

GENERAL NOTES:

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO STATE OF VERMONT AGENCY OF TRANSPORTATION'S STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 2011, AND THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 6TH EDITION, DATED 2012, AND ITS LATEST REVISIONS.
2. DIMENSIONS, ANGLES AND ELEVATIONS SHOWN ON THESE PLANS HAVE BEEN OBTAINED FROM SURVEY INFORMATION AND LIMITED FIELD INVESTIGATION AND MAY NOT ACCURATELY REFLECT ACTUAL FIELD CONDITIONS. ACCORDINGLY, THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAKING FIELD MEASUREMENTS FOR ALL STRUCTURE COMPONENTS IMPACTED BY THE WORK (EXISTING OR PROPOSED) TO ASSURE CONSISTENCY WITH THE PROPOSED MODIFICATIONS. ANY DISCREPANCIES IN DIMENSIONS, CHARACTER OR EXTENT OF THE EXISTING FEATURES SHALL BE BROUGHT TO ATTENTION OF THE ENGINEER BEFORE ADVANCING THE WORK. FABRICATION DRAWINGS REQUIRED FOR VARIOUS ITEMS OF THE WORK SHALL INDICATE THE ACTUAL FIELD MEASUREMENTS AND SHALL BE SO NOTED.
3. ALL DIMENSIONS ARE HORIZONTAL OR VERTICAL, AND ARE GIVEN AT 68 DEGREES FAHRENHEIT, UNLESS NOTED OTHERWISE.
4. ANY PORTIONS OF THE EXISTING DRY LAID STONE MASONRY WALLS AND STONE SHELF DISTURBED DURING CONSTRUCTION OPERATIONS SHALL BE REMOVED AND RESET. PAYMENT FOR THIS WORK WILL BE MADE UNDER ITEM 900.645, SPECIAL PROVISION (REMOVE AND RESET EXISTING STONE WALL). ANY BRACING SYSTEM NECESSARY TO SUPPORT THE WALLS DURING CONSTRUCTION OPERATIONS WILL BE PAID FOR UNDER ITEM 900.645, SPECIAL PROVISION (TEMPORARY STEEL SHEET PILING).
5. ALL PG BINDER USED IN BITUMINOUS CONCRETE PAVEMENT SHALL BE IN ACCORDANCE WITH SUBSECTION 490.03(b).
6. EMULSIFIED ASPHALT SHALL BE APPLIED ON COLD PLANED SURFACES AT THE RATE OF 0.040 GAL/SY AND BETWEEN ALL COURSES OF PAVEMENT AT THE RATE OF 0.025 GAL/SY OR AS DIRECTED BY THE ENGINEER.
7. ANY REQUIRED SAWCUT OF EXISTING PAVEMENT SHALL BE INCIDENTAL TO THE WEARING COURSE PAY ITEM.
8. THE CONTRACTOR SHALL REVIEW AND UNDERSTAND ALL APPLICABLE ENVIRONMENTAL PERMITS AND ENSURE THAT ALL CONSTRUCTION CONDITIONS ARE MET.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING ANY DAMAGE TO PRIVATE OR PUBLIC PROPERTY CAUSED BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE AND TO THE SATISFACTION OF THE ENGINEER.
10. UPON COMPLETION OF THE BOX CULVERT CONSTRUCTION THE CONTRACTOR SHALL REMOVE THE DETOUR, RESTORE THE DETOUR SITE TO THE ORIGINAL GRADE AND STABILIZE AS SHOWN ON THE EPSC FINAL CONDITIONS PLAN.
11. MARKER POSTS: TO BE PLACED AS INDICATED OR AS DIRECTED BY THE ENGINEER.
12. SLOPE ROUNDING: ALL CUT SLOPES TO BE ROUNDED IN ACCORDANCE WITH STANDARD SHEET B-5.
13. AN ESTIMATED QUANTITY OF ITEM 203.16 SOLID ROCK EXCAVATION HAS BEEN INCLUDED TO REMOVE EXISTING CONCRETE ROAD BED.

UTILITY NOTES:

1. THE LOCATION OF ANY UTILITY INFORMATION SHOWN ON THE PLANS IS APPROXIMATE. NO CLAIMS ARE MADE AS TO THE ACCURACY OR COMPLETENESS OF THE UTILITIES SHOWN. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR LOCATING AND PROTECTING FROM DAMAGE ALL UTILITIES ON SITE DURING ALL STAGES OF CONSTRUCTION. SEE THE UTILITY SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
2. THE WATER LINE WILL BE TEMPORARILY SUSPENDED AND SUPPORTED IN PLACE DURING CONSTRUCTION OF THE BOX CULVERT. SEE SPECIAL PROVISIONS AND DETAIL ON SHEET 6.

TEMPORARY RELOCATION OF STREAM NOTES:

- I. ITEM 900.645, SPECIAL PROVISION (TEMPORARY RELOCATION OF STREAM), SHALL BE USED TO DIVERT THE UNNAMED BROOK FLOW AROUND THE CONSTRUCTION AREA OF THE NEW STRUCTURE. THE CONTRACTOR SHALL SUBMIT PLANS SHOWING THE PROPOSED METHOD FOR DIVERTING THE BROOK AND ALLOWING THE NEW STRUCTURE TO BE BUILT IN THE DRY. ITEM 900.645, SPECIAL PROVISION (TEMPORARY RELOCATION OF STREAM) SHALL INCLUDE, BUT IS NOT LIMITED TO, THE FOLLOWING WORK:
 - A. THE TEMPORARY PIPE AND HARDWARE, AS WELL AS ANY PIPE EXTENSIONS REQUIRED TO EXTEND THE EXISTING PIPES.
 - B. ANY EXCAVATION NEEDED TO PLACE AND REMOVE THE TEMPORARY PIPE THAT FALLS OUTSIDE THE PAY LIMITS OF STRUCTURE OR COMMON EXCAVATION AS DEFINED ON THE PLANS.
 - C. ANY BACKFILL NEEDED TO PLACE THE TEMPORARY PIPE SUCH THAT THE EXISTING STREAM ELEVATIONS WILL MAINTAIN THE FLOW OF WATER AT ALL TIMES.
 - D. MATERIAL AND LABOR TO PLACE THE BACKFILL WHICH FALLS OUTSIDE THE PAY LIMITS OF THE ROADWAY SUBBASE AND GRANULAR BACKFILL FOR STRUCTURES AS DEFINED ON THE PLANS.
 - E. INCIDENTALS USED WHILE DIVERTING THE WATER TO THE TEMPORARY PIPES. (SANDBAGS, ETC.)

PRECAST CONCRETE BOX CULVERT NOTES:

1. THE LUMP SUM COST FOR ITEM 540.10 SHALL INCLUDE THE DESIGN, FABRICATION, DELIVERY, HANDLING, REPAIR AND CONSTRUCTION OF ALL THE PRECAST BRIDGE ELEMENTS, INCLUDING THE BOX CULVERT, HEADWALLS, CUT-OFF WALLS, WINGWALLS, WINGWALL FOOTINGS, CAST-IN-PLACE CONCRETE FILLER WALL, REINFORCING STEEL, MEMBRANE WATERPROOFING, WATER REPELLENT, SILANE, AND DRAINAGE MATERIALS.
2. THE FABRICATOR SHALL DESIGN THE PRECAST BRIDGE ELEMENTS, INCLUDING, BUT NOT LIMITED TO, THE BOX CULVERT, HEADWALLS, CUT-OFF WALLS, WINGWALLS, WINGWALL FOOTINGS AND ALL CONNECTIONS INCLUDING CLOSURE HARDWARE. THE MANUFACTURER SHALL ALSO DESIGN THE CAST-IN-PLACE CONCRETE FILLER WALL AS WELL AS THE CONNECTIONS BETWEEN THIS WALL AND THE PRECAST BRIDGE ELEMENTS. THE JOINTS BETWEEN THE PRECAST BOX CULVERT SECTIONS SHALL BE MADE WATERTIGHT UTILIZING FLEXIBLE RUBBER OR PLASTIC GASKETS. MECHANICAL DEVICES SHALL BE USED TO LOCK THE INDIVIDUAL SECTIONS TOGETHER. THE MANUFACTURER SHALL PROVIDE STAMPED DESIGN CALCULATIONS PREPARED BY A REGISTERED VERMONT PROFESSIONAL ENGINEER. THE MANUFACTURER SHALL CONSIDER STRENGTH, SERVICEABILITY, STIFFNESS AND STABILITY OF THE PRECAST ELEMENTS FOR LOADS GENERATED DURING FABRICATION, TRANSPORTATION, ERECTION, CONSTRUCTION OPERATIONS, AND ULTIMATE TRAFFIC CONDITIONS. THE MANUFACTURER SHALL OBTAIN WRITTEN APPROVAL FROM THE VERMONT AGENCY OF TRANSPORTATION STRUCTURES SECTION PRIOR TO FABRICATION. ALL COSTS SHALL BE INCLUDED IN ITEM 540.10.
3. THE PRECAST BOX SECTIONS ARE SHOWN FOR REFERENCE ONLY. THE ACTUAL DIMENSIONS AND SHAPE WILL BE DEPENDENT ON THE FABRICATOR. ALL UNITS EXCEPT THE FIRST AND LAST WILL BE THE SAME SHAPE AND THE SAME LENGTH.
4. THE PRECAST BRIDGE SYSTEM SHALL BE DESIGNED PER THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 6TH EDITION, DATED 2012, AND ITS LATEST REVISIONS, AND SHALL CONSIDER THE FOLLOWING DESIGN CRITERIA:
 - A. DESIGN LOADING = HL-93
 - B. WEIGHT OF BACKFILL MATERIAL = 140 PCF
 - C. SEE GEOTECHNICAL REPORT FOR FACTORED SOIL BEARING RESISTANCES FOR BOX AND WINGWALLS.
 - D. PRECAST CONCRETE COMPRESSIVE STRENGTH: $f'_c = 5000$ psi
CAST-IN-PLACE CONCRETE COMPRESSIVE STRENGTH: $f'_c = 3500$ psi
 - E. REINFORCING STEEL (CAST-IN-PLACE CONCRETE FILLER WALL): $F_y = 60,000$ psi
5. A 3" DIAMETER PERFORATED PVC DRAIN PIPE PER THE FABRICATOR'S SPECIFICATIONS SHALL BE PLACED WITHIN A MINIMUM 16" THICK ZONE OF DRAINAGE AGGREGATE CONFORMING TO SUBSECTION 704.16. STONE SHALL BE COMPLETELY SEPARATED FROM THE IN SITU SOILS BY GEOTEXTILE CONFORMING TO THE REQUIREMENTS OF SECTION 649, GEOTEXTILE FOR UNDERDRAIN TRENCH LINING. PERFORATED PVC PIPE SHALL BE LAID WITH PERFORATIONS DOWN. THIS WORK AND MATERIALS SHALL BE INCIDENTAL TO ITEM 540.10.

6. WEEP HOLES IN THE WINGWALLS AND HEADWALLS SHALL BE PLACED APPROXIMATELY EVERY 10' OR AS INDICATED ON THE PLANS. WEEP HOLES SHALL BE SCREENED TO RETAIN CRUSHED STONE (MAXIMUM 1/2" SQUARE OPENINGS) AND TO PREVENT ENTRY BY ANIMALS.
7. JOINTS BETWEEN ABUTTING PRECAST UNITS SHALL BE WATERTIGHT. THE EXTERIOR (TOP AND SIDES) AND INTERIOR (SIDES AND BOTTOM) JOINTS SHALL BE FILLED WITH MORTAR, TYPE IV, AFTER BEING SET IN THEIR FINAL POSITION. MORTAR SHALL BE WET CURED A MINIMUM OF 24 HOURS PRIOR TO APPLYING WATERPROOFING MEASURES. MORTAR SHALL BE INCIDENTAL TO ITEM 540.10.
8. BOX CULVERTS SHALL BEAR ON COMPACTED GRANULAR BACKFILL FOR STRUCTURES. ANY UNSUITABLE MATERIALS ENCOUNTERED AT THE BOTTOM OF THE EXCAVATION FOR THE BOX CULVERT SHALL BE REMOVED AND REPLACED WITH GRANULAR BACKFILL FOR STRUCTURES TO A DEPTH OF 1.5 FEET AS DIRECTED BY THE ENGINEER OR DEEMED NECESSARY BASED ON BORINGS.
9. THE CONTRACTOR SHALL FOLLOW THE MANUFACTURER'S RECOMMENDATIONS REGARDING BACKFILL AND COMPACTION LIMITS, PROPERTIES, AND PROCEDURES, INCLUDING RESTRICTIONS OF CONSTRUCTION MACHINERY AND OPERATIONS.
10. THE CONTRACTOR SHALL PROVIDE EQUIPMENT CAPABLE OF UNLOADING, LIFTING, AND PLACING PRECAST UNITS IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND UNDER THE DIRECTION OF THE MANUFACTURER'S FIELD REPRESENTATIVE. COST SHALL BE INCLUDED IN ITEM 540.10.
11. PRIOR TO SHIPPING THE PRECAST ELEMENTS, THE CONTRACTOR SHALL SUPPLY CERTIFICATION STATING THAT THE BACKFILL SOIL MEETS THE REQUIREMENTS OF THE PROJECT SPECIFICATIONS. NO BACKFILL SHALL BE PLACED AGAINST ANY STRUCTURAL ELEMENTS PRIOR TO APPROVAL OF THE ENGINEER.
12. THE DRILLING OF HOLES IN THE PRECAST ELEMENTS SHALL NOT BE PERMITTED, UNLESS APPROVED IN WRITING BY THE VERMONT AGENCY OF TRANSPORTATION STRUCTURES SECTION. ANY LIFTING HOLES SHALL BE FILLED WITH MORTAR, TYPE IV. COST FOR MORTAR SHALL BE INCIDENTAL TO ITEM 540.10.
13. THE CONTRACTOR SHALL REPAIR ANY DAMAGE TO PRECAST CONCRETE ELEMENTS AT THE CONTRACTOR'S EXPENSE AND TO THE SATISFACTION OF THE ENGINEER.
14. A 2 FOOT WIDE STRIP OF MEMBRANE WATERPROOFING SHALL BE APPLIED AT EACH OUTER SIDE JOINT AND AT CAST-IN-PLACE CONCRETE FILLER WALL JOINT. THE MEMBRANE SHALL BE CENTERED ON THE JOINT AND COVER THE FULL HEIGHT OF THE SIDE JOINTS. THE ENTIRE TOP SHALL THEN BE COVERED WITH MEMBRANE. THE MEMBRANE SHALL OVERLAP THE EDGES BY 1 FOOT ON EACH SIDE. PAYMENT FOR THE MEMBRANE SHALL BE INCIDENTAL TO ITEM 540.10.
15. WATER REPELLENT SHALL BE APPLIED TO ALL EXPOSED SURFACES OF THE HEADWALLS, WINGWALLS (INCLUDING CAST-IN-PLACE CONCRETE FILLER WALL), AND EXPOSED INTERIOR SURFACES OF THE ENTIRE BOX CULVERT, INCLUDING THE BOTTOM SURFACE OF THE TOP SLAB, THE TOP SURFACE OF THE BOTTOM SLAB, AND THE VERTICAL WALLS. COST SHALL BE INCIDENTAL TO ITEM 540.10. WATER REPELLENT SHALL BE APPLIED IN THE SHOP FOR ALL SURFACES EXCEPT CAST-IN-PLACE CONCRETE FILL WALL, WHICH SHALL HAVE WATER REPELLENT APPLIED IN THE FIELD.
16. MATERIAL SHALL MEET THE FOLLOWING REQUIREMENTS:

CAST-IN-PLACE CONCRETE:	SECTION 501 FOR CONCRETE, HIGH PERFORMANCE CLASS B
REINFORCING STEEL:	SECTION 507 FOR LEVEL I REINFORCING, EPOXY COATED.
MEMBRANE WATERPROOFING:	SECTION 519 FOR TOP OF BOX CULVERT AND SECTION 540 FOR BOX CULVERT JOINTS
WATER REPELLENT, SILANE:	SECTION 514
17. REINFORCING STEEL PLACEMENT TOLERANCES SHALL BE AS FOLLOWS:
 - A. SPACING +/- 1/2"
 - B. CLEARANCE +/- 1/4"
18. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1" X 1".

PROJECT NAME: BARRE TOWN	
PROJECT NUMBER: STP SCR(10)	
FILE NAME: z10d202notes.dgn	PLOT DATE: 2/27/2014
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PROJECT NOTES	SHEET 26 OF 43