

PROJECT NOTES

GENERAL

- ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE STATE OF VERMONT AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 2011, AND ITS LATEST REVISIONS, AND THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 6TH EDITION, AND ITS LATEST REVISIONS.
- ALL DIMENSIONS ARE HORIZONTAL OR VERTICAL, AND ARE GIVEN AT 68 DEGREES FAHRENHEIT, UNLESS NOTED OTHERWISE.
- ALL WORK AND ANY ASSOCIATED ACTIVITY ON THIS PROJECT SHALL BE PERFORMED WITHIN THE EXISTING RIGHT-OF-WAY LIMITS.
- 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.
- NO SUBSTITUTION FOR PRECAST CONCRETE WILL BE PERMITTED.

TRAFFIC CONTROL

- THE CONTRACTOR SHALL IMPLEMENT THE ROAD CLOSURE, TRAFFIC CONTROL, AND DETOUR AS SHOWN ON THE PLANS.
- THE CONTRACTOR SHALL NOTIFY THE TOWN A MINIMUM OF TWO (2) WEEKS PRIOR TO CLOSING THE ROAD.
- UNLESS COVERED UNDER INDIVIDUAL PAY ITEMS OR NOTED OTHERWISE, ALL COSTS FOR WORK SHOWN ON THE TRAFFIC CONTROL SHEETS AND FOR TEMPORARY TRAFFIC CONTROL DEVICES WILL BE INCLUDED IN THE CONTRACT LUMP SUM PRICE FOR ITEM 641.10, "TRAFFIC CONTROL". THIS INCLUDES, BUT IS NOT LIMITED TO, THE FOLLOWING ITEMS:

TEMPORARY TRAFFIC BARRIERS
RETROREFLECTIVE DRUMS
SIGNS
SIGN POSTS

TEMPORARY TRAFFIC BARRIER SHALL BE FURNISHED IN ACCORDANCE WITH SECTION 621.

- THE CONTRACTOR SHALL HAVE THE OPTION OF ALLOWING ALTERNATING ONE-WAY TRAFFIC ON THE CULVERT PRIOR TO COMPLETING THE FULL INSTALLATION OF THE PRECAST CONCRETE ARCH SEGMENTS, PRECAST CONCRETE WINGWALLS AND/OR CONCRETE MEDIAN BARRIER IN ORDER TO MINIMIZE THE BRIDGE CLOSURE TIME. PRIOR TO OPENING VT 73 TO ALTERNATING ONE-WAY TRAFFIC THE GROUT FOR THE INSTALLED PRECAST ARCH SEGMENTS SHALL BE FULLY CURED PER THE MANUFACTURER'S SPECIFICATIONS. THE ALTERNATING ONE-WAY TRAFFIC SHALL BE MAINTAINED ON THE PRECAST CONCRETE ARCH WITH CONCRETE MEDIAN BARRIER (CMB) PLACED ON EACH SIDE OF THE SINGLE TRAFFIC LANE TO PROVIDE A MINIMUM CLEAR DISTANCE/LANE WIDTH OF 11'-0". THE CMB SHALL BE LOCATED A MINIMUM CLEAR DISTANCE OF 3'-0" FROM THE NON-TRAFFIC SIDE OF THE CMB TO THE EDGE (FASCIA) OF THE PRECAST CONCRETE ARCH. THE CMB SHALL BE FLARED AT A RATE OF 1:9 ON THE APPROACHES. IF IT IS NOT POSSIBLE TO PROPERLY FLARE THE CMB AT THE APPROACHES, AN ENERGY ABSORPTION ATTENUATOR SHALL BE PLACED AT THE ENDS OF THE CMB. ALL COSTS ASSOCIATED WITH THE CMB AND ENERGY ABSORPTION ATTENUATORS SHALL BE INCLUDED IN ITEM 641.10, "TRAFFIC CONTROL (ER STP 0162(19))". ENERGY ABSORPTION ATTENUATORS SHALL BE FURNISHED IN ACCORDANCE WITH SECTION 621.
- IF THE CONTRACTOR CHOOSES TO OPEN THE BRIDGE TO ALTERNATING ONE-WAY TRAFFIC, THE CONTRACTOR SHALL SUBMIT A TEMPORARY TRAFFIC CONTROL PLAN TO THE ENGINEER FOR REVIEW AND APPROVAL FOUR WEEKS PRIOR TO CLOSING THE ROADWAY. THE TEMPORARY TRAFFIC CONTROL PLAN SHALL SHOW THE LOCATIONS OF THE TEMPORARY TRAFFIC CONTROL SIGNALS, PORTABLE LIGHT TOWERS, TRAFFIC CONTROL SIGNS, CONCRETE MEDIAN BARRIER (CMB), AND IF NECESSARY PHASING OF THE ALTERNATING ONE-WAY TRAFFIC ON THE CULVERT TO ALLOW FOR THE INSTALLATION OF THE PRECAST CONCRETE ARCH SEGMENTS, PRECAST CONCRETE WINGWALLS, AND THE MEDIAN BARRIER. ALL COSTS ASSOCIATED WITH PROVIDING A TEMPORARY TRAFFIC CONTROL PLAN, IMPLEMENTING THE TEMPORARY TRAFFIC CONTROL PLAN, INCLUDING THE COSTS OF FURNISHING, INSTALLING AND REMOVING THE TEMPORARY TRAFFIC CONTROL SIGNALS, PORTABLE LIGHT TOWERS, SIGNS, SIGN POSTS, CMB, REMOVING AND RESETTING THE CMB, ETC. SHALL BE INCLUDED IN THE UNIT BID PRICE FOR ITEM 641.10, "TRAFFIC CONTROL". TEMPORARY SIGNAL SYSTEMS SHALL BE FURNISHED IN ACCORDANCE WITH SECTION 678.
- ALL SIGNS SHALL BE IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) AND THE "STANDARD HIGHWAY SIGNS AND MARKINGS" BOOK (SHSM) PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION (FHWA).
- DURING CONSTRUCTION, TRAFFIC SHALL BE MAINTAINED ON A REGIONAL DETOUR. MAINTENANCE OF THE REGIONAL DETOUR WILL BE PAID FOR UNDER ITEM 641.10, "TRAFFIC CONTROL (DETOUR)".
- FULL ACCESS TO ALL SIDE ROADS AND DRIVES WITHIN THE PROJECT LIMITS SHALL BE MAINTAINED AT ALL TIMES. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO ITEM 641.10, "TRAFFIC CONTROL (ER STP 0162(19))".

EARTHWORK

- ITEM 529.15 "REMOVAL OF STRUCTURE" IS FOR THE COMPLETE REMOVAL AND DISPOSAL OF THE EXISTING 10' DIA. CMP.
- THE "STONE FILL, TYPE IV" AND "SPECIAL PROVISION (STONE FILL, CULVERT LINING)" SHALL BE PLACED BEFORE THE PRECAST CONCRETE ARCH IS SET.
- THE HEIGHT OF FILL BEHIND ABUTMENTS WILL BE LIMITED TO THE PEDESTAL ELEVATION UNTIL THE PRECAST ARCH HAS BEEN SET AND THE GROUT CURING PERIOD IS UP.

- 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.
- IN ACCORDANCE WITH SUBSECTION 204.01(b), TEMPORARY BRACING, SHEETING OR OTHER MEANS OF SUPPORTING THE EXCAVATION MAY BE REQUIRED FOR THE CONSTRUCTION OF WINGWALLS NO. 2 AND 3. THE COSTS SHALL BE INCLUDED IN THE UNIT PRICE BID FOR ITEM 204.25, "STRUCTURE EXCAVATION".
- THE CONTRACTOR'S ATTENTION IS DIRECTED TO SUBSECTION 301.06 REGARDING THE COMPACTION OF THE SUBBASE MATERIAL.

CONCRETE

- ITEM 514.10, "WATER REPELLENT, SILANE", SHALL BE APPLIED TO ALL EXPOSED CONCRETE SURFACES, EXCEPT THE UNDERSIDE OF THE PRECAST CONCRETE ARCH.
- ALL REINFORCING STEEL SHALL BE DETAILED AND FABRICATED USING PROCEDURES AND TOLERANCES IN ACCORDANCE WITH APPLICABLE PUBLICATIONS OF THE CONCRETE REINFORCING STEEL INSTITUTE (CRSI).
- REINFORCING STEEL PLACEMENT TOLERANCES SHALL BE:

SPACING ± 1"
CLEARANCE ± ¼"

- ALL SUBFOOTING CONCRETE SHALL BE CONCRETE, HIGH PERFORMANCE CLASS B.
- ALL SUBFOOTING CONCRETE SHALL BE PLACED IN THE DRY. DEWATERING SHALL BE CONTINUOUS UNTIL THE FOOTINGS ARE BACKFILLED TO THE ELEVATION OF THE WATER. SUMPS AND TRENCHES THAT DIRECT WATER SHALL BE LOCATED TO PREVENT THE REMOVAL OF FINES BELOW THE FOOTINGS.

SUBSTRUCTURE ON LEDGE

- THE SUBFOOTINGS SHALL BE FOUNDED ON LEDGE WHICH HAS BEEN CLEANED OF ALL LOOSE ROCK AND DEBRIS TO ENSURE THAT SUBSTRUCTURES ARE PLACED ON COMPETENT ROCK.
- THE RESIDENT ENGINEER SHALL NOTIFY THE PROJECT MANAGER AND THE VTRANS STATE GEOLOGIST UPON COMPLETION OF THE EXCAVATION FOR SUBSTRUCTURES FOUNDED ON BEDROCK AND PRIOR TO PLACING FORMWORK. 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.
- LEDGE THAT IS EXCAVATED FOR PLACEMENT OF FOOTINGS SHALL BE EXCAVATED TO PROVIDE A LEVEL SURFACE IN THE TRANSVERSE DIRECTION AND MATCH THE SLOPE SHOWN ON THE PLANS IN THE LONGITUDINAL DIRECTION, OR AS DIRECTED BY THE RESIDENT ENGINEER.
- A MAXIMUM OF 6" OVER BREAKAGE WILL BE REPLACED WITH "HIGH PERFORMANCE CLASS B CONCRETE". OVER BREAKAGE BEYOND 6" SHALL BE REPLACED WITH HIGH PERFORMANCE CLASS B CONCRETE" AT THE EXPENSE OF THE CONTRACTOR.
- THE LIMITS OF THE SUBFOOTING SHALL BE 1'-0" OUTSIDE THE LIMITS OF THE FOOTING.
- THE SUBSTRUCTURE UNITS HAVE BEEN DESIGNED FOR THE ELEVATIONS SHOWN ON THE PLANS. FOR ALL SUBSTRUCTURE UNITS, LEDGE SHALL BE EXCAVATED DOWN TO ALLOW FOR THE INDICATED SUBFOOTING TO BE POURED USING "CONCRETE, HIGH PERFORMANCE CLASS B" AND HAVING A MINIMUM THICKNESS OF 1'-0" AND A MAXIMUM THICKNESS OF 5'-0" TO LEDGE.
- IF LEDGE IS ABOVE THE DESIGN TOP OF FOOTING, THE FOOTING MAY BE RAISED. BEFORE ANY UPWARD ADJUSTMENT IS MADE IN FOOTING ELEVATION, THE PROJECT MANAGER SHALL BE CONTACTED AND PROVIDED WITH A LEDGE PROFILE. NO FURTHER WORK SHALL BE DONE UNTIL APPROVAL OF THE CONFIGURATION IS RECEIVED.
- #8 DOWELS SHALL BE DRILLED AND GROUTED INTO THE LEDGE AS SHOWN ON THE PLANS. THE DOWELS SHALL HAVE A 2'-0" EMBEDMENT INTO THE LEDGE AND SHALL EXTEND INTO THE SUBFOOTING A MINIMUM OF 9" AND A MAXIMUM OF 2'-0" DEPENDING ON THE SUBFOOTING DEPTH. #8 DOWELS WILL ALSO BE USED AT THE INTERFACE BETWEEN THE SUBFOOTING AND THE PRECAST CONCRETE FOOTING AS SHOWN ON THE PLANS. THE DRILLING AND GROUTING OF THESE DOWELS SHALL BE PAID FOR UNDER THE ITEM 507.16, "DRILLING AND GROUTING DOWELS".

PRECAST CONCRETE STRUCTURE

- THE DESIGN, CONSTRUCTION, HANDLING, AND ASSEMBLY OF THE PRECAST UNITS SHALL BE IN ACCORDANCE WITH SECTION 540 AND THE SPECIAL PROVISIONS. HANDLING AND INSTALLATION SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AS APPLICABLE.
- THE PRECAST CONCRETE STRUCTURE SHALL BE DESIGNED TO SUPPORT CONSTRUCTION AND HL-93 LIVE LOADS DIRECTLY ON TOP OF THE CONCRETE ARCH WITHOUT ANY FILL OVER THE CONCRETE ARCH.
- IF VERTICAL CONSTRUCTION JOINTS ARE REQUIRED BY THE CONTRACTOR FOR SHIPMENT OF THE ABUTMENTS, THEN THE SECTIONS SHALL BE KEYED AND MATCH CAST. THE JOINT DETAIL SHALL BE AS SHOWN ON THE PLANS. THE FABRICATOR MAY SUBMIT AN ALTERNATIVE JOINT FOR REVIEW BY THE ENGINEER. THE JOINT DETAIL SHALL BE SHOWN ON THE FABRICATION DRAWINGS.
- REINFORCING STEEL SHALL CONFORM TO THE FOLLOWING:
 - THE REINFORCING STEEL IN THE HEADWALLS SHALL BE "LEVEL II" OR HIGHER.
 - THE REINFORCING STEEL IN ALL OTHER PRECAST UNITS AND FOOTINGS SHALL BE "LEVEL I, EPOXY COATED REINFORCING STEEL" OR HIGHER.

DESIGN VALUES

DESIGN LIVE LOAD: HL-93
DESIGN FILL OVER THE STRUCTURE: 2 FEET
ACTUAL FILL (MIN=1'-4"±, MAX=1'-9"±)
RETAINED SOIL PARAMETERS
UNIT WEIGHT: 140 PCF
FRICTION ANGLE: 34°

UNFACTORED LOADS AT TOP OF PRECAST CONCRETE PEDESTAL:
VERTICAL LOAD (PER PEDESTAL)
DL = 10.3 KLF
LL = 4.8 KLF
HORIZONTAL LOAD (PER PEDESTAL)
DL = 4.1 KLF
LL = 4.0 KLF
FACTORED BEARING RESISTANCE (FOOTING WIDTH):
14.1 KSF (6 FEET)

- THE PRECAST CONCRETE STRUCTURE SHALL HAVE A MINIMUM CLEAR SPAN OF 28 FEET AND VERTICAL CLEAR HEIGHT OF 7'-7 1/8" MEASURED FROM CENTER OF THE SPAN TO THE TOP OF THE KEY IN THE PEDESTAL. THE LUMP SUM COST FOR ITEM 540.10 (FRAME OR ARCH TYPE) SHALL INCLUDE THE PRECAST ARCH UNIT, PRECAST HEADWALLS, PRECAST WINGWALLS, SHEET MEMBRANE WATERPROOFING, AND MECHANICAL CONNECTIONS. THE LUMP SUM COST FOR ITEM 540.10, "PRECAST CONCRETE STRUCTURE (ABUTMENT NO.1) OR (ABUTMENT NO. 2)" SHALL INCLUDE THE PRECAST FOOTINGS AND PRECAST PEDESTALS FOR EACH RESPECTIVE ABUTMENT.
- PRECAST CONCRETE FOOTING AND PRECAST STEMWALL SHALL BE PAID FOR UNDER ITEM 540.10, "PRECAST CONCRETE STRUCTURE (ABUTMENT NO.1)" OR "PRECAST CONCRETE STRUCTURE (ABUTMENT NO. 2)".
- THE PRECAST WINGWALLS SHALL BE SELECTED FROM THE LIST OF WALLS ON THE APPROVED RETAINING WALL DOCUMENT AVAILABLE FROM VAOT MATERIALS AND RESEARCH WEB SITE (http://vtransengineering.vermont.gov/sites/aot_program_development/files/documents/material_sandresearch/MandRSoilAPPROVED_Retaining_Walls_8-2012_Final.pdf).
- THE USE OF EQUIPMENT AND THE METHOD OF BACKFILLING AROUND THE BURIED STRUCTURE SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. CARE SHALL BE TAKEN WHEN BACKFILLING AGAINST JOINT SEALING MATERIALS.
- FABRICATION DRAWINGS FOR THE PRECAST CONCRETE UNIT SECTIONS SHALL INCLUDE A PLAN FOR SHIPPING AND LEVELING THE PRECAST CONCRETE ARCH AND WINGWALL SECTIONS.
- THE CONTRACTOR IS RESPONSIBLE FOR PROPER FIT-UP OF THE PRECAST AND ANY CAST-IN-PLACE ELEMENTS, PER THE FABRICATOR'S RECOMMENDATIONS, APPROVED FABRICATION AND ENGINEERING DRAWINGS, AND TO THE SATISFACTION OF THE ENGINEER.
- ALL PRECAST UNITS INCLUDING THE HEADWALLS AND FOOTINGS SHALL BE DESIGNED BY THE FABRICATOR AND DESIGN CALCULATIONS SUBMITTED WITH FABRICATION DRAWINGS STAMPED BY AN ENGINEER REGISTERED IN THE STATE OF VERMONT.
- TEMPORARY SUPPORTS SHALL BE REQUIRED IF THE STRUCTURE IS BACKFILLED PRIOR TO ACHIEVING FULL MOMENT CAPACITY BETWEEN ALL CONNECTED ELEMENTS. ALL DETAILS SHALL BE INCLUDED IN THE FABRICATION DRAWINGS AND ASSEMBLY PLAN.
- INSTALL SHEET MEMBRANE, WATERPROOFING, TORCH APPLIED OVER THE TOP AND DOWN THE EXTERIOR SIDES OF THE PRECAST UNITS TO THE TOP OF THE FOOTING AND ALONG THE ENTIRE LENGTH. SHEET MEMBRANE WATERPROOFING SHALL ALSO BE INSTALLED ON THE EXTERIOR SIDE OF THE VERTICAL JOINT IN THE PRECAST PEDESTAL. COST OF MEMBRANE WATERPROOFING IS INCIDENTAL TO THE PRECAST UNITS. TAKE CARE DURING BACKFILL OPERATIONS TO AVOID DAMAGE TO THE SHEET MEMBRANE WATERPROOFING.
- THE INLET/OUTLET STATIONS ARE APPROXIMATE, AND MAY CHANGE BASED ON THE MANUFACTURER'S DESIGN DIMENSIONS. THE BEGIN AND END BRIDGE STATIONS ALONG THE VT 73 CENTERLINE SHALL BE AS SHOWN ON THESE PLANS.

GENERAL CONSTRUCTION SEQUENCE

- PROPOSED SEQUENCE OF CONSTRUCTION
 - CLOSE ROADWAY, EXCAVATE AND INSTALL STREAM DIVERSION.
 - DEMO EXISTING STRUCTURE.
 - PREPARE LEDGE FOR CAST-IN-PLACE SUBFOOTING.
 - PLACE SUBFOOTINGS.
 - PLACE PRECAST FOOTINGS, LEVEL AND GROUT.
 - ERECT PRECAST PEDESTALS, GROUT CONNECTIONS AND KEYWAYS.
 - BACKFILL SUBSTRUCTURE TO TOP OF PEDESTAL.
 - INSTALL STONE FILL AND STONE FILL CHANNEL FLOW LINE THROUGH STRUCTURE.
 - ERECT PRECAST STRUCTURE PER MANUFACTURER'S RECOMMENDATION (AT CONTRACTOR'S OPTION, PRECAST WINGWALLS MAY BE ERECTED AFTER OPENING ROADWAY TO ONE-WAY ALTERNATING TRAFFIC).
 - BACKFILL PRECAST STRUCTURE.
 - CONSTRUCT ROADWAY (TEMPORARY ONE-WAY ALTERNATING TRAFFIC PERMISSIBLE PRIOR TO INSTALLATION OF APPROACH RAIL AND CONCRETE BARRIER).
 - CONSTRUCT ROADSIDE DITCHES, APPROACH RAIL, AND CONCRETE BARRIER.
 - FINAL GRADE AND PAVE ON APPROACHES.
 - FINAL RESTORATION AND LINE STRIPING USING TEMPORARY ONE-LANE CLOSURES, AS APPROVED BY RESIDENT ENGINEER.

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