

GENERAL

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO STATE OF VERMONT AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 2011, WITH ITS LATEST REVISIONS, THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 5TH EDITION WITH INTERIMS THROUGH 2011, AND THE PCI NORTHEAST NEXT D BEAM STANDARDS DATED JANUARY 2010.
 2. ALL PRECAST CONCRETE ELEMENTS TO BE FABRICATED TO THE SPECIFIED DIMENSIONS WITHIN THE TOLERANCES DICTATED IN THE PRECAST/PRESTRESSED CONCRETE INSTITUTE TOLERANCE MANUAL FOR PRECAST AND PRESTRESSED CONCRETE CONSTRUCTION, MNL 135-00, AND ITS LATEST REVISIONS.
 3. THE STONE FILL, TYPE IV UNDER THE BRIDGE AS SHOWN IN THE PLANS SHALL BE PLACED BEFORE THE SUPERSTRUCTURE IS SET.
 4. A PORTION OF THE ORIGINAL EASTERN BRIDGE ABUTMENT FOUNDATION IS IN STILL PLACE. THE REMOVAL OF THIS NOTED REMNANT AND THE REMOVAL OF OTHER POTENTIAL FOUNDATION REMNANTS SHALL BE INCIDENTAL TO ITEM 203.27, "UNCLASSIFIED CHANNEL EXCAVATION."
 5. NO ADJUSTMENTS TO THE BITUMINOUS WEARING SURFACE ON THE BRIDGE SHALL BE MADE TO ACCOUNT FOR THE DIFFERENCE BETWEEN BEAM CAMBER AND THE THEORETICAL ROADWAY PROFILE. THE WEARING SURFACE ON THE BRIDGE SHALL BE SHIMMED TRANSVERSELY AS NECESSARY TO ACCOUNT FOR POTENTIAL DIFFERENTIAL CAMBER OF ADJACENT BEAMS.
- TRAFFIC AND DETOUR**
6. THE EXISTING TEMPORARY DETOUR ROADWAY AND BRIDGE SHALL BE USED TO MAINTAIN TRAFFIC DURING CONSTRUCTION. TEMPORARY SIGNING IS CURRENTLY IN PLACE FOR THE TEMPORARY DETOUR. CONTRACTOR SHALL SUPPLEMENT EXISTING TEMPORARY APPROACH SIGNING AS NECESSARY PER THE FEDERAL MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF EXISTING TEMPORARY BRIDGE AND APPROACHES AND BOTH EXISTING AND NEW TEMPORARY SIGNS DURING CONSTRUCTION. TRAFFIC CONTROL SHALL BE PROVIDED IN ACCORDANCE WITH SECTION 641 OF THE STANDARD SPECIFICATION, THE MUTCD, ITS REVISIONS AND AMENDMENTS, ANY PROVISIONS IN THE PLANS AND/OR PROPOSAL OF THIS PROJECT, AND STATE OF VERMONT STANDARDS. WHERE CONFLICTS EXIST BETWEEN THE STANDARDS AND THE MUTCD, THE MUTCD SHALL GOVERN.
 7. A TEMPORARY BRIDGE IS IN PLACE DOWNSTREAM OF THE EXISTING, FAILED STRUCTURE. AFTER CONSTRUCTION OF THE NEW BRIDGE AND APPROACH ROADWAY IS COMPLETED, THE EXISTING TEMPORARY BRIDGE AND APPROACHES SHALL BE REMOVED. THE ESTIMATED SOIL VOLUME TO BE REMOVED WITHIN THE TEMPORARY DETOUR APPROACHES IS NOTED ON THE EARTHWORKS SHEET AND IS BOUND BY THE EXISTING DETOUR ROAD SURFACE, THE PROPOSED SIDE SLOPE SURFACE, AND THE APPROXIMATED PRE-DETOUR GROUND SURFACE SHOWN IN THE CROSS SECTIONS. CONTRACTOR SHALL RE-GRADE THE AREA UNDER THE TEMPORARY ROADWAY TO REPLICATE CONDITIONS PRIOR TO ITS CONSTRUCTION TO THE EXTENT POSSIBLE, INCLUDING REESTABLISHMENT OF THE FIELD DRIVE. PAYMENT FOR REMOVAL OF TEMPORARY BRIDGE AND APPROACHES (INCLUDING BUT NOT LIMITED TO EMBANKMENT, PAVEMENT, SUBBASE, GUARDRAIL, AND BRIDGE) AND REESTABLISHMENT OF THE PRE-EXISTING CONDITIONS SHALL BE PAID FOR UNDER ITEM 900.645, "SPECIAL PROVISION (REMOVAL OF TEMPORARY BRIDGE AND APPROACHES)".
 8. THE CONTRACTOR SHALL SUBMIT SITE SPECIFIC TRAFFIC CONTROL PLANS SHOWING THE PROPOSED TRAFFIC CONTROL MEASURES THAT ARE TO BE IMPLEMENTED IN ADDITION TO THE EXISTING TEMPORARY MEASURES TO THE ENGINEER ONE WEEK PRIOR TO THE PRE-CONSTRUCTION CONFERENCE.
 9. INSTALL SIGNS AND ANY NECESSARY PAVEMENT MARKINGS PRIOR TO OPENING ANY PORTION OF THE PROJECT TO FINAL AND/OR DETOUR TRAFFIC. CARE MUST BE TAKEN TO ENSURE THAT FINAL SIGNS AND PAVEMENT MARKINGS DO NOT CONFLICT WITH PROPOSED TRAFFIC PATTERNS IN ANY ONE STAGE. FINAL SIGNS THAT ARE IN PLACE BUT ARE NOT BEING USED SHALL BE COVERED.
 10. THE COVERING AND REMOVAL OF EXISTING SIGNS SHALL BE AS ORDERED BY THE RESIDENT ENGINEER. PAYMENT FOR COVERING SIGNS WILL BE INCLUDED IN THE PRICE BID FOR ITEM 641.10, "TRAFFIC CONTROL". PAYMENT FOR REMOVAL OF EXISTING SIGNS RELATED TO THE EXISTING TEMPORARY DETOUR WILL ALSO BE INCLUDED IN THE PRICE BID FOR ITEM 641.10, "TRAFFIC CONTROL".
 11. CONSTRUCTION SIGNS WITH YIELDING POSTS AND ALL OTHER TEMPORARY TRAFFIC CONTROL DEVICES SHALL BE INCLUDED IN ITEM 641.10, "TRAFFIC CONTROL". TEMPORARY STRIPING WHICH MAY BE REQUIRED WHEN CONSTRUCTING THE INTERFACE BETWEEN THE TEMPORARY DETOUR AND FINAL ALIGNMENT SHALL BE INCLUDED IN ITEM 641.10, "TRAFFIC CONTROL".
 12. THE CONTRACTOR SHALL SCHEDULE OPERATIONS IN A MANNER THAT LIMITS THE AMOUNT OF TIME THAT NORMAL TRAFFIC FLOWS ARE DISRUPTED.
 13. SIGNS SHALL ONLY BE VISIBLE AT THE TIMES WHEN THE MESSAGE IS PERTINENT, I.E. A "FLAGGER AHEAD" SIGN SHALL ONLY BE VISIBLE TO MOTORISTS WHEN THE FLAGGER IS ACTUALLY DIRECTING TRAFFIC.
 14. CONTRACTOR SHALL ASSUME LIABILITY OF EXISTING TEMPORARY BRIDGE AND APPROACHES AND EXISTING DETOUR SIGNS UPON CONTRACT AWARD AND MAINTAIN THESE ITEMS IN ACCORDANCE WITH SECTION 527.
 15. CONTRACTOR SHALL MAINTAIN DRAINAGE IN COMPLIANCE WITH EPSC STANDARD PRACTICES.

CONCRETE

16. WATER REPELLENT, SILANE, SHALL BE APPLIED TO ALL EXPOSED CONCRETE SURFACES, EXCEPT THE UNDERSIDE OF THE NEXT BEAMS BETWEEN DRIP NOTCHES.
17. ALL REINFORCING STEEL SHALL BE DETAILED AND FABRICATED USING PROCEDURES AND TOLERANCES IN ACCORDANCE WITH APPLICABLE PUBLICATIONS OF THE "CONCRETE REINFORCING STEEL INSTITUTE".
18. ALL REINFORCING STEEL SHALL BE LEVEL 1, EPOXY COATED, IN ACCORDANCE WITH SECTION 507 OF THE GENERAL SPECIAL PROVISIONS. MINIMUM CLEAR COVER SHALL BE AS FOLLOWS:

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| ALONG BACK FACES OF WALLS AGAINST EARTH | 2.0 INCHES |
| ALONG TOP SURFACE OF DECK SLAB | 2.5 INCHES |
| ALONG BOTTOM SURFACE OF DECK SLAB | 1.5 INCHES |
| ELSEWHERE, UNLESS NOTED OTHERWISE | 3.0 INCHES |

PILE FOUNDATIONS

19. THE PILES SHALL BE HP 12 X 74.
20. PILE SHOES ARE BE REQUIRED AND SHALL CONFORM TO SUBSECTION 505.04(F) OF THE STANDARD SPECIFICATIONS.
21. THE TOPS OF PILES AFTER DRIVING SHALL NOT VARY FROM THE PLAN POSITION BY MORE THAN 3 INCHES. THE CONTRACTOR SHALL DEMONSTRATE TO THE SATISFACTION OF THE RESIDENT ENGINEER HOW THE TOLERANCES WILL BE MET REGARDLESS OF INSTALLATION METHOD AND BEFORE COMMENCING PILE INSTALLATION.
22. THE PILES SHALL BE DRIVEN TO A NOMINAL RESISTANCE OF 400 KIPS AS DETERMINED BY THE RESULTS OF DYNAMIC TESTING, AS INTERPRETED BY THE RESIDENT ENGINEER.
23. FOR ESTIMATING PURPOSES, THE PILE TIP ELEVATIONS WERE ASSUMED AS SHOWN ON THE BORING LOGS. THE ACTUAL LENGTHS MAY VARY.
24. 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(d)-2 OF THE STANDARD SPECIFICATIONS. ONE PILE TEST SHALL BE CONDUCTED ON THE FIRST PILE DRIVEN AT EACH ABUTMENT, FOR A TOTAL OF 2 TESTS. MORE TESTS MAY BE REQUIRED BY THE RESIDENT ENGINEER.

PRECAST ABUTMENTS AND POST-TENSIONING

25. IF VERTICAL CONSTRUCTION JOINTS ARE USED BY THE CONTRACTOR TO FACILITATE SHIPMENT AND INSTALLATION OF THE ABUTMENTS, THEN THE SECTIONS SHALL BE KEVED, EPOXY GROUTED, AND MATCH CAST. A JOINT DETAIL SHALL BE SHOWN ON THE FABRICATION DRAWINGS.
26. POST-TENSIONING STRANDS AND CONDUIT SHALL ADHERE TO THE REQUIREMENTS OF SECTION 510 OF THE STANDARD SPECIFICATIONS.
27. CONDUIT SHALL BE GROUTED AFTER POST-TENSIONING. THE GROUT SHALL BE A NON-BLEEDING GROUT MEETING THE REQUIREMENTS OF ASTM C 1107 (GRADE C). GROUTING SHALL BE PERFORMED BY QUALIFIED PERSONNEL WITH PREVIOUS EXPERIENCE.
28. CONTRACTOR SHALL BE RESPONSIBLE FOR POST-TENSIONING ELEMENTS IN THE ANCHORAGE ZONE, INCLUDING ADDITIONAL REINFORCEMENT WITHIN THE LOCAL ZONE (REGION IMMEDIATELY SURROUNDING THE POST-TENSIONING ANCHOR ASSEMBLY). DESIGN SHALL CONFORM TO AASHTO LRFD.
29. DESIGN VALUES
 - A. PRECAST CONCRETE COMPRESSIVE STRENGTH: $f'c = 5000$ PSI.
 - B. POST-TENSIONING STRANDS: 0.6 INCH DIAMETER, 270 KSI, LOW RELAXATION 7-WIRE STRANDS; NUMBER OF STRANDS PER CONDUIT NOTED IN THE PLANS.
 - C. APPARENT MODULUS OF ELASTICITY: 28,500 KSI.
 - D. JACKING FORCE PER STRAND = 44 KIPS.
30. THE CONCRETE FOR ABUTMENT PILE CAVITIES SHALL MEET THE REQUIREMENTS OF ITEM 900.608, "SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET)".
31. THE CORRUGATED STEEL PIPE SHALL MEET THE REQUIREMENTS OF SUBSECTION 711.01.
32. ALL COSTS ASSOCIATED WITH INSTALLING THE CORRUGATED STEEL PIPE, GALVANIZED ANCHOR HEADS AND TRUMPETS, CONDUIT, GROUT, AND POST-TENSIONING STRANDS SHALL BE INCIDENTAL TO ITEM 540.10, "PRECAST CONCRETE STRUCTURE (ABUTMENT NO. 1)" AND/OR ITEM 540.10, "PRECAST CONCRETE STRUCTURE (ABUTMENT NO. 2)".
33. PROPOSED SEQUENCE OF CONSTRUCTION
 - A. PREPARE AND GRADE FOUNDATION TO REQUIRED ELEVATION.
 - B. DRIVE PILES.
 - C. PLACE PRECAST ABUTMENTS, GROUT VERTICAL SHEAR KEYS, AND INSTALL TRANSVERSE STRANDS (IF MORE THAN 1 UNIT). USE A CALIBRATED JACK TO TENSION STRANDS TO 3 KIPS EACH TO REMOVE SAG.

- D. FILL PILE CAVITIES WITH ITEM 900.608, "SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET)".
- E. STRESS POST-TENSIONING STRANDS USING A CALIBRATED JACK, OPERATED BY QUALIFIED PERSONNEL WHO HAVE PREVIOUS EXPERIENCE IN POST-TENSIONING.
- F. GROUT CONDUITS.

ALTERNATE CONSTRUCTION SEQUENCES MAY BE SUBMITTED TO THE VTRANS PROJECT MANAGER FOR APPROVAL.

NEXT D BEAMS

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

DESIGN VALUES

- A. CONCRETE COMPRESSIVE STRENGTH: $f'c = 8000$ PSI.
- B. CONCRETE COMPRESSIVE STRENGTH AT RELEASE: $f'ci = 6000$ PSI.
- C. PRESTRESSING STRANDS: 0.6 INCH DIAMETER, 270 KSI, LOW RELAXATION, 7-WIRE STRANDS.
- D. APPARENT MODULUS OF ELASTICITY = 28,500 KSI.
- E. THE JACKING FORCE PER STRAND IS 44 KIPS.
- F. SERVICE LOADS

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| MEMBER MOMENT (MIDSPAN) | 772 KIP-FT |
| SUPERIMPOSED DEAD LOAD MOMENT (MIDSPAN) | 72 KIP-FT |
| LIVE LOAD AND IMPACT MOMENT (MIDSPAN) | 1295 KIP-FT |
| DEAD LOAD REACTION | 66 KIP |
| LIVE LOAD AND IMPACT REACTION | 80 KIP |
| TOTAL REACTION | 146 KIP |
| MIDSPAN CAMBER AT RELEASE | 1.38 INCH |
| MIDSPAN CAMBER AT END OF CONSTRUCTION | 2.21 INCH |
| LONG-TERM MIDSPAN CAMBER | 2.47 INCH |

36. FLANGE EDGES AND BEAM STEMS IN CONTACT WITH HPC RAPID SET CONCRETE SHALL BE SANDBLASTED PRIOR TO DELIVERY AND POWER WASHED WITH WATER PRIOR TO ERECTION OF THE BEAMS.
37. FILL FLANGE CLOSURE POURS WITH HPC RAPID SET CONCRETE IN ACCORDANCE WITH ITEM 900.608, "SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET)". CONCRETE SHALL HAVE A 28 DAY MINIMUM COMPRESSIVE STRENGTH OF 7000 PSI.
38. METHOD OF FORMING THE 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 THE POUR UNLESS APPROVED BY THE ENGINEER.
39. THE FABRICATOR MAY ALTER THE DESIGN DETAILED WITHIN THESE PLANS TO ACCOMMODATE THEIR SPECIFIC OPERATION. THIS ALTERATION SHALL BE DESIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF VERMONT AND MEET THE ABOVE CRITERIA.
40. PROPOSED SEQUENCE OF CONSTRUCTION
 - A. LAY OUT WORKING LINES FOR THE ENTIRE BRIDGE WIDTH ALONG CENTERLINE OF BEARING AT EACH ABUTMENT MEASURED FROM A SINGLE WORK POINT.
 - B. VERIFY BEAM SEAT ELEVATIONS AND TAKE CORRECTIVE ACTION IF NECESSARY.
 - C. PLACE TEMPORARY BEARINGS.
 - D. ERECT THE BEAMS ALONG WORKING LINES DETERMINED IN STEP A.
 - E. CONSTRUCT FORMS FOR THE FLANGE CONNECTIONS AND BACKWALL/DIAPHRAGMS.
 - F. PLACE HPC, RAPID SET AND CURE.
 - G. BACKFILL AND PREPARE GRADE FOR APPROACH SLABS.

ALTERNATE CONSTRUCTION SEQUENCES MAY BE SUBMITTED TO THE VTRANS PROJECT MANAGER FOR APPROVAL.

ABUTMENT CLOSURE/END DIAPHRAGM

41. THE ABUTMENT CLOSURE POUR SHALL BE MADE WITH HPC RAPID SET CONCRETE IN ACCORDANCE WITH ITEM 900.608, "SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET)". CONCRETE SHALL HAVE A 28 DAY MINIMUM COMPRESSIVE STRENGTH OF 7000 PSI.

APPROACH SLABS

42. PRECAST CONCRETE COMPRESSIVE STRENGTH: $f'c = 5000$ PSI.
43. SLAB EDGES IN CONTACT WITH HPC RAPID SET CONCRETE SHALL BE SANDBLASTED PRIOR TO DELIVERY AND POWER WASHED WITH WATER PRIOR TO INSTALLATION.
44. FILL CLOSURE POURS WITH HPC RAPID SET CONCRETE IN ACCORDANCE WITH ITEM 900.608, "SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET)". CONCRETE SHALL HAVE A 28 DAY MINIMUM COMPRESSIVE STRENGTH OF 7000 PSI.
45. THE FABRICATOR MAY ALTER THE DESIGN DETAILED WITHIN THESE PLANS TO ACCOMMODATE THEIR SPECIFIC OPERATION. THIS ALTERATION SHALL BE DESIGNED AND SEALED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF VERMONT AND MEET THE ABOVE CRITERIA.

PROJECT NAME: PLYMOUTH
PROJECT NUMBER: ER BRS 0149(5)

FILE NAME: zilc330notes.dgn PLOT DATE: 11/5/2012
PROJECT LEADER: J. OLUND DRAWN BY: S. MORGAN
DESIGNED BY: J. OLUND CHECKED BY: D. MYERS
PROJECT NOTES SHEET 8 OF 46

| REVISION | DESCRIPTION | DATE |
|-------------|-------------------------------------|------------|
| ADDENDUM #1 | CHANGE REINFORCING STEEL TO LEVEL 1 | 11/05/2012 |

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