

**GENERAL NOTES**

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE STATE OF VERMONT AGENCY OF TRANSPORTATION 2011 STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION AND ITS LATEST REVISIONS, US ROUTE 7, BR 73A SHALL BE DESIGNED IN ACCORDANCE WITH THE 7TH EDITION OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATION AND ITS LATEST REVISIONS. RR CULVERT C06470 SHALL BE DESIGNED IN ACCORDANCE WITH THE AREMA 2015 MANUAL FOR RAILWAY ENGINEERING.
2. THE CONTRACTOR SHALL ENSURE ACCESS TO ALL DRIVES AND SIDE ROADS AT ALL TIMES DURING CONSTRUCTION.
3. ALL DIMENSIONS SHOWN IN THE PLANS ARE HORIZONTAL OR VERTICAL AND ARE GIVEN AT 68°F.
4. ALL PRECAUTIONS SHALL BE TAKEN TO PREVENT SILTATION OR POLLUTION INTO THE STREAM. REFER TO STANDARD SPECIFICATIONS, SECTION 105. ALL WATER PUMPED FROM EXCAVATION AREA SHALL BE CLARIFIED PRIOR TO BEING ALLOWED TO MIX WITH THE STREAM FLOW. VERMONT WATER QUALITY STANDARDS SHALL BE MAINTAINED AT ALL TIMES. PAYMENT FOR CLARIFICATION OF WATER WILL BE CONSIDERED INCIDENTAL TO EPSC ITEMS.
5. IN-STREAM CONSTRUCTION SHALL OCCUR ONLY WITHIN THE TIMEFRAME OUTLINED IN THE PROJECT PERMITS, WHICH ARE INCLUDED IN THE PROPOSAL. IF THE CONTRACTOR PROPOSES TO PERFORM IN STREAM WORK OUTSIDE OF THESE TIMEFRAMES, THE CONTRACTOR SHALL OBTAIN WRITTEN APPROVAL FROM THE APPROPRIATE REGULATING ENTITIES PRIOR TO PERFORMING THE WORK.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE STAGING SCHEDULE. ALL WORK MUST BE DONE IN THE DRY AND ALL CULVERT SECTIONS AND BED MATERIAL SHALL BE COMPLETELY INSTALLED BEFORE THE STREAM IS ALLOWED TO FLOW THROUGH THEM. THE CONTRACTOR SHALL PREPARE AND SUBMIT A TEMPORARY STREAM DIVERSION PLAN TO CARRY THE STREAM DURING CONSTRUCTION. THE PLAN SHALL DEPICT MEASURES PROPOSED TO PREVENT EROSION AND SEDIMENTATION AND MAINTAIN STREAM WATER QUALITY. THE STREAM DIVERSION, INCLUDING ANY TEMPORARY PIPING OR DEWATERING, SHALL BE PAID UNDER ITEM 900.645 SPECIAL PROVISION (TEMPORARY RELOCATION OF STREAM).
7. THE CONTRACTOR'S ATTENTION IS CALLED TO THE FACT THAT CONTINUOUS COORDINATION WITH THE RAILROAD OPERATOR, VERMONT RAILWAY INC. (VTR), WILL BE REQUIRED THROUGHOUT CONSTRUCTION. VTR WILL PROVIDE THE CONTRACTOR WITH FLAGGERS FOR PROTECTION OF RAILROAD TRAFFIC WHILE WORK IS BEING PERFORMED ON THE RAILROAD RIGHT-OF-WAY (R.O.W.) THE CONTRACTOR SHALL NOT ENTER THE R.O.W. AT ANY TIME WITHOUT VTR AUTHORIZATION. ALL COSTS FOR RAILROAD FLAGGER PROTECTION AND RAILROAD COORDINATION WILL BE PAID FOR UNDER ITEM 900.650, SPECIAL PROVISION (MAINTENANCE OF RAILROAD TRAFFIC) (N.A.B.I.).
8. LAYOUT FOR THIS PROJECT SHALL BE ESTABLISHED USING THE EXISTING HORIZONTAL AND VERTICAL CONTROL POINTS DEFINED ON THE TIE SHEET AND SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE COST OF PERFORMING THIS WORK WILL BE CONSIDERED INCIDENTAL TO ALL OTHER CONTRACT ITEMS.
9. BEGIN BRIDGE/END BRIDGE STATIONS ARE BASED ON AN ASSUMED 1'-0" WALL THICKNESS.

**PRECAST CONCRETE BOX CULVERTS AND WINGWALLS**

1. THE BOX CULVERTS FOR BRIDGE 73A AND C06470, INCLUDING THE SILLS, HEADWALLS, CUTOFF WALLS AND WINGWALLS WILL BE PAID FOR UNDER THE APPROPRIATE ITEM 540.10, PRECAST CONCRETE STRUCTURE. DESIGN OF THESE CULVERTS SHALL BE THE RESPONSIBILITY OF THE FABRICATOR. THE FABRICATOR SHALL USE THE FOLLOWING DESIGN CRITERIA:  
BR73A DESIGN CRITERIA:  
 LIVE LOAD: AASHTO HL-93 LOAD.  
 DESIGN BACKFILL UNIT WEIGHT = 140 POUNDS PER CUBIC FOOT  
 FOUNDATIONS SHALL BE DESIGNED USING A NOMINAL BEARING RESISTANCE OF 6.0 ksf AND A FACTORED BEARING RESISTANCE OF 2.7 ksf.  
 THE COEFFICIENT OF FRICTION FOR SLIDING SHALL BE:  
 PRECAST FOOTINGS.....0.40  
 CAST-IN-PLACE FOOTINGS....0.45  
 IF LOOSE OR SOFT SOILS ARE ENCOUNTERED, THE EXISTING MATERIALS SHALL BE UNDERCUT AN ADDITIONAL 12" AND A GEOTEXILE MEETING THE REQUIREMENTS OF SECTION 649 FOR GEOTEXILE FOR ROAD BED SEPARATOR, SHALL BE PLACED ON THE EXCAVATED SURFACE AND BACKFILLED WITH CRUSHED STONE BEDDING.  
RR CULVERT C06470 DESIGN CRITERIA:  
 BOX CULVERT SHALL BE DESIGNED FOR COOPER E80 LIVE LOAD. SOILS ABOVE THE CULVERT ARE DESIGNED FOR AN AVERAGE INTERNAL FRICTION ANGLE OF 34 DEGREES.  
 THE WINGWALL DESIGN SHALL BE PERFORMED IN ACCORDANCE WITH THE AREMA MANUAL FOR RAILWAY ENGINEERING, 2015.  
 ALL FOUNDATIONS SHALL BE DESIGNED FOR A MAXIMUM ALLOWABLE BEARING STRESS OF 2.0 kips PER SQUARE FOOT.  
 COEFFICIENT OF FRICTION :  
 PRECAST FOOTINGS.....0.40  
 CAST-IN-PLACE FOOTINGS....0.45  
 LATERAL EARTH PRESSURES COEFFICIENT SHALL BE:  
 K<sub>o</sub> = 0.44 (FOR THE SIDES OF THE BOX CULVERT)  
 K<sub>a</sub> = 0.28 (FOR WINGWALLS WITH A LEVEL BACKFILL)  
 K<sub>q</sub> = 0.69 (FOR WINGWALLS WITH A 1.5H TO 1V BACKFILL SLOPE)  
 DESIGN BACKFILL UNIT WEIGHT = 140 POUNDS PER CUBIC FOOT  
 FACTOR OF SAFETY FOR SLIDING SHALL BE GREATER THAN 1.5.  
 FACTOR OF SAFETY FOR OVERTURNING SHALL BE GREATER THAN 2.0.
2. THE CONTRACTOR SHALL SUBMIT FABRICATION DRAWINGS AND DESIGN CALCULATIONS FOR THE BOX CULVERTS AND ALL ASSOCIATED DETAILS FOR THE APPROVAL OF THE STRUCTURES ENGINEER IN ACCORDANCE WITH SUBSECTION 105.03 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION.
3. ALL BOX CULVERT JOINTS SHALL BE STRENGTHENED WITH PERMANENT CLOSURE HARDWARE. ALL HARDWARE COMPONENTS SHALL BE GALVANIZED IN ACCORDANCE WITH SUBSECTION 506.15 OF THE STANDARD SPECIFICATIONS.
4. ALL REINFORCING STEEL TO BE LEVEL I (UNCOATED). MIN. CLEAR COVER SHALL BE TWO INCHES.
5. AFTER BOX CULVERT SECTIONS HAVE BEEN SET IN THEIR FINAL POSITION, THE EXTERIOR (TOP AND SIDES) AND INTERIOR (SIDES AND BOTTOM) OF ALL BOX CULVERT JOINTS, AND ALL LIFTING HOLES, SHALL BE FILLED WITH AN OVERHEAD AND VERTICAL CONCRETE REPAIR MATERIAL FROM THE AGENCY'S APPROVED PRODUCTS LIST. THE REPAIR MATERIAL SHALL BE CURED AS SPECIFIED BY THE MANUFACTURER. THE REPAIR MATERIAL AND ITS INSTALLATION WILL BE CONSIDERED INCIDENTAL TO THE APPROPRIATE ITEM 540.10, PRECAST CONCRETE STRUCTURE.
6. A TWO FOOT WIDE STRIP OF SHEET MEMBRANE WATERPROOFING PREFORMED SHEET SHALL BE APPLIED AT EACH SIDE JOINT. THE MEMBRANE SHALL BE CENTERED ON THE JOINT AND SHALL RUN THE ENTIRE HEIGHT OF THE JOINT. THE ENTIRE TOP OF THE BOX CULVERT SHALL THEN BE COVERED WITH MEMBRANE PROCEEDING FROM OUTLET TO INLET. THE MEMBRANE SHEETS SHALL OVERLAP THE EDGES OF THE CULVERT BY 1 FOOT ON EACH SIDE AS SHOWN IN THE PLANS. MEMBRANE WATERPROOFING WILL BE CONSIDERED INCIDENTAL TO THE APPROPRIATE ITEM 540.10, PRECAST CONCRETE STRUCTURE.
7. WATER REPELLENT IN ACCORDANCE WITH ITEM 514.10 SHALL BE APPLIED TO ALL EXPOSED SURFACES EXCEPT THE INSIDE OF THE BOX.
8. REFER TO SHEET 16 FOR ADDITIONAL NOTES REGARDING THE CONSTRUCTION OF RR CULVERT C06470.

**UTILITY COORDINATION**

1. THE CONTRACTOR SHALL EXERCISE CAUTION WHILE WORKING IN AREAS OF OVERHEAD UTILITIES. OVERHEAD UTILITIES WILL NOT BE RELOCATED OR DE-ENERGIZED IN PREPARATION FOR THIS PROJECT. SEE UTILITIES SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS AND INFORMATION.

POWER LINES WERE TEMPORARILY RELOCATED TO ALLOW SETTING OF ROUTE 7 BOX SECTIONS.

NO UNDERCUTS REQUIRED

PROJECT NAME:	WALLINGFORD
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PROJECT LEADER: G. BOGUE	DRAWN BY: L. BUXTON
DESIGNED BY: T. KNIGHT	CHECKED BY: T. KNIGHT
PROJECT NOTES 1	SHEET 3 OF 36

