FOR PRE-EXCAVATION SHALL BE UNDER ITEM 503.20, "PRE-EXCAVATION OF INTEGRAL ABUTMENT PILES". CASINGS NEED NOT BE USED. SEE GENERAL SPECIAL PROVISIONS.

**CONCRETE**

19. THE FOOTING AT ABUTMENT # 2 SHALL BE HIGH PERFORMANCE CONCRETE, CLASS B.

20. WATER REPELLENT, SILANE, SHALL BE APPLIED TO ALL EXPOSED CONCRETE SURFACES, EXCEPT THE UNDERSIDE OF THE DECK BETWEEN DRIP NOTCHES.

21. REINFORCING STEEL PLACEMENT TOLERANCES SHALL BE:
    SPACING: +/- 1 INCH
    CLEARANCE: +/- 1/4 INCH

**PRECAST ABUTMENTS AND POST-TENSIONING**

22. 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.

23. ANY POST-TENSIONING STRANDS AND CONDUIT SHALL ADHERE TO THE REQUIREMENTS OF SECTION 510. GALVANIZED ANCHOR ASSEMBLIES, CONDUIT, AND POST-TENSIONING STRANDS SHALL BE INCLUDED UNDER ITEM 540.10, "PRECAST CONCRETE STRUCTURE (ABUTMENT #1 BRIDGE 8) AND/OR "PRECAST CONCRETE STRUCTURE (ABUTMENT #2 BRIDGE 8)" AS APPROPRIATE.

24. GALVANIZE ANCHOR ASSEMBLIES AFTER FABRICATION ACCORDING TO AASHTO M232M/M 232.

25. DESIGN VALUES

    A. CONCRETE COMPRESSIVE STRENGTH: f'c = 5000 PSI.
    B. POST-TENSIONING STRANDS: 0.5 INCH DIAMETER, 270 KSI, LOW RELAXATION 7-WIRE STRANDS.
    C. ASSUMED MODULUS OF ELASTICITY IS 28,500 KSI.
    D. THERE SHALL BE 2 STRANDS PER CONDUIT.
    E. THE JACKING FORCE PER STRAND = 32 KIPS
    F. REINFORCING STEEL SHALL BE EPOXY COATED.

26. GROUT FOR THE ABUTMENT # 1 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 8)."

27. GROUT FOR ABUTMENT #2 SHALL MEET THE REQUIREMENTS OF SECTION 510.13. THE GROUT AND PLASTIC SHIMS SHALL BE INCIDENTAL TO ITEM 540.10, "PRECAST CONCRETE STRUCTURE (ABUTMENT #2 BRIDGE 8)."

28. PROPOSED SEQUENCE OF CONSTRUCTION

    ABUTMENT #1
    A. PREPARE AND GRADE FOUNDATION TO REQUIRED ELEVATION.
    B. DRIVE PILES.
    C. PLACE PRECAST ABUTMENTS AND INSTALL TRANSVERSE STRANDS (IF MORE THAN ONE UNIIT). USE A CALIBRATED JACK TO TENSION TO 3 KIPS TO REMOVE SAG.
    D. GROUT VERTICAL SHEAR KEY
    E. 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.
    F. 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.
    G. STRESS POST-TENSIONING STRANDS USING A CALIBRATED JACK OPERATED BY QUALIFIED PERSONNEL, WHO HAVE PREVIOUS EXPERIENCE IN POST-TENSIONING.
    H. GROUT PILE CAVITIES.
    I. BACKFILL.

    ABUTMENT #2
    A. PREPARE BEDROCK FOR FOOTING PLACEMENT.
    B. PLACE CAST-IN-PLACE FOOTING. MEMBRANE FORMING CURING COMPOUND AS SPECIFIED IN SUBSECTION 501.17(b)(6) WILL BE ALLOWED TO CURE THE FOOTING CONCRETE.
    C. PLACE ABUTMENT STEM ONCE FOOTING CONCRETE HAS OBTAINED 75 PERCENT OF THE COMPRESSIVE STRENGTH SPECIFIED IN TABLE 501.03A.
    D. GROUT VERTICAL CONSTRUCTION JOINT (IF PRESENT). GROUT BOTTOM OF STEM. GROUT SHALL ATTAIN A MINIMUM COMPRESSIVE STRENGTH OF 2000 psi BASED ON MANUFACTURER'S RECOMMENDATIONS, PRIOR TO BACKFILLING.
    E. 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 2000 psi MINIMUM.
    F. BACKFILL.

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

**NEXT D BEAMS**

29. NEXT D BEAMS ARE A NONPROPRIETARY SHAPE DEVELOPED BY PCI NORTHEAST (PCINE). STANDARDIZED SECTION PROPERTIES AND DETAILS MAY BE FOUND AT HTTP://WWW.PCINE.ORG.

30. DESIGN VALUES

    A. CONCRETE COMPRESSIVE STRENGTH: f'c = 8000 PSI.
    B. CONCRETE COMPRESSIVE STRENGTH AT RELEASE: f'ci = 6000 PSI
    C. PRESTRESSING STRANDS: .6 INCH DIAMETER, 270 KSI, LOW-RELAXATION 7-WIRE STRANDS
    D. ASSUMED MODULUS OF ELASTICITY IS 28,500 KSI.
    E. THE JACKING FORCE PER STRAND = 47 KIPS
    F. SERVICE LOADS

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|---|---|
| MEMBER MOMENT | 627 K-FT |
| SUPERIMPOSED DEAD LOAD MOMENT | 280 K-FT |
| LIVE LOAD AND IMPACT MOMENT | 1228 K-FT |
| DEAD LOAD REACTION | 65 KIPS |
| LIVE LOAD AND IMPACT REACTION | 99 KIPS |
| TOTAL REACTION | 164 KIPS |
| FINAL CAMBER | 1 9/16 INCHES |

31. THE CURTAIN WALLS SHALL BE CAST ONTO THE ENDS OF THE NEXT D BEAMS BY THE PRESTRESS CONCRETE FABRICATOR. THE CONCRETE SHALL MEET THE REQUIREMENTS OF SECTION 540. PAYMENT FOR THE CURTAIN WALLS SHALL BE INCLUDED IN ITEM 900.640, "SPECIAL PROVISION (PRESTRESSED CONCRETE NEXT D BEAMS)(NEXT 28 D)."

32. ENDS OF FLANGES IN CONTACT WITH GROUT SHALL BE SANDBLASTED PRIOR TO DELIVERY AND POWER WASHED WITH WATER PRIOR TO ERECTION OF THE BEAMS.

33. FILL FLANGE CONNECTION WITH TYPE IV MORTAR ACCORDING TO SECTION 510. MORTAR SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 7000 PSI AND SHALL BE EXTENDED WITH AGGREGATE. GROUTING SHALL BE PAID FOR UNDER ITEM 510.24, "GROUTING SHEAR KEYS."

34. METHOD OF FORMING FLANGE CONNECTION SHALL BE DETERMINED BY THE CONTRACTOR. THE FORMS SHALL BE REMOVABLE AND ABLE TO ACCOMMODATE DIFFERENTIAL CAMBER. FORM SUPPORTS SHALL NOT PENETRATE THROUGH THE TOP OF POUR UNLESS APPROVED BY THE ENGINEER.

35. THE FABRICATOR MAY ALTER THE DESIGN AS DETAILED IN THESE PLANS TO ACCOMMODATE THEIR SPECIFIC OPERATION. THIS ALTERATION MUST BE DESIGNED BY A PROFESSIONAL ENGINEER AND MEET THE ABOVE CRITERIA.

36. PROPOSED SEQUENCE OF CONSTRUCTION

    A. LAY OUT WORKING LINES THE ENTIRE WIDTH OF THE BRIDGE ALONG CENTERLINE OF BEARING MEASURED FROM A SINGLE WORKING POINT. THE WORKING LINES SHALL BE BASED ON THE NOMINAL BEAM WIDTHS.
    B. VERIFY THE BEAM SEAT ELEVATIONS AND TAKE CORRECTIVE ACTION IF NECESSARY.
    C. INSTALL BEARINGS
    D. ERECT THE BEAMS TO FIT WITHIN THE WORKING LINES. PLACE CLOSED CELL FOAM BETWEEN CURTAIN WALL AND ABUTMENT.
    E. CONSTRUCT FORMS FOR THE FLANGE AND CURTAIN WALL CONNECTION POURS.
    F. GROUT CONNECTIONS BETWEEN BEAMS AND CURE.
    G. BACKFILL AND PREPARE GRADE FOR APPROACH SLABS.

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

**SUBSTRUCTURES ON BEDROCK**

37. FOOTINGS OR SUBFOOTINGS FOR SUBSTRUCTURES FOUNDED ON BEDROCK SHALL BE PLACED ON CLEAN COMPETENT ROCK. ALL LOOSE ROCK AND DEBRIS SHALL BE REMOVED.

38. UPON COMPLETION OF THE EXCAVATION FOR SUBSTRUCTURES FOUNDED ON BEDROCK AND PRIOR TO PLACING FORMWORK, THE RESIDENT ENGINEER SHALL NOTIFY THE PROJECT MANAGER AND THE VTRANS STATE GEOLOGIST. THE GEOLOGIST WILL DETERMINE IF THE BEDROCK IS COMPETENT TO OBTAIN THE NOMINAL BEARING RESISTANCE AS SHOWN ON THE PLANS. THE CONTRACTOR SHALL NOTIFY THE GEOLOGIST 72 HOURS PRIOR TO WHEN THE ANALYSIS WILL BE NEEDED.

39. ANY BEDROCK THAT NEEDS TO BE REMOVED SHALL BE PAID FOR WITH THE CORRESPONDING EXCAVATION ITEM INCLUDED IN THE CONTRACT. OVERBREAKAGE BEYOND THE AVERAGE MAXIMUM ALLOWANCE SPECIFIED IN SUBSECTIONS 204.09(B)(1) WILL BE AT THE CONTRACTOR'S EXPENSE.

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| PROJECT NAME: | CHESTER |
| PROJECT NUMBER: | BRF 025-1(28) |

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| FILE NAME: s84e061/Str/notes.dgn | PLOT DATE: 20-SEP-2010 |
| PROJECT LEADER: C.P.WILLIAMS | DRAWN BY: M.FESSEL |
| DESIGNED BY: R.S.YOUNG | CHECKED BY: R.S.YOUNG |
| BRIDGE 8 GENERAL NOTES | SHEET 11 OF 124 |