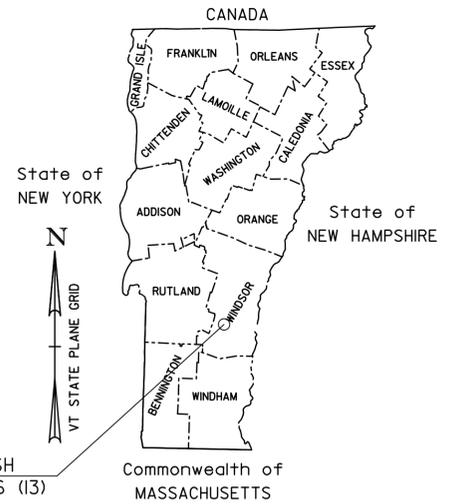
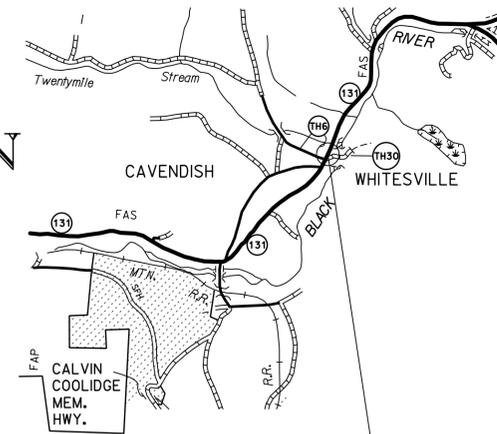


STATE OF VERMONT AGENCY OF TRANSPORTATION



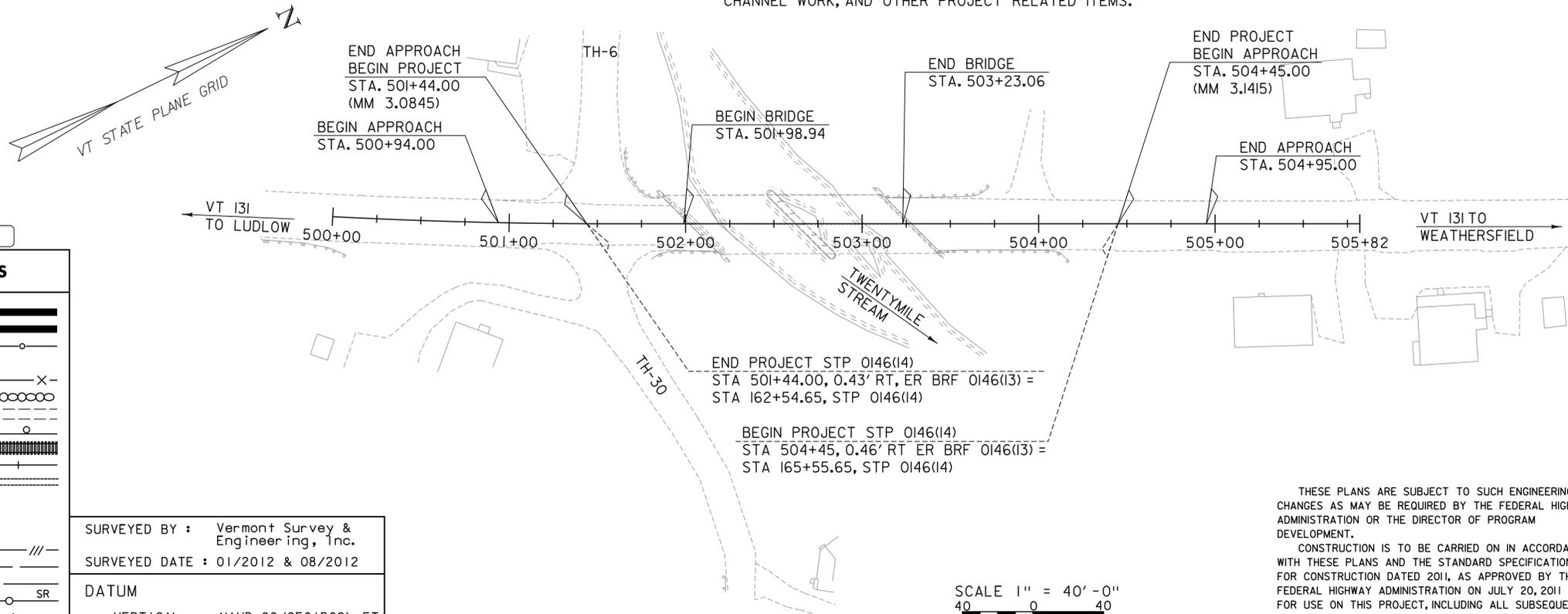
PROPOSED IMPROVEMENT BRIDGE PROJECT TOWN OF CAVENDISH COUNTY OF WINDSOR VT 131 (MAJOR COLLECTOR) BRIDGE NO 1



PROJECT LOCATION: BEGINNING AT A POINT ON VT 131 APPROXIMATELY 3.1 MILES EAST OF THE VT 131/ VT 103 JUNCTION AND EXTENDING NORTHEASTERLY FOR APPROXIMATELY 0.06 MILES ALONG VT 131

LENGTH OF STRUCTURE: 124.12 FEET
LENGTH OF ROADWAY: 176.88 FEET
LENGTH OF PROJECT: 301.00 FEET

PROJECT DESCRIPTION: COMPLETE REPLACEMENT OF BRIDGE #1 INCLUDING THE REMOVAL OF THE EXISTING BRIDGE SUPERSTRUCTURE, ABUTMENTS, AND PIER ALONG WITH RELATED ROADWAY, CHANNEL WORK, AND OTHER PROJECT RELATED ITEMS.



QUALITY ASSURANCE PROGRAM: LEVEL 2

CONVENTIONAL SYMBOLS

COUNTY LINE	
TOWN LINE	
LIMITS OF ACCESS	
POINT OF ACCESS	
FENCE LINE	
STONE WALL	
TRAVELED WAY	
GUARD RAIL	
RAILROAD	
SURVEY LINE	
CULVERT	
POWER POLE	
TELEPHONE POLE	
TREES	
CONTROL OF ACCESS	
PROPERTY LINE	
R.O.W. TAKING LINE	
SLOPE RIGHTS	
TOP OF CUT	
TOE OF SLOPE	

SURVEYED BY : Vermont Survey & Engineering, Inc.

SURVEYED DATE : 01/2012 & 08/2012

DATUM

VERTICAL NAVD 88 (GEOID09) FT
HORIZONTAL NAD 83 (CORS) sFT

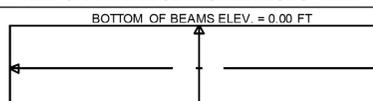
SCALE 1" = 40' - 0"
40 0 40

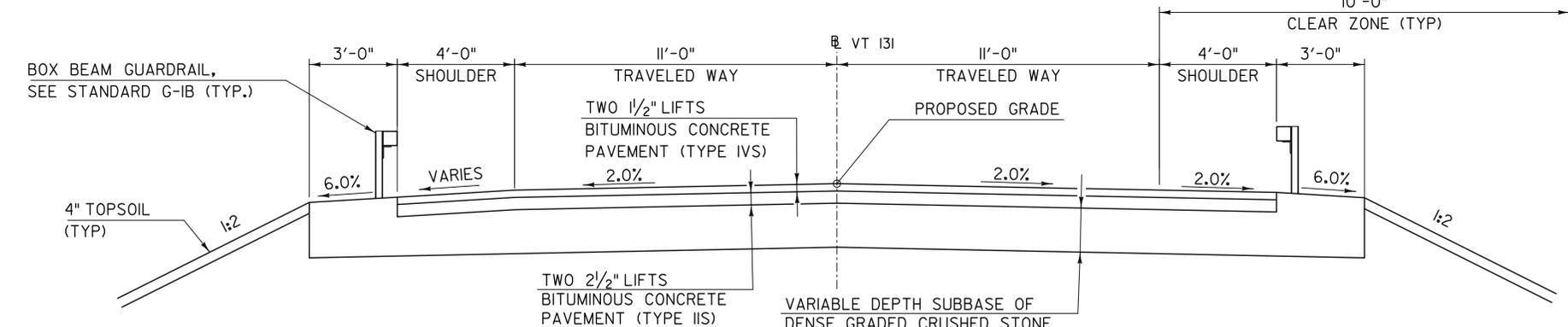
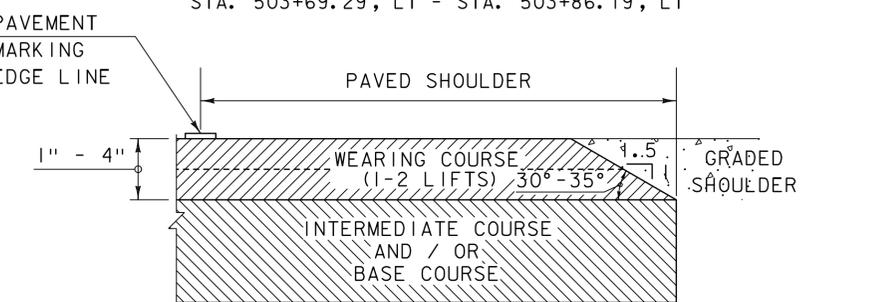
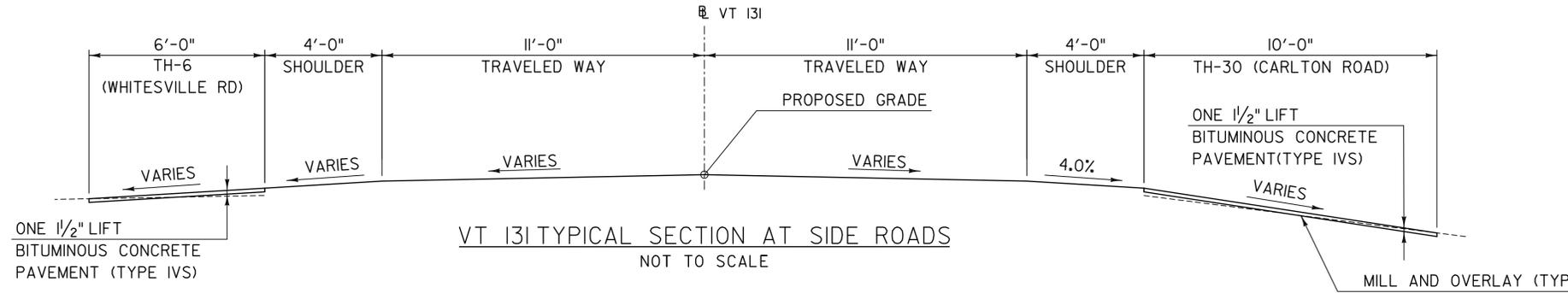
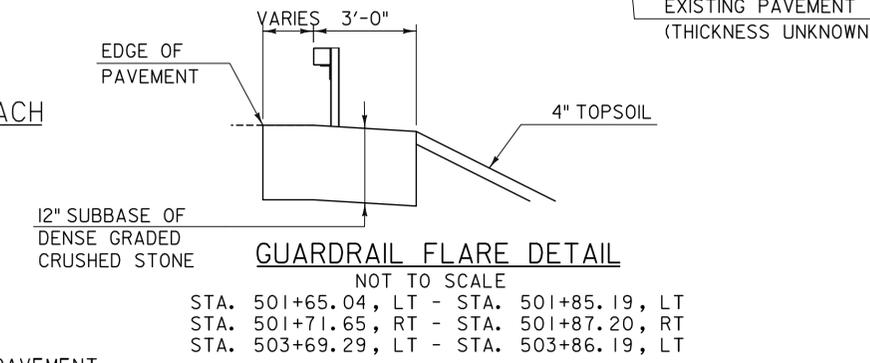
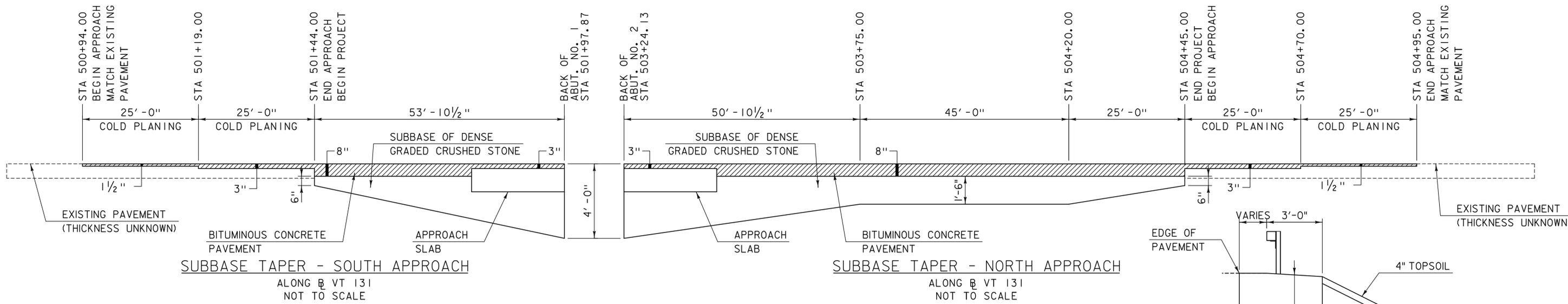


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THESE PLANS ARE SUBJECT TO SUCH ENGINEERING CHANGES AS MAY BE REQUIRED BY THE FEDERAL HIGHWAY ADMINISTRATION OR THE DIRECTOR OF PROGRAM DEVELOPMENT.
CONSTRUCTION IS TO BE CARRIED ON IN ACCORDANCE WITH THESE PLANS AND THE STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2011, AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION ON JULY 20, 2011 FOR USE ON THIS PROJECT, INCLUDING ALL SUBSEQUENT REVISIONS AND SUCH REVISED SPECIFICATIONS AND SPECIAL PROVISIONS AS ARE INCORPORATED IN THESE PLANS.

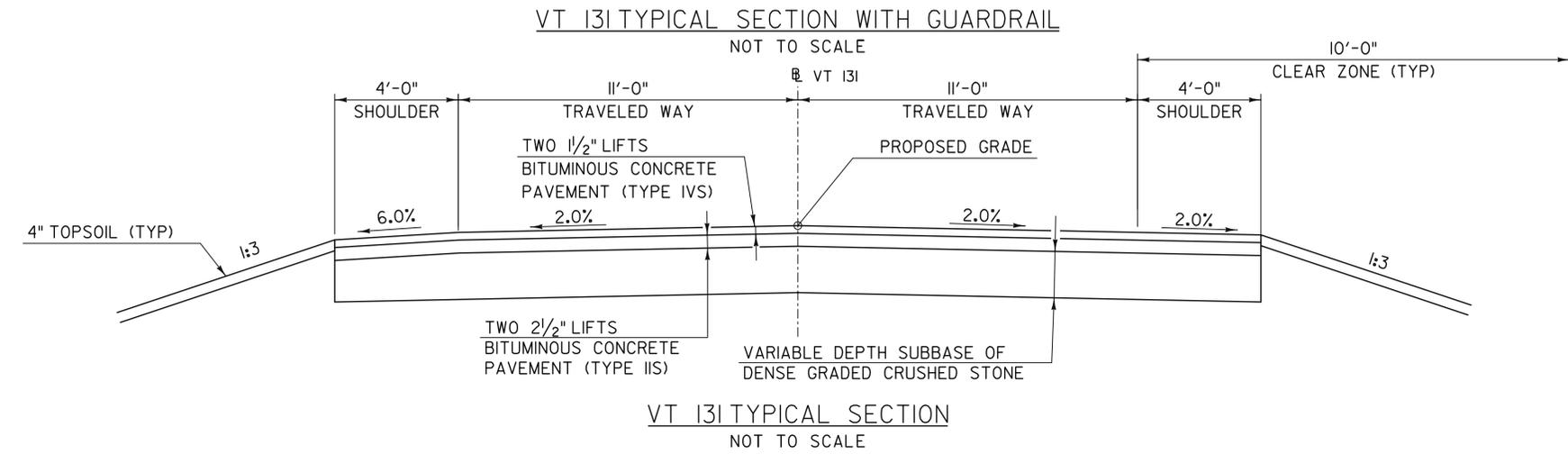
DIRECTOR OF PROGRAM DEVELOPMENT	
APPROVED _____	DATE _____
PROJECT MANAGER : ROB YOUNG, P. E.	
PROJECT NAME :	CAVENDISH
PROJECT NUMBER :	ER BRF 0146 (13)
SHEET 1	OF 49 SHEETS

INDEX OF SHEETS						FINAL HYDRAULIC REPORT																																																																		
PLAN SHEETS						STANDARDS LIST						HYDROLOGIC DATA						PROPOSED STRUCTURE																																																						
<p>1 TITLE SHEET</p> <p>2 PRELIMINARY INFORMATION SHEET</p> <p>3 TYPICAL ROADWAY SECTIONS</p> <p>4 BRIDGE, EARTHWORK, & CHANNEL SECTIONS</p> <p>5 PROJECT NOTES</p> <p>6 - 7 QUANTITY SHEETS</p> <p>8 BRIDGE QUANTITY SHEET</p> <p>9 CONVENTIONAL SYMBOLOGY LEGEND</p> <p>10 TIE SHEET</p> <p>11 LAYOUT SHEET</p> <p>12 VT 131 PROFILE SHEET</p> <p>13 RAIL LAYOUT SHEET</p> <p>14 TRAFFIC SIGNS AND LINES LAYOUT</p> <p>15 TRAFFIC SIGN SUMMARY SHEET</p> <p>16 TRAFFIC DETOUR SIGNING PLAN</p> <p>17 DETOUR DETAILS & NOTES</p> <p>18 DETOUR SIGN DETAILS</p> <p>19 BORING INFORMATION & LAYOUT SHEET</p> <p>20 - 28 BORING LOGS</p> <p>29 PLAN & ELEVATION</p> <p>30 SUPERSTRUCTURE PLAN</p> <p>31 SUPERSTRUCTURE DETAILS</p> <p>32 FRAMING DETAILS</p> <p>33 ABUTMENT 1 PLAN, ELEVATION, & SECTION</p> <p>34 ABUT 2 PLAN & ELEV AND BRG DETAILS</p> <p>35 ABUTMENT REINFORCEMENT</p> <p>36 ABUTMENT CLOSURE POUR DETAILS</p> <p>37 APPROACH SLAB DETAILS</p> <p>38 REINFORCING STEEL SCHEDULE</p> <p>39 - 40 VT 131 CROSS SECTIONS</p> <p>41 - 42 CHANNEL CROSS SECTIONS</p> <p>43 RESOURCE LAYOUT</p> <p>44 EPSC NARRATIVE</p> <p>45 EPSC EXISTING CONDITION LAYOUT</p> <p>46 EPSC CONSTRUCTION CONDITION LAYOUT</p> <p>47 EPSC FINAL CONDITION LAYOUT</p> <p>48 - 49 EPSC DETAILS</p>						<p>A-76 STANDARDS FOR TOWN & DEVELOPMENT ROADS 03-03-2003</p> <p>B-5 SLOPE GRADING, EMBANKMENTS, MUCK 06-01-1994</p> <p>B-71 STANDARDS FOR RESIDENTIAL AND COMMERCIAL DRIVES 07-08-2005</p> <p>E-100 CONSTRUCTION APPROACH SIGNS 01-02-2004</p> <p>E-100A SIDE ROAD CONSTRUCTION - APPROACH SIGNS 01-02-2004</p> <p>E-102 CONSTRUCTION SIGN DETAILS 06-30-2003</p> <p>E-102A CONSTRUCTION SIGN DETAILS 05-01-2004</p> <p>E-106 TRAFFIC CONTROL- MISCELLANEOUS DETAILS 03-01-2004</p> <p>E-107 DELINEATION, BARRICADES AND DETOURS FOR CONSTRUCTION AREAS 06-30-2003</p> <p>E-107A BREAKAWAY BARRICADE DETAILS 06-08-2009</p> <p>E-108 CONSTRUCTION ZONE LONGITUDINAL DROP OFFS 06-08-2009</p> <p>E-108A CONSTRUCTION ZONE LONGITUDINAL DROP OFFS FOR PAVING 06-08-2009</p> <p>E-119 UTILITY WORK ZONE 03-01-2004</p> <p>E-121 STANDARD SIGN PLACEMENT - CONVENTIONAL ROAD 08-08-1995</p> <p>E-123 GUIDE SIGN PLACEMENT - MISCELLANEOUS DETAILS 03-16-2004</p> <p>E-127 ROUTE MARKINGS AT RURAL INTERSECTIONS 08-08-1995</p> <p>E-134 BRIDGE NUMBER PLAQUE 08-08-1995</p> <p>E-136B STATE ROUTE MARKER SIGN DETAILS 08-08-1995</p> <p>E-154 WARNING SIGN DETAILS 05-01-2004</p> <p>E-155 WARNING SIGN DETAILS 05-01-2004</p> <p>E-164 SQUARE STEEL SIGN POST 06-08-2009</p> <p>E-193 PAVEMENT MARKING DETAILS 08-18-1995</p> <p>G-1B BOX BEAM GUARD RAIL 06-01-1994</p> <p>S-364A BRIDGE RAILING, GALVANIZED 3 RAIL BOX BEAM 04-23-2012</p> <p>S-364B GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM 04-23-2012</p> <p>S-364C GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM 04-23-2012</p> <p>S-364D GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM 04-23-2012</p>						<p>DATE: 02-20-2013</p> <p>DRAINAGE AREA: 14.9 SQ. MI.</p> <p>CHARACTER OF TERRAIN: HILLY TO MOUNTAINOUS VALLEY SETTING</p> <p>STREAM CHARACTERISTICS: STRAIGHT TO SINUOUS, LITTLE TO NO FLOODPLAIN</p> <p>NATURE OF STREAMBED: SAND AND GRAVEL</p> <p>Q 2.33 = 1650 CFS Q50 = 5400 CFS</p> <p>Q 10 = 3050 CFS Q 100 = 6700 CFS</p> <p>Q 25 = 4160 CFS Q 500 = 10500 CFS</p> <p>DATE OF FLOOD OF RECORD: AUGUST 28, 2011</p> <p>ESTIMATED DISCHARGE: 6700 CFS</p> <p>WATER SURFACE ELEVATION: 773.5 +/-</p> <p>NATURAL STREAM VELOCITY: 12.1 FPS @ Q50 = 5,400 CFS</p> <p>ICE CONDITIONS: LIGHT TO MODERATE</p> <p>DEBRIS: HEAVY</p> <p>DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? YES</p> <p>IS ORDINARY RISE RAPID? YES</p> <p>IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? NO</p> <p>IF YES, DESCRIBE N/A</p> <p>WATERSHED STORAGE: 1% HEADWATERS: X</p> <p>UNIFORM: -</p> <p>IMMEDIATELY ABOVE SITE: -</p>						<p>STRUCTURE TYPE: SINGLE SPAN STEEL GIRDER</p> <p>CLEAR SPAN (NORMAL TO STREAM): 110 FT</p> <p>VERTICAL CLEARANCE ABOVE STREAMBED: 8.5 FT</p> <p>WATERWAY OF FULL OPENING: 935 SQ FT</p> <p>WATER SURFACE ELEVATIONS AT: ONE BRIDGE LENGTH UPSTREAM</p> <p>Q 2.33 = 768.1 FT VELOCITY = 8.6 FT/SEC</p> <p>Q 10 = 769.0 FT " 10.6 FT/SEC</p> <p>Q 25 = 769.6 FT " 11.4 FT/SEC</p> <p>Q50 = 770.3 FT " 12.0 FT/SEC</p> <p>Q 100 = 770.8 FT " 13.0 FT/SEC</p> <p>IS THE ROADWAY OVERTOPPED BELOW Q100? YES</p> <p>FREQUENCY: 25-YR</p> <p>RELIEF ELEVATION: +/- 764.9 FT</p> <p>DISCHARGE OVER ROAD @ Q100: 677 CFS</p> <p>AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 768.4 FT</p> <p>VERTICAL CLEARANCE: -1.9 FT @ Q100</p> <p>SCOUR: ABUTMENT SCOUR NOT ANTICIPATED FOR Q100 OR Q500</p> <p>CONTRACTION SCOUR NOT ANTICIPATED FOR Q100 OR Q500</p> <p>REQUIRED CHANNEL PROTECTION: 4 FT THICK, STONE FILL, TYPE IV</p>																																																						
STRUCTURES DETAILS SHEETS						EXISTING STRUCTURE INFORMATION						PERMIT INFORMATION																																																												
<p>SD-501.00 CONCRETE DETAILS AND NOTES 05-07-2010</p> <p>SD-502.00 CONCRETE DETAILS AND NOTES 10-10-2012</p> <p>SD-601.00 STRUCTURAL STEEL DETAILS & NOTES 06-04-2010</p> <p>SD-802.00 STRUCTURAL STEEL PLATE GIRDER DETAILS AND NOTES 05-02-2011</p> <p>SD-516.10 BRIDGE JOINT ASPHALTIC PLUG 05-07-2010</p>						<p>STRUCTURE TYPE: TWO-SPAN BRIDGE</p> <p>YEAR BUILT: 1947</p> <p>CLEAR SPAN (NORMAL TO STREAM): 82 FT</p> <p>VERTICAL CLEARANCE ABOVE STREAMBED: 9 FT</p> <p>WATERWAY OF FULL OPENING: 738 SQ FT</p> <p>DISPOSITION OF STRUCTURE: COMPLETE REMOVAL</p> <p>TYPE OF MATERIAL UNDER SUBSTRUCTURE: SAND AND GRAVEL</p> <p>WATER SURFACE ELEVATIONS AT: ONE BRIDGE LENGTH UPSTREAM</p> <p>Q 2.33 = 768.1 FT VELOCITY = 8.9 FT/SEC</p> <p>Q 10 = 769.1 FT " 10.1 FT/SEC</p> <p>Q 25 = 769.7 FT " 11.2 FT/SEC</p> <p>Q50 = 770.3 FT " 12.1 FT/SEC</p> <p>Q 100 = 770.8 FT " 12.8 FT/SEC</p> <p>LONG TERM STREAMBED CHANGES: OVERTOPPING OF UPSTREAM LEFT BANK AND BREACH OF NORTHERN APPROACH</p> <p>IS THE ROADWAY OVERTOPPED BELOW Q100? YES</p> <p>FREQUENCY: 5-YR AND GREATER</p> <p>RELIEF ELEVATION: +/- 764.9 FT</p> <p>DISCHARGE OVER ROAD @ Q100: 2406 CFS</p>						<p>AVERAGE DAILY FLOW: 30 CFS DEPTH OR ELEVATION:</p> <p>ORDINARY LOW WATER: 15 CFS 1.9 FT (BR. LENGTH UPSTREAM)</p> <p>ORDINARY HIGH WATER: 710 CFS 4.7 FT (BRIDGE LENGTH UPSTREAM)</p>																																																												
TRAFFIC DATA						UPSTREAM STRUCTURE						DOWNSTREAM STRUCTURE																																																												
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>YEAR</th> <th>ADT</th> <th>DHV</th> <th>% D</th> <th>% T</th> <th>ADTT</th> </tr> </thead> <tbody> <tr> <td>2014</td> <td>2100</td> <td>240</td> <td>54</td> <td>11.6</td> <td>220</td> </tr> <tr> <td>2034</td> <td>2200</td> <td>250</td> <td>54</td> <td>16.3</td> <td>330</td> </tr> </tbody> </table> <p>20 year ESAL for flexible pavement from 2014 to 2034 : 1336000</p> <p>40 year ESAL for flexible pavement from 2014 to 2054 : 2973000</p> <p>Design Speed : 40 mph</p>						YEAR	ADT	DHV	% D	% T	ADTT	2014	2100	240	54	11.6	220	2034	2200	250	54	16.3	330	<p>TOWN: CAVENDISH, VT DISTANCE: 1600 FT</p> <p>HIGHWAY #: T.H. 6 STRUCTURE #: 43</p> <p>CLEAR SPAN: 43 FT CLEAR HEIGHT: 12 FT</p> <p>YEAR BUILT: 1974 FULL WATERWAY: 516 SF</p> <p>STRUCTURE TYPE: SINGLE SPAN STEEL ROLLED BEAM BRIDGE</p>						<p>TOWN: N/A - CONFLUENCE WITH BLACK RIVER DISTANCE: 900 FT</p> <p>HIGHWAY #: N/A STRUCTURE #: N/A</p> <p>CLEAR SPAN: N/A CLEAR HEIGHT: N/A</p> <p>YEAR BUILT: N/A FULL WATERWAY: N/A</p> <p>STRUCTURE TYPE: N/A</p>																																										
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TRAFFIC MAINTENANCE NOTES						DESIGN VALUES						LRFR LOAD RATING FACTORS																																																												
<p>1. MAINTAIN TRAFFIC ON AN OFF SITE DETOUR.</p> <p>2. TRAFFIC SIGNALS ARE NOT NECESSARY.</p> <p>3. SIDEWALKS ARE NOT NECESSARY</p>						<p>1. DESIGN LIVE LOAD HL-93</p> <p>2. FUTURE PAVEMENT d_p: 0.0 INCH</p> <p>3. DESIGN SPAN L: 122.00 FT</p> <p>4. MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS) Δ: ---</p> <p>5. PRESTRESSING STRAND f_y: ---</p> <p>6. PRESTRESSED CONCRETE STRENGTH f'_c: ---</p> <p>7. PRESTRESSED CONCRETE RELEASE STRENGTH f'_{ci}: ---</p> <p>8. SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET) f'_c: 7.0 KSI</p> <p>9. CONCRETE, HIGH PERFORMANCE CLASS A f'_c: 4.0 KSI</p> <p>10. CONCRETE, HIGH PERFORMANCE CLASS B f'_c: ---</p> <p>11. CONCRETE, CLASS C f'_c: ---</p> <p>12. REINFORCING STEEL f_y: 60 KSI</p> <p>13. STRUCTURAL STEEL AASHTO M270 (WEATHERING) f_y: 50 KSI</p> <p>14. SOIL UNIT WEIGHT γ: 0.140 KCF</p> <p>15. NOMINAL BEARING RESISTANCE OF SOIL q_n: ---</p> <p>16. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD) ϕ: ---</p> <p>17. NOMINAL BEARING RESISTANCE OF ROCK q_n: ---</p> <p>18. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD) ϕ: ---</p> <p>19. NOMINAL AXIAL PILE RESISTANCE q_p: 1090.0 KIPS</p> <p>20. PILE YIELD STRENGTH ASTM A572 f_y: 50 KSI</p> <p>21. PILE SIZE HP 12X74</p> <p>22. EST. PILE LENGTHS (TWO SUBSTRUCTURES) L_p: ---</p> <p>(ABUTMENT 1 = 28 AND ABUTMENT 2 = 80) FT</p> <p>23. PILE RESISTANCE FACTOR ϕ: 0.50</p> <p>24. LATERAL PILE DEFLECTION Δ: 0.62 INCH</p> <p>25. BASIC WIND SPEED V_{3s}: 100 MPH</p> <p>26. MINIMUM GROUND SNOW LOAD p_g: ---</p> <p>27. SEISMIC DATA $P_G A$: 7 %g S_s: 16 %g S_1: 5 %g</p>						<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">LOADING LEVELS</th> <th colspan="7">TRUCK</th> </tr> <tr> <th>H-20</th> <th>HL-93</th> <th>3S2</th> <th>6 AXLE</th> <th>3A. STR.</th> <th>4A. STR.</th> <th>5A. SEMI</th> </tr> </thead> <tbody> <tr> <td>TONNAGE</td> <td>20</td> <td>36</td> <td>36</td> <td>66</td> <td>30</td> <td>34.5</td> <td>38</td> </tr> <tr> <td>INVENTORY</td> <td>2.78</td> <td>1.15</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>POSTING</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>OPERATING</td> <td>3.54</td> <td>1.49</td> <td>1.90</td> <td>1.11</td> <td>1.97</td> <td>1.72</td> <td>1.73</td> </tr> <tr> <td>COMMENTS:</td> <td colspan="7"></td> </tr> </tbody> </table>						LOADING LEVELS	TRUCK							H-20	HL-93	3S2	6 AXLE	3A. STR.	4A. STR.	5A. SEMI	TONNAGE	20	36	36	66	30	34.5	38	INVENTORY	2.78	1.15						POSTING								OPERATING	3.54	1.49	1.90	1.11	1.97	1.72	1.73	COMMENTS:							
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NOTE: LEVELING COURSE MAY INCLUDE THE "SAFETY EDGE" AT THE CONTRACTORS CHOICE.

NOTE: EMULSIFIED ASPHALT SHALL BE APPLIED TO ALL COLD PLANED BITUMINOUS CONCRETE PAVEMENT SURFACES AT THE RATE OF 0.025 GAL/SY OR AS DIRECTED BY THE ENGINEER. EMULSIFIED ASPHALT SHALL ALSO BE APPLIED BETWEEN ALL LIFTS OF PAVEMENT. THE COST SHALL BE PAID UNDER ITEM 404.65, "EMULSIFIED ASPHALT".



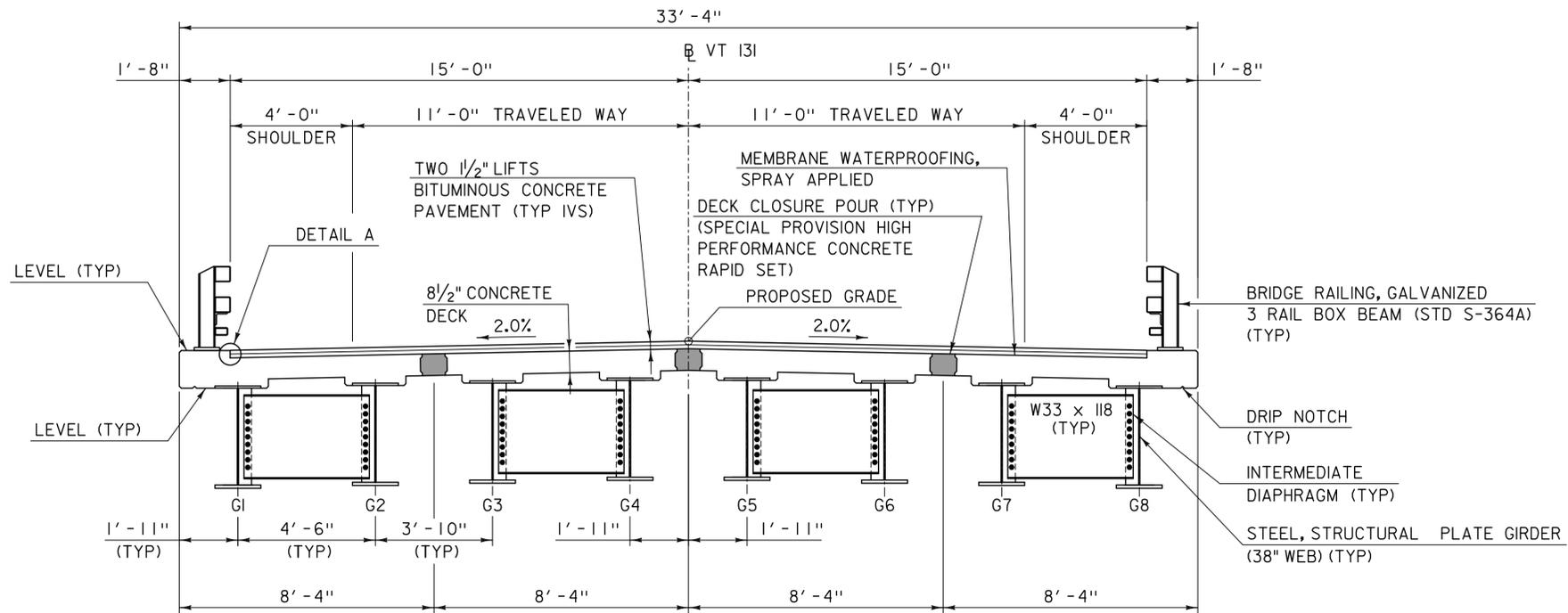
MATERIAL TOLERANCES (IF USED ON PROJECT)	
SURFACE	
- PAVEMENT (TOTAL THICKNESS)	+/- 1/4"
- AGGREGATE SURFACE COURSE	+/- 1/2"
SUBBASE	
- SAND BORROWS	+/- 1"

PROJECT NAME: CAVENDISH
PROJECT NUMBER: ER BRF 0146(13)

FILE NAME: zllc318bdr_typ_r.dgn
PROJECT LEADER: J. OLUND
DESIGNED BY: J. HOWE
TYPICAL ROADWAY SECTIONS

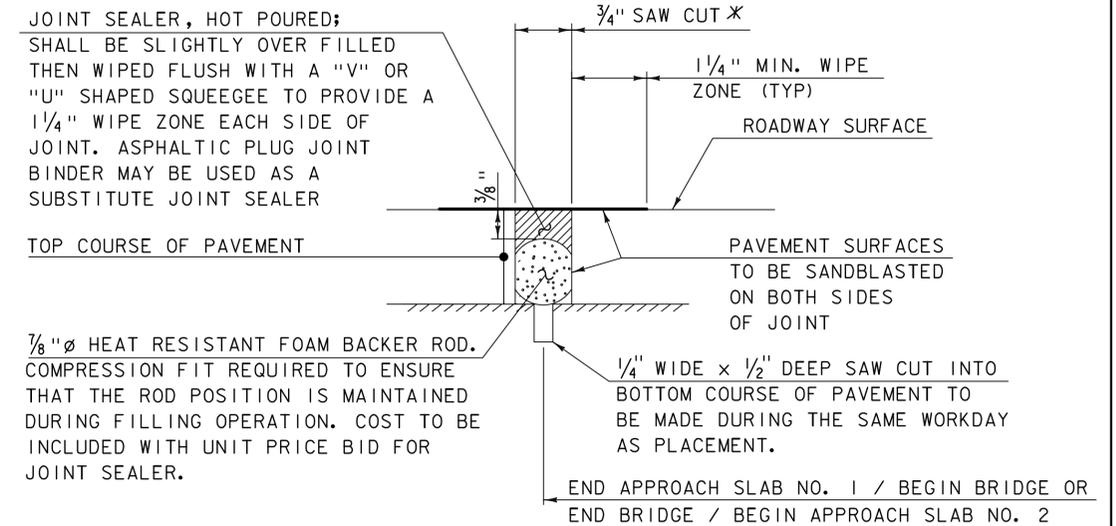
PLOT DATE: 7/19/2013
DRAWN BY: S. MORGAN
CHECKED BY: D. BRYANT
SHEET 3 OF 49

TYLIN INTERNATIONAL



BRIDGE TYPICAL SECTION

SCALE: 3/8" = 1'-0"

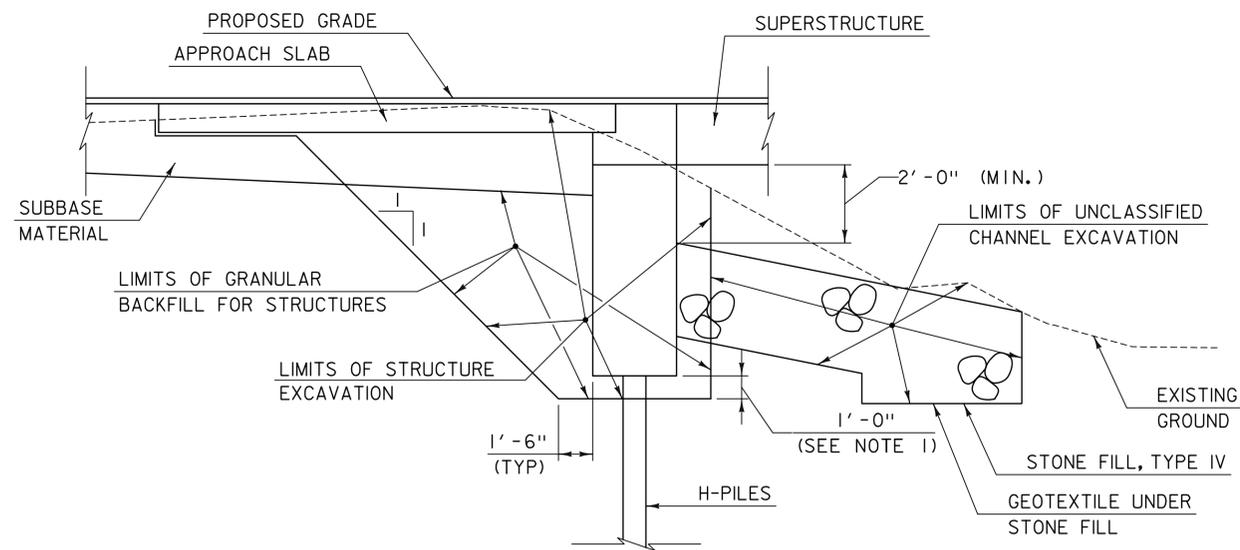


ITEM 524.11, "JOINT SEALER, HOT POURED"

SAWED PAVEMENT JOINT DETAIL

(NOT TO SCALE)

* JOINT IS TO BE LOCATED ACCURATELY BY STRING LINING, OR OTHER MEANS, PRIOR TO PAVING, SO THAT THE SAW CUTS WILL BE MADE DIRECTLY OVER THE END OF CONCRETE DECK. JOINT SHALL BE CUT DRY IN A SINGLE PASS AND BE SEALED WITHIN 24 HOURS OR PRIOR TO EXPOSURE TO TRAFFIC. JOINT SHALL BE CLEANED PRIOR TO APPLYING THE JOINT SEALER.

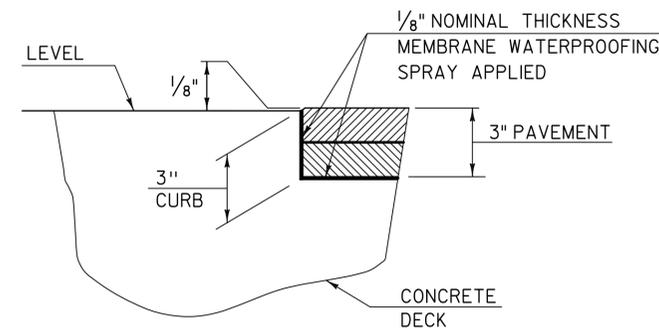


EARTHWORK TYPICAL SECTION

NOT TO SCALE

NOTES:

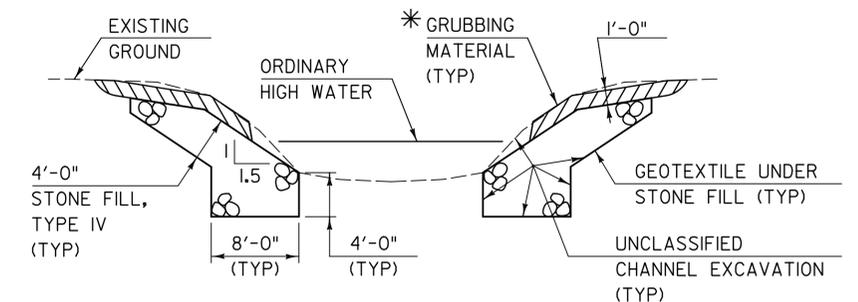
- ONE FT UNDERCUT AS DETERMINED NECESSARY BY THE ENGINEER.
- ACTUAL LIMITS OF STRUCTURE EXCAVATION TO BE DETERMINED BY THE CONTRACTOR. HOWEVER, ONLY THE EXCAVATION BETWEEN THE LIMITS SHOWN WILL BE PAID FOR UNDER ITEM 204.25, "STRUCTURE EXCAVATION." EXCAVATION BY THE CONTRACTOR OUTSIDE THESE LIMITS WILL BE AT THE EXPENSE OF THE CONTRACTOR.



DETAIL A

NOT TO SCALE

(LEFT CURB SHOWN
RIGHT CURB SIMILAR)



CHANNEL TYPICAL SECTION

(NOT TO SCALE)

* GRUBBING MATERIAL SHALL NOT BE PLACED ON THE STONE FILL IN THE AREA UNDER THE BRIDGE. WHENEVER CHANNEL SLOPE INTERSECTS ROADWAY SUBBASE, GRUBBING MATERIAL SHALL BEGIN AT THE BOTTOM OF SUBBASE.

TYLIN INTERNATIONAL

PROJECT NAME: CAVENDISH
PROJECT NUMBER: ER BRF 0146(13)

FILE NAME: zllc318bdr+typ.dgn
PROJECT LEADER: J. OLUND
DESIGNED BY: J. OLUND
BRIDGE, EARTHWORK, & CHANNEL SECTIONS

PLOT DATE: 7/19/2013
DRAWN BY: S. MORGAN
CHECKED BY: T. POULIN
SHEET 4 OF 49

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 AND THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, 6TH EDITION WITH INTERIMS THROUGH 2012.
2. ALL PRECAST CONCRETE ELEMENTS SHALL BE FABRICATED TO THE SPECIFIED DIMENSIONS AND 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 EXISTING STEEL IS PAINTED WITH A MATERIAL THAT MAY CONTAIN LEAD. THE CONTRACTOR SHALL FOLLOW ALL APPLICABLE REGULATIONS WHEN HANDLING AND WORKING WITH THIS STEEL. THE REMOVED STRUCTURAL STEEL IS THE PROPERTY OF THE CONTRACTOR. THE CONTRACTOR SHALL INDEMNIFY AND HOLD THE STATE AND ITS OFFICERS AND EMPLOYEES HARMLESS CONCERNING THE CONTRACTOR'S USE OR DISPOSAL OF THE REMOVED EXISTING STRUCTURAL STEEL.
4. THE EXISTING PIER SHALL BE REMOVED TO APPROXIMATELY ELEVATION 758.0 TO BECOME FLUSH WITH OR NOMINALLY COVERED BY THE STREAMBED. ANY VOIDS CREATED AS A RESULT OF PIER REMOVAL SHALL BE BACKFILLED WITH STONE FILL, TYPE I MEETING THE REQUIREMENTS OF SECTION 613. THIS WORK WILL BE CONSIDERED INCIDENTAL TO ITEM 529.15, "REMOVAL OF STRUCTURE." THE EXISTING SUPERSTRUCTURE, ABUTMENTS, AND ANY GROUT, CONCRETE, OR STONE FOUND BENEATH THE ABUTMENTS THAT INTERFERES WITH PROPOSED ABUTMENT OR PILE INSTALLATION SHALL BE REMOVED IN ITS ENTIRETY.
5. THE CONTRACTOR IS NOTIFIED THAT A VERMONT AGENCY OF TRANSPORTATION PAVING PROJECT (CAVENDISH-WEATHERSFIELD STP 0146(14)) IS SCHEDULED FOR CONSTRUCTION DURING A SIMILAR TIMEFRAME. EXISTING GRADES, SIGNAGE, AND OTHER MINOR SURVEY RELATED ASPECTS NOTED WITHIN THESE PLANS MAY DIFFER FROM FIELD CONDITIONS IF THE PAVEMENT PROJECT COMMENCES AND/OR COMPLETES PRIOR TO BRIDGE CLOSURE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COSTS ASSOCIATED WITH CHANGED FIELD CONDITIONS AND/OR COORDINATION WITH THE POTENTIALLY CONCURRENT PROJECT.
6. THE CONTRACTOR IS NOTIFIED THAT EXISTING WATER LINES ARE WITHIN THE CONSTRUCTION LIMITS. SEE THE UTILITY SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COSTS ASSOCIATED WITH COORDINATION WITH THE WATER LINE, IF NEEDED.
7. ALL DIMENSIONS SHOWN IN THE PLANS ARE HORIZONTAL OR VERTICAL AT 70°F, UNLESS NOTED OTHERWISE.
8. NO PROVISIONS HAVE BEEN MADE FOR THE CONTRACTOR TO PERFORM WORK OR SET UP STAGING OUTSIDE THE EXISTING RIGHT-OF-WAY.

EARTHWORK AND RELATED ITEMS

9. ITEM "STONE FILL, TYPE IV" UNDER THE BRIDGE AS SHOWN IN THE PLANS SHALL BE PLACED BEFORE THE SUPERSTRUCTURE IS SET.
10. TEMPORARY CONSTRUCTION FILLS USED FOR ANY PURPOSE WITHIN THE WATERCOURSE SHALL CONSIST OF CLEAN STONE FILL ONLY. NO OTHER FILLING IN THE STREAM SHALL OCCUR WITHOUT THE APPROVAL OF THE STREAM ALTERATION ENGINEER.

CONCRETE

11. WATER REPELLENT, SILANE SHALL BE APPLIED TO ALL EXPOSED CONCRETE SURFACES EXCEPT THE UNDERSIDE OF THE PREFABRICATED BRIDGE UNITS BETWEEN DRIP NOTCHES.
12. ALL REINFORCING STEEL SHALL BE DETAILED AND FABRICATED USING PROCEDURES AND TOLERANCES IN ACCORDANCE WITH APPLICABLE PUBLICATIONS OF THE "CONCRETE REINFORCING STEEL INSTITUTE".
13. ALL REINFORCING STEEL SHALL BE LEVEL II IN ACCORDANCE WITH SECTION 507 OF THE GENERAL SPECIAL PROVISIONS. MINIMUM CLEAR COVER SHALL BE AS FOLLOWS:

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	2.0 INCHES

PILE FOUNDATIONS

14. THE PILES SHALL BE HP 12 X 74.
15. PILE SHOES ARE REQUIRED AND SHALL CONFORM TO SUBSECTION 505.04(F) OF THE STANDARD SPECIFICATIONS.

16. DIFFICULT DRIVING CONDITIONS EXIST. THE CONTRACTOR SHALL DESCRIBE TO THE SATISFACTION OF THE RESIDENT ENGINEER HOW THE INSTALLATION TOLERANCES WILL BE MET REGARDLESS OF INSTALLATION METHOD AND BEFORE CLOSING THE BRIDGE TO TRAFFIC.
17. THE PILES SHALL BE DRIVEN TO A NOMINAL RESISTANCE OF 390 KIPS AS DETERMINED BY THE RESULTS OF DYNAMIC TESTING, AS INTERPRETED BY THE RESIDENT ENGINEER. PILES SHALL BE DRIVEN TO A MINIMUM OF 18 FT BELOW THE BOTTOM OF THE ABUTMENT ELEVATIONS, REGARDLESS IF REQUIRED DRIVING RESISTANCE HAS BEEN MET.
18. FOR ESTIMATING PURPOSES, THE PILE TIP ELEVATIONS WERE ASSUMED AS SHOWN ON THE BORING LOGS. THE ACTUAL LENGTHS MAY VARY.
19. 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.
20. ADDITIONAL SUBSURFACE CONDITION INFORMATION CAN BE FOUND IN THE PROJECT GEOTECHNICAL REPORT, INCLUDED WITH THE CONTRACT DOCUMENTS.

PRECAST ABUTMENTS AND POST-TENSIONING

21. ABUTMENT DESIGNS PROVIDED HEREIN ARE DETAILED ASSUMING VERTICAL JOINTS WILL BE USED TO FACILITATE SHIPPING AND INSTALLATION. IF VERTICAL CONSTRUCTION JOINTS ARE USED, THEN THE SECTIONS SHALL BE KEYED, EPOXY GROUTED, AND MATCH CAST. A JOINT DETAIL SHALL BE SHOWN ON THE FABRICATION DRAWINGS. IF VERTICAL CONSTRUCTION JOINTS ARE NOT USED, THE ABUTMENTS SHALL BE PRECAST AS MONOLITHIC UNITS AND MILD REINFORCEMENT SHOWN SHALL BE CONTINUOUS THROUGH THE PLAN-DETAILED CONSTRUCTION JOINTS. POST-TENSIONING STRANDS SHALL BE USED REGARDLESS OF THE USE OR NON-USE OF VERTICAL CONSTRUCTION JOINTS.
22. POST-TENSIONING STRANDS AND CONDUIT SHALL ADHERE TO THE REQUIREMENTS OF SECTION 510 OF THE STANDARD SPECIFICATIONS.
23. CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND DETAILING OF POST-TENSIONING ELEMENTS IN THE ANCHORAGE ZONE, INCLUDING BLOCK OUT DETAILS FOR JACK ENTRANCE, ANCHOR PLATES, AND/OR ADDITIONAL REINFORCEMENT WITHIN THE LOCAL ZONE (REGION IMMEDIATELY SURROUNDING THE POST-TENSIONING ANCHOR ASSEMBLY). DESIGN SHALL CONFORM TO AASHTO LRFD.
24. ALL COSTS ASSOCIATED WITH DETAILING AND INSTALLING THE ANCHOR PLATES, CONDUIT, POST-TENSIONING STRANDS, AND RELATED ITEMS SHALL BE INCIDENTAL TO ITEM 540.10, "PRECAST CONCRETE STRUCTURE (ABUTMENT NO. 1)" AND/OR ITEM 540.10, "PRECAST CONCRETE STRUCTURE (ABUTMENT NO. 2)".
25. OTHER THAN STONE FILL PLACEMENT BENEATH THE SUPERSTRUCTURE, THE ABUTMENTS SHALL NOT BE BACKFILLED UNTIL THE SUPERSTRUCTURE UNITS HAVE BEEN ERECTED. ABUTMENT BACKFILL OPERATIONS SHALL OCCUR SIMULTANEOUSLY AT EACH ABUTMENT, WITH NO MORE THAN 3 FT OF DIFFERENTIAL BACKFILL DEPTH.
26. DESIGN VALUES
 - A. PRECAST CONCRETE COMPRESSIVE STRENGTH: $f'_c = 5,000$ PSI.
 - B. POST-TENSIONING STRANDS: 0.6 INCH DIAMETER, 270 KSI, LOW RELAXATION 7-WIRE STRANDS, SINGLE STRAND PER CONDUIT.
 - C. APPARENT MODULUS OF ELASTICITY: 28,500 KSI.
 - D. JACKING FORCE PER STRAND = 44 KIPS.
27. THE CONCRETE FOR ABUTMENT PILE CAVITIES SHALL MEET THE REQUIREMENTS OF ITEM 900.608, "SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET)".
28. PROPOSED SEQUENCE OF CONSTRUCTION
 - A. PREPARE AND GRADE FOUNDATION TO REQUIRED ELEVATION.
 - B. DRIVE PILES.
 - C. PLACE PRECAST ABUTMENTS, EPOXY BOND VERTICAL SHEAR KEYS, AND INSTALL TRANSVERSE STRANDS. 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.

ALTERNATE CONSTRUCTION SEQUENCES MAY BE SUBMITTED TO THE VTRANS PROJECT MANAGER FOR APPROVAL AND SHALL BE SUBMITTED WITH THE FABRICATION PLANS.

PREFABRICATED BRIDGE UNITS (PBU'S)

29. THE WEB AND BOTTOM FLANGE PLATES OF THE GIRDERS SHALL BE CHARPY V-NOTCH (CVN) TESTED IN ACCORDANCE WITH SUBSECTION 714.01.
30. BOLTS USED IN FIELD CONNECTIONS SHALL BE ASTM A325 TYPE 3, 7/8" DIA., AND MEET THE REQUIREMENTS OF SUBSECTION 714.05. HOLE DIAMETERS SHALL BE 15/16".
31. AFTER SUPERSTRUCTURE STEEL HAS BEEN ERECTED AT THE DECK CASTING SITE, AND BEFORE ANY FORMWORK OR OTHER LOADS ARE ADDED TO THE GIRDERS, ELEVATIONS ALONG THE TOP OF THE GIRDERS SHALL BE TAKEN AS DIRECTED BY THE ENGINEER FOR USE IN DETERMINING DECK FORMWORK ELEVATIONS.
32. ANY BOLT HOLES IN THE WEBS OF FASCIA GIRDERS NOT OTHERWISE FILLED SHALL BE FILLED WITH BUTTON HEAD OR HEX HEAD TYPE 3 BOLTS. THE BOLTS SHALL BE TIGHTENED IN ACCORDANCE WITH SUBSECTION 506.19 OF THE STANDARD SPECIFICATIONS.
33. ENDS OF GIRDERS SHALL BE VERTICAL IN THEIR FINAL POSITION.
34. PBU DECKS SHALL MEET THE REQUIREMENTS OF "CONCRETE, HIGH PERFORMANCE CLASS A".
35. DECK EDGES IN CONTACT WITH HPC RAPID SET CONCRETE SHALL BE WIRE BRUSHED TO REMOVE ALL CEMENTITIOUS FILM FROM THE KEY PRIOR TO DELIVERY AND POWER WASHED WITH WATER PRIOR TO ERECTION OF THE BEAMS.
36. FILL DECK 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.
37. METHOD OF FORMING THE DECK CLOSURE POUR SHALL BE DETERMINED BY THE CONTRACTOR. THE FORMS SHALL BE REMOVABLE AND ABLE TO ACCOMMODATE DIFFERENTIAL CAMBER AND SETTING TOLERANCES. FORM SUPPORTS SHALL NOT PENETRATE THROUGH THE TOP OF THE POUR UNLESS APPROVED BY THE ENGINEER.
38. 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 BEARING ASSEMBLY ELEVATIONS AND TAKE CORRECTIVE ACTION IF NECESSARY.
 - C. ERECT THE PBU'S ALONG WORKING LINES DETERMINED IN STEP A.
 - D. CONSTRUCT FORMS FOR THE FLANGE CONNECTIONS AND BACKWALL/DIAPHRAGMS.
 - E. PLACE ALL HPC, RAPID SET IN ONE CONTINUOUS POUR AND CURE.
 - F. BACKFILL AND PREPARE GRADE FOR APPROACH SLABS.
39. ALTERNATE CONSTRUCTION SEQUENCES MAY BE SUBMITTED TO THE VTRANS PROJECT MANAGER FOR APPROVAL AND SHALL BE SUBMITTED WITH THE FABRICATION PLANS.

ABUTMENT CLOSURE/END DIAPHRAGM

40. 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

41. PRECAST CONCRETE COMPRESSIVE STRENGTH: $f'_c = 5,000$ PSI.
42. SLAB EDGES IN CONTACT WITH HPC RAPID SET CONCRETE SHALL BE WIRE BRUSHED TO REMOVE ALL CEMENTITIOUS FILM FROM THE KEY PRIOR TO DELIVERY AND POWER WASHED WITH WATER PRIOR TO INSTALLATION.
43. 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.
44. PRIOR TO PAVING, ANY TRANSVERSE GAPS BETWEEN THE APPROACH SLAB AND SUPERSTRUCTURE DECK SHALL BE FILLED WITH MORTAR, TYPE IV MEETING THE REQUIREMENTS OF SECTION 707.03. PAYMENT SHALL BE INCIDENTAL TO RELATED CONTRACT ITEMS.

TYLIN INTERNATIONAL	PROJECT NAME: CAVENDISH	PROJECT NUMBER: ER BRF 0146(13)
	FILE NAME: zllc318bdrnotes.dgn	PLOT DATE: 7/29/2013
	PROJECT LEADER: J. OLUND	DRAWN BY: S. MORGAN
	DESIGNED BY: D. MYERS	CHECKED BY: J. OLUND
	PROJECT NOTES	SHEET 5 OF 49

QUANTITY SHEET 1

SUMMARY OF ESTIMATED QUANTITIES										TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES			
						ROADWAY	TRAINING	EROSION CONTROL	BRIDGE	FULL C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
						302					302		CY	COMMON EXCAVATION	203.15				
									850		850		CY	UNCLASSIFIED CHANNEL EXCAVATION	203.27				
						1					1		CY	TRENCH EXCAVATION OF EARTH, EXPLORATORY (N.A.B.I.)	204.22				
									340		340		CY	STRUCTURE EXCAVATION	204.25				
									250		250		CY	GRANULAR BACKFILL FOR STRUCTURES	204.30				
						405					405		SY	COLD PLANING, BITUMINOUS PAVEMENT	210.10				
						415					415		CY	SUBBASE OF DENSE GRADED CRUSHED STONE	301.35				
						2					2		CY	AGGREGATE SURFACE COURSE	401.10				
						4			2.4		6.4		CWT	EMULSIFIED ASPHALT	404.65				
						1					1		LU	PRICE ADJUSTMENT, ASPHALT CEMENT (N.A.B.I.)	406.50				
									1		1		LS	FURNISHING EQUIPMENT FOR DRIVING PILING	504.10				
									650		650		LF	STEEL PILING, HP 12 X 74	505.16				
									2		2		EACH	DYNAMIC PILE LOADING TEST	505.45				
									6900		6900		LB	REINFORCING STEEL, LEVEL II	507.12				
									13		13		GAL	WATER REPELLENT, SILANE	514.10				
									64		64		LF	BRIDGE EXPANSION JOINT, ASPHALTIC PLUG	516.10				
									400		400		SY	SHEET MEMBRANE WATERPROOFING, SPRAY APPLIED	520.10				
									64		64		LF	JOINT SEALER, HOT POURED	524.11				
									256		256		LF	BRIDGE RAILING, GALVANIZED 3 RAIL BOX BEAM	525.335				
									1		1		EACH	REMOVAL OF STRUCTURE (4288 SF - EST.)	529.15				
									1		1		LS	PRECAST CONCRETE STRUCTURE (ABUTMENT NO. 1)	540.10				
									1		1		LS	PRECAST CONCRETE STRUCTURE (ABUTMENT NO. 2)	540.10				
									1		1		LS	PRECAST CONCRETE STRUCTURE (APPROACH SLAB NO. 1)	540.10				
									1		1		LS	PRECAST CONCRETE STRUCTURE (APPROACH SLAB NO. 2)	540.10				
								20			20		HR	ALL PURPOSE EXCAVATOR RENTAL, TYPE I	608.25				
						25					25		MGAL	DUST CONTROL WITH WATER	609.10				
									920		920		CY	STONE FILL, TYPE IV	613.13				
						90					90		LF	BOX BEAM GUARDRAIL	621.30				
						4					4		EACH	GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM	621.725				
						215					215		LF	REMOVAL AND DISPOSAL OF GUARDRAIL	621.80				
						100					100		HR	UNIFORMED TRAFFIC OFFICERS	630.10				
						100					100		HR	FLAGGERS	630.15				
										1	1		LS	FIELD OFFICE, ENGINEERS	631.10				
										1	1		LS	TESTING EQUIPMENT, CONCRETE	631.16				
										1	1		LS	TESTING EQUIPMENT, BITUMINOUS	631.17				
										3000	3000		DL	FIELD OFFICE TELEPHONE (N.A.B.I.)	631.26				
							520				520		HR	EMPLOYEE TRAINEESHIP	634.10				
						1					1		LS	MOBILIZATION/DEMOBILIZATION	635.11				
						1					1		LS	TRAFFIC CONTROL	641.10				
						4					4		EACH	PORTABLE CHANGEABLE MESSAGE SIGN	641.15				

PROJECT NAME: **CAVENDISH**
PROJECT NUMBER: **ER BR F 0146(13)**
FILE NAME: z11b292.xls PLOT DATE: 07/19/2013
PROJECT LEADER: J. OLUND DRAWN BY: S. MORGAN
DESIGNED BY: T. POULIN CHECKED BY: J. OLUND
QUANTITY SHEET #1 SHEET 6 OF 49



QUANTITY SHEET 2

SUMMARY OF ESTIMATED QUANTITIES										TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES			
						ROADWAY	TRAINING	EROSION CONTROL	BRIDGE	FULL C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
						750					750		LF	4 INCH WHITE LINE	646.20				
						730					730		LF	4 INCH YELLOW LINE	646.21				
									730		730		SY	GEOTEXTILE UNDER STONE FILL	649.31				
								130			130		SY	GEOTEXTILE FOR SILT FENCE	649.51				
								260			260		SY	GEOTEXTILE FOR FILTER CURTAIN	649.61				
								30			30		LB	SEED	651.15				
								1			1		LB	SEED, WINTER RYE	651.17				
								100			100		LB	FERTILIZER	651.18				
								0.5			0.5		TON	AGRICULTURAL LIMESTONE	651.20				
								0.5			0.5		TON	HAY MULCH	651.25				
						100					100		CY	TOPSOIL	651.35				
									280		280		SY	GRUBBING MATERIAL	651.40				
								1			1		LS	EPSC PLAN	652.10				
								80			80		HR	MONITORING EPSC PLAN	652.20				
								1			1		LU	MAINTENANCE OF EPSC PLAN (N.A.B.I.)	652.30				
								440			440		SY	TEMPORARY EROSION MATTING	653.20				
								15			15		CY	VEHICLE TRACKING PAD	653.35				
								710			710		LF	PROJECT DEMARCATION FENCE	653.55				
						23.25					23.25		SF	TRAFFIC SIGNS, TYPE A	675.20				
						36					36		LF	SQUARE TUBE SIGN POST AND ANCHOR	675.341				
						7					7		EACH	REMOVING SIGNS	675.50				
									90		90		CY	SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET) (FPQ)	900.608				
									1		1		LS	SPECIAL PROVISION (CPM SCHEDULE)	900.645				
									1		1		LU	SPECIAL PROVISION (INCENTIVE/DISINCENTIVE) (N.A.B.I.)	900.650				
						1					1		LU	SPECIAL PROVISION (MAT DENSITY PAY ADJUSTMENT, SMALL QUANTITY) (N.A.B.I.)	900.650				
						1					1		LU	SPECIAL PROVISION (MIXTURE PAY ADJUSTMENT) (N.A.B.I.)	900.650				
									452		452		SY	SPECIAL PROVISION (PREFABRICATED BRIDGE UNIT SUPERSTRUCTURE)	900.675				
						250			94		344		TON	SPECIAL PROVISION (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY)	900.680				

PROJECT NAME: **CAVENDISH**
 PROJECT NUMBER: **ER BRF 0146(13)**
 FILE NAME: z11b292.xls PLOT DATE: 07/19/2013
 PROJECT LEADER: J. OLUND DRAWN BY: S. MORGAN
 DESIGNED BY: T. POULIN CHECKED BY: J. OLUND
 QUANTITY SHEET #2 SHEET 7 OF 49



BRIDGE QUANTITY SHEET

SUMMARY OF BRIDGE QUANTITIES										TOTALS		DESCRIPTIONS			DETAILED SUMMARY OF QUANTITIES		
							APPROACH SLABS	ABUTMENT #1	ABUTMENT #2	SUPERSTRUCTURE	BRIDGE TOTAL	UNIT	ITEMS	ITEM NUMBER	QUANTITIES	UNIT	ITEMS
								410	440		850	CY	UNCLASSIFIED CHANNEL EXCAVATION	203.27			
								230	110		340	CY	STRUCTURE EXCAVATION	204.25			
								135	115		250	CY	GRANULAR BACKFILL FOR STRUCTURES	204.30			
							0.6			1.8	2.4	CWT	EMULSIFIED ASPHALT	404.65			
								0.5	0.5		1	LS	FURNISHING EQUIPMENT FOR DRIVING PILING	504.10			
								170	480		650	LF	STEEL PILING, HP 12 X 74	505.16			
								1	1		2	EACH	DYNAMIC PILE LOADING TEST	505.45			
								3450	3450		6900	LB	REINFORCING STEEL, LEVEL II	507.12			
								3	3	7	13	GAL	WATER REPELLENT, SILANE	514.10			
							64				64	LF	BRIDGE EXPANSION JOINT, ASPHALTIC PLUG	516.10			
										400	400	SY	SHEET MEMBRANE WATERPROOFING, SPRAY APPLIED	520.10			
										64	64	LF	JOINT SEALER, HOT POURED	524.11			
										256	256	LF	BRIDGE RAILING, GALVANIZED 3 RAIL BOX BEAM	525.335			
										1	1	EACH	REMOVAL OF STRUCTURE (4288 SF - EST.)	529.15			
								1			1	LS	PRECAST CONCRETE STRUCTURE (ABUTMENT NO. 1)	540.10			
									1		1	LS	PRECAST CONCRETE STRUCTURE (ABUTMENT NO. 2)	540.10			
							1				1	LS	PRECAST CONCRETE STRUCTURE (APPROACH SLAB NO. 1)	540.10			
							1				1	LS	PRECAST CONCRETE STRUCTURE (APPROACH SLAB NO. 2)	540.10			
								460	460		920	CY	STONE FILL, TYPE IV	613.13			
								365	365		730	SY	GEOTEXTILE UNDER STONE FILL	649.31			
								130	150		280	SY	GRUBBING MATERIAL	651.40			
							5	40	40	5	90	CY	SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET) (FPQ)	900.608			
										1	1	LS	SPECIAL PROVISION (CPM SCHEDULE)	900.645			
										1	1	LU	SPECIAL PROVISION (INCENTIVE/DISINCENTIVE) (N.A.B.I.)	900.650			
										452	452	SY	SPECIAL PROVISION (PREFABRICATED BRIDGE UNIT SUPERSTRUCTURE)	900.675			
							23			71	94	TON	SPECIAL PROVISION (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY)	900.680			

PROJECT NAME: **CAVENDISH**
 PROJECT NUMBER: **ER BR F 0146(13)**
 FILE NAME: z11b292.xls PLOT DATE: 07/19/2013
 PROJECT LEADER: J. OLUND DRAWN BY: S. MORGAN
 DESIGNED BY: T. POULIN CHECKED BY: J. OLUND
 BRIDGE QUANTITY SHEET SHEET 8 OF 49



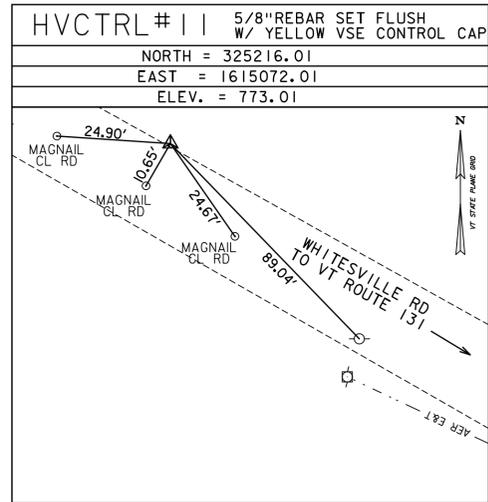
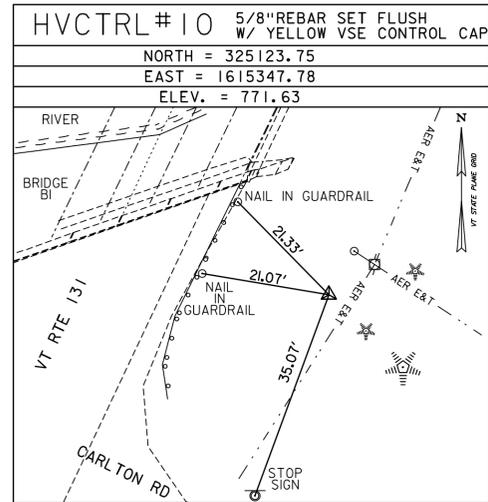
GPS/NGS CONTROL POINTS

SPRINGFIELD VT CORS ARP

PID DJ8961
 N = 284807.69
 E = 1646390.48
 ELLIP HEIGHT = 513.30

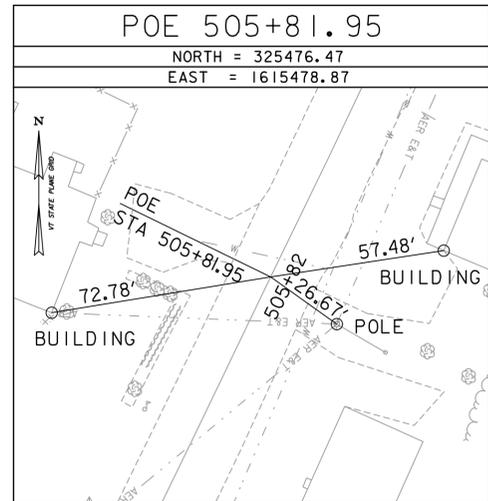
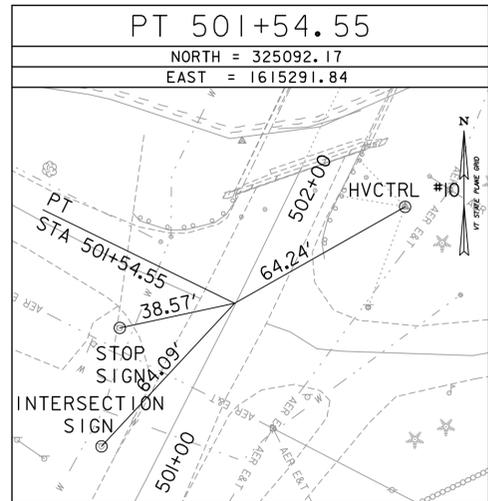
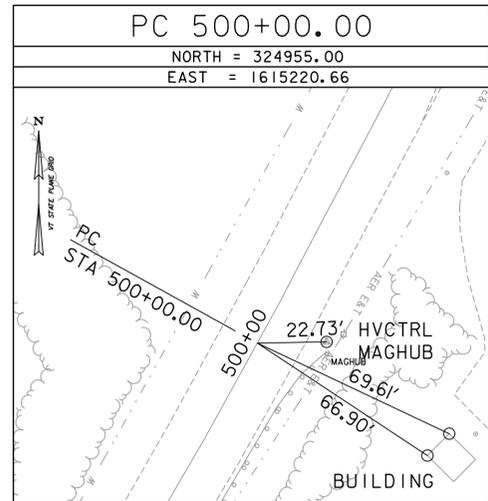
STATION IS A GPS CONTINUOUSLY OPERATING REFERENCE STATION. STATION IS THE ANTENNA REFERENCE POINT OF THE GPS ANTENNA. LOCATED AT THE SPRINGFIELD, VERMONT HIGH SCHOOL, THE MONUMENT IS ATTACHED TO A TWO STORY CONCRETE & BRICK BUILDING WITH A 8 FT CONCRETE FOUNDATION BUILT IN 1967. THE MAST IS A 1.75 INCH DIA. GALV PIPE THAT IS 108 INCHES LONG. THE MAST IS ATTACHED TO A STEEL MOUNTING FRAME WITH THREE ATTACHMENTS CONSISTING OF 3/8 INCH SS THROUGH BOLTS. THE MOUNTING FRAME IS ATTACHED TO THE BUILDING USING 8 ATTACHMENT POINTS. THE TOP 2 AND THIRD 2 ARE 1/2 INCH SS BOLTS SECURED TO THE BRICK OR CONCRETE WITH LEAD ANCHORS. THE SECOND 2 AND BOTTOM 2 ATTACHMENTS ARE THROUGH BOLTED AND CONSIST OF 1/2 INCH SS THREADED ROD AND NUTS.

TRAVERSE TIES



* MAIN TRAVERSE COMPLETED: DECEMBER 28, 2011 BY VSE, T. CATTANEO-PC, T. COMSTOCK

ALIGNMENT TIES



DATUM	
VERTICAL	NAVD 88(GEOID09) FT
HORIZONTAL	NAD 83(CORS) sFT
ADJUSTMENT	LSQ

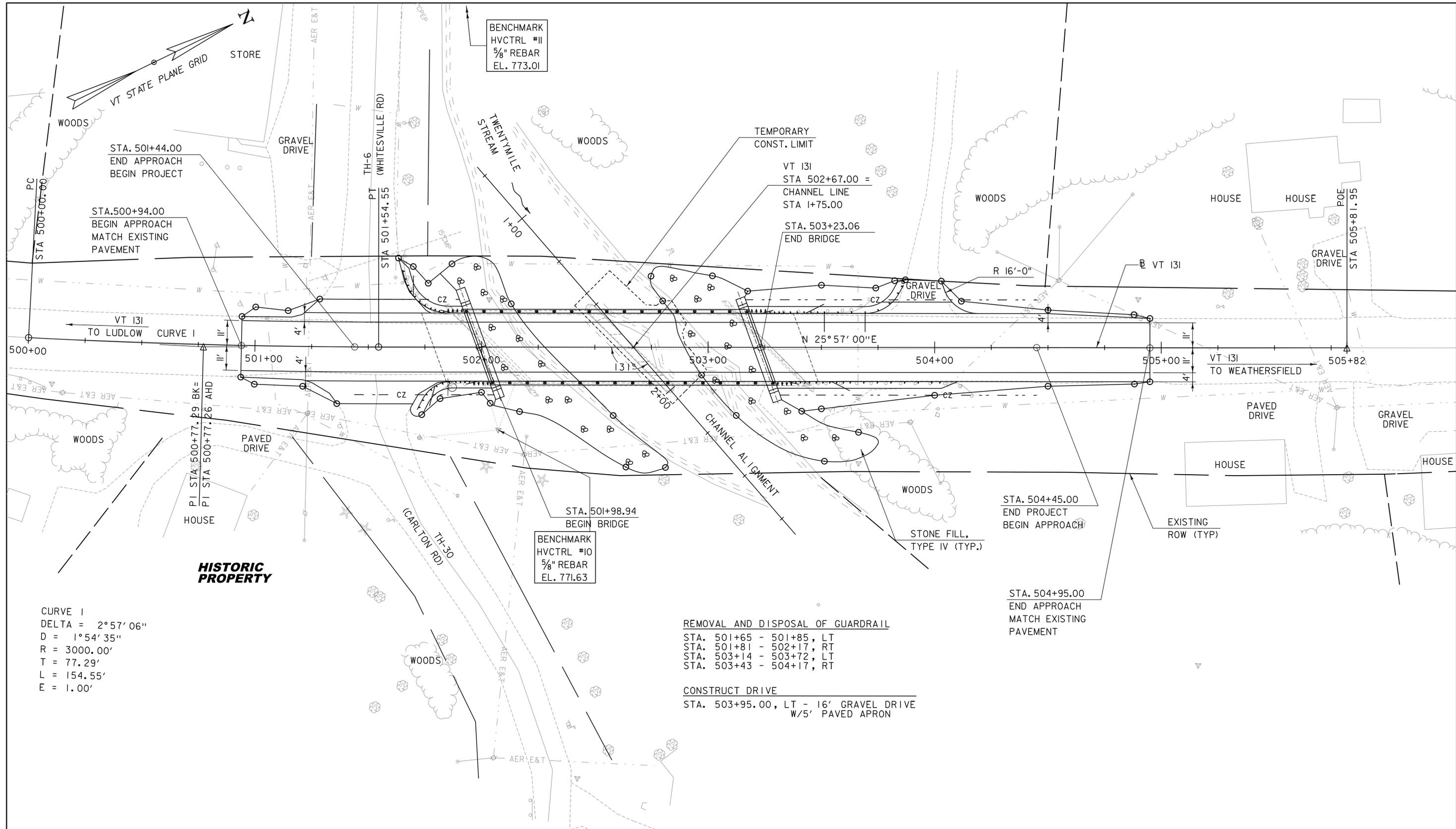


TYLIN INTERNATIONAL

PROJECT NAME: CAVENDISH
 PROJECT NUMBER: ER BRF 0146(13)

FILE NAME: zllc318bdr_t1.dgn
 PROJECT LEADER: J. OLUND
 DESIGNED BY: J. HOWE
 TIE SHEET

PLOT DATE: 7/19/2013
 DRAWN BY: S. MORGAN
 CHECKED BY: D. BURHANS
 SHEET 10 OF 49



CURVE 1
 DELTA = 2°57'06"
 D = 1°54'35"
 R = 3000.00'
 T = 77.29'
 L = 154.55'
 E = 1.00'

HISTORIC PROPERTY

REMOVAL AND DISPOSAL OF GUARDRAIL
 STA. 501+65 - 501+85, LT
 STA. 501+81 - 502+17, RT
 STA. 503+14 - 503+72, LT
 STA. 503+43 - 504+17, RT

CONSTRUCT DRIVE
 STA. 503+95.00, LT - 16' GRAVEL DRIVE
 W/5' PAVED APRON

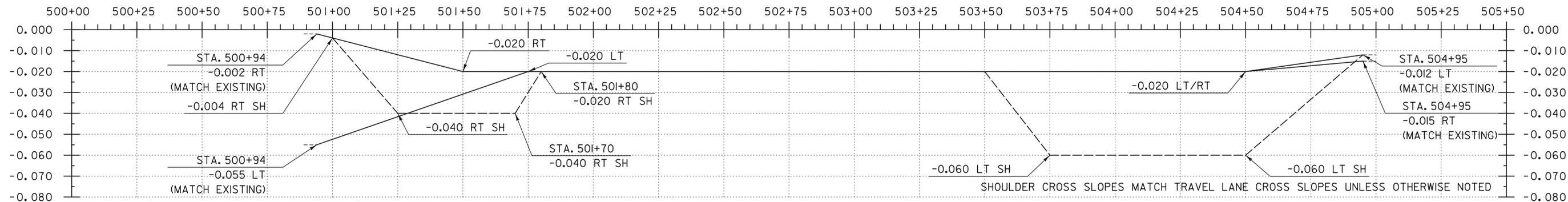
LAYOUT

EXISTING BRIDGE DATA
 YEAR BUILT 1947
 TWO SPAN ROLLED BEAM
 OVERALL LENGTH = 128 FT
 CLEAR SPAN = 82 FT
 DECK WIDTH = 33.5 FT

SCALE 1" = 20'-0"
 20 0 20

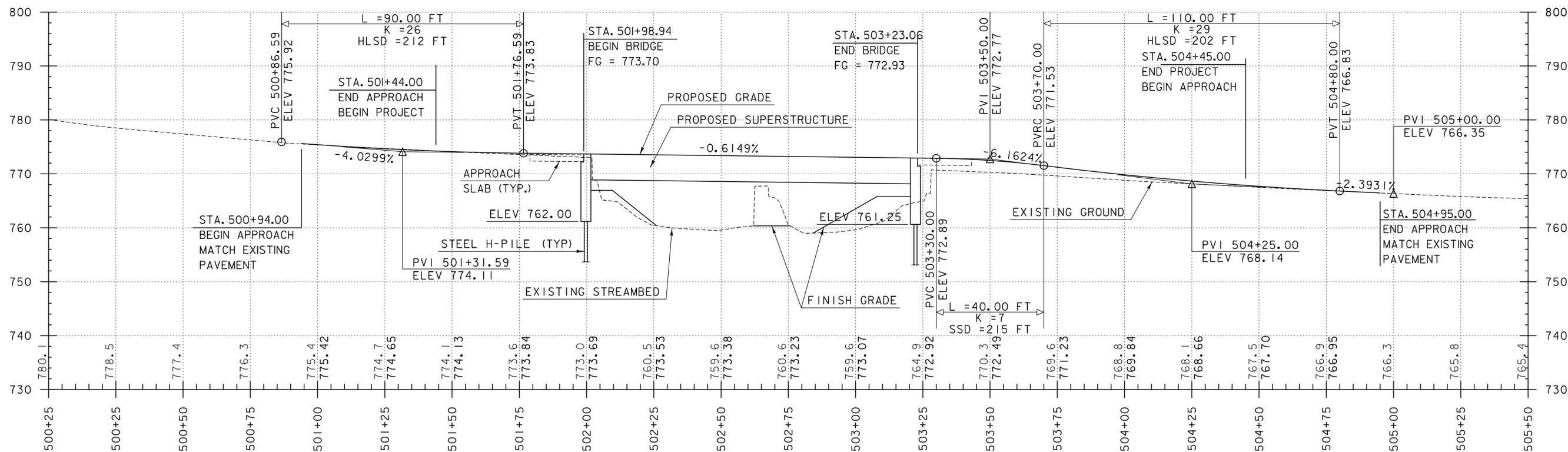
TYLININTERNATIONAL

PROJECT NAME: CAVENDISH	FILE NAME: zllc318bdr_nul.dgn	PLOT DATE: 7/19/2013
PROJECT NUMBER: ER BRF 0146(13)	PROJECT LEADER: J. OLUND	DRAWN BY: S. MORGAN
	DESIGNED BY: J. HOWE	CHECKED BY: D. BRYANT
	LAYOUT SHEET	SHEET II OF 49



BANKING DIAGRAM - VT 131

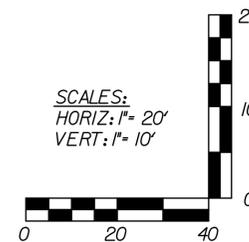
HORIZ: 1"=20'
NO VERTICAL SCALE



PROFILE - VT 131

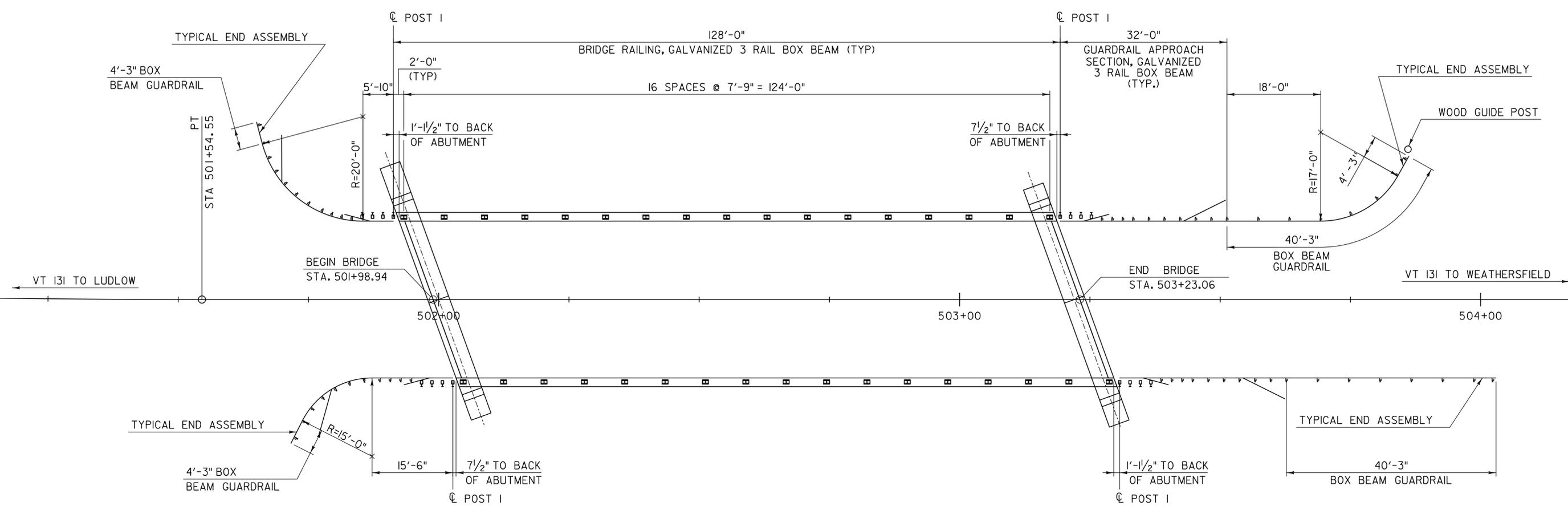
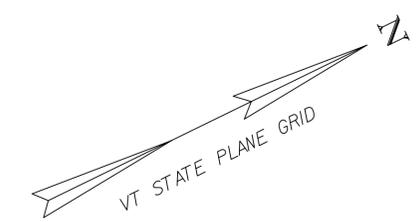
THE GRADES SHOWN TO THE NEAREST TENTH ARE THE SURVEYED GROUND ELEVATIONS ALONG THE PROPOSED ALIGNMENT

THE GRADES SHOWN TO THE NEAREST HUNDRETH ARE THE PROPOSED GRADES FOR THE NEW ALIGNMENT



TYLIN INTERNATIONAL

PROJECT NAME: CAVENDISH	PLOT DATE: 7/19/2013
PROJECT NUMBER: ER BRF 0146(13)	DRAWN BY: J. HOWE
FILE NAME: zllc318bdr_pro.dgn	CHECKED BY: D. BRYANT
PROJECT LEADER: J. OLUND	SHEET 12 OF 49
DESIGNED BY: J. HOWE	
VT 131 PROFILE SHEET	



RAIL LAYOUT

NOTE: ALL DIMENSIONS ARE MEASURED HORIZONTALLY ALONG THE FACE OF RAIL.

BOX BEAM GUARDRAIL

STA. 501+65.04 - 501+66.14, LT
 STA. 501+71.65 - 501+73.84, RT
 STA. 503+51.29 - 503+86.19, LT
 STA. 503+62.71 - 504+02.96, RT

GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM

STA. 501+66.14 - 501+91.29, LT
 STA. 501+73.84 - 502+02.71, RT
 STA. 503+19.29 - 503+51.29, LT
 STA. 503+30.71 - 504+62.71, RT

BRIDGE RAILING, GALVANIZED 3 RAIL BOX BEAM

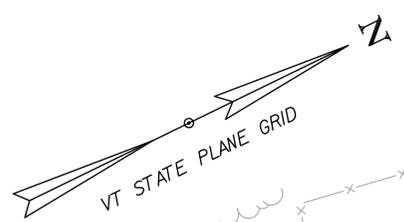
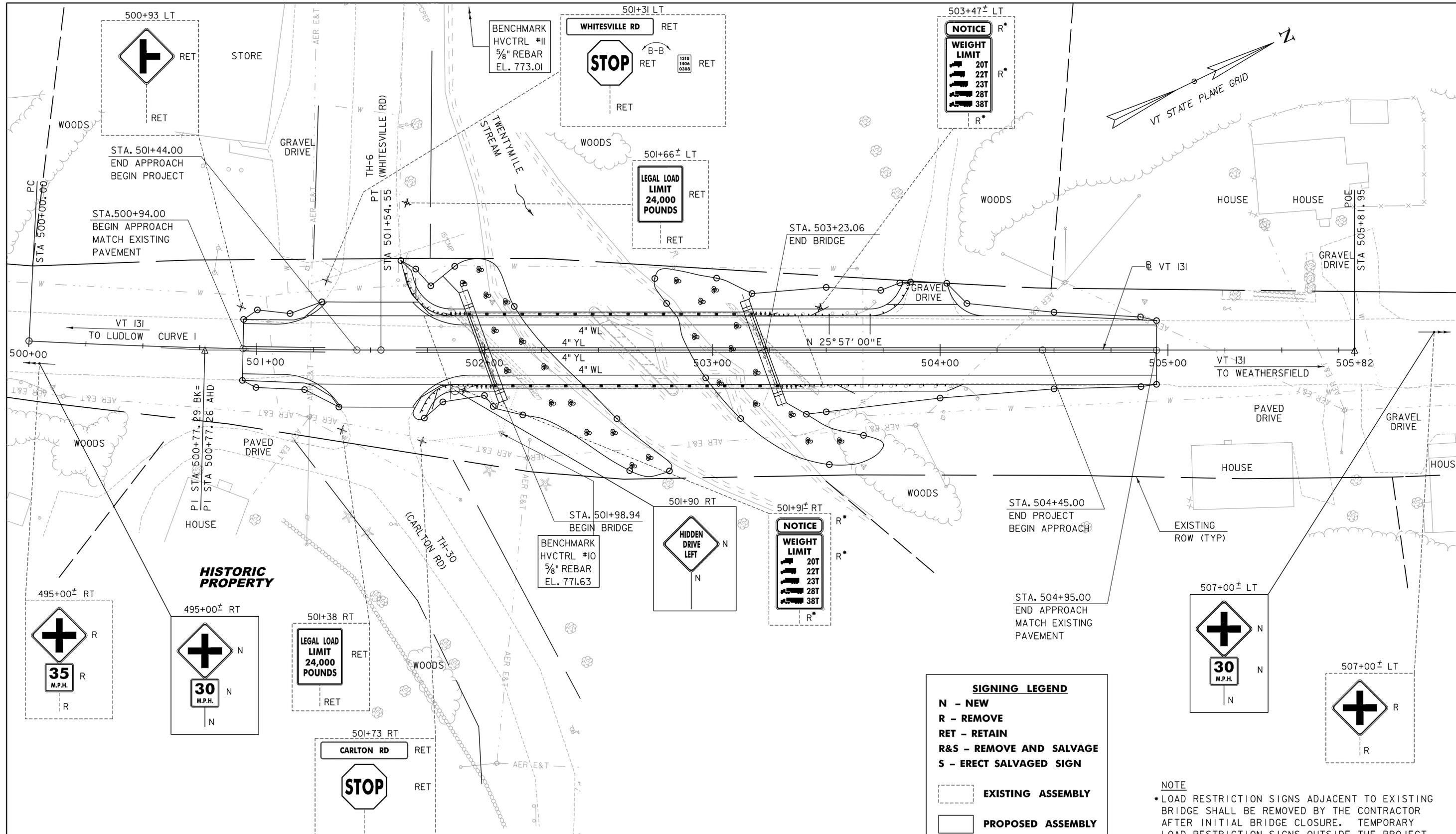
STA. 501+91.29 - 503+19.29, LT
 STA. 502+02.71 - 503+30.71, RT

TYLIN INTERNATIONAL

PROJECT NAME: CAVENDISH
 PROJECT NUMBER: ER BRF 0146(13)

FILE NAME: zllc318bdr_raillay.dgn
 PROJECT LEADER: J. OLUND
 DESIGNED BY: J. HOWE
 RAIL LAYOUT SHEET

PLOT DATE: 7/19/2013
 DRAWN BY: S. MORGAN
 CHECKED BY: D. BRYANT
 SHEET 13 OF 49



TRAFFIC SIGN AND LINE LAYOUT

SIGNING LEGEND

N - NEW
R - REMOVE
RET - RETAIN
R&S - REMOVE AND SALVAGE
S - ERECT SALVAGED SIGN

--- EXISTING ASSEMBLY
 --- PROPOSED ASSEMBLY

NOTE
 * LOAD RESTRICTION SIGNS ADJACENT TO EXISTING BRIDGE SHALL BE REMOVED BY THE CONTRACTOR AFTER INITIAL BRIDGE CLOSURE. TEMPORARY LOAD RESTRICTION SIGNS OUTSIDE THE PROJECT LIMITS, IN CAVENDISH AND WEATHERSFIELD, SHALL BE REMOVED BY THE AGENCY.

EXISTING BRIDGE DATA
 YEAR BUILT 1947
 TWO SPAN ROLLED BEAM
 OVERALL LENGTH = 128 FT
 CLEAR SPAN = 82 FT
 DECK WIDTH = 33.5 FT

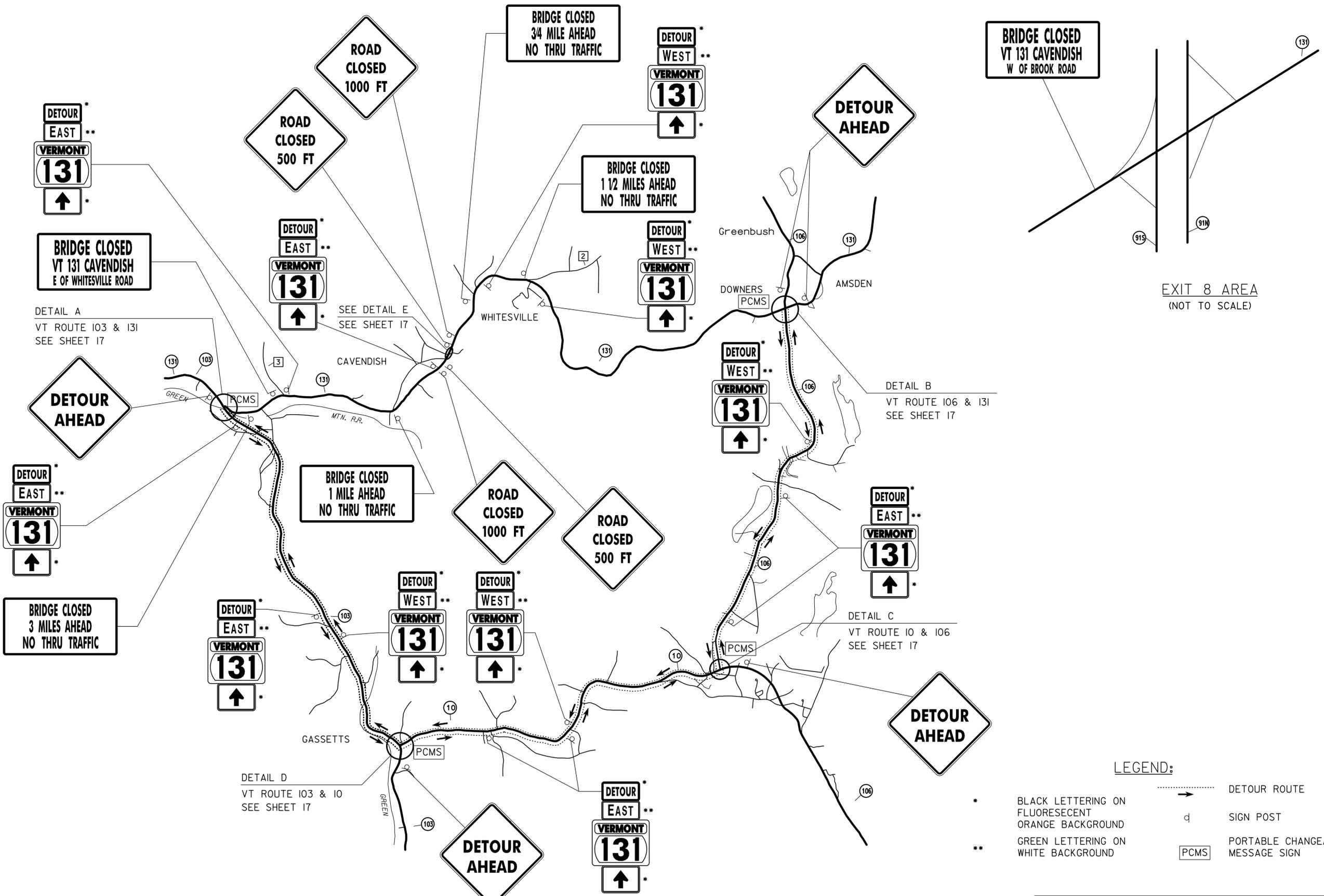
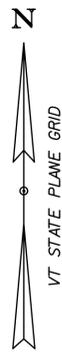
4 INCH WHITE LINE
 STA. 500+94 - 501+31 SOLID LT (TH 6)
 STA. 500+94 - 501+37 SOLID RT (TH 30)
 STA. 501+68 (TH 6) - 504+95 SOLID LT
 STA. 501+68 (TH 30) - 504+95 SOLID RT

4 INCH YELLOW LINE
 STA. 500+94 - 501+30 (DOUBLE CENTERLINE)
 STA. 501+70 - 504+95 (DOUBLE CENTERLINE)

SCALE 1" = 20' - 0"
 20 0 20

TYLIN INTERNATIONAL

PROJECT NAME: CAVENDISH
 PROJECT NUMBER: ER BRF 0146(13)
 FILE NAME: zllc318bdr_snl.dgn
 PROJECT LEADER: J. OLUND
 DESIGNED BY: T. KELLEY
 TRAFFIC SIGNS AND LINES LAYOUT
 PLOT DATE: 7/19/2013
 DRAWN BY: T. KELLEY
 CHECKED BY: D. BRYANT
 SHEET 14 OF 49



DETAIL A
VT ROUTE 103 & 131
SEE SHEET 17

SEE DETAIL E
SEE SHEET 17

DETAIL B
VT ROUTE 106 & 131
SEE SHEET 17

DETAIL C
VT ROUTE 10 & 106
SEE SHEET 17

DETAIL D
VT ROUTE 103 & 10
SEE SHEET 17

- LEGEND:**
- * BLACK LETTERING ON FLUORESCENT ORANGE BACKGROUND
 - ** GREEN LETTERING ON WHITE BACKGROUND
 - > DETOUR ROUTE
 - q SIGN POST
 - PCMS PORTABLE CHANGEABLE MESSAGE SIGN

TRAFFIC DETOUR SIGNING PLAN
(NOT TO SCALE)

TYLIN INTERNATIONAL

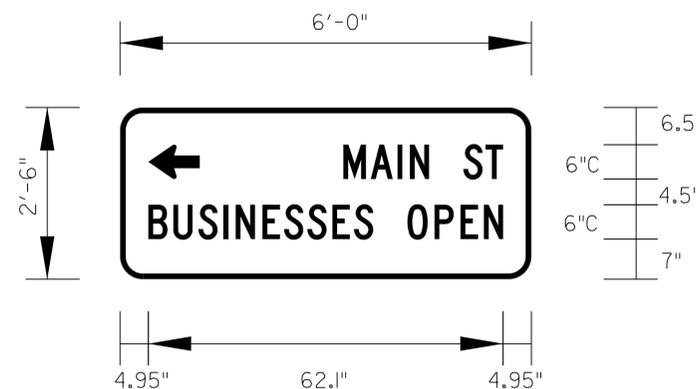
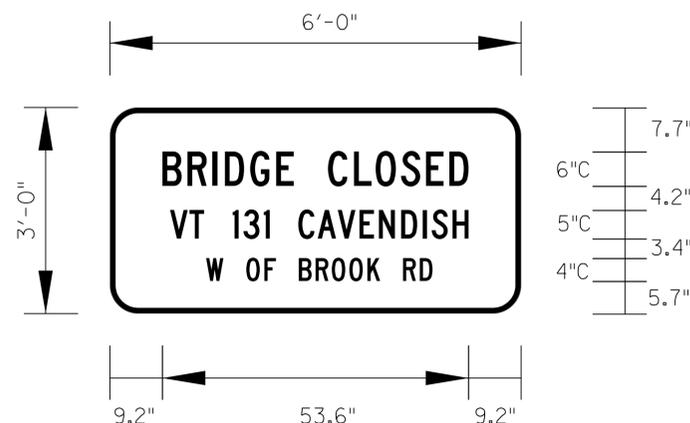
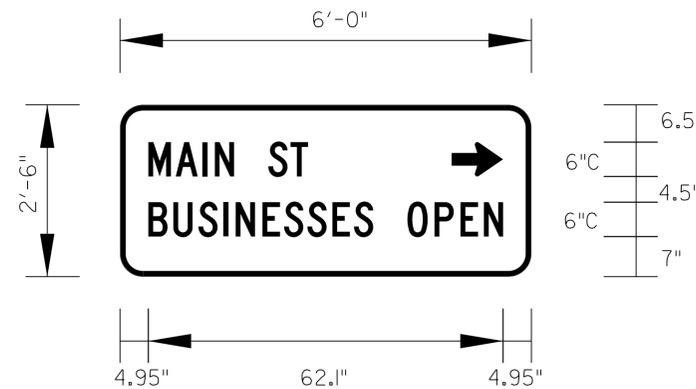
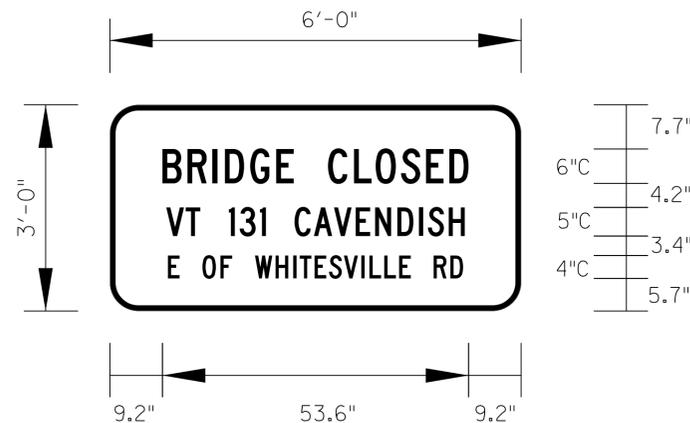
PROJECT NAME:	CAVENDISH	PLOT DATE:	7/19/2013	
PROJECT NUMBER:	ER BRF 0146(13)	DRAWN BY:	S. MORGAN	
FILE NAME:	zllc318bdr_detourmap.dgn	DESIGNED BY:	A. GREENLAW	
PROJECT LEADER:	J. OLUND	TRAFFIC DETOUR SIGNING PLAN	CHECKED BY:	D. BRYANT
			SHEET	16 OF 49

	B	R	I	D	G	E	
	W	I	L	L		B	E
	C	L	O	S	E	D	

	M	M	M		D	D	
				T	O		
	M	M	M		D	D	

PORTABLE CHANGEABLE MESSAGE SIGN

MMM = MONTH
DD = DAY



NOTES

1. DETOUR SIGNS SHALL BE INCLUDED IN THE UNIT BID PRICE FOR ITEM 641.10 "TRAFFIC CONTROL".
2. SIGNS SHOWN ON THIS SHEET SHALL HAVE BLACK TEXT ON FLUORESCENT ORANGE BACKGROUND.
3. SIGNS SHOWN ON THIS SHEET SHALL HAVE 3.0" RADIUS, 1.25" BLACK BORDER, AND A 0.75" INDENT

CONSTRUCTION SIGNS FOR DETOUR
SIGN DIMENSIONS ARE SHOWN IN INCHES

TYLININTERNATIONAL

PROJECT NAME: CAVENDISH
PROJECT NUMBER: ER BRF 0146(13)

FILE NAME: zllc318bdr_det+sign02.dgn
PROJECT LEADER: J. OLUND
DESIGNED BY: D. REYNOLDS
DETOUR SIGN DETAILS

PLOT DATE: 7/19/2013
DRAWN BY: D. REYNOLDS
CHECKED BY: D. BRYANT
SHEET 18 OF 49

SOIL CLASSIFICATION

AASHTO

A1	Gravel and Sand
A3	Fine Sand
A2	Silty or Clayey Gravel and Sand
A4	Silty Soil - Low Compressibility
A5	Silty Soil - Highly Compressible
A6	Clayey Soil - Low Compressibility
A7	Clayey Soil - Highly Compressible

ROCK QUALITY DESIGNATION

R.Q.D. (%)	ROCK DESCRIPTION
<25	Very Poor
25 to 50	Poor
51 to 75	Fair
76 to 90	Good
>90	Excellent

SHEAR STRENGTH

UNDRAINED SHEAR STRENGTH IN P.S.F.	CONSISTENCY
<250	Very Soft
250-500	Soft
500-1000	Med. Stiff
1000-2000	Stiff
2000-4000	Very Stiff
>4000	Hard

CORRELATION GUIDE OF "N" TO DENSITY/CONSISTENCY

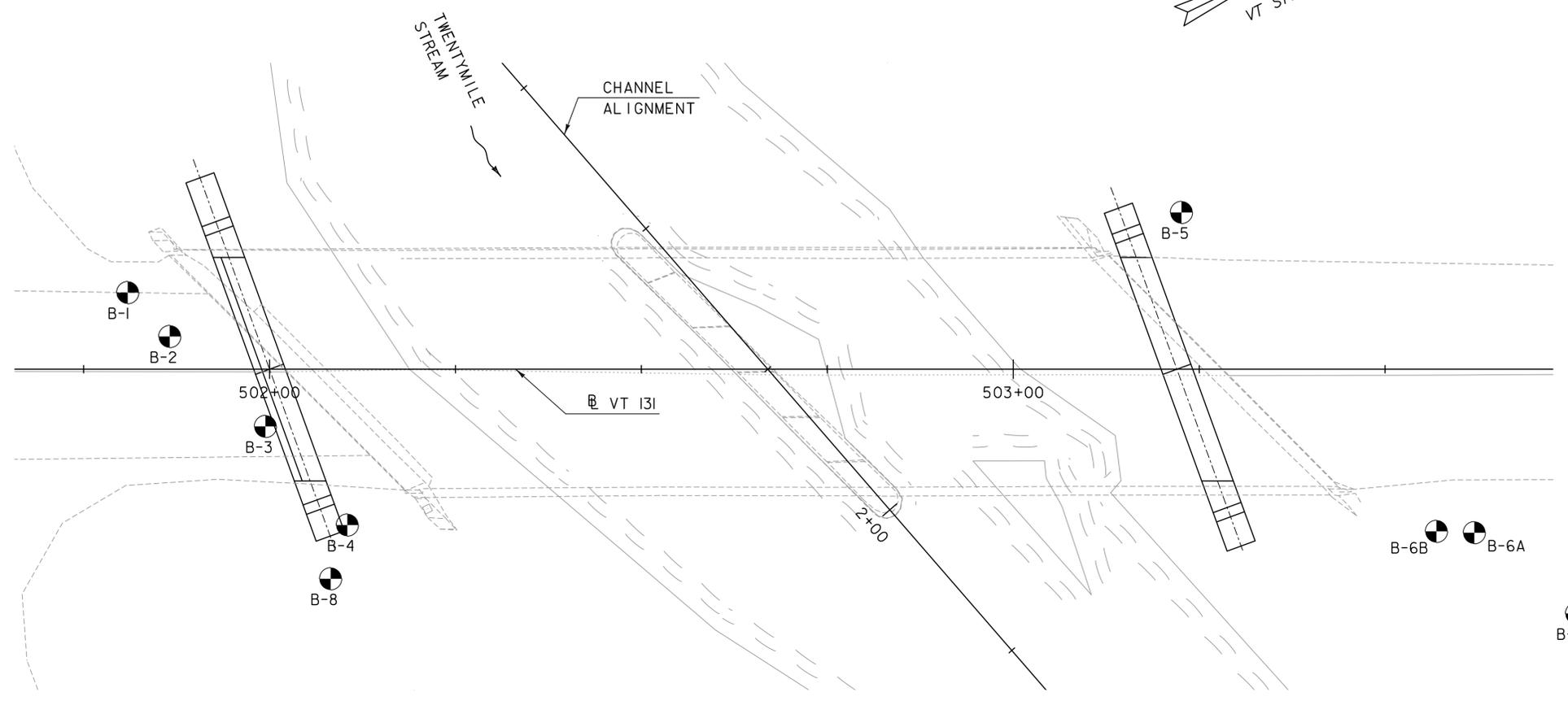
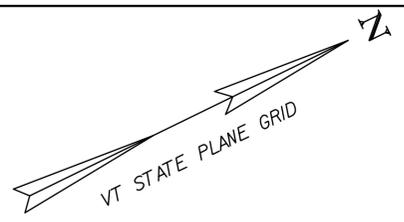
DENSITY (GRANULAR SOILS)		CONSISTENCY (COHESIVE SOILS)	
N	DESCRIPTIVE TERM	N	DESCRIPTIVE TERM
<5	Very Loose	<2	Very Soft
5-10	Loose	2-4	Soft
11-24	Med. Dense	5-8	Med. Stiff
25-50	Dense	9-15	Stiff
>50	Very Dense	16-30	Very Stiff
		31-60	Hard
		>60	Very Hard

COMMONLY USED SYMBOLS

- ▼ Water Elevation
- ⊕ Standard Penetration Boring
- ⊗ Auger Boring
- ⊙ Rod Sounding
- S Sample
- N Standard Penetration Test
- Blow Count Per Foot For:
- 2" O. D. Sampler
- 1 3/8" I. D. Sampler
- Hammer Weight Of 140 Lbs.
- Hammer Fall Of 30"
- VS Field Vane Shear Test
- US Undisturbed Soil Sample
- B Blast
- DC Diamond Core
- MD Mud Drill
- WA Wash Ahead
- HSA Hollow Stem Auger
- AX Core Size 1 1/8"
- BX Core Size 1 3/8"
- NX Core Size 2 1/8"
- M Double Tube Core Barrel Used
- LL Liquid Limit
- PL Plastic Limit
- PI Plasticity Index
- NP Non Plastic
- w Moisture Content (Dry Wgt. Basis)
- D Dry
- M Moist
- MTW Moist To Wet
- W Wet
- Sat Saturated
- Bo Boulder
- Gr Gravel
- Sa Sand
- SI Silt
- Cl Clay
- HP Hardpan
- Le Ledge
- NLTD No Ledge To Depth
- CNPF Can Not Penetrate Further
- TLOB To Ledge Or Boulder
- NR No Recovery
- Rec. Recovery
- %Rec. Percent Recovery
- ROD Rock Quality Designation
- CBR California Bearing Ratio
- < Less Than
- > Greater Than
- R Refusal (N > 100)

COLOR

blk	Black	pnk	Pink
bl	Blue	pu	Purple
brn	Brown	rd	Red
dk	Dark	tn	Tan
gr'y	Gray	wh	White
gn	Green	yel	Yellow
lt	Light	mltc	Multicolored
or	Orange		



BORING LAYOUT

SCALE 1" = 10' - 0"

GENERAL NOTES

- The subsurface explorations shown herein were made between February 29, 2012 and November 5, 2012 by GeoDesign, Inc.
- Soil and rock classifications, properties and descriptions are based on engineering interpretation from available subsurface information by GeoDesign, Inc. and may not necessarily reflect actual variations in subsurface conditions that may be encountered between individual boring or sample locations.
- Observed water levels and/or conditions indicated are as recorded at the time of exploration and may vary according to the prevailing rainfall, methods of exploration and other factors.
- Engineering judgement was exercised in preparing the subsurface information presented herein. Analysis and interpretation of subsurface data was performed and interpreted for Agency design and estimating purposes. Presentation of the information in the Contract is intended to provide the Contractor access to the same data available to the Agency. The subsurface information is presented in good faith and is not intended as a substitute for personal investigation, independent interpretation, independent analysis or judgement by the Contractor.
- Pictorial structure details shown on the boring plan layout or soils profile are for illustrative purposes only and may not accurately portray final contract details.
- Terminology used on boring logs to describe the hardness, degree of weathering, and spacing of fractures, joints and other discontinuities in the bedrock is defined in the AASHTO Manual on Subsurface Investigations, 1988.

DEFINITIONS (AASHTO)

- BEDROCK (LEDGE)** - Rock in its native location of indefinite thickness.
- BOULDER** - A rock fragment with an average dimension > 12 inches.
- COBBLE** - Rock fragments with an average dimension between 3 and 12 inches.
- GRAVEL** - Rounded particles of rock < 3" and > 0.075" (#10 sieve).
- SAND** - Particles of rock < 0.075" (#10 sieve) and > 0.0025" (#200 sieve).
- SLT** - Soil < 0.0025" (#200 sieve), non or slightly plastic and exhibits no strength when air-dried.
- CLAY** - Fine grained soil, exhibits plasticity when moist and considerable strength when air-dried.
- VARVED** - Alternate layers of silt and clay.
- HARDPAN** - Extremely dense soil, cemented layer, not softened when wet.
- MUCK** - Soft organic soil (containing > 10% organic material).
- MOISTURE CONTENT** - Weight of water divided by dry weight of soil.
- FLOWING SAND** - Granular soil so saturated (loose) that it flows into drill casing during extraction of wash rod.
- STRIKE** - Angle from magnetic north to line of intersection of bed with a horizontal plane.
- DIP** - Inclination of bed with a horizontal plane.

BORING LAYOUT

HOLE NO.	STATION	OFFSET	NORTHING	EASTING	GROUND ELEVATION	ELEVATION TLOB
B-1	501+80.93	10.29' LT	325120.38	1615294.13	773.26	741.3
B-2	501+86.59	4.39' LT	325122.89	1615301.91	773.27	-
B-3	501+99.44	7.68' RT	325129.17	1615318.39	772.99	-
B-4	502+10.45	20.91' RT	325133.28	1615335.10	772.14	740.6
B-5	503+22.61	21.05' LT	325252.49	1615346.45	770.41	-
B-6A	503+61.98	21.93' RT	325269.08	1615402.33	769.37	-
B-6B	503+56.89	21.75' RT	325264.58	1615399.94	769.87	-
B-7	503+75.73	32.78' RT	325276.70	1615418.10	771.00	-
B-8	502+08.20	28.12' RT	325128.10	1615340.60	772.00	730.8

PROJECT NAME: CAVENDISH	
PROJECT NUMBER: ER BRF 0146(13)	
FILE NAME: zllc318bdrborinfo.dgn	PLOT DATE: 7/19/2013
PROJECT LEADER: J. OLUND	DRAWN BY: S. MORGAN
DESIGNED BY: J. OLUND	CHECKED BY: T. POULIN
BORING INFORMATION & LAYOUT SHEET	
SHEET 19 OF 49	



VTTrans Working to Get You There		STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION		BORING LOG		Boring No.: B-1					
		Cavendish ER BR 0146(13)		Cavendish, Vermont		Page No.: 1 of 2					
						Pin No.: 11c318					
						Checked By: JAG					
Boring Crew: B. DeLude (SJB), J. Gilman (GeoDesign)		Casing Sampler		Groundwater Observations ⁹							
Date Started: 3/12/12 Date Finished: 3/14/12		Type: FJ SS		Date	Depth (ft)	Notes					
VTSPG NAD83: N 325120.38 ft E 1615294.13 ft		Hammer Wt: 140 lb. 140 lb.		03/13/12	12.5	Wet Sample					
Station: Not Available Offset: Not Available		Hammer Fall: 30 in. 30 in.		03/14/12	15.0	In Casing Overnight					
Ground Elevation: 773.26 ft		Hammer/Rod Type: Auto/AWJ									
		Rig: Diedrich D-50 C _c = 1.5									
Depth (ft)	Strata ¹⁰	CLASSIFICATION OF MATERIALS (Description)	Well Diagram	Run (Dip deg.)	Core Rec. % (R ₀₀ %)	Drill Rate minutes/ft	Blows/6" (N Value) ¹¹	Moisture Content %	Gravel %	Sand %	Fines %
5		S1 (5'-7'): Very loose, tan fine to coarse SAND, little Silt, dry. Rec. = 0.5 ft					1-1-1 (2)				
10		S2 (10'-12'): Dense, tan brown fine to coarse SAND, some fine to coarse GRAVEL, trace Silt, damp. Rec. = 1.17 ft					24-16- 15-21 (31)				
15		S3 (12.5'-14.5'): Very dense, gray brown (with oxidation) fine to coarse GRAVEL, some fine to coarse Sand, little Silt, wet. Rec. = 1.0 ft					11-37- 36-34 (73)				
		S4 (15' - 15.75'): Refusal, similar description as S3. Rec. = 0.58 ft					38-50/3" (R)				
		S5 (17' - 17.67'): Refusal, similar description as S3. Rec. = 0.67 ft					17-50/2" (R)				
20		S6 (20'-21.33'): Refusal, tannish white fine to coarse SAND, little Silt, trace coarse Gravel, moist. Piece of coarse gravel in spoon tip. Rec. = 0.75 ft					46-22- 50/4" (R)				
25		S7 (25'-27'): Dense. Top 2.5": Dark brown fine to coarse SAND, little Silt, wet. Middle 5.5": Tan fine to medium SAND, little Silt, wet. Bottom 6": Similar description as Top 2.5". Rec. = 1.17 ft					15-13- 26-48 (39)				
30		S8 (30'-30.25'): Refusal, no recovery. Rec. = 0.0 ft					50/3" (R)				
35											
40		C1 (36.5' to 41.5'): Hard, fresh, white with darker minerals and mica, medium grained, moderately jointed, fair quality GNEISS. No reaction to dilute HCl.		C1	75 (68)	3 1.5 4 3.5					
45		C2 (41.5' to 46.5'): Hard, fresh, white with darker minerals and mica, medium grained, closely to moderately jointed, fair quality GNEISS. Zone 6" to 18" at top of core recovery was green, slightly weathered and fractured approximately every 1.5" at approximately 30 degrees from horizontal.		C2	93 (64)	4 4 5 5 5					
Hole stopped @ 46.5 ft											
Notes: 1. Stratification lines represent approximate boundary between material types. Transition may be gradual. 2. N Values have not been corrected for hammer energy. CE is the hammer energy correction factor. 3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.											

BOTTOM OF
ABUT. NO. 1
EL. 762.0

ESTIMATED BOTTOM OF
PILE AT ABUT. NO. 1
EL. 741.3

GEODESIGN BORING LOG - NO STA - OFFSET 888-04.4 CAVENDISH ER BR 0146(13) VERMONT AOT DOT 5/20/13

VTTrans Working to Get You There		STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION		BORING LOG		Boring No.: B-1					
		Cavendish ER BR 0146(13)		Cavendish, Vermont		Page No.: 2 of 2					
						Pin No.: 11c318					
						Checked By: JAG					
Boring Crew: B. DeLude (SJB), J. Gilman (GeoDesign)		Casing Sampler		Groundwater Observations ⁹							
Date Started: 3/12/12 Date Finished: 3/14/12		Type: FJ SS		Date	Depth (ft)	Notes					
VTSPG NAD83: N 325120.38 ft E 1615294.13 ft		Hammer Wt: 140 lb. 140 lb.		03/13/12	12.5	Wet Sample					
Station: Not Available Offset: Not Available		Hammer Fall: 30 in. 30 in.		03/14/12	15.0	In Casing Overnight					
Ground Elevation: 773.26 ft		Hammer/Rod Type: Auto/AWJ									
		Rig: Diedrich D-50 C _c = 1.5									
Depth (ft)	Strata ¹⁰	CLASSIFICATION OF MATERIALS (Description)	Well Diagram	Run (Dip deg.)	Core Rec. % (R ₀₀ %)	Drill Rate minutes/ft	Blows/6" (N Value) ¹¹	Moisture Content %	Gravel %	Sand %	Fines %
55		Remarks: 1) Ground surface elevation and boring location surveyed by Vermont Survey and Engineering, Inc. 2) Driller noted augers out of plumb due to hard drilling resistance through cobble at 7' deep. 3) Hollow stem auger refusal at 9' deep on inferred large cobble/boulder. Driller switched to spinning 4" flush joint casing and washing with mud rotary bit. Driller was able to advance past obstruction. 4) Driller inferred advance through cobble from approximately 15.8' to 17' deep. 5) Casing refusal at 32' deep. Roller bit advance from 32' to 36.5' deep was slow with hard resistance. Observed consistent milky white wash return with rock particles/fragments. Rate of advance increased and wash return changed from milky white to brown between 32.5' to 33.5' deep; possible soil infill zone. Set up to attempt core C1 at 36.5' deep. 6) Boring terminated at bottom of C2 at 46.5' deep. Set 3" I.D. PVC casing for geophysical testing to 34' deep (plus 6" bottom cap) with road box recessed slightly below roadway pavement surface. See Well Log. 7) Hammer efficiency is assumed. 8) Soil descriptions are per the Burmister Classification System based on visual observations.									
60											
65											
70											
75											
80											
85											
90											
95											
Notes: 1. Stratification lines represent approximate boundary between material types. Transition may be gradual. 2. N Values have not been corrected for hammer energy. CE is the hammer energy correction factor. 3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.											

GEODESIGN BORING LOG - NO STA - OFFSET 888-04.4 CAVENDISH ER BR 0146(13) VERMONT AOT DOT 5/20/13

PROJECT NAME: CAVENDISH
PROJECT NUMBER: ER BR 0146(13)

TYLIN INTERNATIONAL

FILE NAME: zllc318bdrbor1.dgn
PROJECT LEADER: J. OLUND
DESIGNED BY: J. OLUND
BORING LOGS 1

PLOT DATE: 7/19/2013
DRAWN BY: S. MORGAN
CHECKED BY: T. POULIN
SHEET 20 OF 49

 STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION		BORING LOG		Boring No.: B-2				
		Cavendish ER BR 0146(13)		Page No.: 1 of 1				
Cavendish, Vermont		Casing		Pin No.: 11c318				
Boring Crew: B. DeLude (SJB), J. Gilman (GeoDesign)		Sampler		Checked By: JAG				
Date Started: 3/14/12 Date Finished: 3/15/12		Type: FJ SS	Groundwater Observations ³					
VTSPG NAD83: N 325122.89 ft E 1615301.91 ft		I.D.: 4 in 1.38 in	Date	Depth (ft)	Notes			
Station: Not Available Offset: Not Available		Hammer Wt: 140 lb. 140 lb.	03/15/12		See note 2			
Ground Elevation: 773.27 ft		Hammer Fall: 30 in. 30 in.						
		Hammer/Rod Type: Auto/AWJ						
		Rig: Diedrich D-50 C _c = 1.5						
Depth (ft)	Strata ¹	CLASSIFICATION OF MATERIALS (Description)	Well Diagram	Blows/ft ² (N Value) ²	Moisture Content %	Gravel %	Sand %	Fines %
0-10		Inferred Fill. (Inferred from B-1).						
10-32.5		Inferred Silty Sand & Gravel with Cobbles and Boulders. (Inferred from B-1)						
32.5-35		Hole stopped @ 32.5 ft Rollerbit refusal on inferred bedrock.						
Notes:		1) Stratification lines represent approximate boundary between material types. Transition may be gradual. 2) N Values have not been corrected for hammer energy. C _c is the hammer energy correction factor. 3) Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.						

BOTTOM OF
ABUT. NO. 1
EL. 762.0

ESTIMATED BOTTOM OF
PILE AT ABUT. NO. 1
EL. 738.7

GEODESIGN BORING LOG - NO STA+ OFFSET 888-044 CAVENDISH ER BR 0146(13) VERMONT AOT.GDT 5/20/13



PROJECT NAME: CAVENDISH	PLOT DATE: 7/19/2013
PROJECT NUMBER: ER BR 0146(13)	DRAWN BY: S. MORGAN
FILE NAME: zllc318bdrbor2.dgn	CHECKED BY: T. POULIN
PROJECT LEADER: J. OLUND	SHEET 21 OF 49
DESIGNED BY: J. OLUND	
BORING LOGS 2	

VT Trans		STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION		BORING LOG		Boring No.: B-3		
				Cavendish ER BR 0146(13)		Page No.: 1 of 1		
				Cavendish, Vermont		Pin No.: 11c318		
						Checked By: JAG		
Boring Crew: B. DeLude (SUB), J. Gilman (GeoDesign)		Casing Type: AUGER		Sampler: SS		Groundwater Observations ^a		
Date Started: 3/08/12		Date Finished: 3/08/12		I.D.: 4.25 in		Date: 03/08/12		
VTSPG NAD83: N 325129.17 ft E 1615318.39 ft		Hammer Wt: N.A.		140 lb.		Depth (ft): 13.5		
Station: Not Available		Hammer Fall: N.A.		30 in.		Notes: Wet Sample		
Ground Elevation: 772.99 ft		Hammer/Rod Type: Auto/NWJ		Rig: Diedrich D-50				
				C _t = 1.5				
Depth (ft)	Strata ^b	CLASSIFICATION OF MATERIALS (Description)	Well Diagram	Blows/ft ^c (N Value)	Moisture Content %	Gravel %	Sand %	Fines %
5		S1 (5'-7'): Loose, brown fine to coarse SAND, little Silt, moist. Rec. = 0.75 ft		3-2-2-13 (4)				
10		S2 (10'-12'): Dense, brown fine to coarse GRAVEL, some fine to coarse Sand, little Silt, moist. Angular and pulverized rock fragments in spoon tip. Rec. = 1.08 ft		8-16-29-44 (45)				
15		S3 (13.5'-15.5'): Dense, brown (and oxidized) fine to coarse GRAVEL and fine to coarse SAND, little Silt, wet. Rec. = 1.33 ft		26-15-20-14 (35)				
		S4 (15.5'-17.5'): Similar description as S3 except medium dense. Rec. = 1.08 ft		4-8-18-38 (26)				
		S5 (17.5'-19.5'): Dense, brown (and oxidized) fine to coarse GRAVEL, some fine to coarse Sand, little Silt, wet. Rec. = 1.42 ft		17-20-25-22 (45)				
		S6 (20'-22'): Dense, brown fine to coarse GRAVEL and fine to coarse SAND, little Silt, wet. Rec. = 1.25 ft		17-26-19-56 (45)				
		S7 (25'-27'): Very dense, brown to dark brown fine to coarse GRAVEL and fine to coarse SAND, little Silt, wet. Rec. = 2.0 ft		14-18-50-36 (68)				
		S8 (30'-30.33'): Refusal, brown fine to coarse GRAVEL, some fine to coarse Sand, little Silt, wet. Rec. = 0.33 ft		50/4" (R)				
		Hole stopped @ 35.0 ft Borehole terminated due to lost auger plug in hole.						
		Remarks: 1) Ground surface elevation and exploration location surveyed by Vermont Survey and Engineering, Inc. 2) Increased rig chatter and slow advance from 12' to 13.5' deep and 31' to 32' deep (augering through inferred cobbles). Driller lost auger plug and could not recover after advancing to 35' deep. Terminated exploration with no refusal. Set 3" I.D. PVC casing for geophysical testing to 30' deep (plus 6" bottom cap) with road box recessed slightly below roadway pavement surface. See Well Log. 4) Hammer efficiency is assumed. 5) Soil descriptions are per the Burmister Classification System based on visual observations.						
Notes:		1. Stratification lines represent approximate boundary between material types. Transition may be gradual. 2. N Values have not been corrected for hammer energy. SE is the hammer energy correction factor. 3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.						

BOTTOM OF
ABUT. NO. 1
EL. 762.0

ESTIMATED BOTTOM OF
PILE AT ABUT. NO. 1
EL. 735.0

GEODESIGN BORING LOG - NO STA - OFFSET 888-04.4 CAVENDISH ER BR 0146.GPJ VERMONT AOT.GDT 5/20/13

TYLININTERNATIONAL

PROJECT NAME: CAVENDISH
PROJECT NUMBER: ER BR 0146(13)

FILE NAME: zllc318bdrbor3.dgn
PROJECT LEADER: J. OLUND
DESIGNED BY: J. OLUND
BORING LOGS 3

PLOT DATE: 7/19/2013
DRAWN BY: S. MORGAN
CHECKED BY: T. POULIN
SHEET 22 OF 49

VT <small>Working to Get You There</small>		STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION		BORING LOG		Boring No.: B-4							
				Cavendish ER BR 0146(13)		Page No.: 1 of 1							
				Cavendish, Vermont		Pin No.: 11c318							
						Checked By: JAG							
Boring Crew: B. DeLude (SJB), J. Gilman (GeoDesign)		Type: AUGER		Casing: SS		Groundwater Observations ⁸							
Date Started: 3/06/12 Date Finished: 3/07/12		I.D.: 4.25 in 1.38 in		Sampler		Date Depth (ft) Notes							
VTSPG NAD83: N 325133.28 ft E 1615335.10 ft		Hammer Wt: N.A. 140 lb.		03/06/12 20.0 Wet sample									
Station: Not Available Offset: Not Available		Hammer Fall: N.A. 30 in.		03/07/12 12.0 In Augers Overnight									
Ground Elevation: 772.14 ft		Rig: Diedrich D-50		C _t = 1.5									
Depth (ft)	Strata ¹⁾	CLASSIFICATION OF MATERIALS (Description)	Well Diagram	Run (Dip deg.)	Core Rec. % (R00 %)	Drill Rate minutes/ft	Blows/6" (N Value) ²⁾	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
0-5		S1 (0'-0.5'): Refusal, brown fine to coarse SAND, some Silt, little fine to coarse Gravel, frozen/moist. Rock fragments and pulverized flour in spoon tip. Rec. = 0.5 ft					23-10/0 ¹⁾ (R)						
5-7		S2 (5'-7'): Medium dense, gray brown fine to coarse SAND and fine to coarse GRAVEL, trace to little Silt, moist. Rec. = 0.75 ft					16-9-7-7 (16)						
10-12		S3 (10'-12'): Very dense, white/gray/brown (with some oxidization), fine to coarse SAND and fine to coarse GRAVEL, little Silt, moist. Fragments from gravel/cobbles pulverized in spoon tip. Rec. = 1.08 ft (AASHTO M145 Classification: A-1-b.)					13-27-32-24 (59)	57.6	28.8	13.6		NP	NP
12-13.25		S4 (12'-13.25'): Refusal, brown (with oxidized orange) fine to coarse SAND, little to some Silt, little fine to coarse Gravel, moist. Contains some pulverized rock pieces. Rec. = 1.0 ft (AASHTO M145 Classification: A-1-a.)					22-25-50/3 (R)	63.1	25.9	11.0		NP	NP
15-17		S5 (15'-17'): Similar description as S4 except very dense. Rec. = 1.5 ft					36-30-35-41 (65)						
17-17		S6 (17'): Refusal, no recovery. Rec. = 0.0 ft					50/0 (R)						
20-22		S7 (20'-22'): Medium dense, brown fine to coarse SAND, little Silt, little fine to coarse Gravel, very moist. Rec. = 1.08 ft					19-7-8-17 (15)						
25-27		S8 (25'-27'): Very dense, brown and dark brown fine to coarse SAND, some Silt, trace fine to coarse Gravel, wet. One piece angular coarse gravel in sample jar. Rec. = 1.0 ft					24-46-30-26 (76)						
32.5-36.5		C1 (32.5' to 36.5'): (Top 16"): Gray, hard, fresh, fine grained Boulder. (Bottom 14"): Gravel and Rock fragments.		C1	63 (38)	3							
36.5		Hole stopped @ 36.5 ft Borehole abandoned after coring through boulder.											
40		Remarks: 1) Ground surface elevation and exploration location surveyed by Vermont Survey and Engineering, Inc. 2) Driller noted difficult drilling from 0' to 17' deep with inferred frequent cobbles and boulders. Cobbles were less frequent and advance faster from 17' to 31.5' deep. 3) Driller noted heaving sands in augers while attempting split spoon sample at 30' deep. Driller advanced augers to refusal at 31.5' deep and advanced roller bit in augers to 32.5' deep into inferred top of bedrock end of first day. Driller cleaned out with roller bit the following day and attempted C1. 4) End of exploration at 36.5' deep after coring boulder and attempting to advance augers below it. Driller could not advance below boulder due to risk of losing tools in hole. Set 3" I.D. PVC casing for geophysical testing to 31' deep (plus 6" bottom cap) with 3' stick up and protective riser. See Well Log. 5) Hammer efficiency is assumed. 6) Soil descriptions are per the Burmister Classification System based on visual observations. Lab testing gradations reported are per AASHTO M145.											
Notes: 1. Stratification lines represent approximate boundary between material types. Transition may be gradual. 2. N Values have not been corrected for hammer energy. CE is the hammer energy correction factor. 3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.													

BOTTOM OF
ABUT. NO. 1
EL. 762.0

ESTIMATED BOTTOM OF
PILE AT ABUT. NO. 1
EL. 732.0

GEODESIGN BORING LOG - NO STA - OFFSET 888-014 - CAVENDISH ER BRF 0146(13) VERMONT AOT DOT 5/20/13

TYLININTERNATIONAL

PROJECT NAME: CAVENDISH
PROJECT NUMBER: ER BRF 0146(13)

FILE NAME: zllc318bdrbor4.dgn
PROJECT LEADER: J. OLUND
DESIGNED BY: J. OLUND
BORING LOGS 4

PLOT DATE: 7/19/2013
DRAWN BY: S. MORGAN
CHECKED BY: T. POULIN
SHEET 23 OF 49

 STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION		BORING LOG		Boring No.: B-5					
		Cavendish ER BR 0146(13)		Page No.: 1 of 1					
Cavendish, Vermont				Pin No.: 11c318					
				Checked By: JAG					
Boring Crew: B. DeLude (SJB), J. McIntyre (GeoDesign)		Casing Sampler		Groundwater Observations ⁹⁹					
Date Started: 2/29/12 Date Finished: 2/29/12		Type: AUGER SS		Date					
VTSPG NAD83: N 325252.49 ft E 1615346.45 ft		I.D.: 4.25 in 1.38 in		Depth (ft)					
Station: Not Available Offset: Not Available		Hammer Wt: N.A. 140 lb.		Notes					
Ground Elevation: 770.41 ft		Hammer Fall: N.A. 30 in.		02/29/12 15.0 Wet Sample					
		Hammer/Rod Type: Auto/NWJ							
		Rig: Diedrich D-50 C _r = 1.5							
Depth (ft)	Strata ⁹⁹	CLASSIFICATION OF MATERIALS (Description)	Blows/ft (N Value) ⁹⁹	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
5	X X X X	S1 (5'-5.5'): Refusal. Rock fragment approximately 3" long recovered. Rec. = 0.25 ft	54 (R)						
10	X X X X	S2 (10'-12'): Medium dense, brown fine to coarse SAND, some fine Gravel, trace Silt, moist. Rec. = 0.5 ft (AASHTO M145 Classification: A-1-a.)	5-9-18-21 (27)		64.7	26.0	9.3	NP	NP
15	X X X X	S3 (15'-15.08'): Refusal. Gravel piece. Wet spoon. Rec. = 0.08 ft	50/1" (R)						
20	X X X X	S4 (20'-21'): Refusal, brown fine to coarse SAND, some fine to coarse Gravel, little Silt, wet. Rec. = 1.0 ft	20-50/6" (R)						
25		Hole stopped @ 25.0 ft Borehole terminated due to lost auger plug in hole.							
Remarks: 1) Ground surface elevation and exploration location surveyed by Vermont Survey and Engineering, Inc. 2) Auger refusal encountered at 25' deep with difficult advance for entirety of borehole (inferred cobbles and boulders). 3) Driller lost auger plug at 25' deep. Unable to recover and drive split spoon sample. Boring terminated. 4) Hammer efficiency is assumed. 5) Soil descriptions are per the Burmister Classification System based on visual observations. Lab testing gradations reported are per AASHTO M145.									
Notes: 1. Stratification lines represent approximate boundary between material types. Transition may be gradual. 2. N Values have not been corrected for hammer energy. CE is the hammer energy correction factor. 3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.									

BOTTOM OF
 ABUT. NO. 2
 EL. 761.25

ESTIMATED BOTTOM
 OF PILE AT
 ABUT. NO. 2
 EL. 681.25

TYLIN INTERNATIONAL

PROJECT NAME: CAVENDISH
 PROJECT NUMBER: ER BRF 0146(13)

FILE NAME: zllc318bdrbor5.dgn
 PROJECT LEADER: J. OLUND
 DESIGNED BY: J. OLUND
 BORING LOGS 5

PLOT DATE: 7/19/2013
 DRAWN BY: S. MORGAN
 CHECKED BY: T. POULIN
 SHEET 24 OF 49

 STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION		BORING LOG		Boring No.: B-6A					
		Cavendish ER BR 0146(13)		Page No.: 1 of 1					
Cavendish, Vermont				Pin No.: 11c318					
				Checked By: JAG					
Boring Crew: B. DeLude (SJB), J. McIntyre (GeoDesign)		Casing Type: AUGER	Sampler: SS	Groundwater Observations ³					
Date Started: 2/29/12 Date Finished: 2/29/12		I.D.: 4.25 in	1.38 in						
VTSPG NAD83: N 325269.08 ft E 1615402.33 ft		Hammer Wt: N.A.	140 lb.	Date: 02/29/12					
Station: Not Available Offset: Not Available		Hammer Fall: N.A.	30 in.	Depth (ft):					
Ground Elevation: 769.37 ft		Hammer/Rod Type: Auto/NWJ		Notes: None Observed					
		Rig: Diedrich D-50	C _e = 1.5						
Depth (ft)	Strata ¹	CLASSIFICATION OF MATERIALS (Description)			Blows/6" (N Value) ²	Moisture Content %	Gravel %	Sand %	Fines %
5	x x x	Inferred Fill. (Inferred from B-5).							
10	x x x	Hole stopped @ 10.0 ft Hollow stem auger refusal.							
15		Remarks: 1) Ground surface elevation and exploration location surveyed by Vermont Survey and Engineering, Inc. 2) Hollow stem auger refusal at 10' deep. Borehole offset 5' south to B-6B to continue advance below 10' deep.							
20									
25									
30									
35									
40									
45									
Notes:					1. Stratification lines represent approximate boundary between material types. Transition may be gradual. 2. N Values have not been corrected for hammer energy. CE is the hammer energy correction factor. 3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.				

BOTTOM OF
ABUT. NO. 2
EL. 761.25

ESTIMATED BOTTOM
OF PILE AT
ABUT. NO. 2
EL. 681.25

TYLIN INTERNATIONAL

PROJECT NAME: CAVENDISH
PROJECT NUMBER: ER BRF 0146(13)

FILE NAME: zllc318bdrbor6.dgn
PROJECT LEADER: J. OLUND
DESIGNED BY: J. OLUND
BORING LOGS 6

PLOT DATE: 7/19/2013
DRAWN BY: S. MORGAN
CHECKED BY: T. POULIN
SHEET 25 OF 49

 STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION		BORING LOG		Boring No.: B-6B					
		Cavendish ER BR 0146(13)		Page No.: 1 of 1					
Cavendish, Vermont				Pin No.: 11c318					
				Checked By: JAG					
Boring Crew: B. DeLude (SJB), J. Gaudette (GeoDesign)		Casing Sampler		Groundwater Observations ⁹					
Date Started: 3/08/12 Date Finished: 3/08/12		Type: AUGER SS		Date					
VTSPG NAD83: N 325264.58 ft E 1615399.94 ft		I.D.: 4.25 in 1.38 in		Depth (ft)					
Station: Not Available Offset: Not Available		Hammer Wt: N.A. 140 lb.		Notes					
Ground Elevation: 769.87 ft		Hammer Fall: N.A. 30 in.		03/08/12 14.5 Wet Sample					
		Hammer/Rod Type: Auto/NWJ							
		Rig: Diedrich D-50 C _e = 1.5							
Depth (ft)	Strata ⁸	CLASSIFICATION OF MATERIALS (Description)	Blows/ft ¹⁰ (N Value) ¹⁰	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
5	x x x	Inferred Fill. (Inferred from B-5).							
10	x x x	S1 (9.5'-11.5'): Very dense, light beige with brown to gray brown fine to coarse GRAVEL and fine to coarse SAND, trace Silt, damp. Rec. = 1.5 ft (AASHTO M145 Classification: A-1-b.)	36-39-32-50 (71)	49.1	35.5	15.4	NP	NP	
15	x x x	S2 (12'-14'): Dense, tan brown to dark brown fine to coarse SAND, some fine to coarse Gravel, little Silt, moist. Rec. = 1.17 ft (AASHTO M145 Classification: A-1-a.)	26-18-21-22 (39)	56.3	32.0	11.6	NP	NP	
17	x x x	S3 (14.5'-15.5'): Refusal, dark brown fine to coarse SAND, little fine to coarse Gravel, little Silt, wet. Rec. = 0.5 ft	20-50/6" (R)						
19	x x x	S4 (17.5'-19.5'): Very dense, light to dark brown fine to coarse SAND, some fine to coarse Gravel, little Silt, wet. Rec. = 0.5 ft	16-18-32-38 (50)						
20	x x x	S5 (19.5'-20.3'): Refusal. Top 2": Dark, brown similar description to S4. Bottom 4": Gray, possible cobble or boulder fragments. Rec. = 0.5 ft	55-50/3" (R)						
20.3		Hole stopped @ 20.3 ft Hollow stem auger refusal on inferred boulder.							
25		Remarks: 1) Ground surface elevation and exploration location surveyed by Vermont Survey and Engineering, Inc. B-6B performed 5' south of B-6A to resume advance after shallow refusal. 2) Small cobbles less than 6" diameter inferred between 3' and 7' deep and 8' to 9.5' deep. Similar drilling resistance through inferred cobbles to 12' deep. Attempted split spoon sample at 12' deep (S2). Slightly less grinding resistance encountered through 15' deep, with difficult grinding encountered at 17' to 19' deep. 3) Hollow stem auger refusal at 19.5' deep on possible boulder. Split spoon sample attempted at 19.5' deep (S5). Boring terminated. 4) Hammer efficiency is assumed. 5) Soil descriptions are per the Burmister Classification System based on visual observations. Lab testing gradations reported are per AASHTO M145.							
Notes: 1. Stratification lines represent approximate boundary between material types. Transition may be gradual. 2. N Values have not been corrected for hammer energy. CE is the hammer energy correction factor. 3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.									

BOTTOM OF
ABUT NO. 2
EL. 761.25

ESTIMATED BOTTOM
OF PILE AT
ABUT. NO. 2
EL. 681.25

TYLIN INTERNATIONAL

PROJECT NAME: CAVENDISH
PROJECT NUMBER: ER BRF 0146(13)

FILE NAME: zllc318bdrbor7.dgn
PROJECT LEADER: J. OLUND
DESIGNED BY: J. OLUND
BORING LOGS 7

PLOT DATE: 7/19/2013
DRAWN BY: S. MORGAN
CHECKED BY: T. POULIN
SHEET 26 OF 49

VTTrans		STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION		BORING LOG		Boring No.: B-7						
Cavendish ER BR 0146(13) <td colspan="2">Cavendish, Vermont <td colspan="2">Page No.: 1 of 2</td> </td>				Cavendish, Vermont <td colspan="2">Page No.: 1 of 2</td>		Page No.: 1 of 2						
Cavendish, Vermont <td colspan="2">Checked By: DTH <td colspan="2">Pin No.: 11c318 </td></td>				Checked By: DTH <td colspan="2">Pin No.: 11c318 </td>		Pin No.: 11c318						
Boring Crew: T. Farrell (SJB), R. Marshall (GeoDesign)		Type: FJ SS		Casing Sampler		Groundwater Observations ⁹						
Date Started: 10/29/12 Date Finished: 11/01/12		I.D.: 3 in 1.38 in		Date		Date						
VTSPG NAD83: N 325276.70 ft E 1615418.10 ft		Hammer Wt: N.A. 140 lb.		10/30/12		13.0 In casing (20 min)						
Station: Not Available Offset: Not Available		Hammer Fall: N.A. 30 in		10/31/12		15.8 In casing (16 hrs)						
Ground Elevation: 771 ft		Hammer/Rod Type: Auto/AWJ		C _t = 1.5								
Rig: CME 550X ATV												
Depth (ft)	Strata ⁸	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (ROD %)	Drill Rate minutes/ft	Blows/6" (N Value) ¹⁰	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
5	X X X	Inferred Fill.										
10	X X X	S1 (9.5'-10.33'): Refusal, gray brown fine to coarse GRAVEL and fine to coarse SAND, trace Silt. Rec. = 0.58 ft				45-50/4" (R)						
15	X X X	S2 (11.5'-12.5'): Very dense, gray brown fine to medium SAND, some fine to coarse Gravel, trace (+) Silt. Rec. = 0.75 ft				31-25-38-47 (63)						
20	X X X	S3 (14.5'-16.5'): Dense, gray brown fine to coarse GRAVEL, some fine to coarse Sand, trace Silt. Rec. = 0.5 ft				25-22-24-36 (46)						
25	X X X	S4 (16.5'-18.5'): Dense, gray brown fine to medium SAND and fine to coarse GRAVEL, trace Silt. Rec. = 1.25 ft				24-20-22-26 (42)						
30	X X X	S5 (19.5'-19.58'): Refusal, no recovery. Rec. = 0.0 ft				50/1" (R)						
35	X X X	S6 (24.5'-26.5'): Dense, gray brown fine to coarse SAND and fine to coarse GRAVEL, little Silt. Rec. = 0.92 ft (AASHTO M145 Classification: A-1-b.)				68-22-18-17 (40)	11.0	50.7	33.3	16.1	NP	NP
40	X X X	S7 (29.5' - 31.5'): Very dense, gray brown fine to coarse SAND and fine to coarse GRAVEL, little Silt. Rec. = 0.67 ft				21-20-36-50 (56)						
45	X X X	S8 (34.5' - 36.5'): Dense, gray brown fine to coarse SAND, some fine to coarse Gravel, some Silt. Rec. = 0.75 ft (AASHTO M145 Classification: A-2-4.)				52-19-28-22 (47)	12.4	37.9	41.5	20.6	NP	NP
50	X X X	S9 (39.5' - 40.42'): Refusal, gray brown fine to medium SAND, some (+) fine to coarse Gravel, trace Silt. Rec. = 0.5 ft				34-50/5" (R)						
55	X X X	C1 (43.9'-44.4'): Inferred cobble (no recovery).	C1	0		50/1" (R)						
60	X X X	S10 (44.5'-44.58'): Refusal, coarse GRAVEL (quartzite fragments). Rec. = 0.08 ft	C2	55	9							
65	X X X	C2 (45.2'-50.2'): Boulder and Cobble fragments with subrounded Gravel; largest fragment 14".			5							
70	X X X				3							
75	X X X				3							
80	X X X				3							
85	X X X				3							
90	X X X				3							
95	X X X				3							
Notes: 1. Stratification lines represent approximate boundary between material types. Transition may be gradual. 2. N Values have not been corrected for hammer energy. CE is the hammer energy correction factor. 3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.												

BOTTOM OF ABUT NO. 2 EL. 761.25

GEODESIC BORING LOG - NO STA. OFFSET - 888-04.4 CAVENDISH ER BRF 0146(13) VERMONT AOT.GDT - 5/20/13

VTTrans		STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION		BORING LOG		Boring No.: B-7						
Cavendish ER BR 0146(13)				Cavendish, Vermont		Page No.: 2 of 2						
Cavendish, Vermont				Checked By: DTH		Pin No.: 11c318						
Boring Crew: T. Farrell (SJB), R. Marshall (GeoDesign)		Type: FJ SS		Casing Sampler		Groundwater Observations ⁹						
Date Started: 10/29/12 Date Finished: 11/01/12		I.D.: 3 in 1.38 in		Date		Date						
VTSPG NAD83: N 325276.70 ft E 1615418.10 ft		Hammer Wt: N.A. 140 lb.		10/30/12		13.0 In casing (20 min)						
Station: Not Available Offset: Not Available		Hammer Fall: N.A. 30 in		10/31/12		15.8 In casing (16 hrs)						
Ground Elevation: 771 ft		Hammer/Rod Type: Auto/AWJ		C _t = 1.5								
Rig: CME 550X ATV												
Depth (ft)	Strata ⁸	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (ROD %)	Drill Rate minutes/ft	Blows/6" (N Value) ¹⁰	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
55	X X X	C3 (50.2'-54.5'): Cobble fragments with Gravel; largest fragment 4".	C3	59								
60	X X X	C4 (54.5'-60.6'): Cobble fragments with coarse Sand and fine to coarse Gravel; largest fragment 3".	C4	16	3							
65	X X X	Hole stopped @ 60.6 ft Borehole terminated after breaking spin casing shoe.			3							
70	X X X	Remarks: 1) Ground surface elevation was estimated from topographic plan and exploration location was taped from existing features in the field by GeoDesign. 2) Hollow stem auger refusal at 7.9 feet; boring offset approximately 2.5 feet SW and advanced using 4-inch ID Flush Joint casing with drive and wash method. 3) Roller bit advanced through inferred cobbles and boulders below 19.6 feet, to 34.5 feet. 4) At 34.5 feet, 4-inch casing ended, and 3-inch Flush Joint casing was telescoped inside and advanced using wash and drive method to 43.6 feet. 5) Attempted to core despite difficulty lowering NX wireline coring barrel to 43.6 feet due to bent or crooked 3-inch casing; grinding noise indicated problems with drive shoe, and 3-inch casing was removed; drive shoe partially crushed. 6) Switched from drive shoe to spin shoe on 3-inch casing and advanced into rock from 43.6 to 43.9 feet and cleaned out. 7) Rock core attempted with white cuttings from 43.9 to 44.4 feet through inferred cobble (no recovery). 8) Flush joint casing spun to 49.3 feet to maximum reach of casing. Then roller bit advanced through gravelly sands to pilot ahead of casing to 51.4 feet before switching over to NQ wireline. 9) Borehole collapsed to 56 feet after removing NQ casing in order to remove a 5 ft and add a 10ft section. 10) Removed 3-inch casing in order to add four, 10-ft sections of HQ casing to bottom of casing string in order to re-case borehole to the bottom of borehole; found spin shoe to be damaged / partially broken with carbide fragments in the borehole. Borehole subsequently abandoned at 60.6 feet. 11) Hammer efficiency is assumed. 12) Soil descriptions are per the Burmister Classification System based on visual observations. Lab testing gradations reported are per AASHTO M145.			8							
75	X X X				2							
80	X X X											
85	X X X											
90	X X X											
95	X X X											
Notes: 1. Stratification lines represent approximate boundary between material types. Transition may be gradual. 2. N Values have not been corrected for hammer energy. CE is the hammer energy correction factor. 3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.												

ESTIMATED BOTTOM OF PILE AT ABUT. NO. 2 EL. 681.25

GEODESIC BORING LOG - NO STA. OFFSET - 888-04.4 CAVENDISH ER BRF 0146(13) VERMONT AOT.GDT - 5/20/13

PROJECT NAME: CAVENDISH
 PROJECT NUMBER: ER BRF 0146(13)
 FILE NAME: z11c318bdrbor8.dgn
 PROJECT LEADER: J. OLUND
 DESIGNED BY: J. OLUND
 BORING LOGS 8
 PLOT DATE: 7/19/2013
 DRAWN BY: S. MORGAN
 CHECKED BY: T. POULIN
 SHEET 27 OF 49



VT Trans		STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION		BORING LOG			Boring No.: B-8					
				Cavendish ER BR 0146(13)			Page No.: 1 of 2					
				Cavendish, Vermont			Pin No.: 11c318					
							Checked By: DTH					
Boring Crew: T. Farrell (SJB), A. Barribault (GeoDesign)		Type: FJ	Casing: SS	Groundwater Observations ⁹								
Date Started: 11/01/12	Date Finished: 11/05/12	I.D.: 3 in	Sampler: 1.38 in	Date: 11/05/12	Depth (ft):	Notes: See note 4.						
VTSPG NAD83: N 325128.10 ft E 1615340.60 ft		Hammer Wt: N.A.	140 lb.									
Station: Not Available Offset: Not Available		Hammer Fall: N.A.	30 in.									
Ground Elevation: 772 ft		Hammer/Rod Type: Auto/AWJ										
		Rig: CME 550X ATV	C _g = 1.5									
Depth (ft)	Strata ¹	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. (ROD %)	Drill Rate (minutes/ft)	Blows/ft ² (N Value)	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
5												
10		S1 (9.5'-10.83'): Refusal, brown fine to medium SAND and fine to coarse GRAVEL, trace (+) Silt. Rec. = 0.5 ft				10-12-50/4" (R)						
15		S2 (15'-17'): Very dense, dark greenish-brown fine to coarse SAND, little fine to coarse Gravel, little Silt. Rec. = 1.17 ft				22-20-38-49 (58)						
20		S3 (20'-22'): Medium dense, dark brown fine to coarse SAND, some fine to coarse Gravel, trace Silt. Rec. = 0.83 ft				16-14-11-11 (25)						
25		S4 (25'-27'): Very dense, brown fine to coarse SAND, little fine to coarse Gravel, little Silt. Rec. = 0.92 ft (AASHTO M145 Classification: A-2-4.)				25-37-48-50/4" (85)	12.8	28.9	52.7	18.4	NP	NP
30		S5 (30'-32'): Very dense, gray-brown fine to coarse SAND, some fine to coarse Gravel, little Silt. Rec. = 1.17 ft				22-32-23-21 (55)						
35		S6 (35'-36.83'): Very dense, gray-brown and black fine to coarse SAND (some possibly completely weathered gravel/cobbles), some Silt, trace (+) fine to coarse Gravel. Rec. = 1.17 ft (AASHTO M145 Classification: A-2-4.)				29-29-44-59/4" (73)	12.4	18.2	60.9	20.9	NP	NP
40		S7 (40'-40.17'): Refusal, gray fine to coarse SAND, little Silt, trace fine Gravel (pulverized, in spoon tip). Rec. = 0.17 ft				50/2" (R)						
45		C1 (40.5' - 45.5') (Top 8"): Cobble and Glacial Till. (Bottom 48"): Moderately hard (with areas soft or friable), moderately weathered, gray with orange weathering areas, medium grained GNEISS, dip and fracture angles 30 to 50 degrees.										
		Hole stopped @ 45.5 ft Borehole terminated due to crooked hole.										
Notes: 1. Stratification lines represent approximate boundary between material types. Transition may be gradual. 2. N Values have not been corrected for hammer energy. C _g is the hammer energy correction factor. 3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.												

BOTTOM OF
ABUT. NO. 1
EL. 762.0

ESTIMATED BOTTOM OF
PILE AT ABUT. NO. 1
EL. 730.8

REDESIGN BORING LOG - NO STA - OFFSET 888-044 CAVENDISH ER BRF 0146.GPJ VERMONT AOT.GDT 5/29/13

VT Trans		STATE OF VERMONT AGENCY OF TRANSPORTATION MATERIALS & RESEARCH SECTION SUBSURFACE INFORMATION		BORING LOG			Boring No.: B-8					
				Cavendish ER BR 0146(13)			Page No.: 2 of 2					
				Cavendish, Vermont			Pin No.: 11c318					
							Checked By: DTH					
Boring Crew: T. Farrell (SJB), A. Barribault (GeoDesign)		Type: FJ	Casing: SS	Groundwater Observations ⁹								
Date Started: 11/01/12	Date Finished: 11/05/12	I.D.: 3 in	Sampler: 1.38 in	Date: 11/05/12	Depth (ft):	Notes: See note 4.						
VTSPG NAD83: N 325128.10 ft E 1615340.60 ft		Hammer Wt: N.A.	140 lb.									
Station: Not Available Offset: Not Available		Hammer Fall: N.A.	30 in.									
Ground Elevation: 772 ft		Hammer/Rod Type: Auto/AWJ										
		Rig: CME 550X ATV	C _g = 1.5									
Depth (ft)	Strata ¹	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. (ROD %)	Drill Rate (minutes/ft)	Blows/ft ² (N Value)	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
55												
60												
65												
70												
75												
80												
85												
90												
95												
Remarks: 1) Ground surface elevation was estimated from topographic plan and exploration location was taped from existing features in the field by GeoDesign. 2) Borehole advanced to 11 feet using 4 1/4" HSA, refusal; offset and advanced using 4" flush joint casing (driven), refusal at 3.5 feet; offset and 4" FJ casing driven to refusal at 3.5 feet, with deflection; offset and advanced with HSA to 15 feet on November 1. 3) HSA removed and 4" FJ casing with spin shoe installed on 11/2 to 11 feet, roller bit advanced ahead to 15 feet, followed by casing and then cleaned out prior to sampling S2 at 15 feet. Casing and roller bit advanced prior to sampling in similar fashion to 30 feet. 4) No groundwater measurements taken due to use of wash water during drilling. 5) At 30 feet 3-inch FJ casing with spin shoe telescoped inside 4-inch casing due to rotational resistance of 4-inch casing on 11/5. Spin casing advanced to 40.5 feet. 6) Began NQ wireline core at 40.5 feet. Wash return water whitish, then gray, with orange between 44.3 and 44.5 feet. 7) Driller attempted to core C2 but could not get the inner core barrel in position to resume advance. Exploration terminated at 44.5 feet deep. 8) Hammer efficiency is assumed. 9) Soil descriptions are per the Burmister Classification System based on visual observations. Lab testing gradations reported are per AASHTO M145.												
Notes: 1. Stratification lines represent approximate boundary between material types. Transition may be gradual. 2. N Values have not been corrected for hammer energy. C _g is the hammer energy correction factor. 3. Water level readings have been made at times and under conditions stated. Fluctuations of groundwater may occur due to other factors than those present at the time measurements were made.												

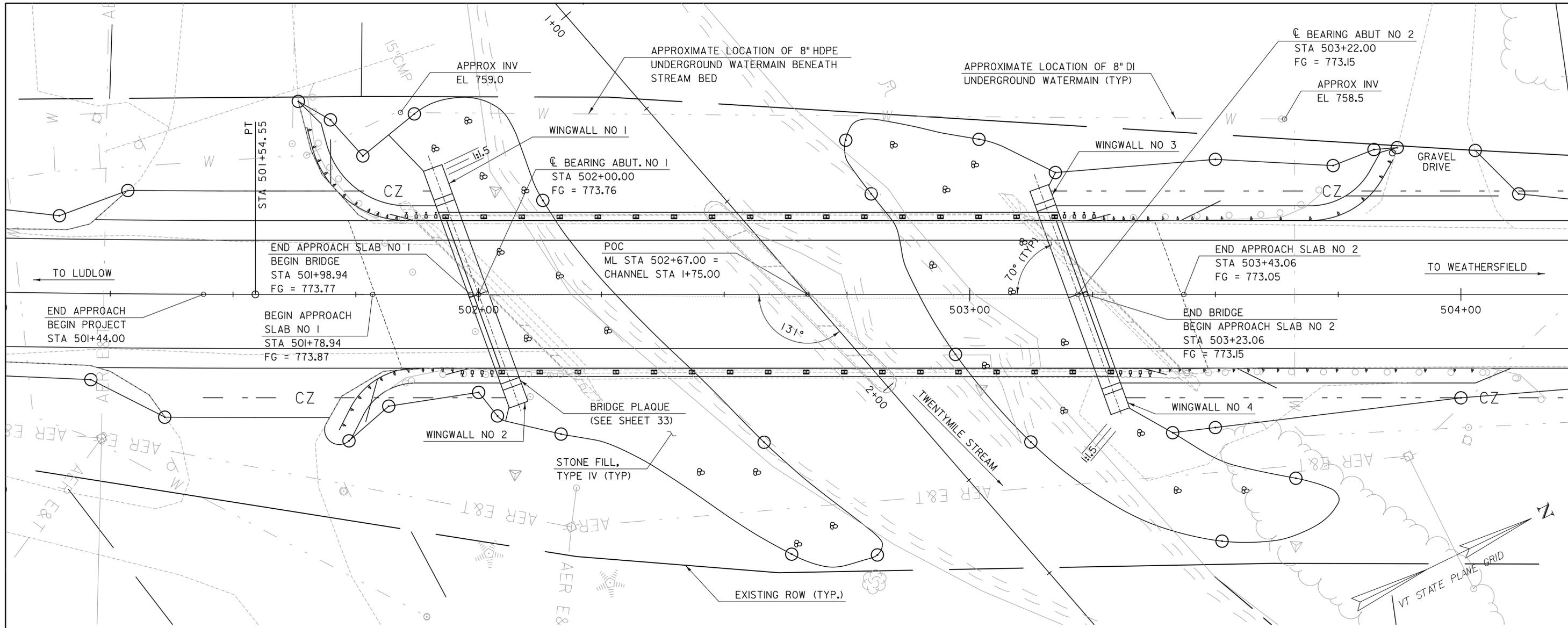
REDESIGN BORING LOG - NO STA - OFFSET 888-044 CAVENDISH ER BRF 0146.GPJ VERMONT AOT.GDT 5/29/13

PROJECT NAME: CAVENDISH
PROJECT NUMBER: ER BRF 0146(13)

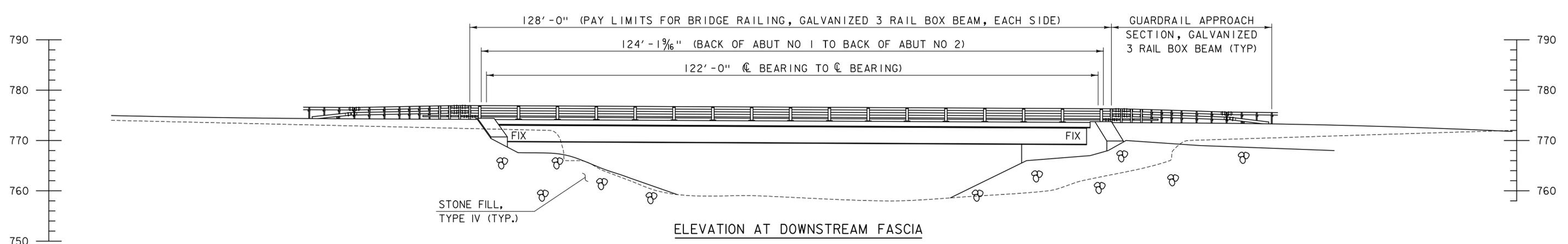
TYLIN INTERNATIONAL

FILE NAME: zllc318bdrbor9.dgn
PROJECT LEADER: J. OLUND
DESIGNED BY: J. OLUND
BORING LOGS 9

PLOT DATE: 7/19/2013
DRAWN BY: S. MORGAN
CHECKED BY: T. POULIN
SHEET 28 OF 49



PLAN

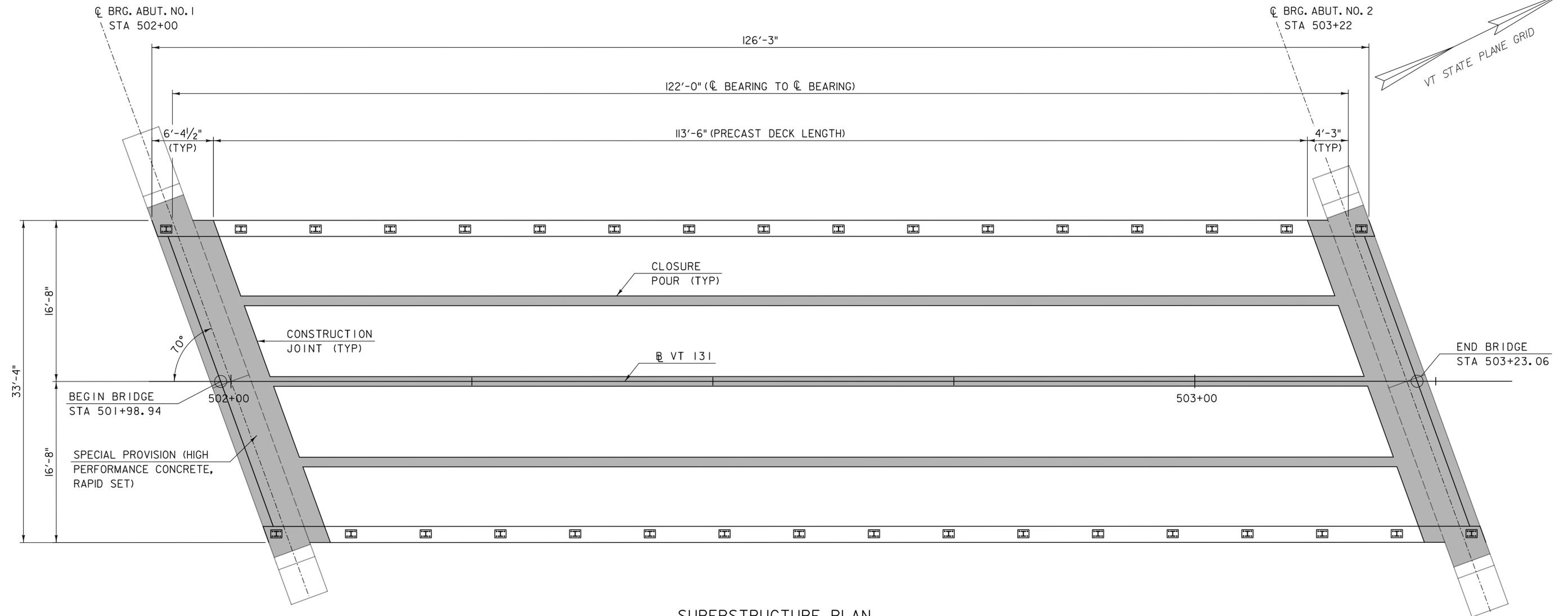


ELEVATION AT DOWNSTREAM FASCIA

PROJECT NAME:	CAVENDISH
PROJECT NUMBER:	ER BRF 0146(13)
FILE NAME:	zllc318bdrpe.dgn
PROJECT LEADER:	J. OLUND
DESIGNED BY:	T. POULIN
PLAN & ELEVATION	
PLOT DATE:	7/19/2013
DRAWN BY:	T. POULIN
CHECKED BY:	J. OLUND
SHEET	29 OF 49

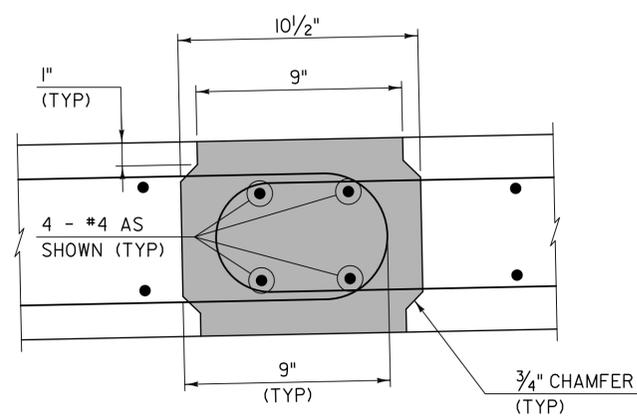
SCALE 1" = 10'-0"

TYLININTERNATIONAL



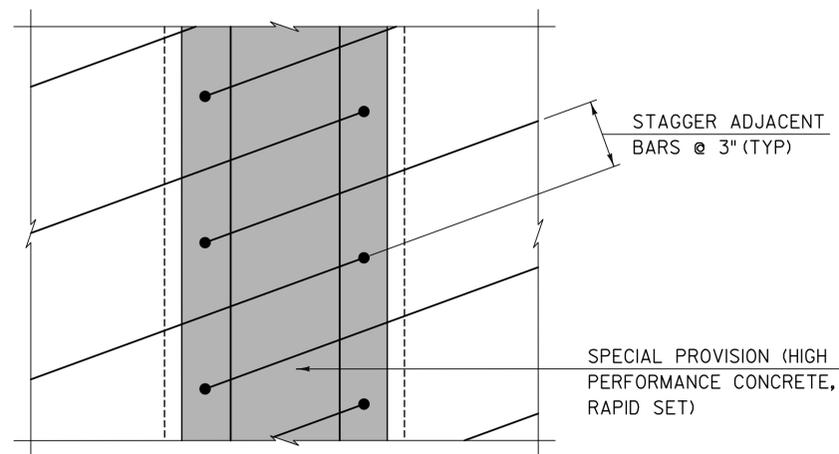
SUPERSTRUCTURE PLAN

SCALE: 3/16" = 1'-0"



CLOSURE POUR DETAIL SECTION

SCALE: 3" = 1'-0"



CLOSURE POUR DETAIL PLAN

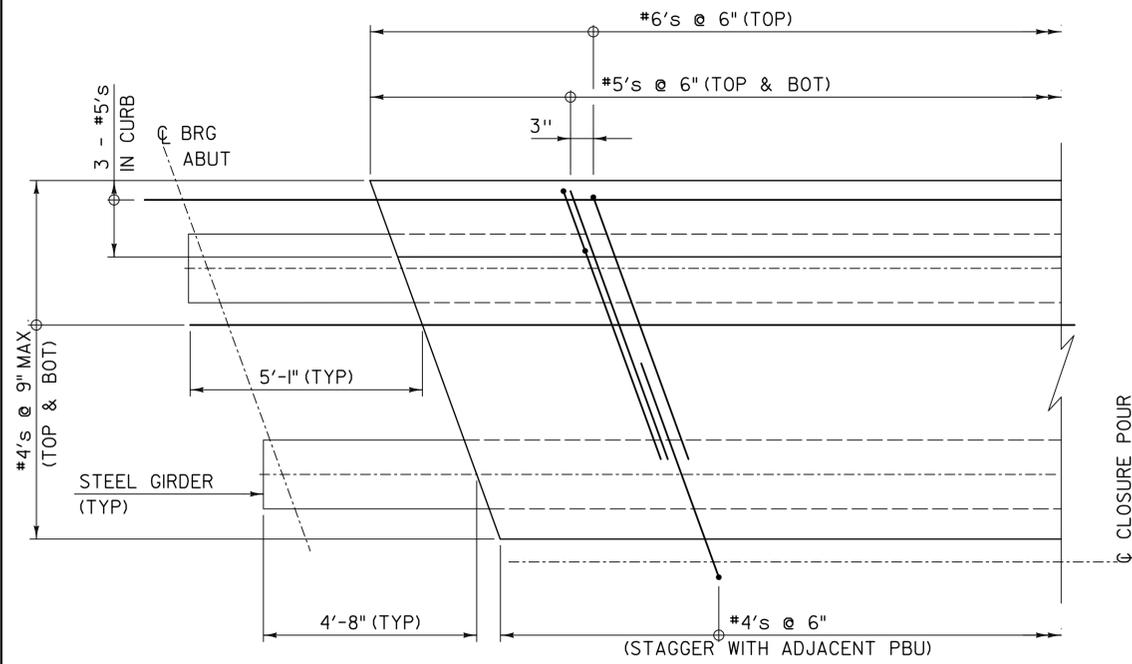
SCALE: 3" = 1'-0"

TYLIN INTERNATIONAL

PROJECT NAME: CAVENDISH
PROJECT NUMBER: ER BRF 0146(13)

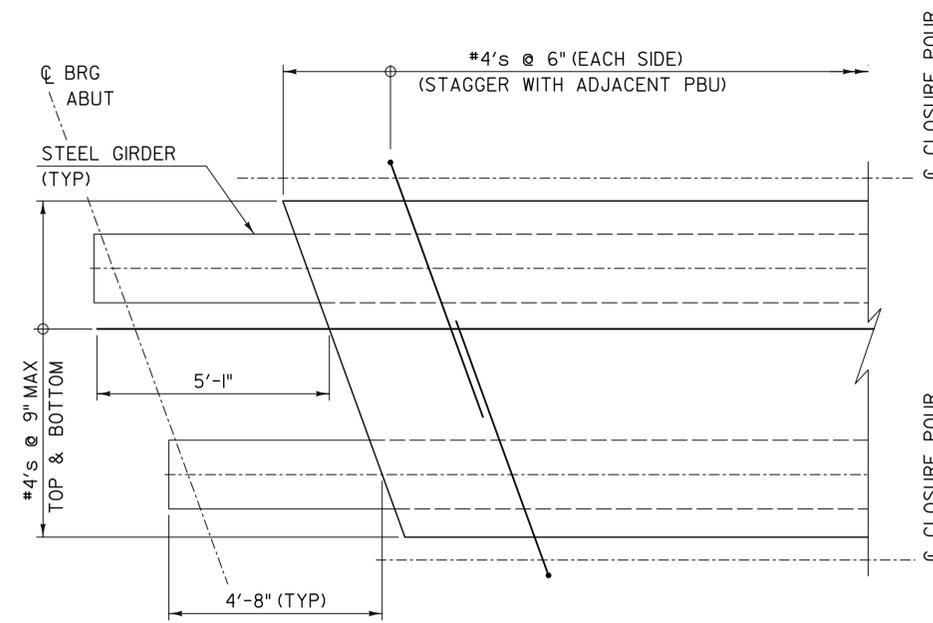
FILE NAME: zllc318bdr-supl.dgn
PROJECT LEADER: J. OLUND
DESIGNED BY: S. KELLER
SUPERSTRUCTURE PLAN

PLOT DATE: 7/19/2013
DRAWN BY: S. MORGAN
CHECKED BY: D. MYERS
SHEET 30 OF 49



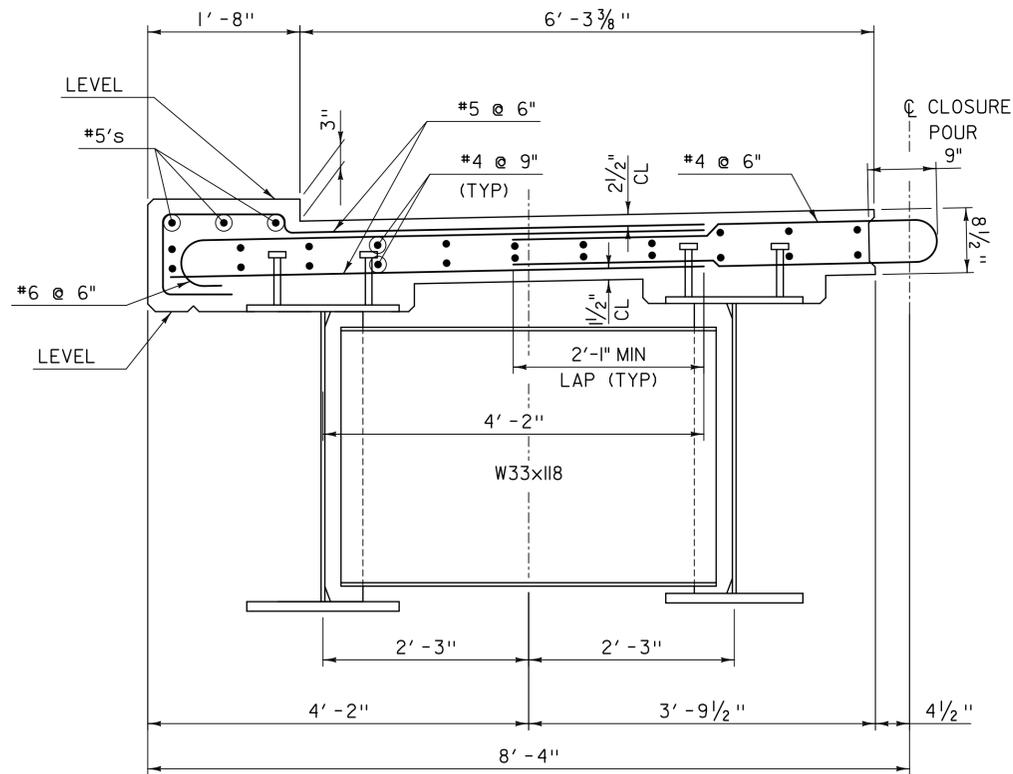
EXTERIOR UNIT - PLAN

SCALE: 1/2" = 1'-0"



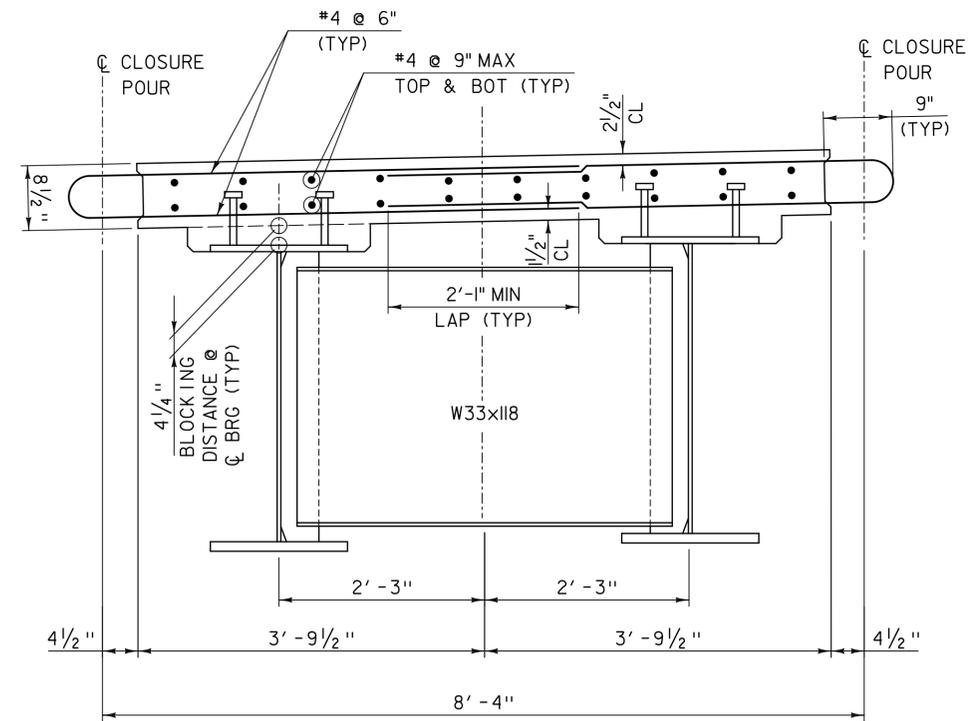
INTERIOR UNIT - PLAN

SCALE: 1" = 1'-0"



EXTERIOR UNIT - SECTION

SCALE: 1" = 1'-0"



INTERIOR UNIT - SECTION

SCALE: 1" = 1'-0"

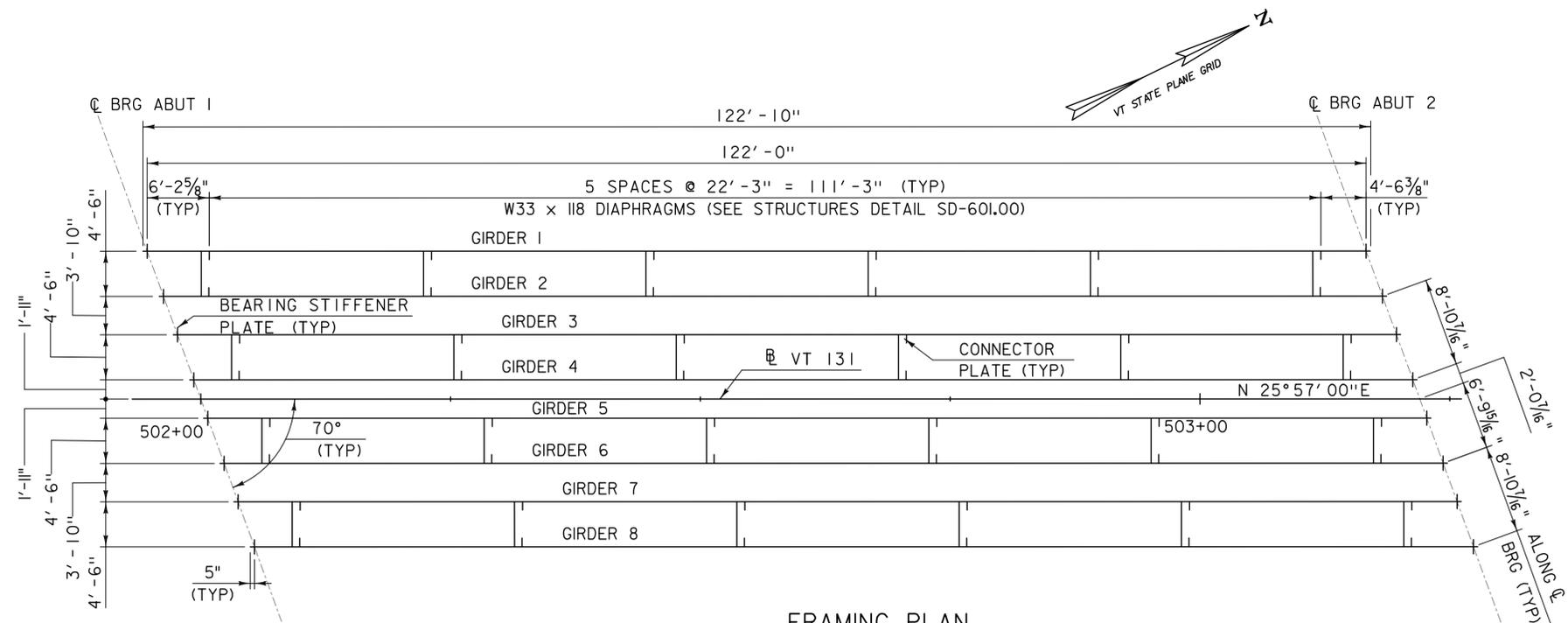
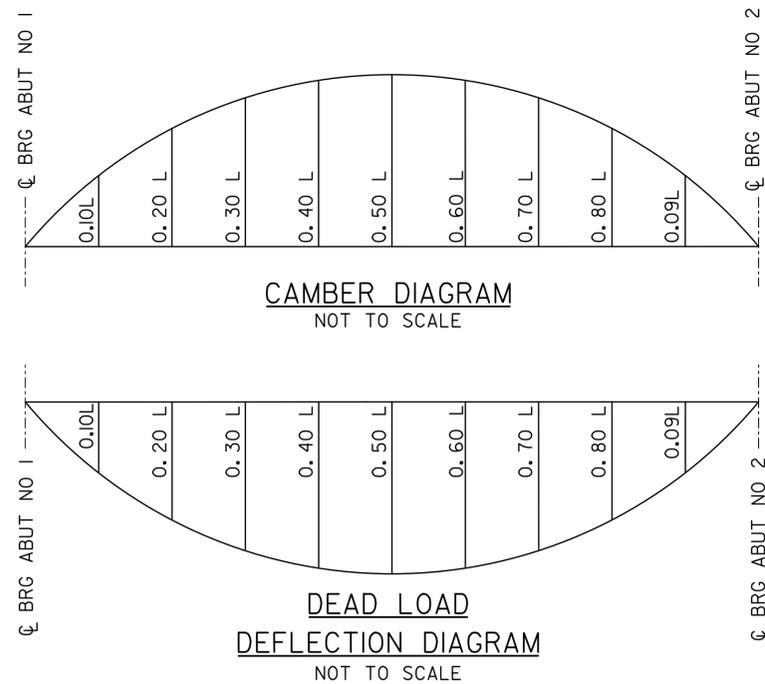
NOTE: MINIMUM LAP LENGTH FOR #4 LONGITUDINAL BARS SHALL BE 1'-3".

TYLIN INTERNATIONAL

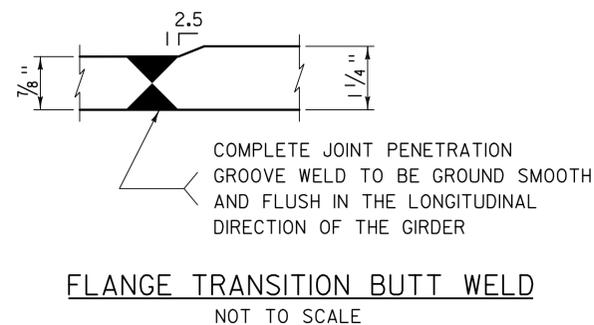
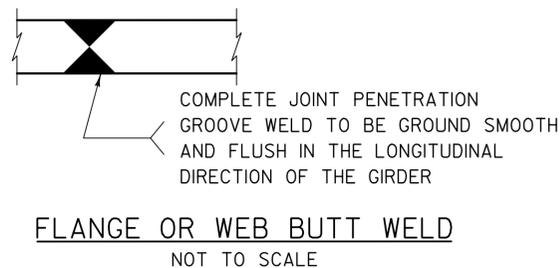
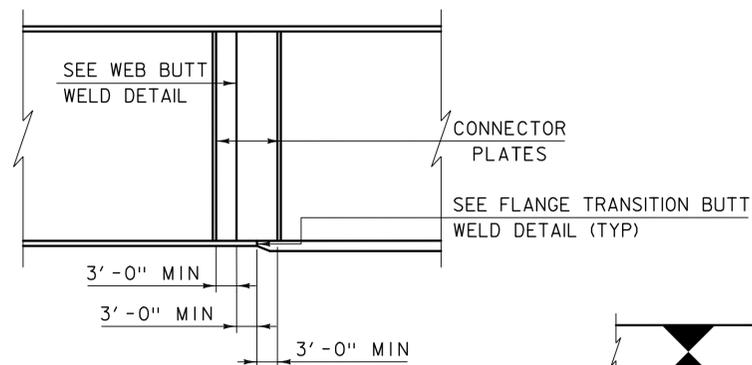
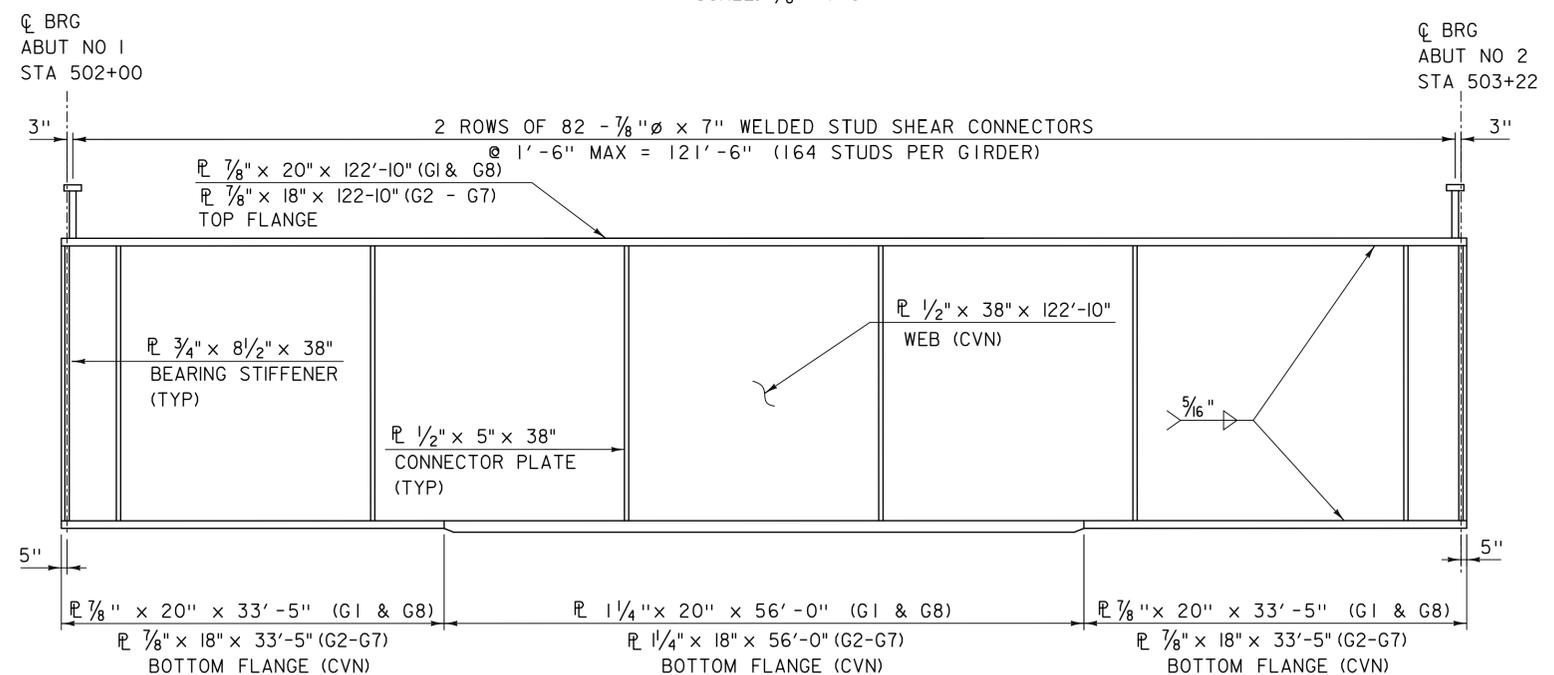
PROJECT NAME: CAVENDISH
PROJECT NUMBER: ER BRF 0146(13)

FILE NAME: zllc318bdrsup2.dgn
PROJECT LEADER: J. OLUND
DESIGNED BY: S. KELLER
SUPERSTRUCTURE DETAILS

PLOT DATE: 7/19/2013
DRAWN BY: S. MORGAN
CHECKED BY: D. MYERS
SHEET 31 OF 49



GIRDER	LOCATION	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90
EXTERIOR GIRDERS (G1, G8)	STEEL DL DEFLECTION	1/16	15/16	13/4	21/16	23/16	21/16	13/4	15/16	1/16
	SLAB & SDL DEFLECTION	27/16	49/16	61/8	73/16	71/2	73/16	61/8	49/16	27/16
	TOTAL DL DEFLECTION	31/8	57/8	715/16	91/4	911/16	91/4	715/16	59/16	31/8
	RESIDUAL CAMBER	9/16	1	11/4	17/16	11/2	17/16	11/4	1	9/16
INTERIOR GIRDERS (G2, G3, G4, G5, G6, G7)	STEEL DL DEFLECTION	1/16	15/16	13/16	21/8	21/4	21/8	13/16	15/16	1/16
	SLAB & SDL DEFLECTION	21/16	315/16	55/16	63/16	61/2	63/16	55/16	315/16	21/16
	TOTAL DL DEFLECTION	213/16	51/4	71/8	85/16	83/4	85/16	71/8	51/4	213/16
	RESIDUAL CAMBER	9/16	1	11/4	17/16	11/2	17/16	11/4	1	9/16
	REQUIRED TOTAL CAMBER	33/8	61/4	83/8	93/4	101/4	93/4	83/8	61/4	33/8

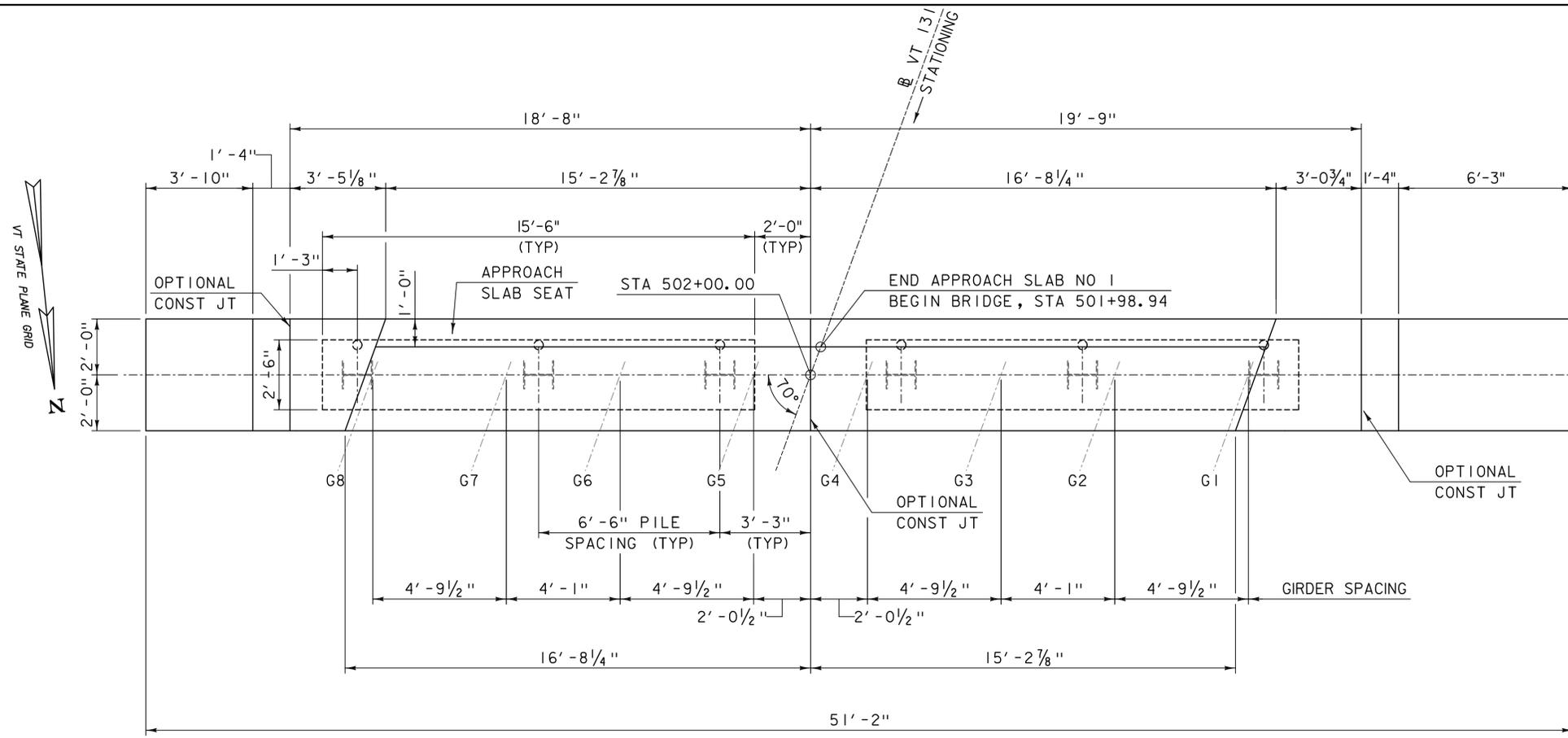


PROJECT NAME: CAVENDISH
PROJECT NUMBER: ER BRF 0146(13)

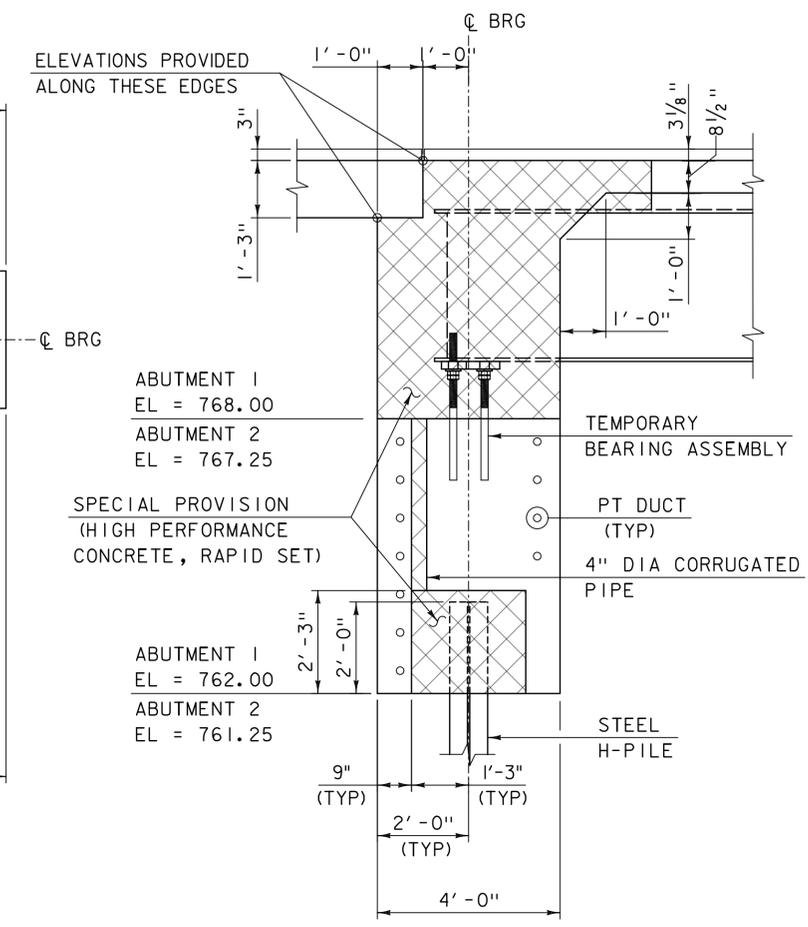
FILE NAME: zllc318bdr frame.dgn
PROJECT LEADER: J. OLUND
DESIGNED BY: S. KELLER
FRAMING DETAILS

PLOT DATE: 7/19/2013
DRAWN BY: B. CARTER
CHECKED BY: D. MYERS
SHEET 32 OF 49

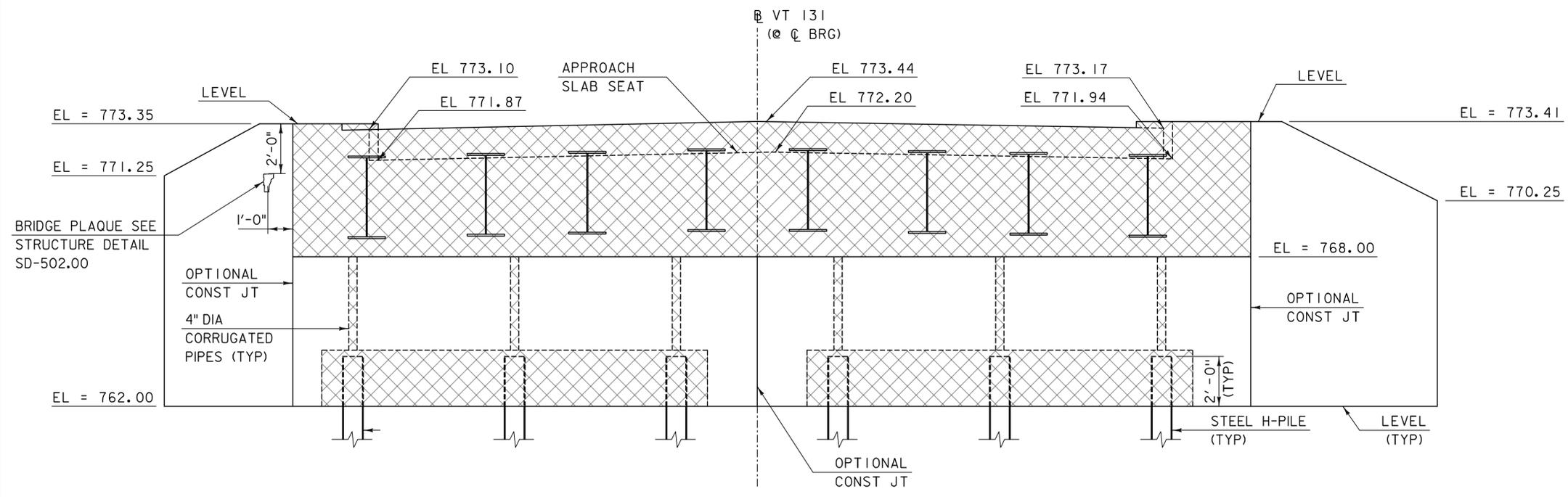
TYLIN INTERNATIONAL



ABUTMENT I - PLAN
SCALE: 3/8" = 1'-0"



ABUTMENT - TYPICAL SECTION
SCALE: 1/2" = 1'-0"
(DIMENSIONS ARE NORMAL TO ABUTMENT)



ABUTMENT I - ELEVATION
SCALE: 3/8" = 1'-0"

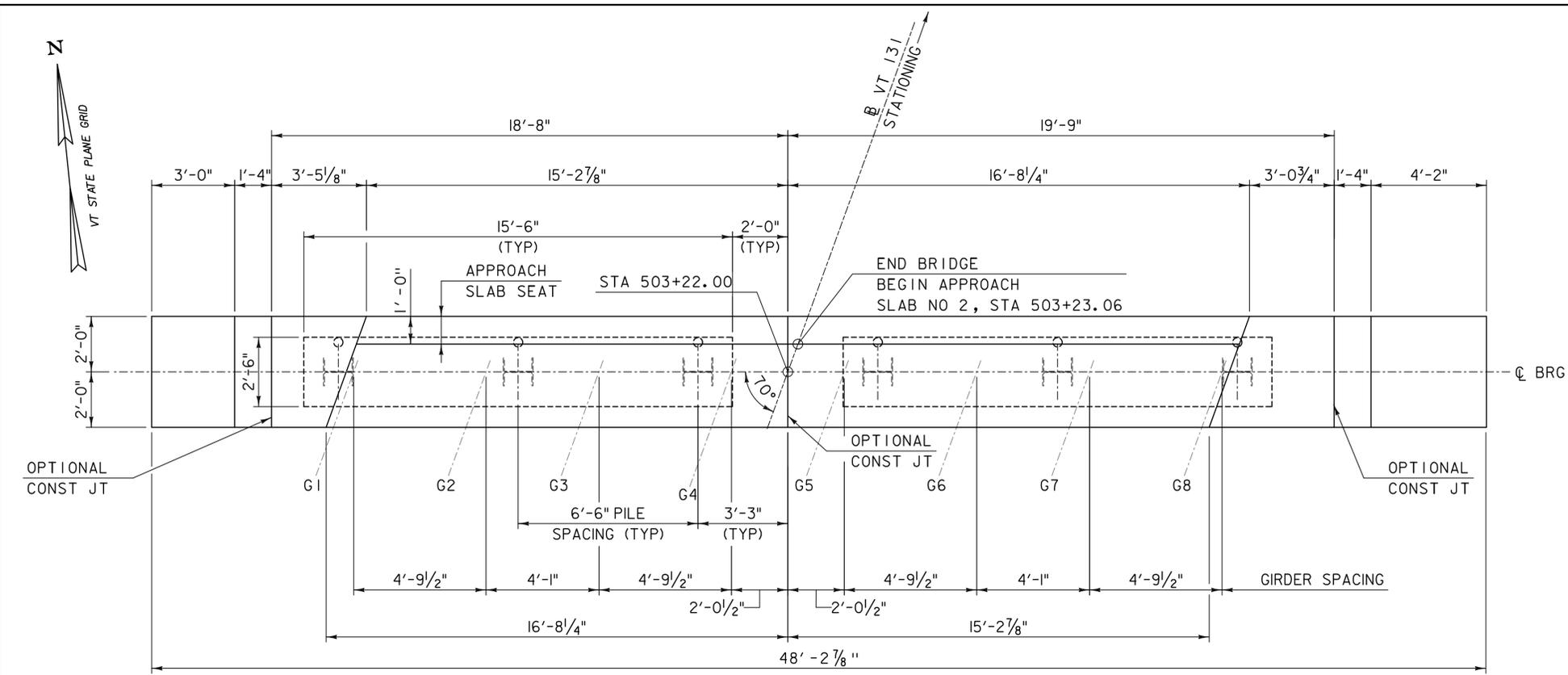
BOTTOM OF GIRDER ELEVATIONS	
GIRDER	ELEVATION
G1	768.79
G2	768.87
G3	768.94
G4	769.02
G5	769.01
G6	768.91
G7	768.83
G8	768.73

PROJECT NAME: CAVENDISH
PROJECT NUMBER: ER BRF 0146(13)

FILE NAME: zllc318bdrabuti.dgn
PROJECT LEADER: J. OLUND
DESIGNED BY: D. MYERS
ABUTMENT I PLAN, ELEVATION & SECTION

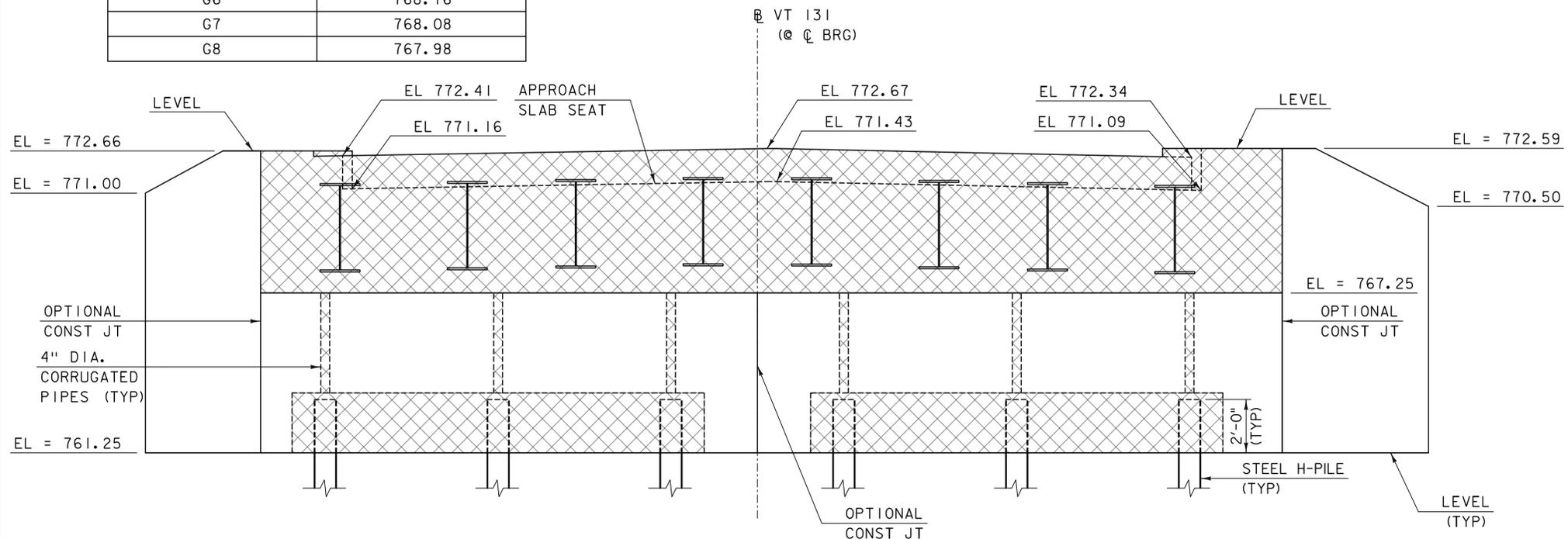
PLOT DATE: 7/19/2013
DRAWN BY: T. KELLEY
CHECKED BY: J. OLUND
SHEET 33 OF 49



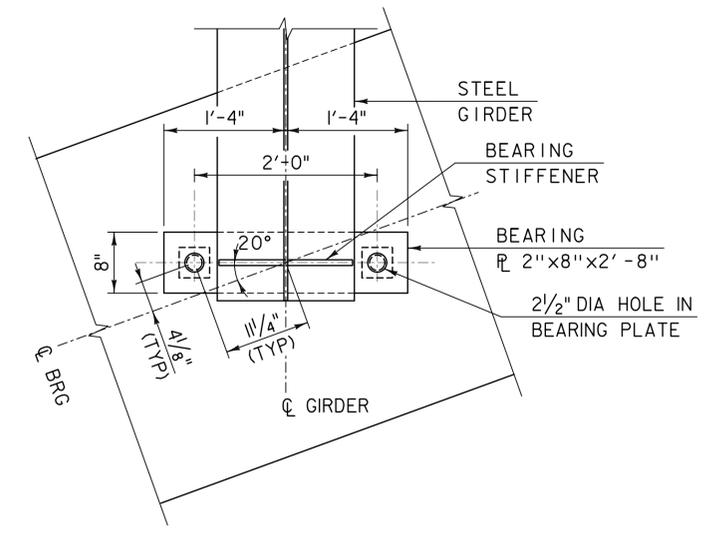


ABUTMENT 2 - PLAN
SCALE: 3/8" = 1'-0"

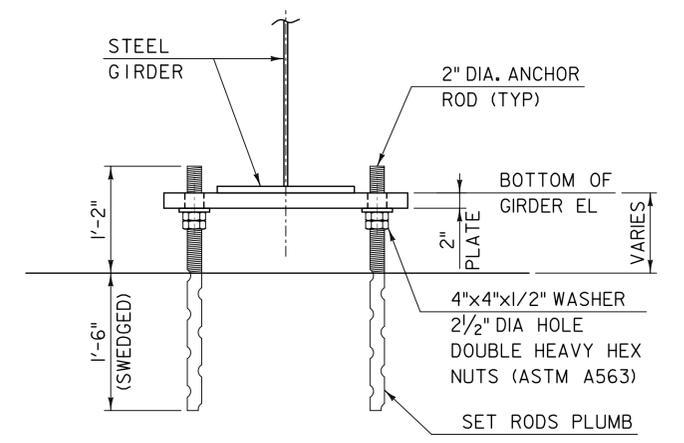
BOTTOM OF GIRDER ELEVATIONS	
GIRDER	ELEVATION
G1	768.04
G2	768.12
G3	768.19
G4	768.27
G5	768.26
G6	768.16
G7	768.08
G8	767.98



ABUTMENT 2 - ELEVATION
SCALE: 3/8" = 1'-0"



TEMPORARY BEARING ASSEMBLY PLAN
SCALE: 1" = 1'-0"

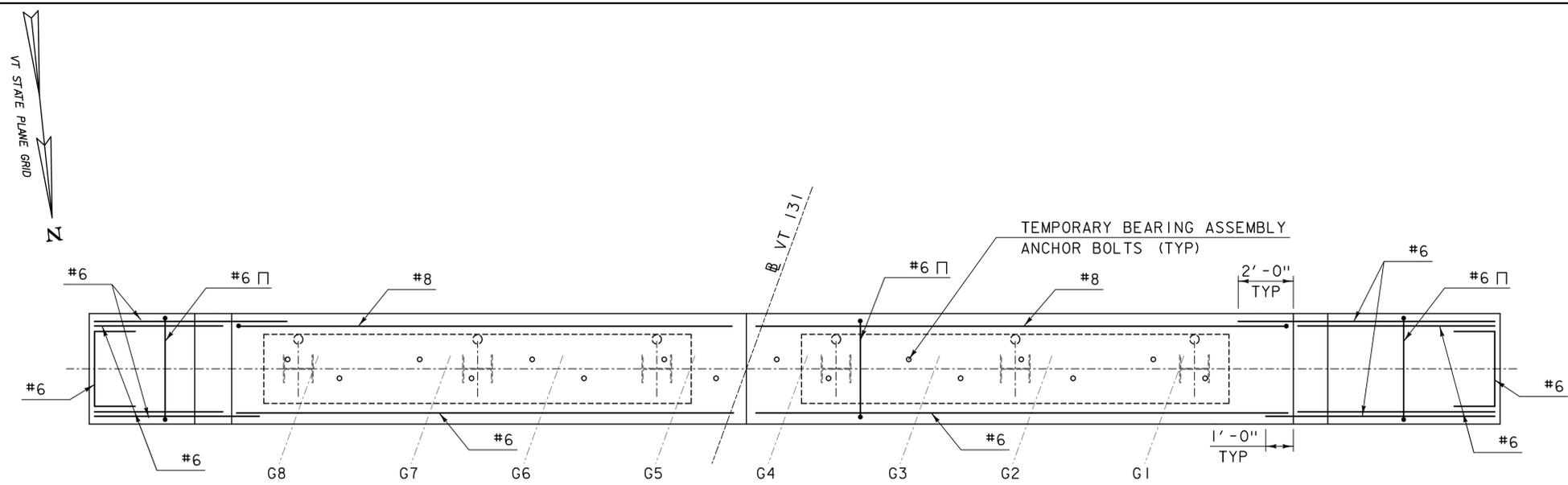


TEMPORARY BEARING ASSEMBLY ELEVATION
SCALE: 1" = 1'-0"

TEMPORARY BEARING NOTES

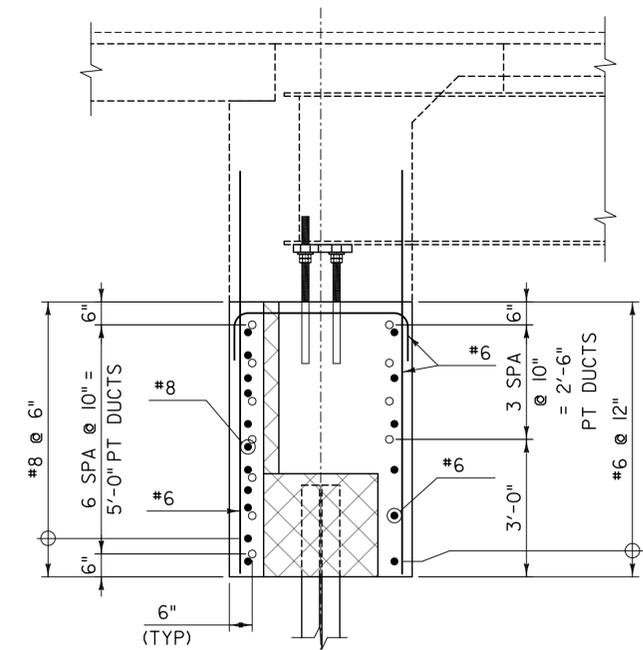
1. THE TOP SURFACE OF THE BEARING PLATE SHALL BE GREASED PRIOR TO SETTING GIRDERS. EXCESS GREASE SHALL BE WIPED CLEAN AFTER GIRDERS HAVE BEEN SET.
2. PAYMENT FOR TEMPORARY BEARING ASSEMBLIES SHALL BE INCIDENTAL TO RESPECTIVE 540.10 ITEMS.
3. BEARING PLATES SHALL BE LEVEL PRIOR TO SETTING PREFABRICATED BRIDGE UNITS. ELEVATIONS SHALL BE ADJUSTED TO WITHIN 0.01FT OF ELEVATIONS NOTED DURING OFF-SITE FABRICATION OF THE UNITS.
4. BEARING PLATE STEEL SHALL CONFORM TO SUBSECTION 714.03. ANCHOR RODS SHALL MEET THE REQUIREMENTS OF SUBSECTION 714.08, AND SHALL BE GRADE 55.

PROJECT NAME:	CAVENDISH
PROJECT NUMBER:	ER BRF 0146(13)
FILE NAME:	zllc318bdrabut2.dgn
PROJECT LEADER:	J. OLUND
DESIGNED BY:	D. MYERS
ABUT 2 PLAN & ELEV AND BRG DETAILS	
PLOT DATE:	7/19/2013
DRAWN BY:	T. KELLEY
CHECKED BY:	J. OLUND
SHEET 34	OF 49



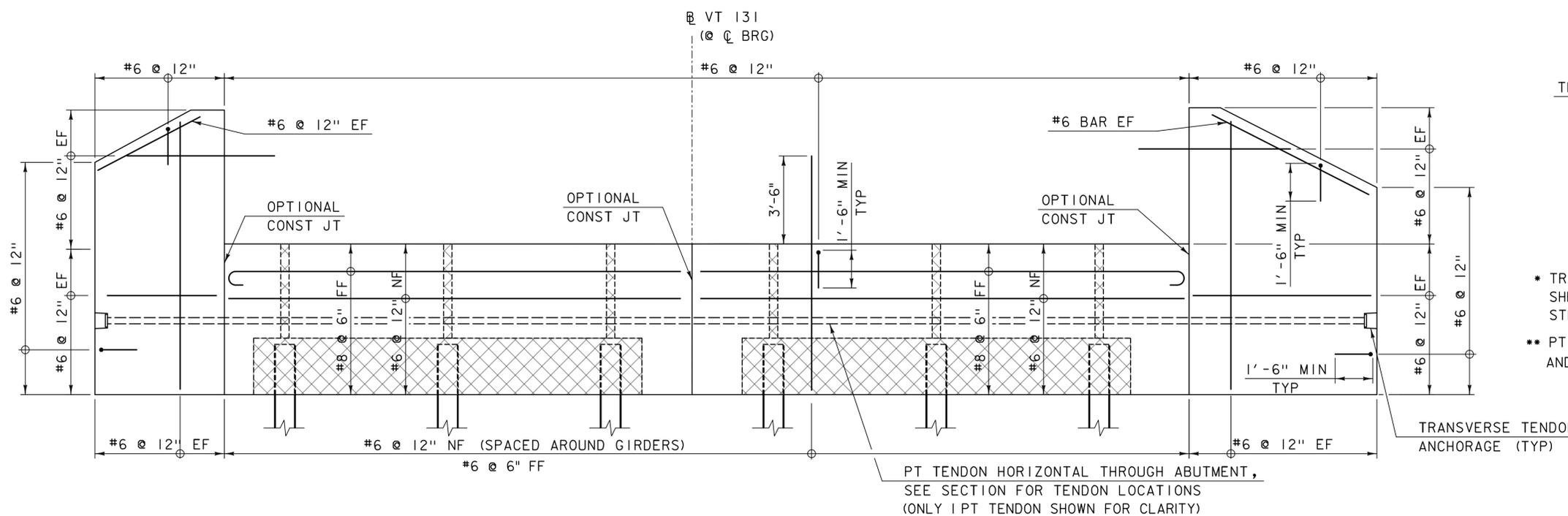
ABUTMENT REINFORCEMENT PLAN

SCALE: 3/8" = 1'-0"
(ABUTMENT 1 SHOWN, ABUTMENT 2 SIMILAR)



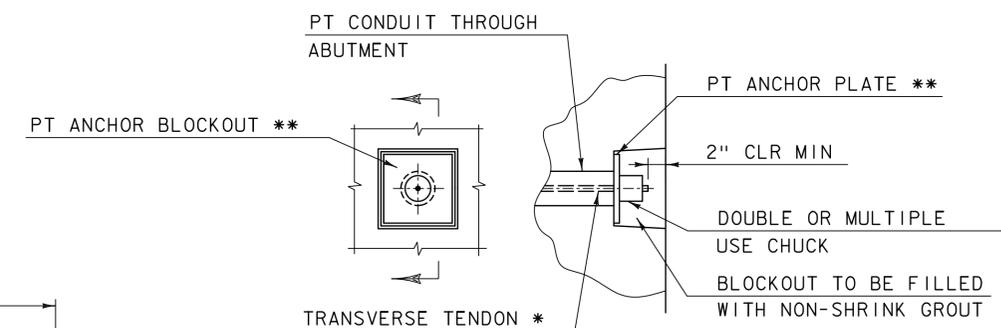
ABUTMENT REINFORCEMENT SECTION

SCALE: 1/2" = 1'-0"



ABUTMENT REINFORCEMENT ELEVATION

SCALE: 3/8" = 1'-0"
(ABUTMENT 1 SHOWN, ABUTMENT 2 SIMILAR)



TRANSVERSE TENDON ANCHORAGE DETAIL

NOT TO SCALE

* TRANSVERSE TENDONS SHALL BE COVERED BY A SEAMLESS POLYPROPYLENE SHEATH (WITH CORROSION INHIBITOR GREASE BETWEEN SHEATH AND STRAND) FOR THE LENGTH OF STRAND, EXCEPT AT ANCHORAGE LOCATIONS.

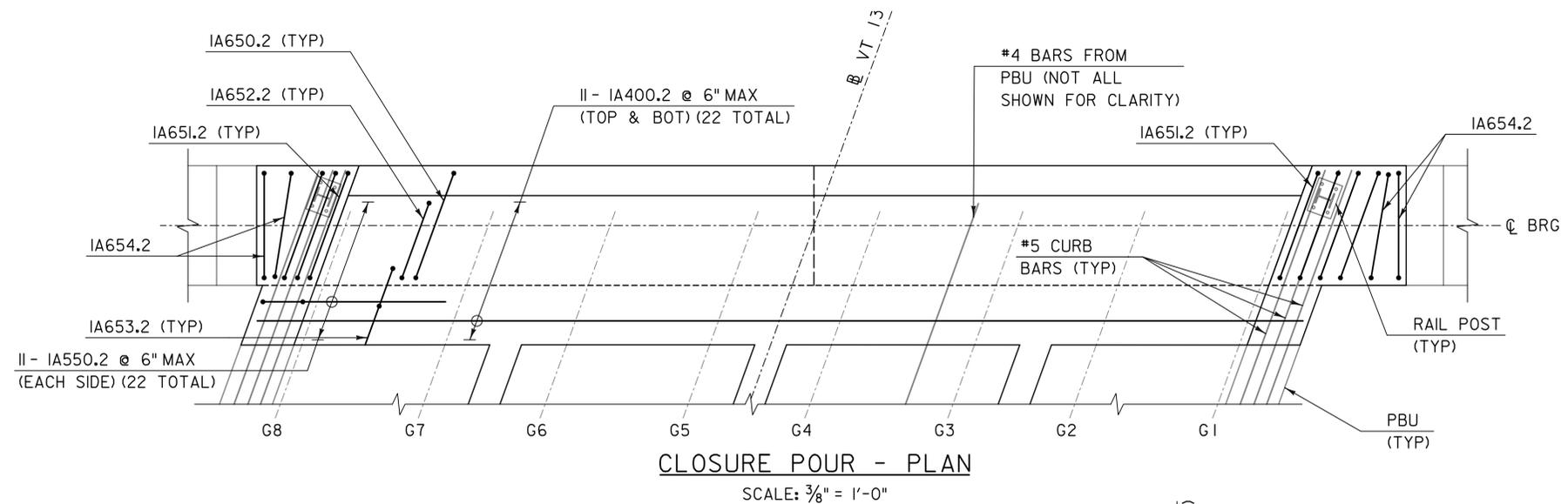
** PT VENDOR SHALL SUPPLY DESIGN AND DIMENSIONS FOR ANCHOR PLATE AND BLOCKOUT FOR JACK ENTRANCE REQUIREMENTS.

TYLIN INTERNATIONAL

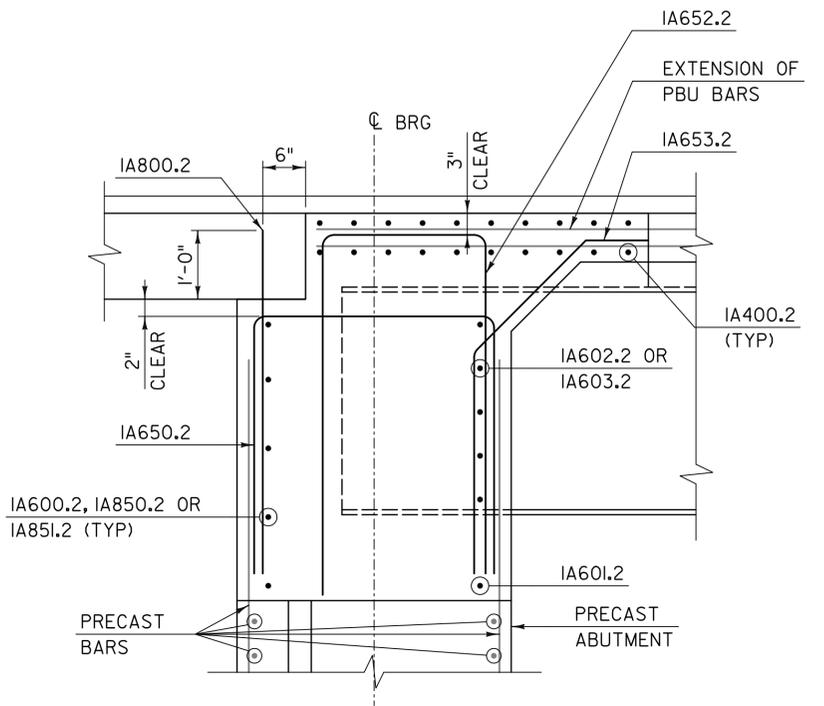
PROJECT NAME: CAVENDISH
PROJECT NUMBER: ER BRF 0146(13)

FILE NAME: zllc318bdrabu.tr.dgn
PROJECT LEADER: J. OLUND
DESIGNED BY: D. MYERS
ABUTMENT REINFORCEMENT

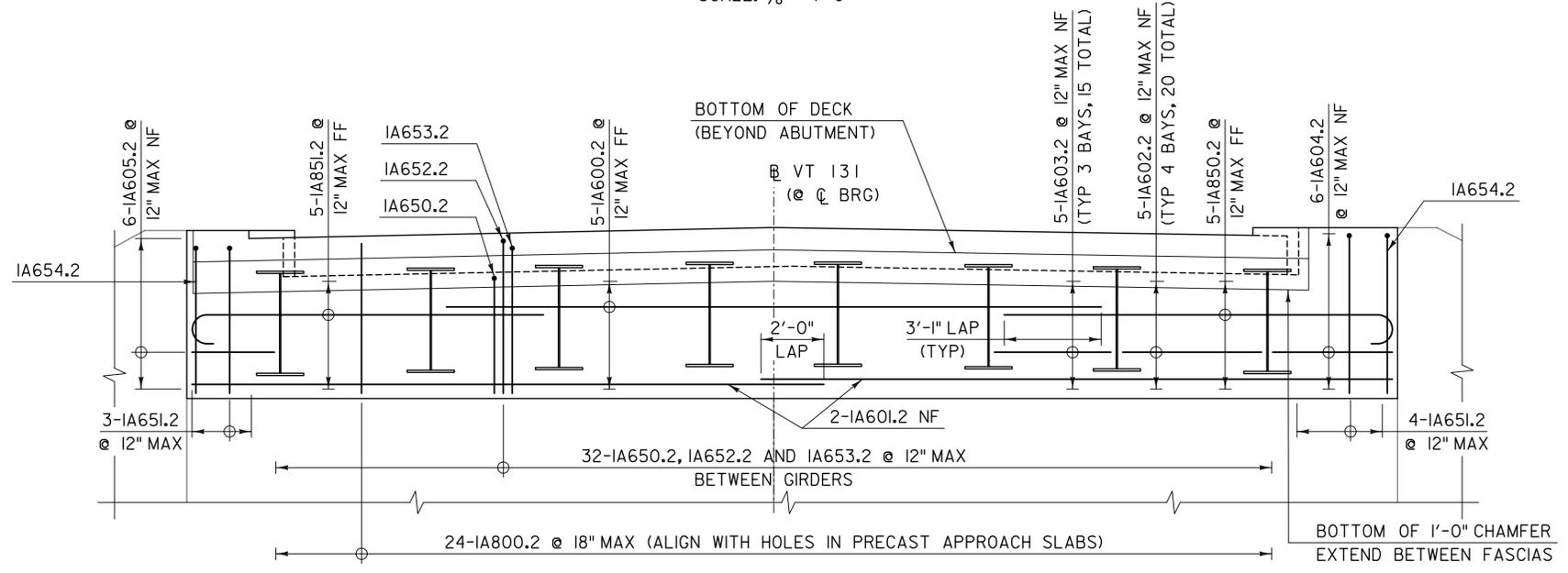
PLOT DATE: 7/19/2013
DRAWN BY: S. MORGAN
CHECKED BY: J. OLUND
SHEET 35 OF 49



CLOSURE POUR - PLAN
SCALE: 3/8" = 1'-0"



CLOSURE POUR - SECTION
SCALE: 3/4" = 1'-0"



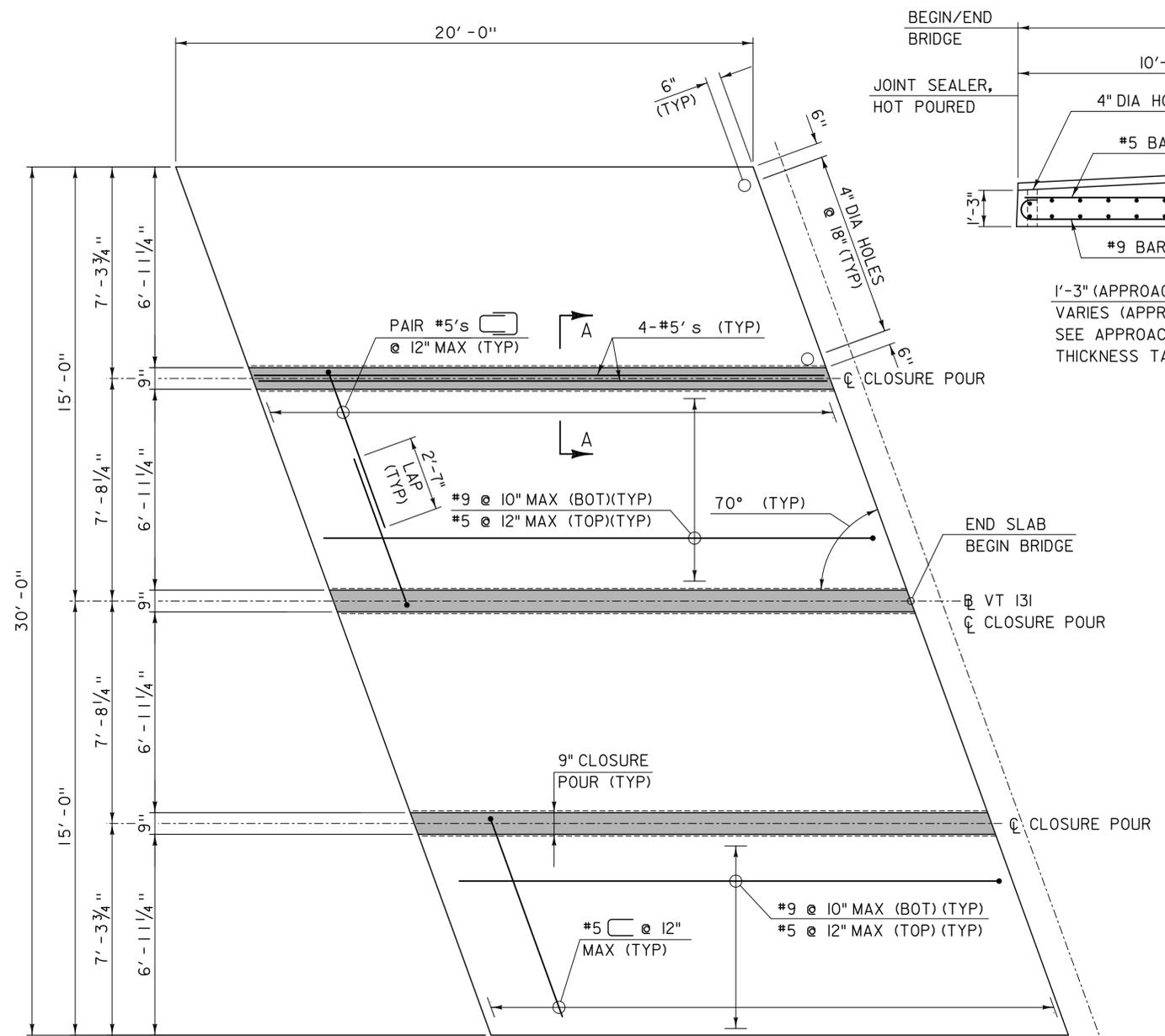
CLOSURE POUR - ELEVATION
SCALE: 3/8" = 1'-0"

NOTE:

ABUTMENT 1 REINFORCEMENT SHOWN. ABUTMENT 2 REINFORCEMENT SIMILAR BUT WITH BAR DESIGNATION PREFIX 2A INSTEAD OF IA. SEE REINFORCING STEEL SCHEDULE ON SHEET 38.

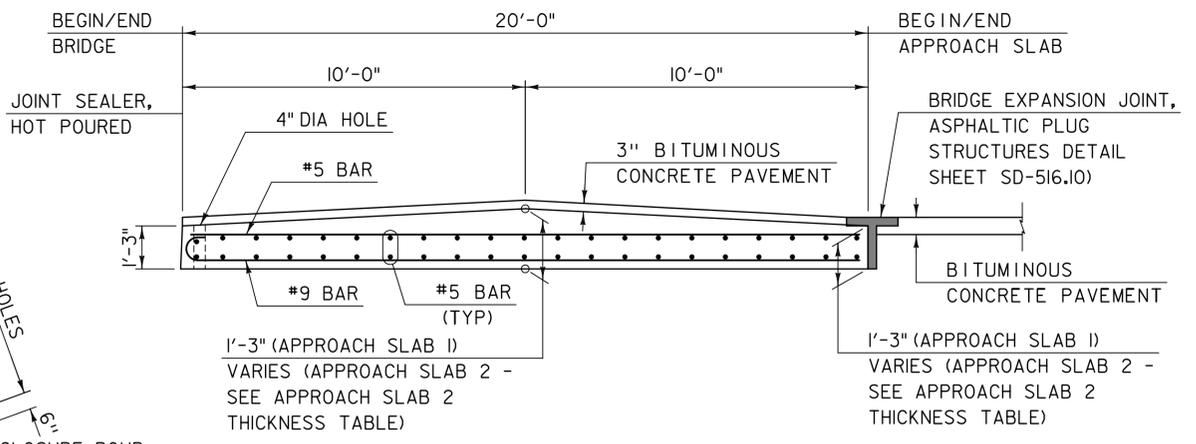


PROJECT NAME:	CAVENDISH
PROJECT NUMBER:	ER BRF 0146(13)
FILE NAME:	zllc318bdr.clospour.dgn
PROJECT LEADER:	J. OLUND
DESIGNED BY:	D. MYERS
ABUTMENT CLOSURE POUR DETAILS	
PLOT DATE:	7/19/2013
DRAWN BY:	S. MORGAN
CHECKED BY:	T. POULIN
SHEET	36 OF 49



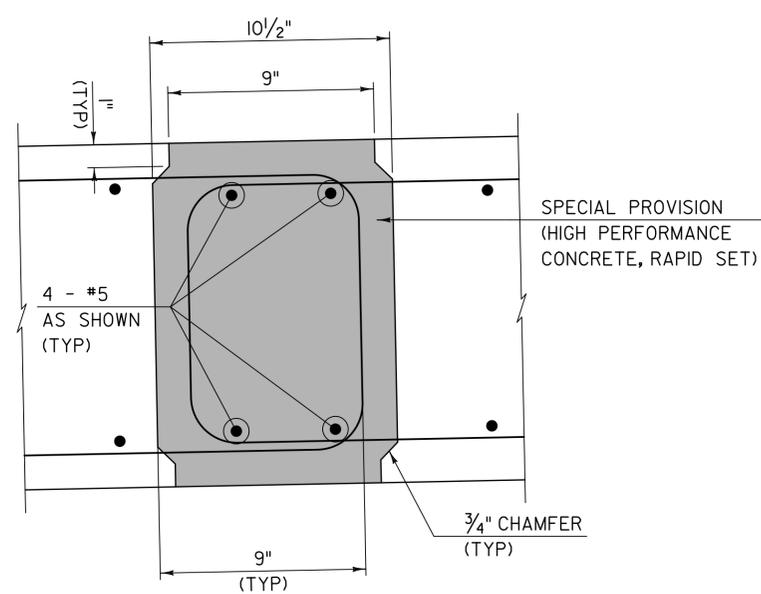
APPROACH SLAB PLAN VIEW

SCALE: 3/8" = 1'-0"
(APPROACH SLAB 1 SHOWN, APPROACH SLAB 2 SIMILAR)



APPROACH SLAB ELEVATION VIEW

SCALE: 3/8" = 1'-0"
(APPROACH SLAB 2 SHOWN, APPROACH SLAB 1 SIMILAR)

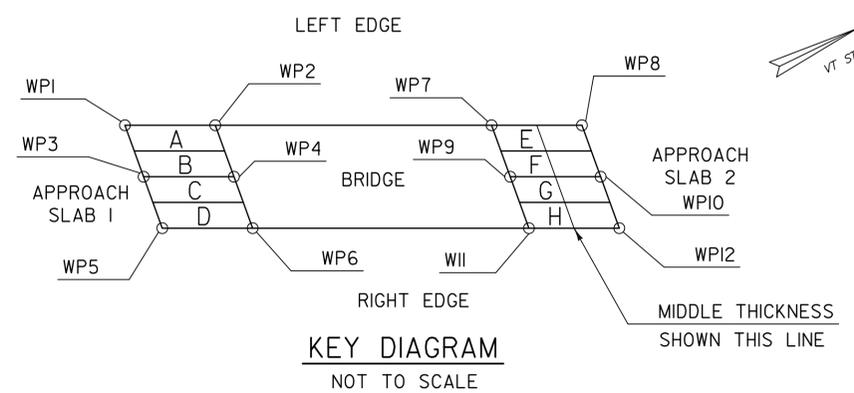


SECTION A-A

SCALE: 3" = 1'-0"

SLAB NO. 2 THICKNESS TABLE		
	LEFT EDGE	RIGHT EDGE
MIDDLE A. S. #2 - PANEL E	1' - 4 3/8"	1' - 4 3/8"
MIDDLE A. S. #2 - PANEL F	1' - 4 3/8"	1' - 4 3/8"
MIDDLE A. S. #2 - PANEL G	1' - 4 3/8"	1' - 4 1/8"
MIDDLE A. S. #2 - PANEL H	1' - 4 1/8"	1' - 3 7/8"
END A. S. #2 - PANEL E	1' - 5 3/8"	1' - 5"
END A. S. #2 - PANEL F	1' - 5"	1' - 4 1/2"
END A. S. #2 - PANEL G	1' - 4 3/8"	1' - 3 3/4"
END A. S. #2 - PANEL H	1' - 3 3/4"	1' - 3"

BOTTOM OF SLAB ELEVATION TABLE	
WP1	772.05
WP2	771.93
WP3	772.31
WP4	772.19
WP5	771.98
WP6	771.86
WP7	771.17
WP8	770.81
WP9	771.42
WP10	771.06
WP11	771.10
WP12	770.74



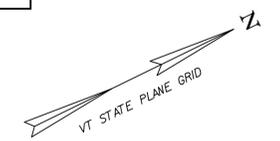
KEY DIAGRAM
NOT TO SCALE

NOTES:

- LIFTING DEVICES AND ANY ASSOCIATED REINFORCEMENT SHALL BE DETERMINED BY THE FABRICATOR AND SHOWN IN THE FABRICATION DRAWINGS. LIFTING DEVICES SHALL BE LIMITED TO FOUR (4) PER PANEL AND BE RECESSED AND GROUTED AFTER INSTALLATION OF THE SLABS.
- THE LOCATION OF THE FOUR INCH DIAMETER HOLES CAST THROUGH THE BRIDGE-END OF THE APPROACH SLABS SHALL BE COORDINATED WITH REINFORCING STEEL EXTENDING FROM THE ABUTMENTS. SEE SHEET 36 FOR ABUTMENT REINFORCING STEEL LAYOUT.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING UNIFORM CONTACT BETWEEN THE APPROACH SLAB AND THE SUBBASE MATERIAL TO THE SATISFACTION OF THE ENGINEER. THE FABRICATION DRAWINGS SHALL INDICATE THE MEANS AND METHODS NECESSARY TO INSTALL THE APPROACH SLABS TO THE ELEVATIONS SPECIFIED.
- PAYMENT FOR APPROACH SLABS, THE #5 REINFORCING BARS WITHIN THE CLOSURE POURS, AND ALL LABOR AND TOOLS NECESSARY TO INSTALL THE SLABS SHALL BE MADE UNDER ITEM 540.10, "PRECAST CONCRETE STRUCTURE (APPROACH SLAB NO. 1)" AND/OR ITEM 540.10, "PRECAST CONCRETE STRUCTURE (APPROACH SLAB NO. 2)".
- PAYMENT FOR CONCRETE CLOSURE POURS SHALL BE MADE UNDER ITEM 900.608, "SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET)".
- APPROACH SLAB REINFORCING STEEL SHOWN IS TYPICAL FOR EACH PANEL.

TYLIN INTERNATIONAL

PROJECT NAME: CAVENDISH	PLOT DATE: 7/19/2013
PROJECT NUMBER: ER BRF 0146(13)	DRAWN BY: S. MORGAN
FILE NAME: zllc318bdrapprslab.dgn	CHECKED BY: J. OLUND
PROJECT LEADER: J. OLUND	SHEET 37 OF 49
DESIGNED BY: T. POULIN	
APPROACH SLAB DETAILS	

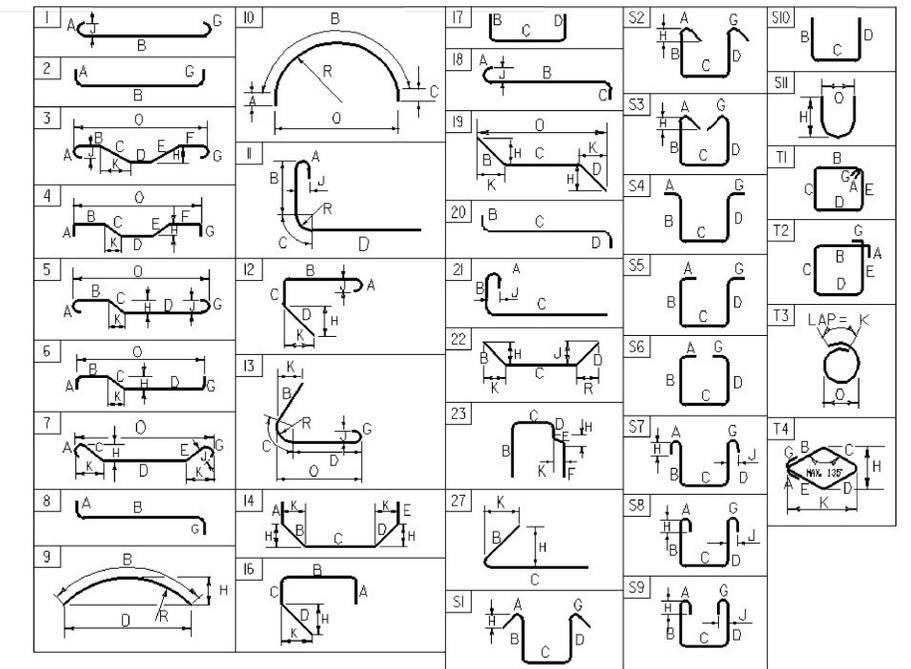


REINFORCING STEEL SCHEDULE

ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O	ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O				
ABUTMENT 1 REINFORCEMENT																																							
*	23	4	35'- 1"	1A400.2	STR																																		
	5	6	21'- 9"	1A600.2	STR																																		
	2	6	20'- 3"	1A601.2	STR																																		
	20	6	4'- 8"	1A602.2	STR																																		
	15	6	3'- 11"	1A603.2	STR																																		
	6	6	4'- 6"	1A604.2	STR																																		
	6	6	2'- 1"	1A605.2	STR																																		
	24	8	4'- 10"	1A800.2	STR																																		
*	12	5	6'- 3"	1A550.2	S5	0'- 10"	0'- 6"	1'- 5"	0'- 3"																														
	32	6	11'- 2"	1A650.2	17		3'- 8"	3'- 10"	3'- 8"																														
	7	6	14'- 2"	1A651.2	17		5'- 2"	3'- 10"	5'- 2"																														
	32	6	12'- 8"	1A652.2	17		4'- 11"	2'- 10"	4'- 11"																														
	32	6	6'- 2"	1A653.2	14	0'- 11"	1'- 11"	3'- 4"	0'- 0"	0'- 0"																													
*	5	6	14'- 0"	1A654.2	17		5'- 2"	3'- 8"	5'- 2"																														
	5	8	12'- 10"	1A850.2	1	0'- 11"	11'- 11"	0'- 0"																															
*	6	8	11'- 9"	1A851.2	1	0'- 11"	10'- 10"	0'- 0"																															
ABUTMENT 2 REINFORCEMENT																																							
	22	4	35'- 1"	2A400.2	STR																																		
	5	6	21'- 9"	2A600.2	STR																																		
	2	6	20'- 3"	2A601.2	STR																																		
	20	6	4'- 8"	2A602.2	STR																																		
	15	6	3'- 11"	2A603.2	STR																																		
	6	6	4'- 6"	2A604.2	STR																																		
	6	6	2'- 1"	2A605.2	STR																																		
	24	8	4'- 10"	2A800.2	STR																																		
	11	5	6'- 3"	2A550.2	S5	0'- 10"	0'- 6"	1'- 5"	0'- 3"																														
	32	6	11'- 2"	2A650.2	17		3'- 8"	3'- 10"	3'- 8"																														
	7	6	14'- 2"	2A651.2	17		5'- 2"	3'- 10"	5'- 2"																														
	32	6	12'- 8"	2A652.2	17		4'- 11"	2'- 10"	4'- 11"																														
	32	6	6'- 2"	2A653.2	14	0'- 11"	1'- 11"	3'- 4"	0'- 0"	0'- 0"																													
	4	6	14'- 0"	2A654.2	17		5'- 2"	3'- 8"	5'- 2"																														
	5	8	12'- 10"	2A850.2	1	0'- 11"	11'- 11"	0'- 0"																															
	5	8	11'- 9"	2A851.2	1	0'- 11"	10'- 10"	0'- 0"																															

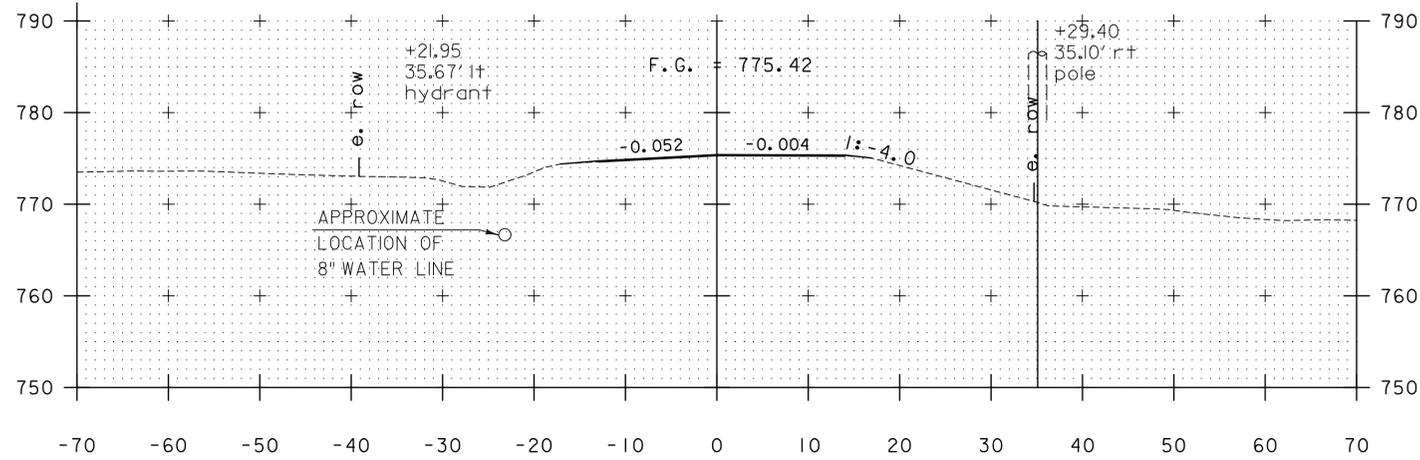
~ NOTES ~

- UNLESS OTHERWISE DESIGNATED, ALL BAR REINFORCEMENT FOR CONCRETE IN SIZES UP TO AND INCLUDING NO. 18 SHALL CONFORM TO THE REQUIREMENTS OF THE "SPECIFICATIONS FOR DEFORMED BILLET-STEEL BARS FOR CONCRETE REINFORCEMENT", AASHTO M 31 (ASTM A 615-SI). ALL BARS SHALL BE GRADE 60, UNLESS OTHERWISE DESIGNATED.
- FOR TYPICAL BENDING DETAILS, RECOMMENDED PIN DIAMETER "D" OF BENDS AND HOOKS, AND OTHER STANDARD PRACTICE, SEE CURRENT CONCRETE REINFORCING STEEL INSTITUTE "MANUAL OF STANDARD PRACTICE".
- BARS WHICH REQUIRE MORE ACCURATE BENDING THAN STANDARD PRACTICES SHOULD HAVE LIMITS INDICATED.
- ALL DIMENSIONS ARE OUT TO OUT OF BAR EXCEPT "A" AND "G" ON STANDARD 180 DEGREE AND 135 DEGREE HOOKS.
- "J" DIMENSION ON 180 DEGREE HOOKS TO BE SHOWN ONLY WHERE NECESSARY TO RESTRICT HOOK SIZE. OTHERWISE, STANDARD HOOKS ARE TO BE USED.
- "H" DIMENSION ON STIRRUPS TO BE SHOWN ONLY WHEN NECESSARY TO MAINTAIN CLEARANCES.
- WHERE SLOPE DIFFERS FROM 45 DEGREES, DIMENSIONS "H" AND "K" MUST BE SHOWN.
- ▲ DENOTES BARS TO BE CUT IN FIELD.
- * DENOTES ONE EXTRA BAR ADDED FOR TESTING PURPOSES.
- 2 IN BAR MARK SUFFIX DENOTES LEVEL II REINFORCING STEEL.
- E IN BAR MARK PREFIX DENOTES EPOXY COATED REINFORCING STEEL.

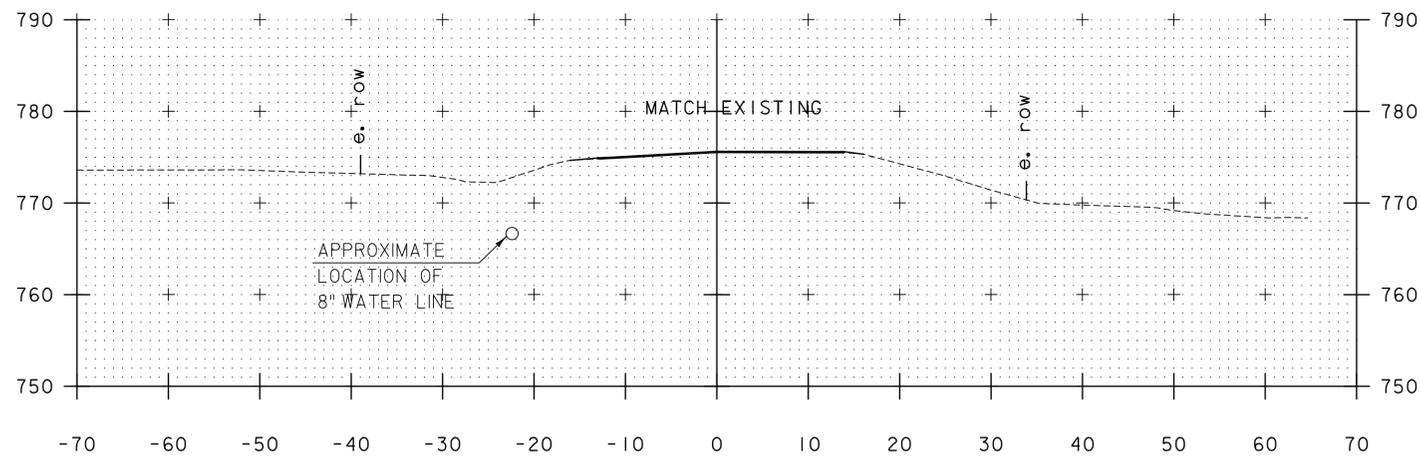


ASTM STANDARD REINFORCING BARS				
BAR SIZE DESIGNATION	WEIGHT POUNDS PER FOOT	NOMINAL DIMENSIONS ROUND SECTION		
		DIAMETER INCHES	AREA INCHES ²	PERIMETER INCHES
#3	0.376	0.375	0.11	1.178
#4	0.668	0.500	0.20	1.571
#5	1.043	0.625	0.31	1.963
#6	1.502	0.750	0.44	2.356
#7	2.044	0.875	0.60	2.749
#8	2.670	1.000	0.79	3.142
#9	3.400	1.128	1.00	3.544
#10	4.303	1.270	1.27	3.990
#11	5.313	1.410	1.56	4.430
#14	7.65	1.693	2.25	5.32
#18	13.60	2.257	4.00	7.09

PROJECT NAME: **CAVENDISH**
PROJECT NUMBER: **ER BRF 0146(13)**
FILE NAME: **z11c318rss.xls** PLOT DATE: **6/11/2013**
PROJECT MANAGER: **J. OLUND** DRAWN BY: **T. POULIN**
DESIGNED BY: **T. POULIN** CHECKED BY: **J. OLUND**
REINFORCING STEEL SCHEDULE SHEET **38** OF **49**

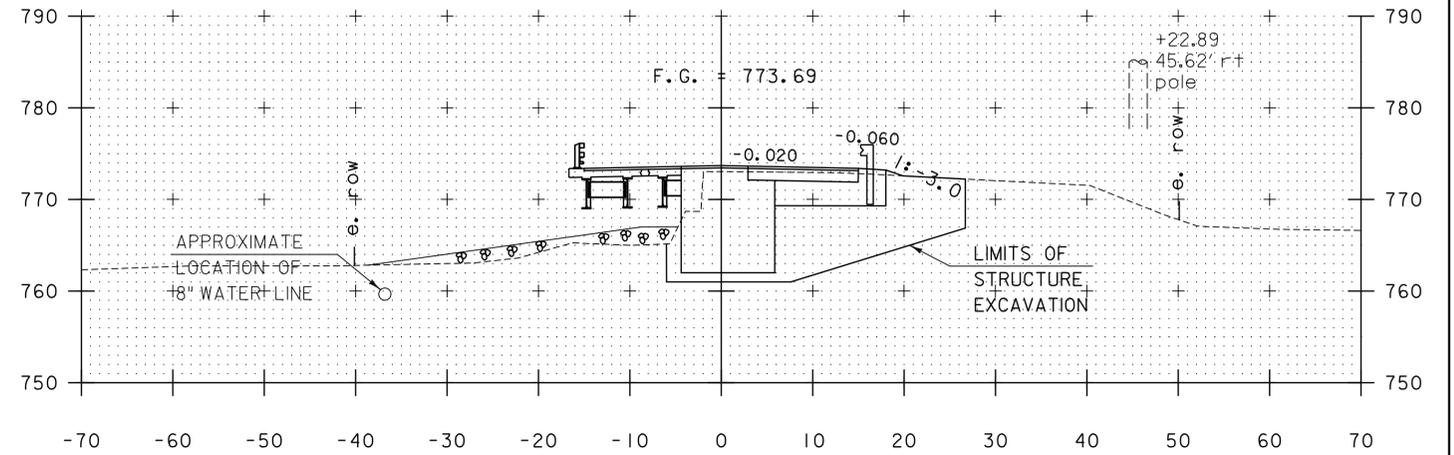


501+00



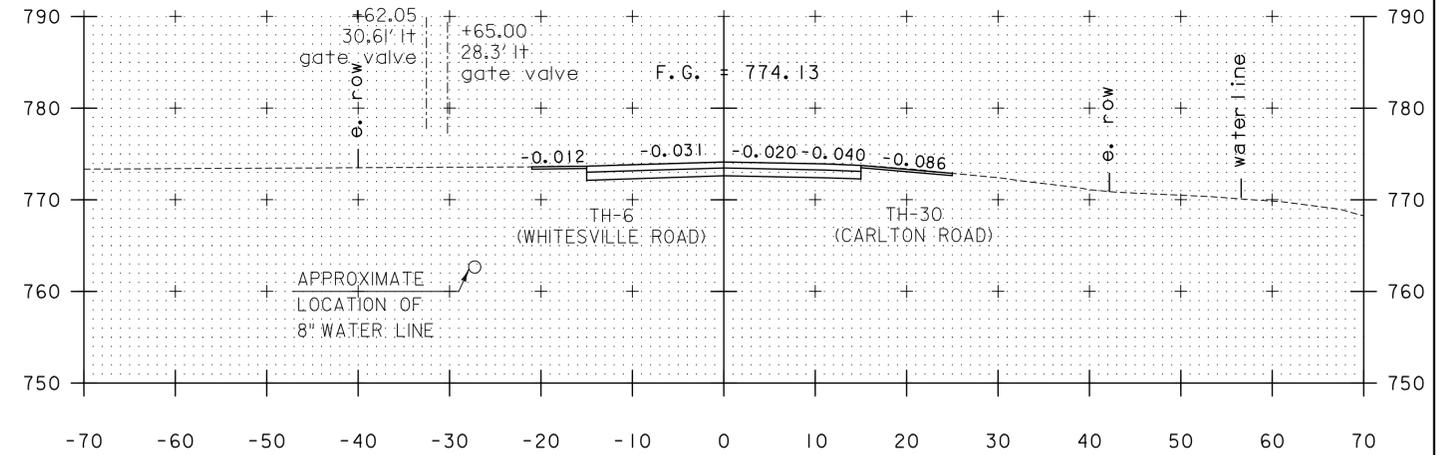
500+94

BEGIN APPROACH



502+00

STA 501+98.94
 BEGIN BRIDGE



501+50

STA 501+44
 END APPROACH
 BEGIN PROJECT

STA. 500+94 TO STA. 502+00

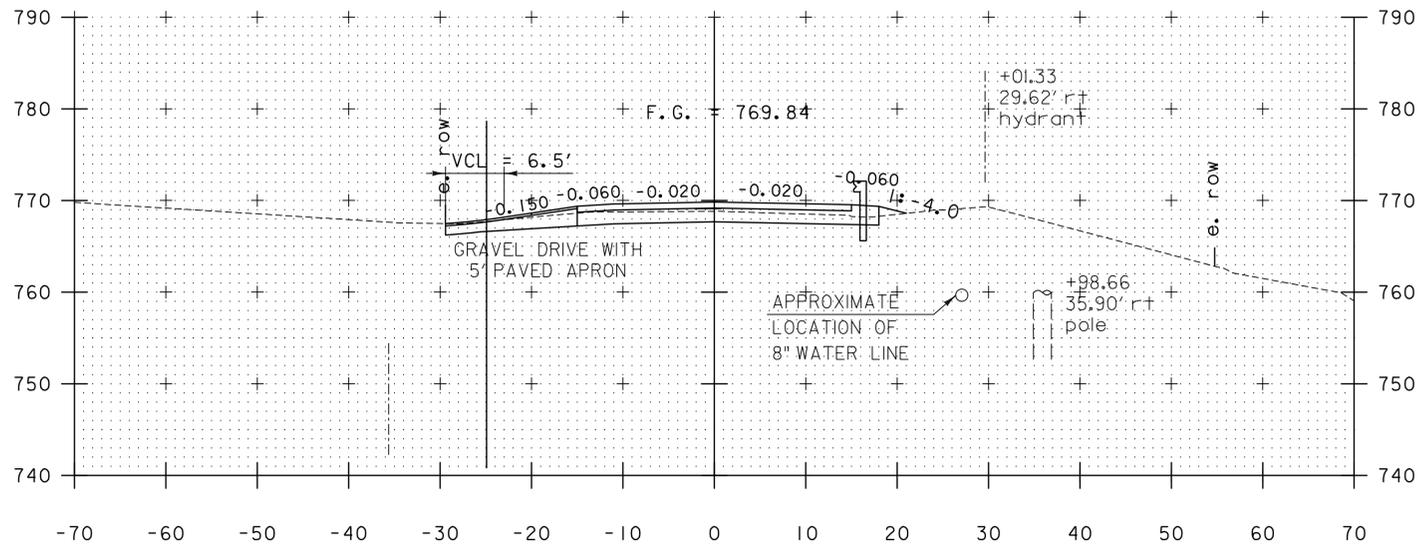
PROJECT NAME: CAVENDISH
 PROJECT NUMBER: ER BRF 0146(13)

SCALE 1" = 10' - 0"

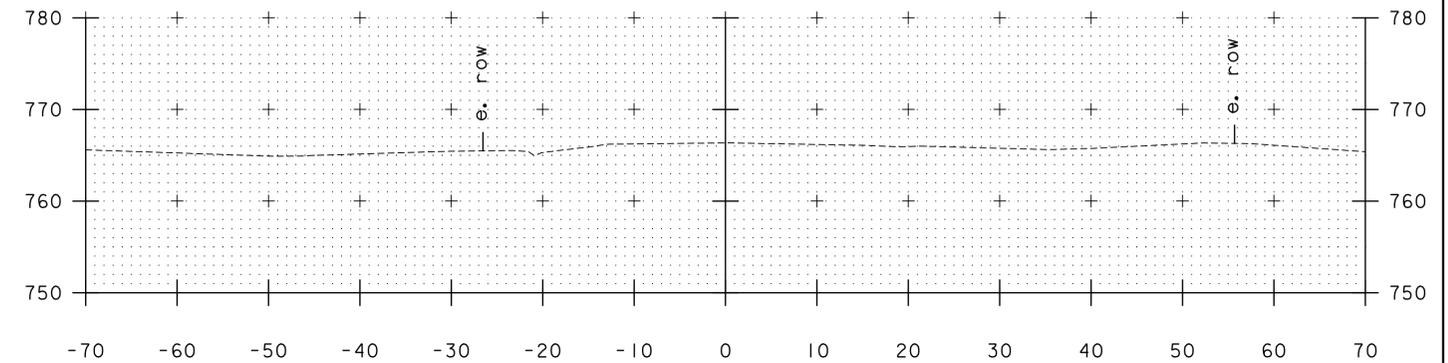
TYLIN INTERNATIONAL

FILE NAME: zllc318bdr_xs.dgn
 PROJECT LEADER: J. OLUND
 DESIGNED BY: J. HOWE
 VT 131 CROSS SECTIONS I

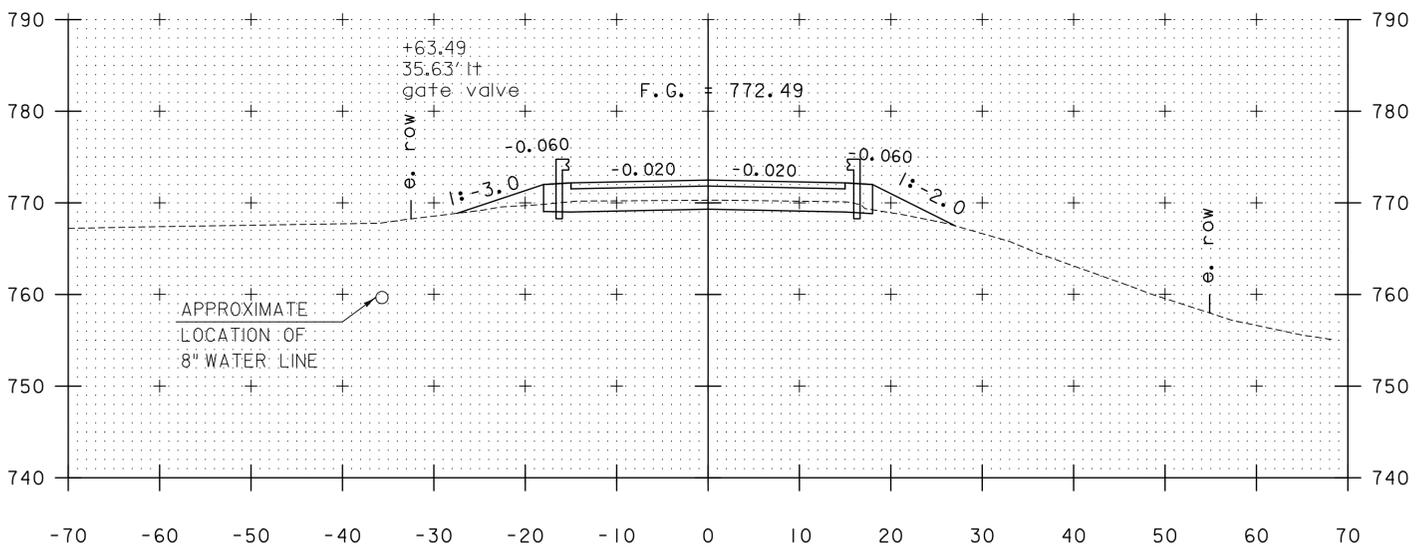
PLOT DATE: 7/19/2013
 DRAWN BY: J. DAVIS
 CHECKED BY: D. BRYANT
 SHEET 39 OF 49



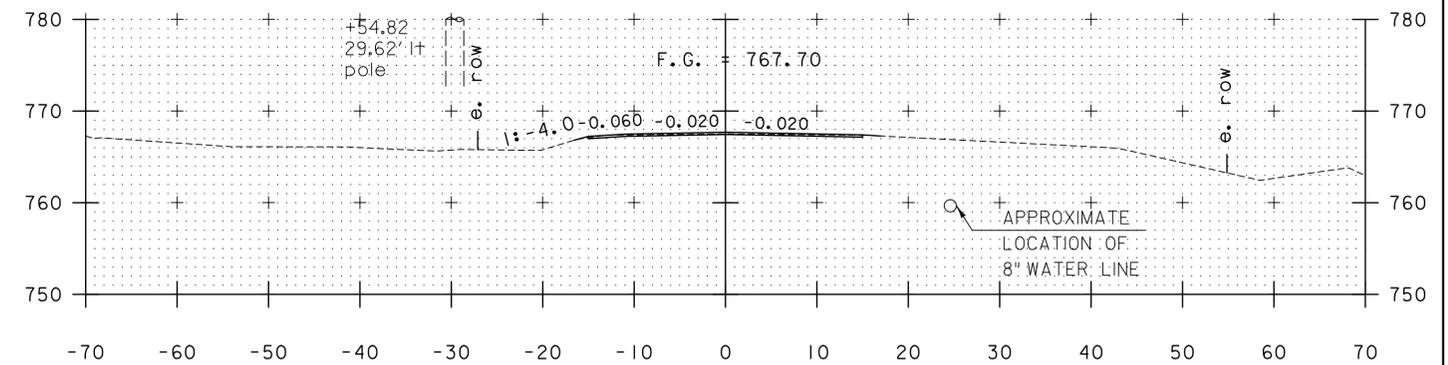
504+00



505+00
 STA 504+95
 END APPROACH
 MATCH EXISTING PAVEMENT



503+50
 STA 503+23.06
 END BRIDGE



504+50
 STA 504+45
 END PROJECT
 BEGIN APPROACH

STA. 503+50 TO STA. 505+00

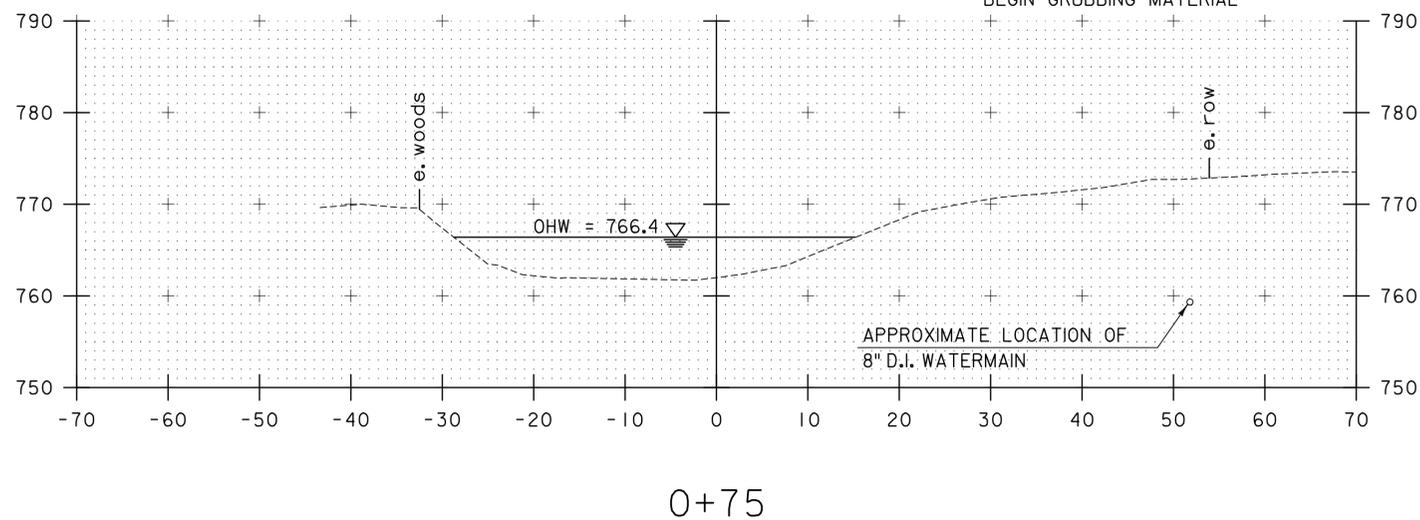
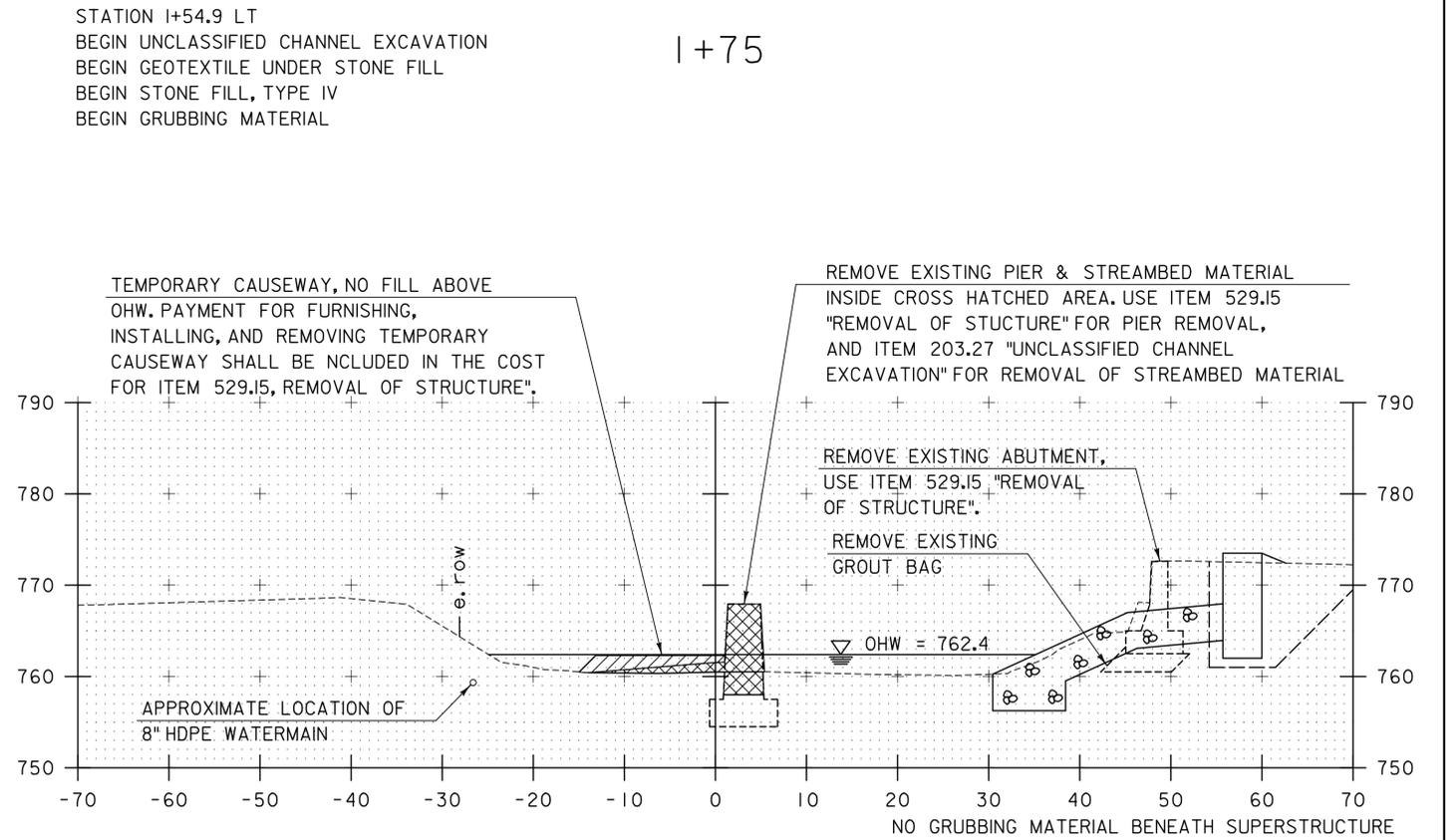
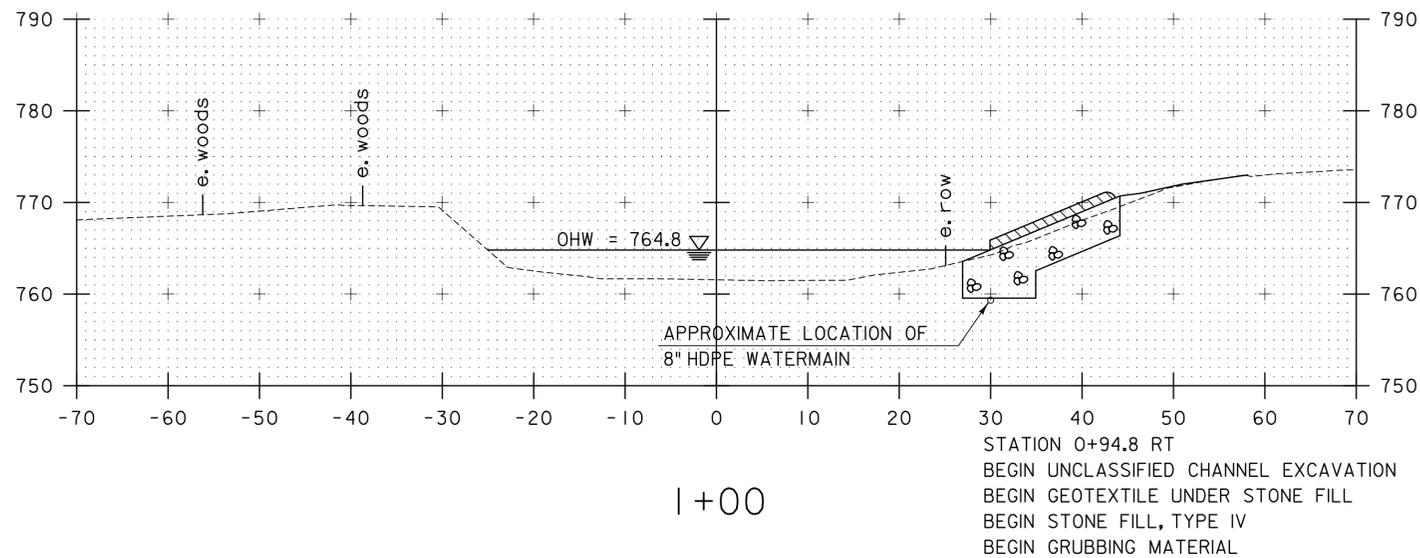
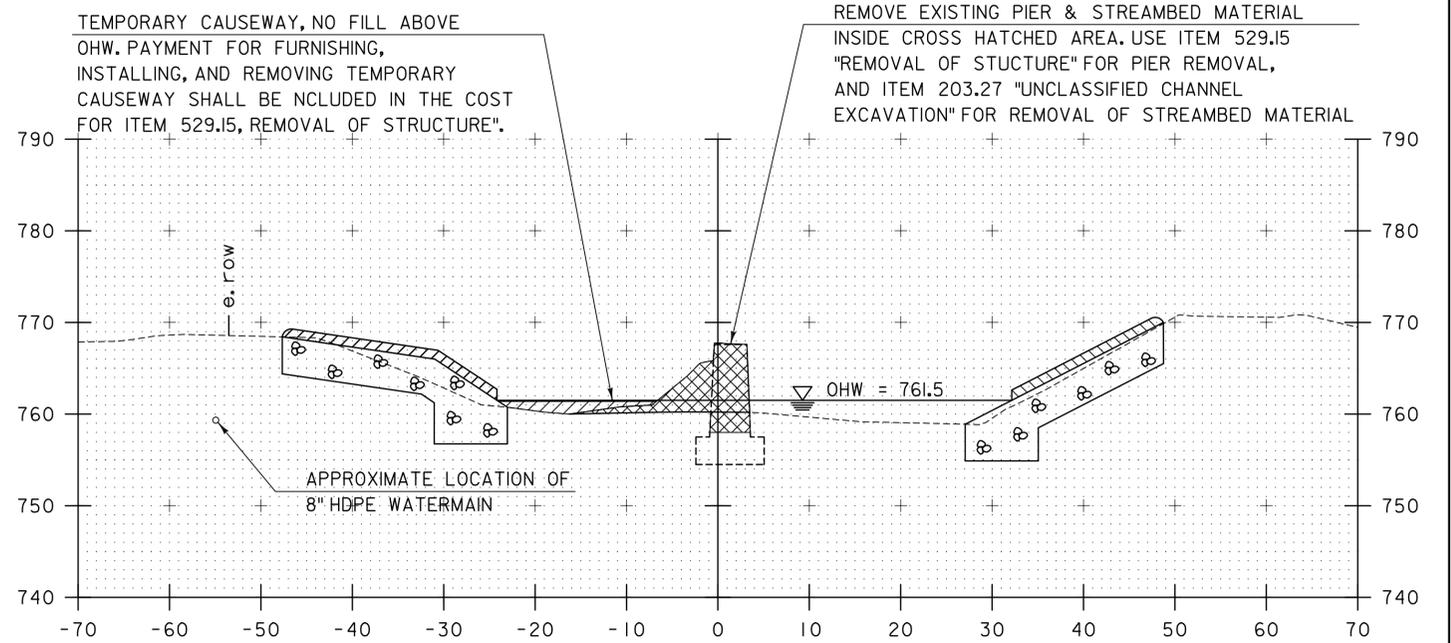
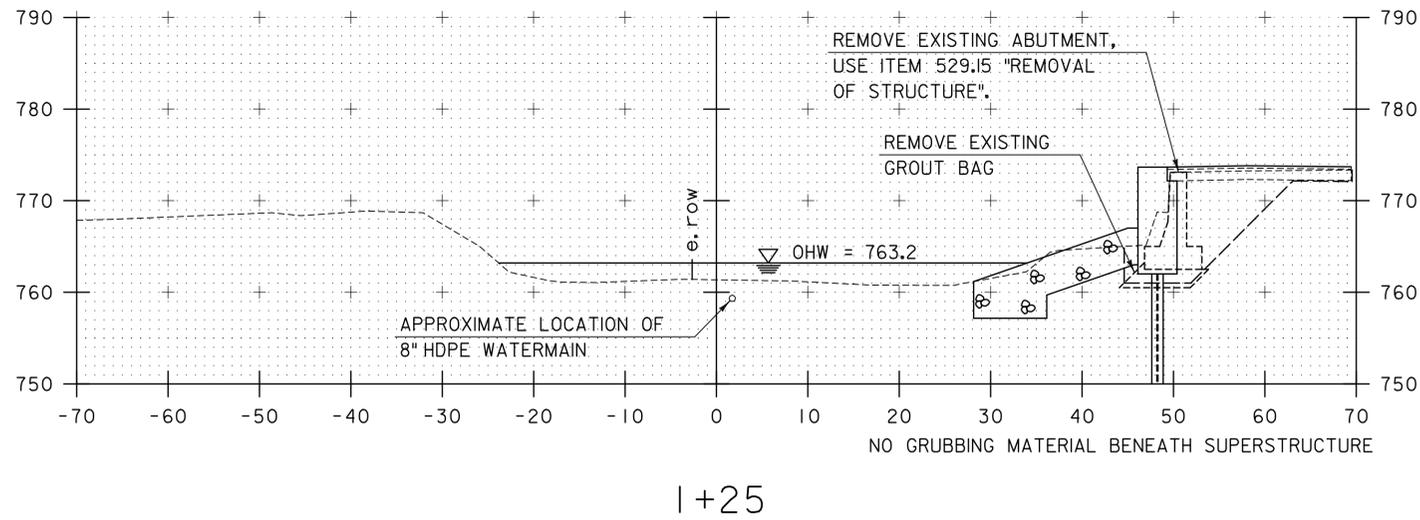
PROJECT NAME: CAVENDISH
 PROJECT NUMBER: ER BRF 0146(13)

SCALE 1" = 10' - 0"

TYLIN INTERNATIONAL

FILE NAME: zllc318bdr_xs.dgn
 PROJECT LEADER: J. OLUND
 DESIGNED BY: J. HOWE
 VT 131 CROSS SECTIONS 2

PLOT DATE: 7/19/2013
 DRAWN BY: J. DAVIS
 CHECKED BY: D. BRYANT
 SHEET 40 OF 49



STA. 0+75 TO STA. I+75

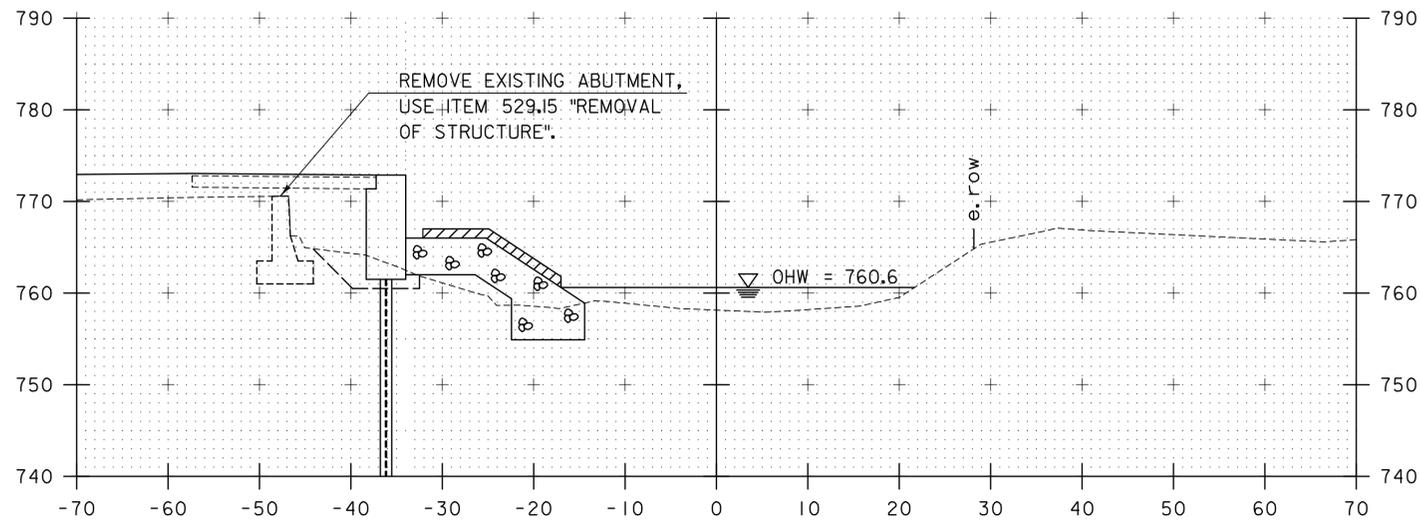
PROJECT NAME: CAVENDISH
PROJECT NUMBER: ER BRF 0146(13)

FILE NAME: zllc318bdr_chl.dgn
PROJECT LEADER: J. OLUND
DESIGNED BY: T. POULIN
CHANNEL CROSS SECTIONS I

PLOT DATE: 7/19/2013
DRAWN BY: T. POULIN
CHECKED BY: J. OLUND
SHEET 41 OF 49

SCALE 1" = 10' - 0"
10 0 10

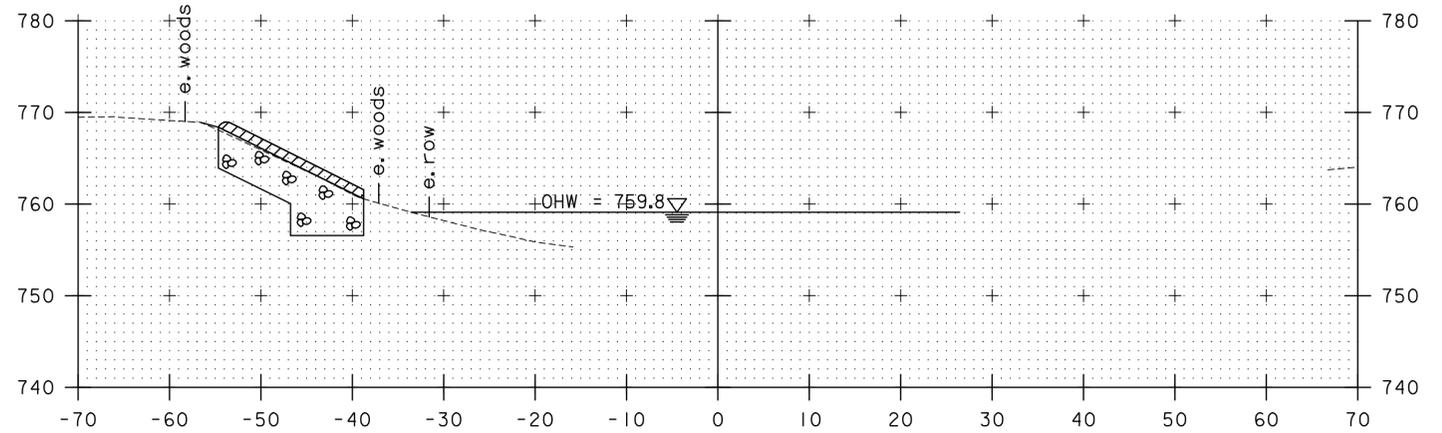
TYLIN INTERNATIONAL



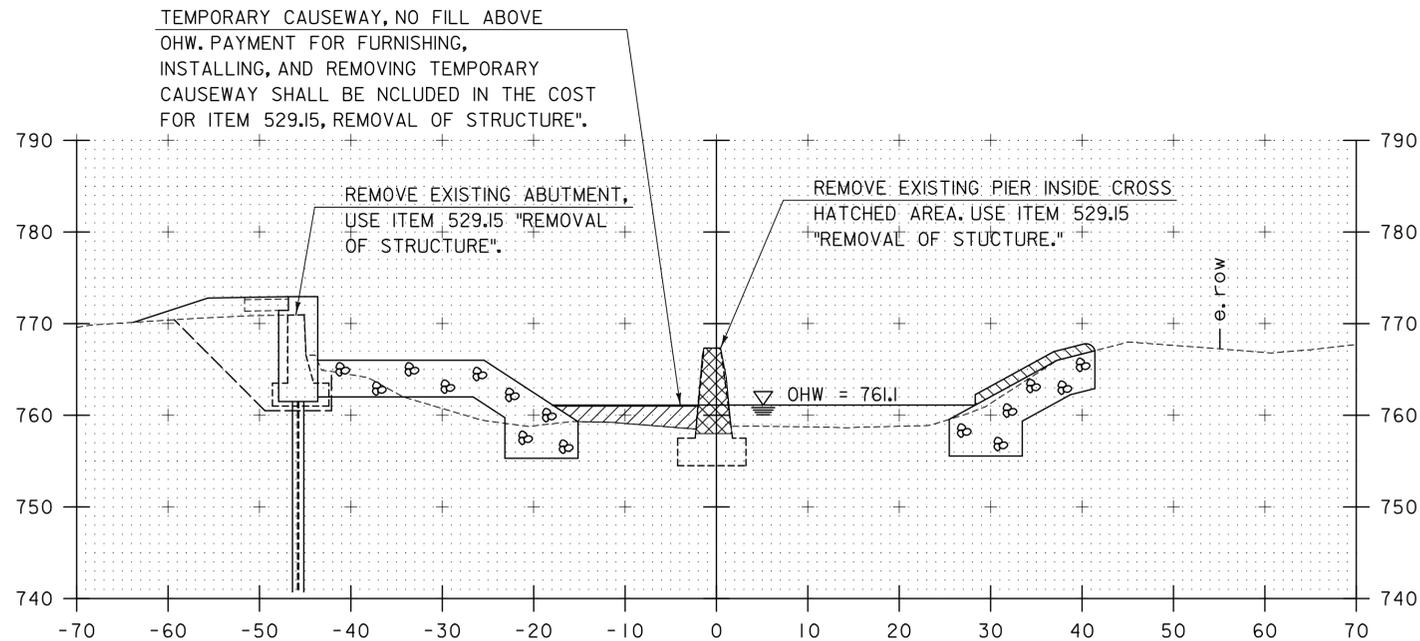
2+25

STATION 2+24.3 RT
 END UNCLASSIFIED CHANNEL EXCAVATION
 END GEOTEXTILE UNDER STONE FILL
 END STONE FILL, TYPE IV
 END GRUBBING MATERIAL

STATION 2+78.9 LT
 END UNCLASSIFIED CHANNEL EXCAVATION
 END GEOTEXTILE UNDER STONE FILL
 END STONE FILL, TYPE IV
 END GRUBBING MATERIAL

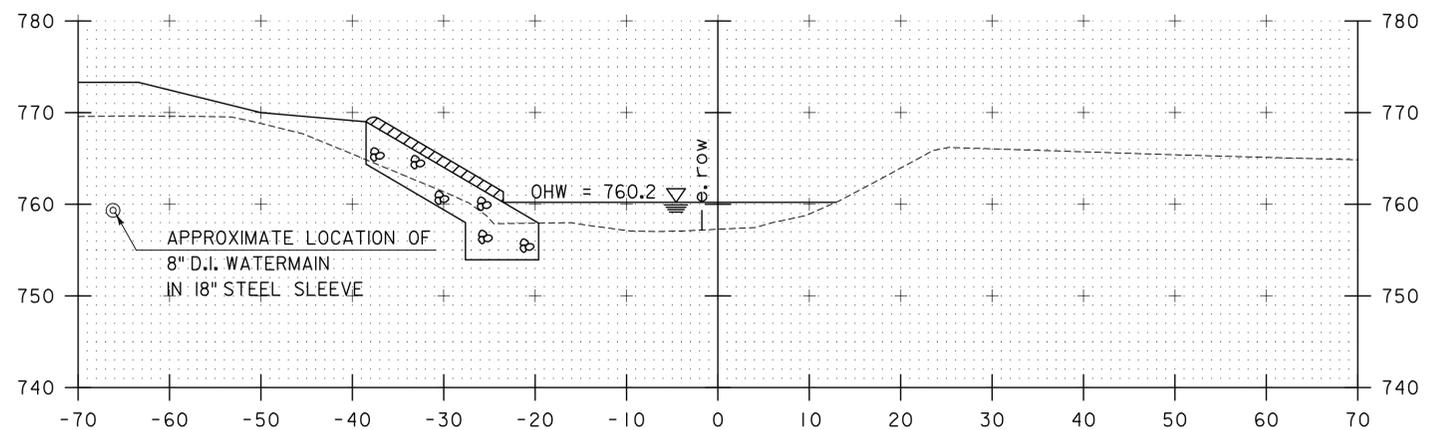


2+75



2+00

NO GRUBBING MATERIAL BENEATH SUPERSTRUCTURE



2+50

STA. 2+00 TO STA. 2+75

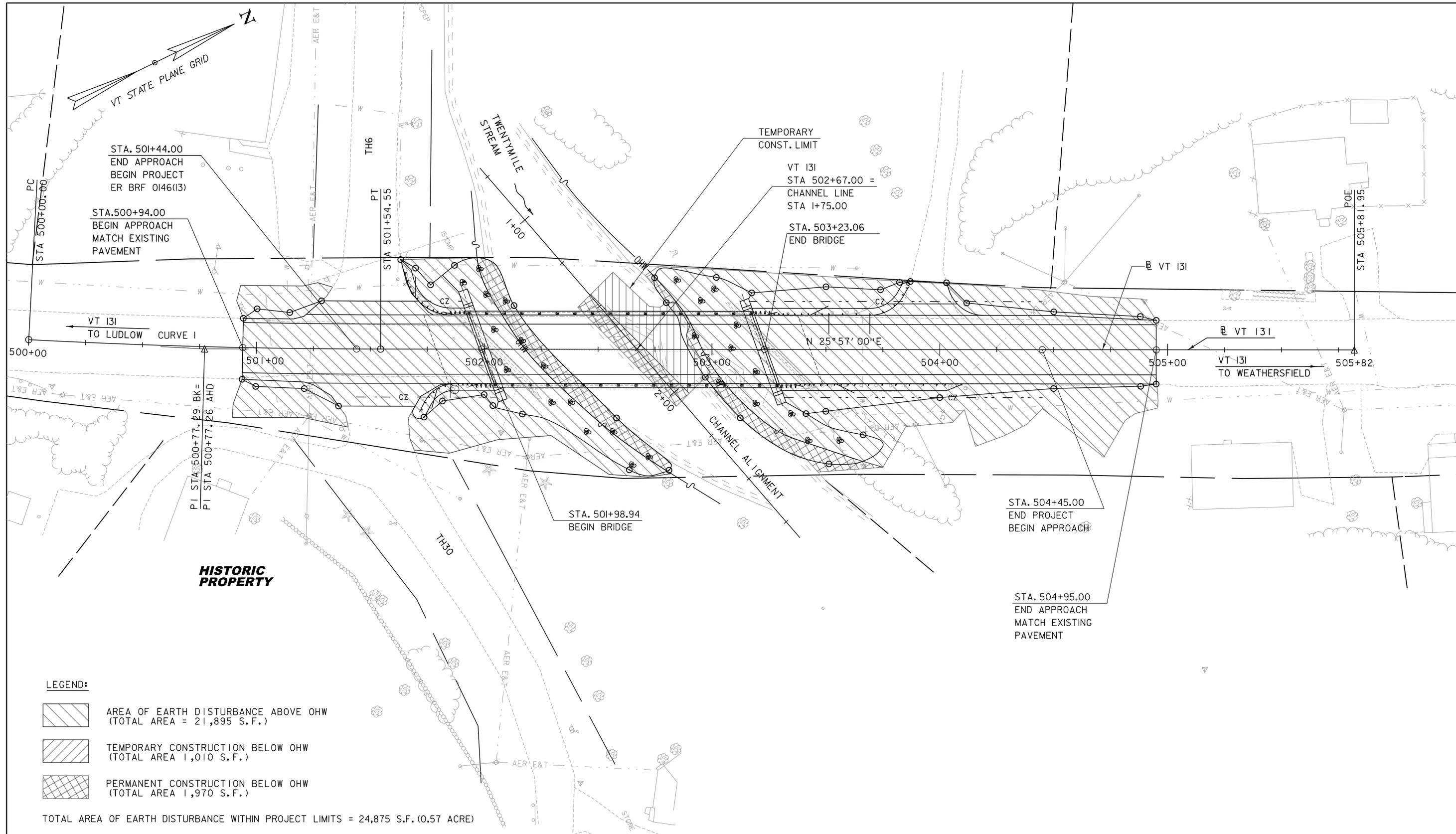
PROJECT NAME: CAVENDISH
 PROJECT NUMBER: ER BRF 0146(13)

FILE NAME: zllc318bdr_chl.dgn
 PROJECT LEADER: J. OLUND
 DESIGNED BY: T. POULIN
 CHANNEL CROSS SECTIONS 2

PLOT DATE: 7/19/2013
 DRAWN BY: T. POULIN
 CHECKED BY: J. OLUND
 SHEET 42 OF 49

SCALE 1" = 10' - 0"
 10 0 10

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LEGEND:

-  AREA OF EARTH DISTURBANCE ABOVE OHW
(TOTAL AREA = 21,895 S.F.)
-  TEMPORARY CONSTRUCTION BELOW OHW
(TOTAL AREA 1,010 S.F.)
-  PERMANENT CONSTRUCTION BELOW OHW
(TOTAL AREA 1,970 S.F.)

TOTAL AREA OF EARTH DISTURBANCE WITHIN PROJECT LIMITS = 24,875 S.F. (0.57 ACRE)

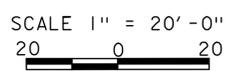
 ORDINARY HIGH WATER (OHW) LINE

NOTE: NO WETLANDS WITHIN PROJECT LIMITS.

RESOURCE LAYOUT

NOTE: ORDINARY HIGH WATER ELEVATION VARIES, SEE CHANNEL CROSS SECTION SHEETS.

PROJECT NAME: CAVENDISH
PROJECT NUMBER: ER BRF 0146(13)



TYLININTERNATIONAL

FILE NAME: zllc318bdr_Rl.dgn
PROJECT LEADER: J. OLUND
DESIGNED BY: D. BURHANS
RESOURCE LAYOUT

PLOT DATE: 7/19/2013
DRAWN BY: D. BURHANS
CHECKED BY: D. BRYANT
SHEET 43 OF 49

EROSION CONTROL NARRATIVE

1.1 PROJECT DESCRIPTION

THIS PROJECT INVOLVES THE REPLACEMENT OF BRIDGE #1 ON VT 131 SPANNING 124 FEET OVER THE BODY OF WATER KNOWN AS TWENTYMILE STREAM IN THE TOWN OF CAVENDISH. THE PROJECT BEGINS AT A POINT APPROXIMATELY 3.10 MILES EAST OF THE VT 131 / VT 103 JUNCTION AND EXTENDS NORTHEASTERLY FOR 0.06 MILES ALONG VT 131. WORK WILL INVOLVE COMPLETE REPLACEMENT OF BRIDGE #1 ALONG WITH RELATED ROADWAY AND CHANNEL WORK AND REMOVAL OF THE EXISTING BRIDGE SUPERSTRUCTURE, ABUTMENTS, AND PIER AND INCIDENTAL ITEMS.

NOTE: AREA OF DISTURBANCE INCLUDES LIMITS OF EARTH DISTURBANCE WITHIN THE PROJECT AREA AS SHOWN ON THE ATTACHED EPSC PLAN. THE AREA OF DISTURBANCE DOES NOT INCLUDE WASTE, BORROW AND STAGING AREAS, UNLESS IT IS CONTIGUOUS TO THE PROJECT SITE. THE CONTRACTOR IS RESPONSIBLE FOR SUBMITTING THE LOCATION OF THE WASTE, BORROW AND STAGING AREAS, AS WELL AS THE MATERIAL STOCKPILE, REFUELING AND MAINTENANCE AREAS. A MAP SHALL BE ATTACHED IF NECESSARY.

TOTAL AREA OF DISTURBANCE IS APPROXIMATELY 24,875 SQUARE FEET (0.57 ACRES).

IT IS ANTICIPATED THAT THE PROJECT WILL LAST ONE CONSTRUCTION SEASON.

1.2 SITE INVENTORY

1.2.1 TOPOGRAPHY, EXISTING ROADS, UTILITIES

THE TOPOGRAPHY SURROUNDING THE PROJECT SITE CONSISTS PREDOMINANTLY OF ROLLING HILLS. RTE 131 PARALLELS THE BLACK RIVER TO THE WEST. THE GENERAL TOPOGRAPHY OF THE AREA SLOPES TOWARD THE RIVER. BEYOND THE RIVER IS THE HAWKS MOUNTAIN WILDLIFE MANAGEMENT AREA.

THERE IS ONE BUSINESS NEAR THE SOUTHWEST CORNER OF THE PROJECT. THERE ARE RESIDENTIAL PROPERTIES IN CLOSE PROXIMITY TO THE OTHER THREE CORNERS OF THE PROJECT. THE PROPERTY ON THE SOUTHEAST CORNER OF THE PROJECT IS A HISTORIC PROPERTY.

THERE IS A SIDEROAD TO THE WEST AND A SIDEROAD TO THE EAST AT THE BEGINNING OF THE PROJECT. ALL ROAD SURFACES IN THE PROJECT AREA ARE BITUMINOUS CONCRETE PAVEMENT. THERE IS ONE DRIVE WITHIN THE PROJECT AREA WHICH IS IMPACTED BY THE PROJECT. THIS DRIVE IS GRAVEL.

WITHIN THE PROJECT AREA THERE IS A WATER LINE AS WELL AS AERIAL TELEPHONE AND ELECTRICAL LINES. THE WATER LINE PARALLELS VT 131 ON THE WEST SIDE OF THE ROAD FROM THE BEGINNING OF THE PROJECT, CROSSING TWENTYMILE STREAM THEN CROSSES VT 131, WHERE IT PARALLELS THE ROAD ON THE EAST SIDE AS IT CONTINUES NORTH. THE TELEPHONE AND ELECTRICAL LINES CROSS OVER VT 131 ON THE SOUTH APPROACH. THEY PARALLEL THE ROAD ON THE EAST SIDE. ON THE NORTH END OF THE PROJECT THEY CROSS VT 131 SEVERAL TIMES.

1.2.2 DRAINAGE, WATERWAYS, BODIES OF WATER, AND PROXIMITY TO NATURAL OR MAN-MADE WATER FEATURES

THE BRIDGE SPANS THE BODY OF WATER KNOWN AS TWENTYMILE STREAM. IN GENERAL THE BROOK IS CLASSIFIED AS MEANDERING. WITHIN THE REACH INFLUENCED BY THE BRIDGE THE BROOK IS CHANNELIZED WITH A BEND DOWNSTREAM. THE BROOK BOUNDARIES ARE ALLUVIAL AND STREAM BANKS ARE GENERALLY SHALLOW. THE STREAM BED CONSISTS OF SAND AND GRAVEL. THE TRIBUTARY AREA AT THE BRIDGE IS 14.9 SQUARE MILES. CONSTRUCTION OF THE NEW BRIDGE WILL REQUIRE SOME TEMPORARY AND PERMANENT IMPACTS TO TWENTYMILE STREAM.

THE FOLLOWING DESCRIPTIONS ARE FOR THE EXISTING SITE PLANS: SURFACE DRAINAGE FROM VT 131 FLOWS DOWN VEGETATED SIDESLOPES TOWARDS TWENTYMILE STREAM.

1.2.3 VEGETATION

THE VEGETATION IN THE PROJECT AREA IS A MIX OF GRASS, BRUSH AND TREES. THE GRASSED AREAS BEING PREDOMINANTLY IN THE VICINITY OF THE RESIDENTIAL PROPERTIES, THERE ARE SOME AREAS OF TREES. THE IMPACT TO VEGETATION WILL BE LIMITED TO THAT WHICH IS REQUIRED FOR REMOVAL AND REPLACEMENT OF THE EXISTING BRIDGE AND THE PLACEMENT OF THE STONE FILL. THE VEGETATION IN THESE AREAS IS MOSTLY BRUSH. DISTURBED VEGETATION WILL BE REESTABLISHED WITH STANDARD SEED AND MULCH PRACTICES.

1.2.4 SOILS

SOIL DATA CAME FROM THE U.S. DEPARTMENT OF AGRICULTURE NATURAL RESOURCES CONSERVATION SERVICE FOR THE COUNTY OF WINDSOR, VERMONT. SOILS ON THE PROJECT SITE ARE:

CROGHAN AND SHEEPSHOT.

SEE EPSC EXISTING CONDITIONS LAYOUT SHEETS FOR SOIL LOCATIONS AND ADDITIONAL INFORMATION.

1.2.4 SENSITIVE RESOURCE AREAS

CRITICAL HABITATS: NO
HISTORICAL OR ARCHAEOLOGICAL AREAS: NO
PRIME AGRICULTURE LAND: NO
THREATENED AND ENDANGERED SPECIES: NO
WATER RESOURCE: TWENTYMILE STREAM
WETLANDS:NO
TOTAL IMPACTED AREA 0 SF.

1.3 RISK EVALUATION

THE PROJECT DOES NOT FALL UNDER THE JURISDICTION OF GENERAL PERMIT 3-9020 FOR STORMWATER RUNOFF FROM CONSTRUCTION SITES. SHOULD CHANGES PRIOR TO OR DURING CONSTRUCTION RESULT IN ONE OR MORE ACRES OF EARTH DISTURBANCE OR SHOULD THE PROJECT BECOME PART OF A LARGER PLAN OF DEVELOPMENT, THE CONTRACTOR WILL BE RESPONSIBLE FOR ANY ADDITIONAL PERMITTING.

1.4 EROSION PREVENTION AND SEDIMENT CONTROL

THE EROSION CONTROL PLANS ARE MEANT AS A GUIDELINE FOR PREVENTING EROSION AND CONTROLLING SEDIMENT TRANSPORT. THE PRINCIPLES OUTLINED IN THIS NARRATIVE CONSIST OF APPLYING MEASURES THROUGHOUT THE LIFE OF THE PROJECT TO AVOID SEDIMENT TRANSPORT TO THE RECEIVING WATERS. THE MEASURES INCLUDE STABILIZATION AND STRUCTURAL PRACTICES, STORM WATER CONTROLS AND OTHER POLLUTION PREVENTION PRACTICES. THEY HAVE BEEN PROPOSED BY THE DESIGNER AS A BASIS FOR PROTECTING RESOURCES AND WILL NEED TO BE BUILT BASED UPON THE SPECIFIC MEANS AND METHODS OF THE CONTRACTOR. REFER TO THE LOW RISK SITE HANDBOOK AND APPROPRIATE DETAIL SHEETS FOR SPECIFIC GUIDANCE AND CONSTRUCTION DETAILING.

ALL MEASURES SHALL BE REGULARLY MAINTAINED AND SHALL BE CHECKED FOR SEDIMENT BUILD-UP. SEDIMENT SHALL BE DISPOSED AT AN APPROVED SITE WHERE IT WILL NOT BE SUBJECT TO EROSION.

1.4.1 MARK SITE BOUNDARIES

SITE BOUNDARIES AND AREAS CONSTRUCTION EQUIPMENT CAN ACCESS SHALL BE DELINEATED.

PROJECT DEMARCATION FENCING (PDF) SHALL BE USED TO PHYSICALLY MARK SITE BOUNDARIES.

1.4.2 LIMIT DISTURBANCE AREA

PREVENTING INITIAL SOIL EROSION BY MINIMIZING THE EXPOSED AREA IS MUCH MORE EFFECTIVE THAN TREATING ERODED SEDIMENT. EARTH DISTURBANCE CAN BE MINIMIZED THROUGH CONSTRUCTION PHASING BY ONLY OPENING UP EARTH AS NECESSARY. THIS CAN LIMIT THE AREA THAT WILL BE DISTURBED AND EXPOSED TO EROSION. EMPLOY TEMPORARY CONSTRUCTION STABILIZATION PRACTICES IN INCREMENTAL STAGES AS PHASES CHANGE. FOR PROJECTS WHICH FALL UNDER THE CONSTRUCTION GENERAL PERMIT, ONLY THE ACREAGE LISTED ON THE PERMIT AUTHORIZATION MAY BE EXPOSED AT ANY GIVEN TIME.

MAINTAINING VEGETATED BUFFERS ALONG STREAM BANKS OR OTHER SENSITIVE AREAS IS A CRUCIAL EROSION AND SEDIMENT CONTROL MEASURE THAT SHOULD BE ESTABLISHED WHEREVER POSSIBLE.

1.4.3 SITE ENTRANCE/EXIT STABILIZATION

TRACKING OF SEDIMENT ONTO PUBLIC HIGHWAYS SHALL BE MINIMIZED TO REDUCE THE POTENTIAL FOR RUNOFF ENTERING RECEIVING WATERS. INSTALLATION SHALL COINCIDE WITH THE CONTRACTOR'S PROGRESS SCHEDULE. STABILIZED CONSTRUCTION ENTRANCES SHALL BE INSTALLED AS PROPOSED ON THE EPSC PLAN AND ANYWHERE EQUIPMENT WILL BE GOING FROM AREAS OF EXPOSED SOILS TO PAVED SURFACES.

1.4.4 INSTALL SEDIMENT BARRIERS

SEDIMENT BARRIERS SHALL BE UTILIZED TO INTERCEPT RUNOFF AND ALLOW SUSPENDED SEDIMENT TO SETTLE OUT. THEY SHOULD BE INSTALLED PRIOR TO ANY UPSLOPE WORK.

SILT FENCE WILL BE INSTALLED AS PROPOSED ON THE EPSC PLAN AND DETAIL SHEETS.

1.4.5 DIVERT UPLAND RUNOFF

DIVERSIONARY MEASURES SHALL BE USED TO INTERCEPT RUNOFF FROM ABOVE THE CONSTRUCTION AND DIRECT IT AROUND THE DISTURBED AREA SO THAT CLEAN WATER DOES NOT BECOME MUDDIED WHILE TRAVELING OVER EXPOSED SOILS ON THE CONSTRUCTION SITE.

DIVERSION OF UPLAND RUNOFF IS NOT ANTICIPATED.

1.4.6 SLOW DOWN CHANNELIZED RUNOFF

CHECK STRUCTURES SHALL BE UTILIZED TO REDUCE THE VELOCITY, AND THUS THE EROSION POTENTIAL, OF CONCENTRATED FLOW IN CHANNELS.

STONE CHECK DAMS ARE NOT ANTICIPATED FOR THIS PROJECT UNLESS DIRECTED BY THE RESIDENT ENGINEER.

1.4.7 CONSTRUCT PERMANENT CONTROLS

PERMANENT STORMWATER TREATMENT DEVICES ARE NOT ANTICIPATED FOR THIS PROJECT.

SEED AND MULCH WILL BE USED AS PERMANENT CONTROLS TO STABILIZE EXPOSED SOIL. RIPRAP AND STONE FILL WILL BE USED TO STABILIZE THE STREAMBED AROUND THE ABUTMENTS.

1.4.8 STABILIZE EXPOSED SOILS DURING CONSTRUCTION

ALL AREAS OF DISTURBANCE MUST HAVE TEMPORARY STABILIZATION IN PLACE WITHIN 48 HOURS OF DISTURBANCE. THE FORECAST OF RAINFALL EVENTS SHALL TRIGGER IMMEDIATE PROTECTION OF EXPOSED SOILS.

SURFACE ROUGHENING OF ALL EXPOSED SLOPES, COMBINED WITH TEMPORARY MULCHING, SHALL BE UTILIZED ON A REGULAR BASIS. BIODEGRADABLE EROSION CONTROL MATTING OR AN EQUIVALENT SHALL BE USED TO STABILIZE ALL SLOPES STEEPER THAN 3:1.

THE FORECAST OF RAINFALL EVENTS SHALL TRIGGER IMMEDIATE PROTECTION OF EXPOSED SOILS.

1.4.9 WINTER STABILIZATION

VARIOUS MEASURES SPECIFIC TO WINTER MAY BE NECESSARY SHOULD THE PROJECT EXTEND INTO WINTER (OCTOBER 15 THROUGH APRIL 15). REFER TO THE LOW RISK SITE HANDBOOK FOR GUIDANCE.

SHOULD EARTH DISTURBANCE BE PERFORMED OUTSIDE THE CONSTRUCTION SEASON, A WINTER EROSION AND SEDIMENT CONTROL PLAN DESCRIBING ALTERNATIVE STABILIZATION METHODS SHALL BE SUBMITTED TO THE RESIDENT ENGINEER PRIOR TO AUGUST 15TH FOR APPROVAL.

1.4.10 STABILIZE SOIL AT FINAL GRADE

EXPOSED SOIL MUST BE STABILIZED WITHIN 48 HOURS OF REACHING FINAL GRADE.

SEED, MULCH, FERTILIZER, AND LIME SHALL BE USED TO ESTABLISH PERMANENT VEGETATION. FOR SLOPES STEEPER THAN 1:3, BIODEGRADABLE EROSION CONTROL MATTING OR AN EQUIVALENT SHALL BE USED INSTEAD OF MULCH.

1.4.11 DE-WATERING ACTIVITIES

THE USE OF COFFERDAMS IS NOT ANTICIPATED.

A SEDIMENTATION DEWATERING LOCATION IS SHOWN IN THE PLANS FOR USE IN DRAINING EXCAVATED CHANNEL MATERIAL PRIOR TO REMOVAL FROM THE PROJECT SITE. METHODS AND DETAILS TO CONTAIN SEDIMENT TRANSPORT FROM THIS DEWATERING LOCATION ARE THE RESPONSIBILITY OF THE CONTRACTOR.

1.4.12 INSPECT YOUR SITE

INSPECT THE PROJECT SITE BASED ON SPECIAL PROVISION REQUIREMENTS.

1.5 SEQUENCE AND STAGING

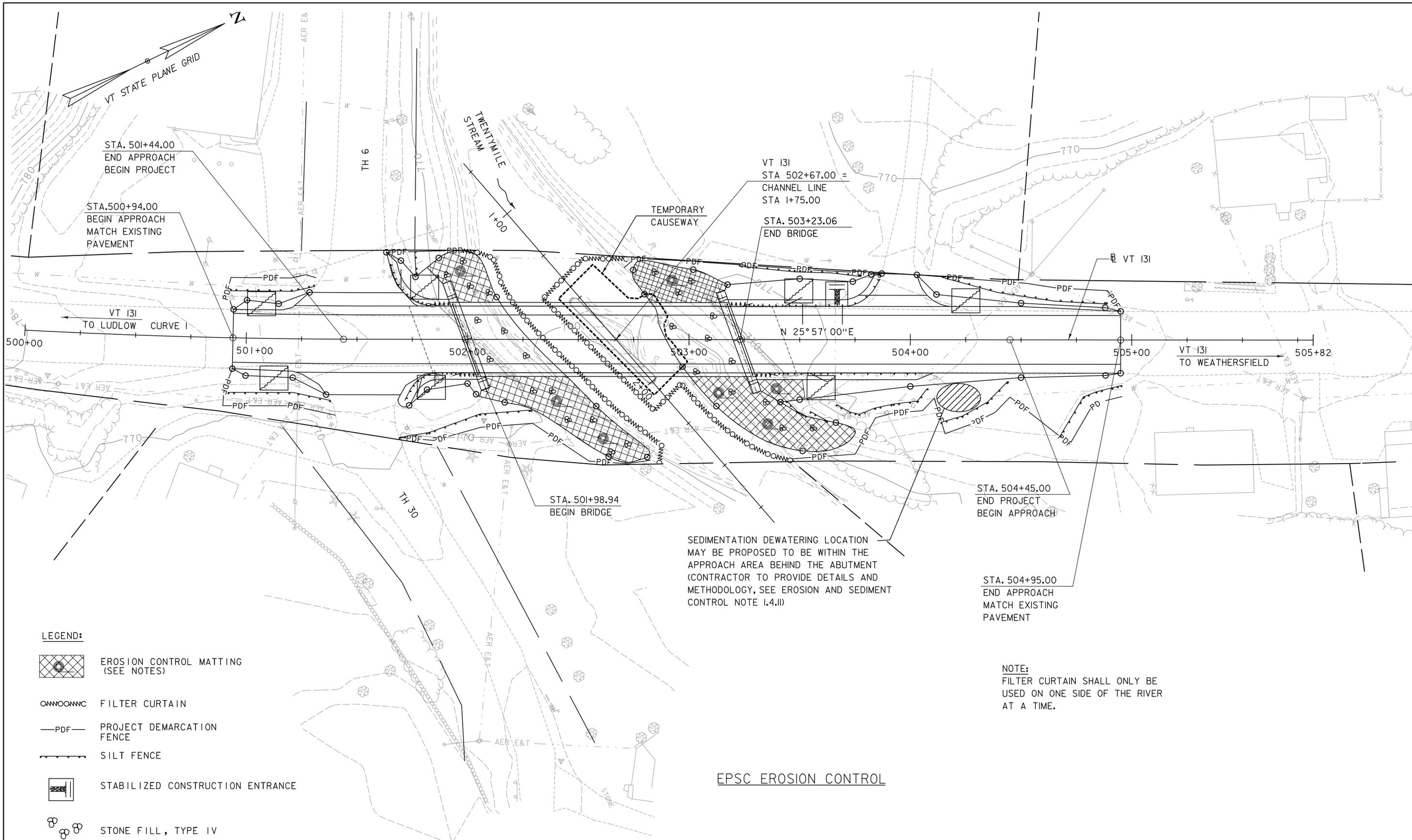
THIS SECTION WILL BE DEVELOPED BY THE CONTRACTOR USING THE GUIDANCE OUTLINED IN THE VTRANS EPSC PLAN CONTRACTOR CHECKLIST.

1.5.1 CONSTRUCTION SEQUENCE

1.5.2 OFF-SITE ACTIVITIES

IN ADDITION TO THE CONTRACTOR CHECKLIST ANY ACTIVITIES OUTSIDE THE CONSTRUCTION LIMITS SHALL FOLLOW SUBSECTIONS 105.25- 105.29 OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION. WASTE, BORROW AND STAGING SITES MUST BE APPROVED BY VTRANS ENVIRONMENTAL SECTION.

TYLIN INTERNATIONAL	PROJECT NAME: CAVENDISH	PROJECT NUMBER: ER BRF 0146(13)
	FILE NAME: zllc318bdr_ero_n.dgn	PLOT DATE: 7/19/2013
	PROJECT LEADER: J. OLUND	DRAWN BY: D. BURHANS
	DESIGNED BY: D. BURHANS	CHECKED BY: D. BRYANT
	EPSC NARRATIVE	SHEET 44 OF 49

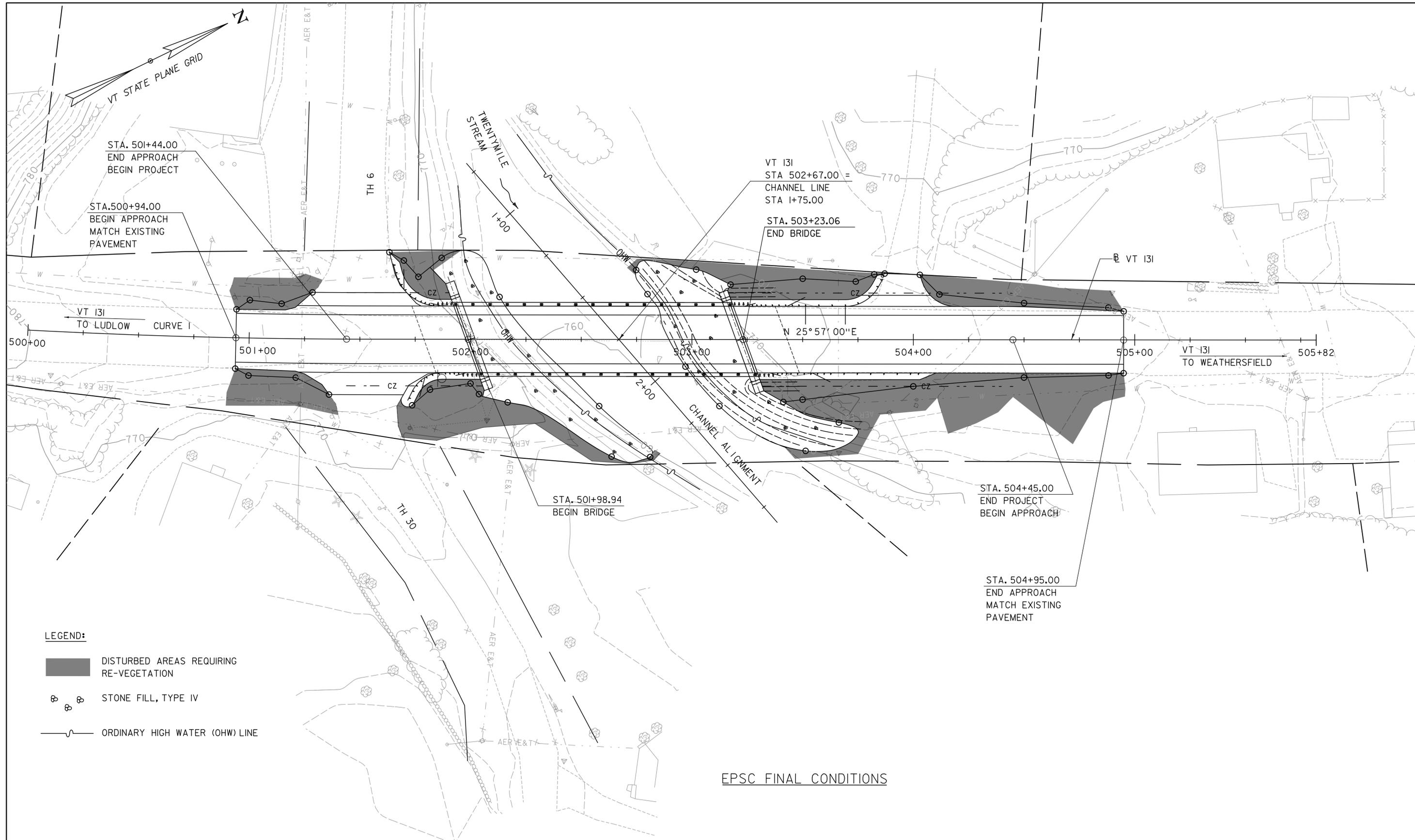


EPSC EROSION CONTROL

SCALE 1" = 20' - 0"
20 0 20

TYLIN INTERNATIONAL

PROJECT NAME: CAVENDISH	PLOT DATE: 7/19/2013
PROJECT NUMBER: ER BRF 0146(13)	DRAWN BY: D. BURHANS
FILE NAME: zllc318bdr_ero_c.dgn	CHECKED BY: D. BRYANT
PROJECT LEADER: J. OLUND	SHEET 46 OF 49
DESIGNED BY: D. BURHANS	
EPSC CONSTRUCTION CONDITION LAYOUT	



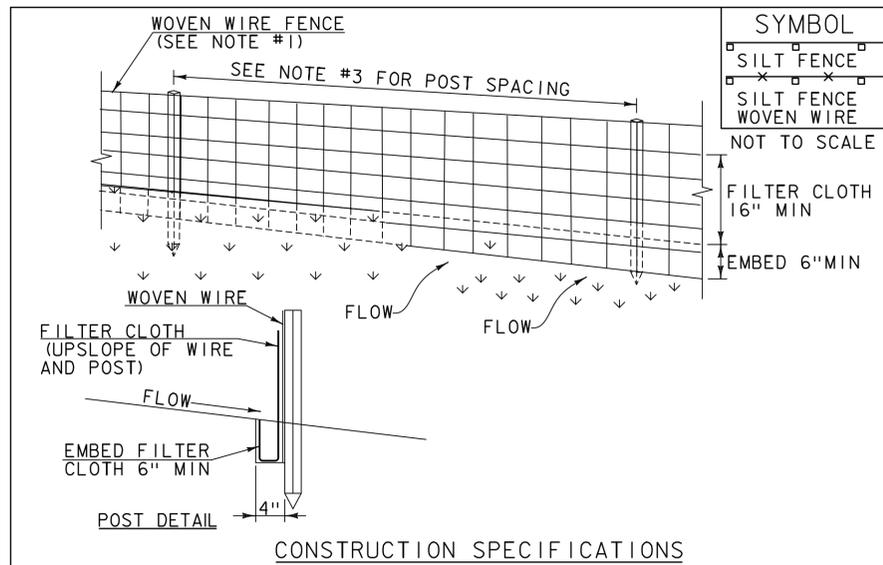
- LEGEND:**
- DISTURBED AREAS REQUIRING RE-VEGETATION
 - STONE FILL, TYPE IV
 - ORDINARY HIGH WATER (OHW) LINE

EPSC FINAL CONDITIONS

SCALE 1" = 20' - 0"
 20 0 20



PROJECT NAME: CAVENDISH	
PROJECT NUMBER: ER BRF 0146(13)	
FILE NAME: zllc318bdr_ero-f.dgn	PLOT DATE: 7/19/2013
PROJECT LEADER: J. OLUND	DRAWN BY: D. BURHANS
DESIGNED BY: D. BURHANS	CHECKED BY: D. BRYANT
EPSC FINAL CONDITION LAYOUT	SHEET 47 OF 49



1. WOVEN WIRE REINFORCED FENCE IS REQUIRED WITHIN 100' UPSLOPE OF RECEIVING WATERS WHEN THE PROJECT FALLS UNDER A CONSTRUCTION STORMWATER PERMIT. WOVEN WIRE SHALL BE A MIN. 14 GAUGE WITH A 3" MAX. MESH OPENING.
2. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAF1100X, STABILINKA T140N OR APPROVED EQUIVALENT.
3. POST SPACING FOR WIRE-BACKED FENCE SHALL BE 10' MAXIMUM. FOR FILTER-CLOTH FENCE, WHEN ELONGATION IS >50%, POST SPACING SHALL NOT EXCEED 4' AND WHEN ELONGATION IS <50%, POST SPACING SHALL NOT EXCEED 6'.
4. WOVEN WIRE FENCE IS TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES. FILTER CLOTH IS TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
5. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY 6" AND FOLDED.
6. MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN SEDIMENT REACHES HALF OF FABRIC HEIGHT.

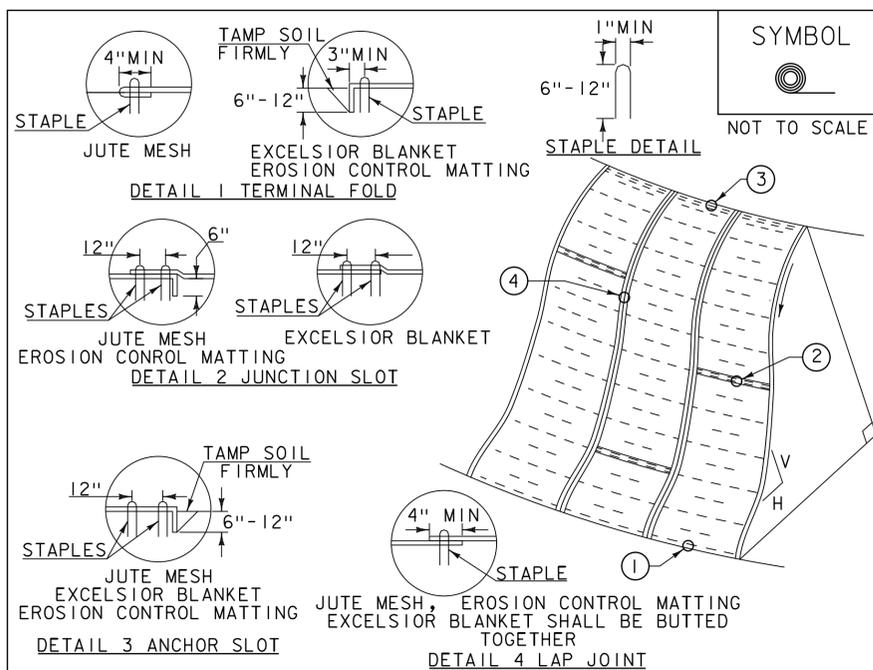
ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
 ORIGINALLY DEVELOPED BY USDA-NRCS
 VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SILT FENCE

NOTES:
 REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006-" FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 649 AND AS SHOWN IN THE PLANS FOR GEOTEXTILE FOR SILT FENCE (PAY ITEM 649.51) OR GEOTEXTILE FOR SILT FENCE, WOVEN WIRE REINFORCED (PAY ITEM 649.515).

REVISIONS	
MARCH 21, 2008	WHF
DECEMBER 11, 2008	WHF
JANUARY 13, 2009	WHF



1. APPLY TO SLOPES GREATER THAN 3H: 1V OR WHERE NECESSARY TO AID IN ESTABLISHING VEGETATION.
2. APPLY FERTILIZER, LIME SEED PRIOR TO PLACING MATTING.
3. STAPLES ARE TO BE PLACED ALTERNATELY, IN COLUMNS APPROXIMATELY 2' APART AND IN ROWS APPROXIMATELY 3' APART. APPROXIMATELY 175 STAPLES ARE REQUIRED PER 4' X 225' ROLL OF MATERIAL AND 125 STAPLES ARE REQUIRED PER 4' X 150' ROLL OF MATERIAL.
4. DISTURBED AREAS SHALL BE SMOOTHLY GRADED. EROSION CONTROL MATERIAL SHALL BE PLACED LOOSELY OVER GROUND SURFACE. DO NOT STRETCH.
5. ALL TERMINAL ENDS AND TRANSVERSE LAPS SHALL BE STAPLED AT APPROXIMATELY 12" INTERVALS.

ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
 ORIGINALLY DEVELOPED BY USDA-NRCS
 VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

ROLLED EROSION CONTROL PRODUCT (RECP) SIDE SLOPE

NOTES:
 REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006-" FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.
 THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 AND AS SHOWN IN THE PLANS FOR TEMPORARY EROSION MATTING (PAY ITEM 653.20) OR PERMANENT EROSION MATTING (PAY ITEM 653.21).

REVISIONS	
APRIL 16, 2007	JMF
JANUARY 13, 2009	WHF

VAOT RURAL AREA MIX					
% WEIGHT	LBS/AC		NAME	GERM %	PURITY %
	BROADCAST	HYDROSEED			
37.5%	22.5	45	CREeping RED FESCUE	85%	98%
37.5%	22.5	45	TALL FESCUE	90%	95%
5.0%	3	6	RED TOP	90%	95%
15.0%	9	18	BIRDSFOOT TREFOIL	85%	98%
5.0%	3	6	ANNUAL RYE GRASS	85%	95%
100%	60	120			

VAOT URBAN AREA MIX					
% WEIGHT	LBS/AC		NAME	GERM %	PURITY %
	BROADCAST	HYDROSEED			
42.5%	34	68	CREeping RED FESCUE	85%	98%
10.0%	8	16	PERENNIAL RYE GRASS	90%	95%
42.5%	34	68	KENTUCKY BLUE GRASS	85%	85%
5.0%	4	8	ANNUAL RYE GRASS	85%	95%
100%	80	160			

SOIL AMENDMENT GUIDANCE			
FERTILIZER		LIME	
BROADCAST	HYDROSEED	BROADCAST	HYDROSEED
10-20-10	FOLLOW	PELLETIZED	FOLLOW
500 LBS/AC	MANUFACTURER	2 TONS/AC	MANUFACTURER

CONSTRUCTION GUIDANCE

1. RURAL SEED MIX: USE AS INDICATED IN THE PLANS AND/OR FOR ALL ESTABLISHED UPLAND (NON WETLAND) AREAS DISTURBED BY THE CONTRACTOR.
2. URBAN SEED MIX: USE AS INDICATED IN THE PLANS AND/OR FOR ALL ESTABLISHED LAWN AREAS DISTURBED BY THE CONTRACTOR.
3. ALL SEED MIXTURES: SHALL NOT HAVE A WEED CONTENT EXCEEDING 0.40% BY WEIGHT AND SHALL BE FREE OF ALL NOXIOUS SEED.
4. FERTILIZER AND LIMESTONE: SHALL FOLLOW RATES SHOWN ON PLAN OR AS DIRECTED BY THE ENGINEER
5. HAY MULCH: TO BE PLACED ON EARTH SLOPES AT THE RATE OF 2 TONS/ACRE, ACHIEVE 90% GROUND COVER OR AS DIRECTED BY THE ENGINEER.
6. TOPSOIL: TO BE USED WITH SEED AS INDICATED ON THE PLANS, OR AS DIRECTED BY THE ENGINEER.
7. HYDROSEEDING: ALTHOUGH GUIDANCE IS GIVEN ABOVE THE SITE CONDITIONS AND THE TYPE OF HYDROSEED WILL ULTIMATELY DICTATE THE AMOUNTS AND TYPES OF SOIL AMENDMENTS TO BE APPLIED
8. TURF ESTABLISHMENT: PLACING SEED, FERTILIZER, LIME AND MULCH PRIOR TO SEPTEMBER 15 AND AFTER APRIL 15 CAN BETTER ENSURE A VIGOROUS GROWTH OF GRASS.

ADAPTED FROM VTRANS TECHNICAL LANDSCAPE MANUAL FOR ROADWAYS AND TRANSPORTATION FACILITIES

TURF ESTABLISHMENT

REVISIONS	
JUNE 23, 2009	WHF
JANUARY 15, 2010	WHF
FEBRUARY 16, 2011	WHF

LEGEND:

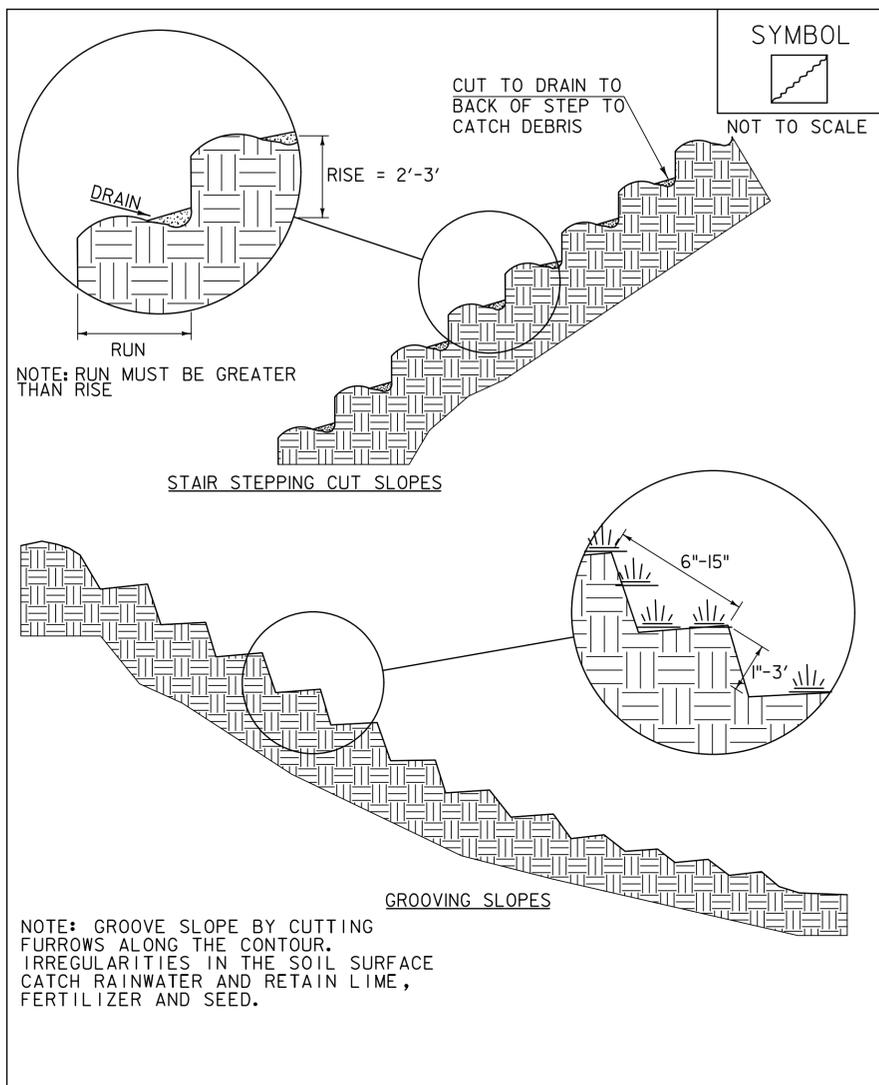
- | | | | |
|--|-------------------------------------|--|----------------------------------|
| | EROSION CONTROL MATTING (SEE NOTES) | | STABILIZED CONSTRUCTION ENTRANCE |
| | FILTER CURTAIN | | STONE FILL, TYPE IV |
| | PROJECT DEMARCATION FENCE | | SURFACE ROUGHENING |
| | SILT FENCE | | TEMPORARY CONSTRUCTION LIMITS |

PROJECT NAME: CAVENDISH
 PROJECT NUMBER: ER BRF 0146(13)

TYLIN INTERNATIONAL

FILE NAME: zllc318bdr_epsc_details.dgn
 PROJECT LEADER: J. OLUND
 DESIGNED BY: D. BURHANS
 EPSC DETAILS I

PLOT DATE: 7/19/2013
 DRAWN BY: S. MORGAN
 CHECKED BY: D. BRYANT
 SHEET 48 OF 49



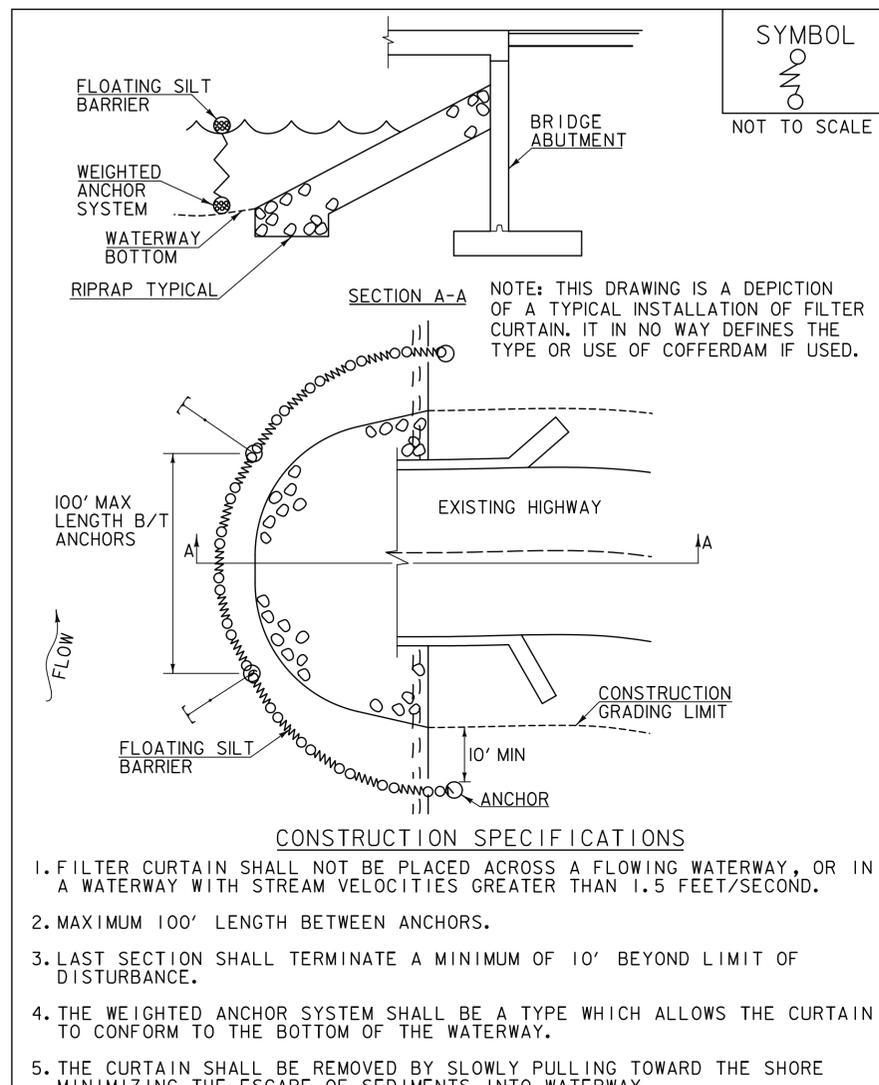
ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

SURFACE ROUGHENING

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR
EROSION PREVENTION & SEDIMENT CONTROL -2006- "FROM
THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL
GUIDANCE.

THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE
CONTRACT

REVISIONS	
APRIL 1, 2008	WHF
JANUARY 13, 2009	WHF



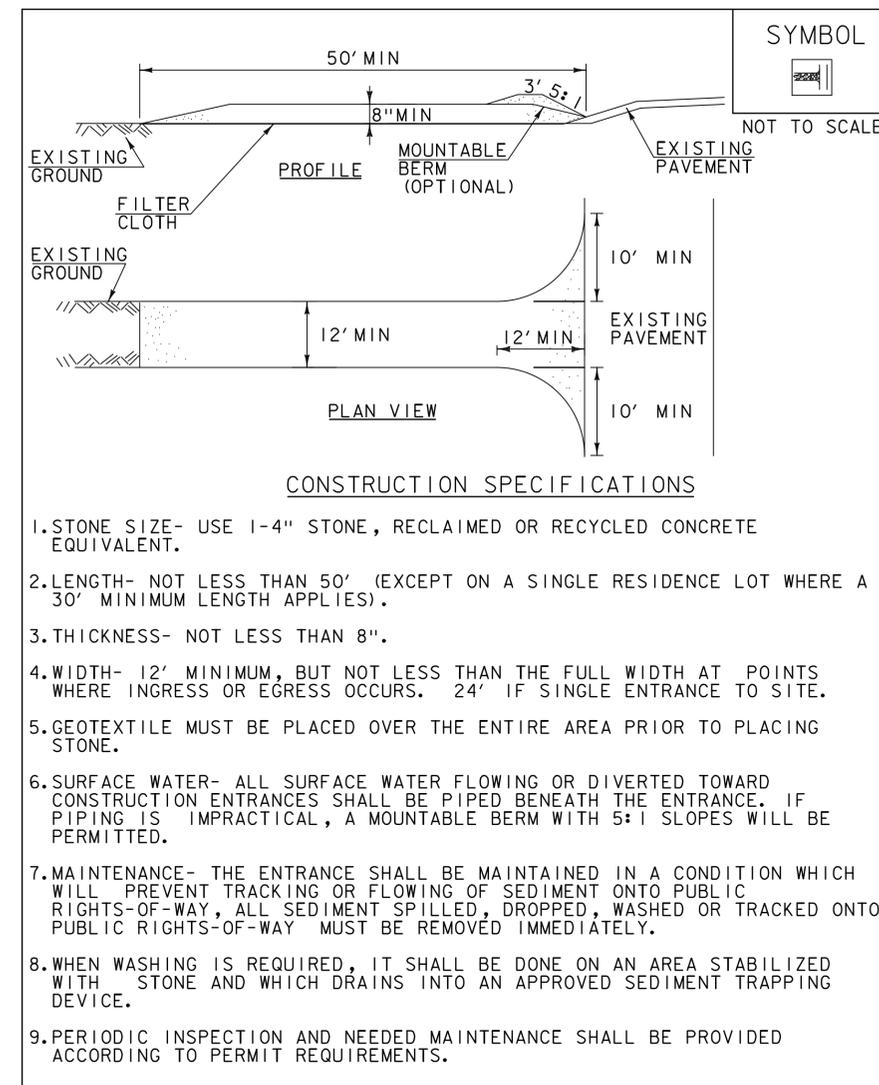
ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

FILTER CURTAIN

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR
EROSION PREVENTION & SEDIMENT CONTROL -2006- "FROM
THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL
GUIDANCE.

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH
SECTION 649 FOR GEOTEXTILE FOR FILTER CURTAIN (PAY
ITEM 649.6I).

REVISIONS	
APRIL 1, 2008	WHF
JANUARY 13, 2009	WHF
SEPTEMBER 4, 2009	WHF



ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

STABILIZED CONSTRUCTION ENTRANCE

NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR
EROSION PREVENTION & SEDIMENT CONTROL -2006- "FROM
THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL
GUIDANCE.

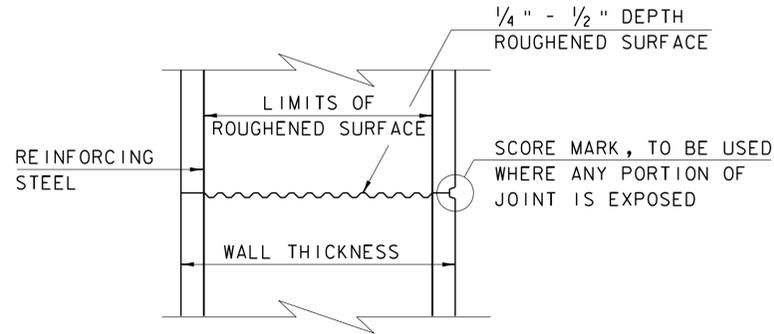
THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH
SECTION 653 FOR VEHICLE TRACKING PAD (PAY ITEM 653.35)
OR AS SPECIFIED IN THE CONTRACT.

REVISIONS	
MARCH 24, 2008	WHF
JANUARY 13, 2009	WHF

TYLIN INTERNATIONAL	PROJECT NAME: CAVENDISH	PLOT DATE: 7/19/2013
	PROJECT NUMBER: ER BRF 0146(13)	DRAWN BY: S. MORGAN
	FILE NAME: zllc318bdr_epsc_dets2.dgn	DESIGNED BY: D. BURHANS
	PROJECT LEADER: J. OLUND	CHECKED BY: D. BRYANT
	EPSC DETAILS 2	SHEET 49 OF 49

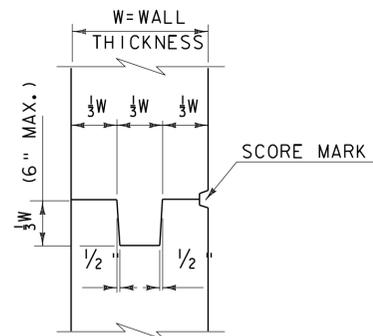
CONCRETE GENERAL NOTES

- ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1" x 1"

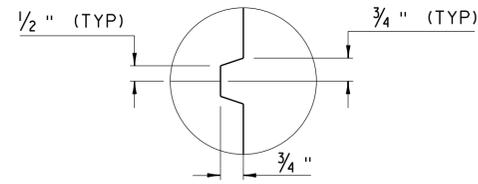


TYPICAL HORIZONTAL CONSTRUCTION JOINT
(NOT TO SCALE)

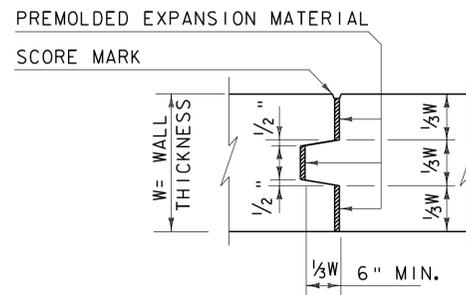
- THE SURFACE OF THE CONCRETE CONSTRUCTION JOINTS SHALL BE CLEANED AND FREE OF LAITANCE.
- IMMEDIATELY BEFORE NEW CONCRETE IS PLACED, ALL CONSTRUCTION JOINTS SHALL BE WETTED AND STANDING WATER REMOVED.



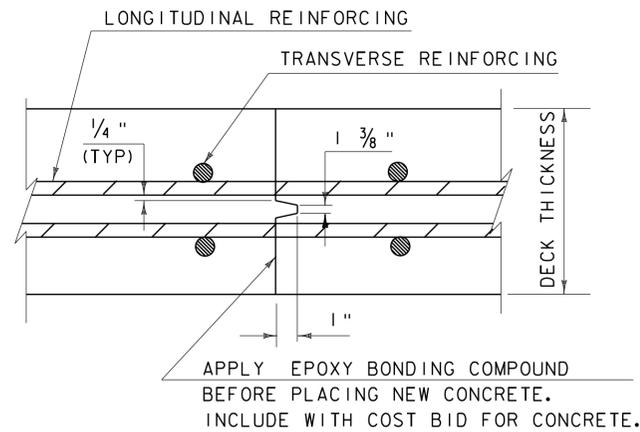
TYPICAL CONCRETE CONSTRUCTION JOINT
(NOT TO SCALE)



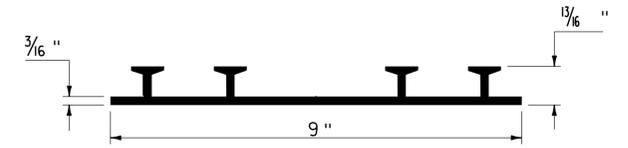
SCORE MARK DETAIL
(NOT TO SCALE)



TYPICAL CONCRETE EXPANSION JOINT
(NOT TO SCALE)



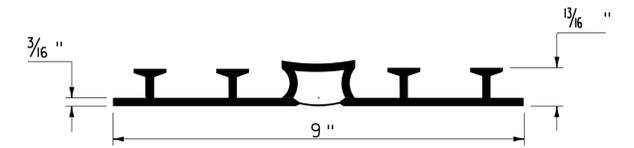
TRANSVERSE BRIDGE SLAB CONSTRUCTION JOINT DETAILS
(NOT TO SCALE)



P.V.C. WATERSTOP FOR CONSTRUCTION JOINTS
(NOT TO SCALE)

PAYMENT FOR THE P.V.C. WATERSTOP SHALL BE INCIDENTAL TO THE UNIT BID PRICE FOR THE ADJACENT CONCRETE.

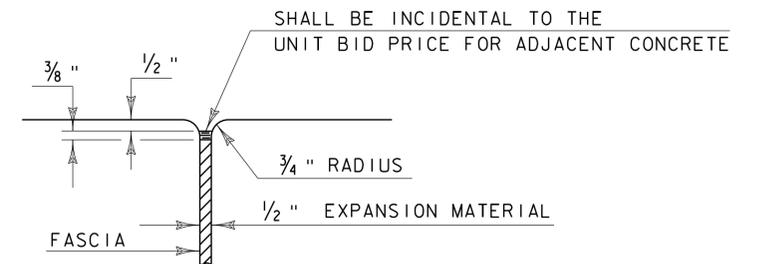
OTHER CONFIGURATIONS OF WATERSTOP MAY BE USED UPON APPROVAL OF THE ENGINEER.



P.V.C. WATERSTOP FOR EXPANSION JOINTS
(NOT TO SCALE)

PAYMENT FOR THE P.V.C. WATERSTOP SHALL BE INCIDENTAL TO THE UNIT BID PRICE FOR THE ADJACENT CONCRETE.

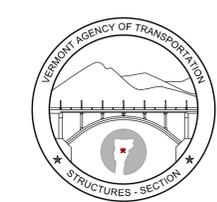
OTHER CONFIGURATIONS OF WATERSTOP MAY BE USED UPON APPROVAL OF THE ENGINEER.



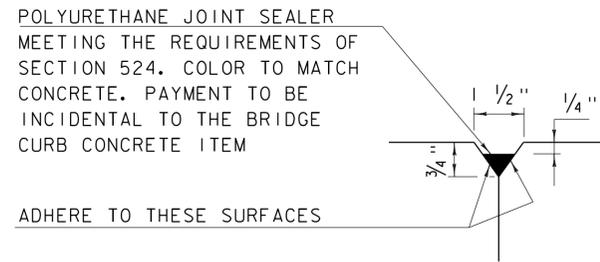
JOINT BETWEEN FASCIA AND WINGWALL
(NOT TO SCALE)

REVISIONS	
MAY 7, 2010	APPROVED FOR USE BY VAOT STRUCTURES SECTION

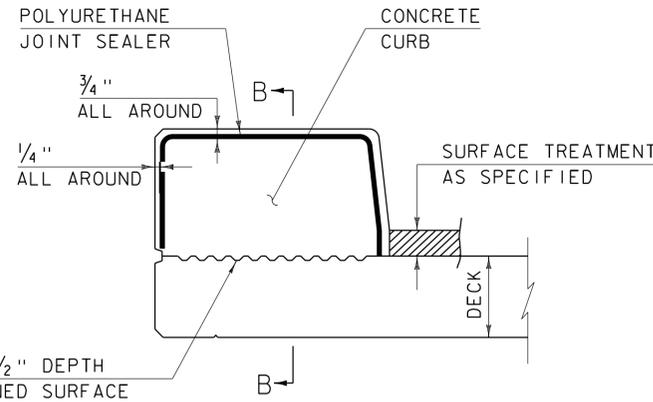
**CONCRETE
DETAILS AND NOTES**



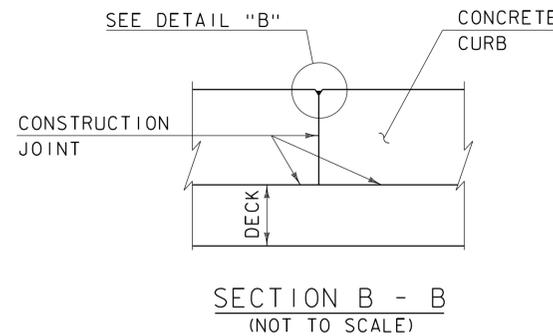
**STRUCTURES
DETAIL
SD-5 01.00**



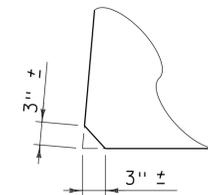
DETAIL "B"
(NOT TO SCALE)



CONCRETE CURB JOINT SECTION
(NOT TO SCALE)



SECTION B - B
(NOT TO SCALE)

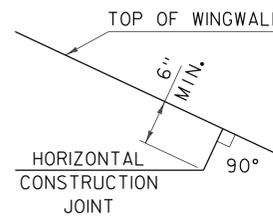


ACUTE ANGLE
CLIP DETAIL
(NOT TO SCALE)

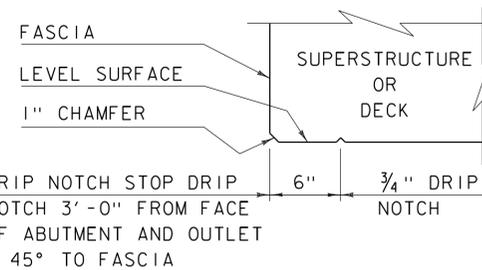
1. SEE TYPICAL HORIZONTAL CONSTRUCTION JOINT DETAIL FOR ADDITIONAL INFORMATION

CONCRETE CURB JOINT NOTES

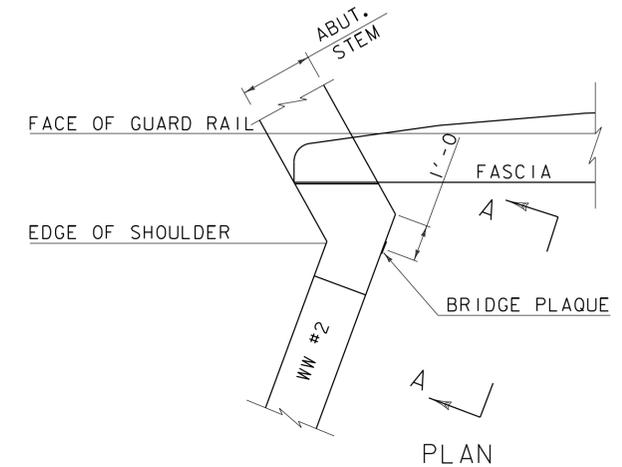
1. CONCRETE CURBS MAY BE PLACED IN ONE CONTINUOUS OPERATION IF AN APPROVED SHRINKAGE REDUCING ADMIXTURE LISTED IN THE SPECIAL PROVISIONS IS USED WITH THE CONCRETE MIX DESIGN. PAYMENT FOR THE SHRINKAGE REDUCING ADMIXTURE WILL BE INCIDENTAL TO THE BRIDGE CURB CONCRETE ITEM.
2. IF THE CONTRACTOR CHOOSES NOT TO USE AN APPROVED SHRINKAGE REDUCING ADMIXTURE, THE CURBS SHALL BE CONSTRUCTED WITH CONSTRUCTION JOINTS SPACED AT A MAXIMUM OF 15'-0" CENTER TO CENTER AND 2'-0" MINIMUM FROM THE CENTER OF NEAREST BRIDGE RAILING POST.
3. ON MULTI-SPAN CONTINUOUS SUPERSTRUCTURES, REGARDLESS OF WHETHER APPROVED SHRINKAGE REDUCING ADMIXTURE IS USED, CURB JOINTS SHALL BE LOCATED OVER THE CENTERLINE OF PIERS AND 7'-0" EACH SIDE OF THE CENTERLINE OF EACH PIER.
4. WHEN CURB JOINTS ARE USED THE CURBS SHALL BE PLACED IN ALTERNATE SECTIONS WITH A MINIMUM OF 48 HOUR DELAY BETWEEN ADJACENT PLACEMENTS.
5. LONGITUDINAL REINFORCING SHALL BE CONTINUOUS THROUGH CURB CONSTRUCTION JOINTS. CURB STIRRUP BARS SHALL BE TURNED AS NECESSARY TO MAINTAIN COVER IN THE FLARED CURB ENDS.
6. THE JOINT SPACING AND DETAILS SHOWN SHALL APPLY TO SIDEWALKS WHEN SHOWN IN THE PLANS.



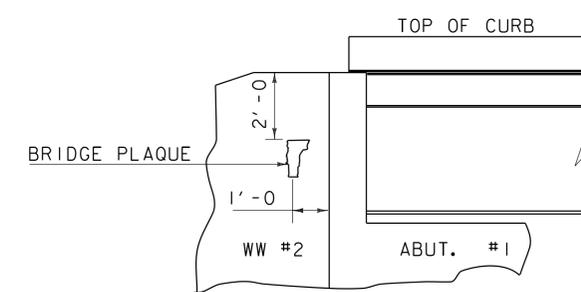
HORIZONTAL WINGWALL
CONSTRUCTION JOINT
(NOT TO SCALE)



DRIP NOTCH DETAIL
(NOT TO SCALE)



PLAN



VIEW "A - A"

BRIDGE PLAQUE
(NOT TO SCALE)

THE BRIDGE PLAQUE WILL BE SUPPLIED BY THE AGENCY OF TRANSPORTATION AND SHALL BE INSTALLED BY THE CONTRACTOR AT ABUTMENT #1 ON THE RIGHT SIDE AS SHOWN OR AS DIRECTED BY THE ENGINEER.

PAYMENT FOR INSTALLATION OF THE BRIDGE PLAQUE SHALL BE INCIDENTAL TO THE ADJACENT CONCRETE.

REVISIONS

MAY 7, 2010	APPROVED FOR USE BY VAOT STRUCTURES SECTION
JUNE 4, 2010	MODIFIED AND ADDED TWO DETAILS
OCTOBER 10, 2012	MODIFIED HORZ. JOINT WINGWALL ADD 6" MIN. DIMENSION

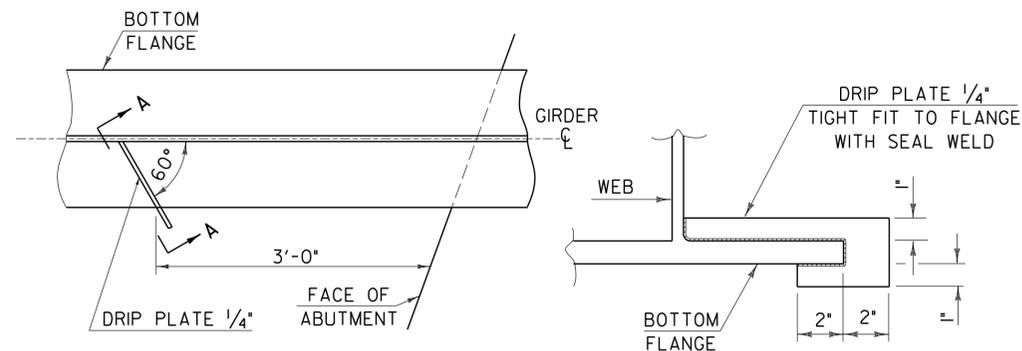
CONCRETE
DETAILS AND NOTES



STRUCTURES
DETAIL
SD-502.00

STRUCTURAL STEEL GENERAL NOTES:

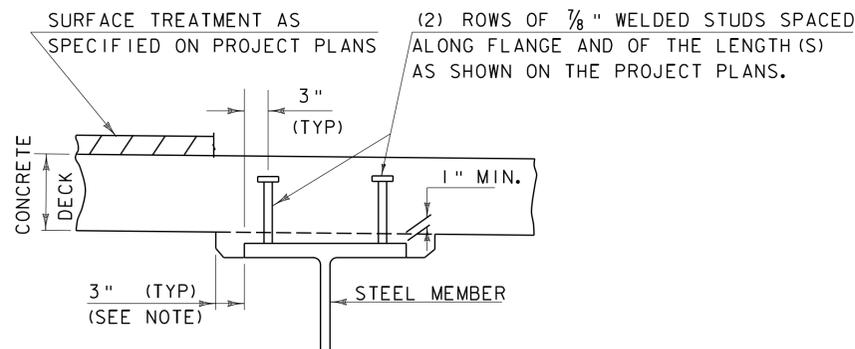
1. ALL FIELD CONNECTIONS SHALL BE MADE WITH 7/8" DIAMETER HIGH-STRENGTH BOLTS IN 15/16" DIAMETER HOLES, PER SUBSECTION 506.I9, UNLESS OTHERWISE SPECIFIED.
2. ALL HOLES IN THE WEBS OF THE FASCIA GIRDERS THAT ARE NOT OTHERWISE FILLED, SHALL BE FILLED WITH EITHER BUTTON HEAD OR HEX HEAD BOLTS. THESE BOLTS SHALL BE TIGHTENED IN ACCORDANCE WITH SUBSECTION 506.I9.
3. ALL WELDING SHALL CONFORM TO THE PROVISIONS OF SUBSECTION 506.I0.
4. ANY CONNECTIONS THAT ARE NOT DETAILED ON THE PLANS SHALL BE DETAILED BY THE FABRICATOR AND SUBMITTED TO THE STRUCTURES ENGINEER FOR APPROVAL.
5. STRUCTURAL STEEL MEMBERS DESIGNATED "CVN" IN THE PLANS SHALL BE CHARPY V-NOTCH TESTED IN ACCORDANCE WITH SUBSECTION 714.01 OF THE STANDARD SPECIFICATIONS.
6. ENDS OF GIRDERS ARE TO BE VERTICAL IN THEIR FINAL POSITION.
7. AFTER SUPERSTRUCTURE STEEL HAS BEEN ERECTED, ELEVATIONS ALONG THE TOP OF THE GIRDERS SHALL BE TAKEN AS DIRECTED BY THE RESIDENT ENGINEER FOR USE IN DETERMINING FINISHED GRADES.



PLAN DRIP PLATE

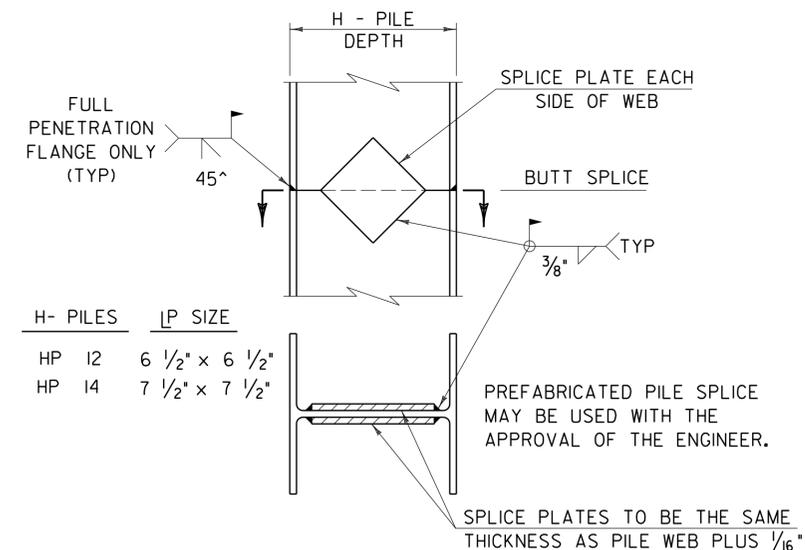
SECTION A - A

NOTE: DRIP PLATES SHALL BE PLACED ON OUTSIDE EDGE OF FASCIA GIRDERS ON THE HIGH SIDE OF ALL PIERS AND ABUTMENTS OR AS INDICATED ON PROJECT PLANS.



NOTE:
 THE 3" HORIZONTAL SECTION MAY BE ELIMINATED FOR FORMING SYSTEMS DESIGNED FOR THE CONSTRUCTION OF VERTICAL HAUNCHES. ANY VOIDS RESULTING FROM FORMING SYSTEM ELEMENTS SHALL BE FILLED WITH JOINT SEALER, POLYURETHANE MEETING THE REQUIREMENTS OF SECTION 524. THE COST OF THE JOINT SEALER, POLYURETHANE SHALL BE INCIDENTAL TO THE ADJACENT CONCRETE.

HAUNCH AND SHEAR CONNECTOR DETAIL



H- PILES	IP SIZE
HP 12	6 1/2" x 6 1/2"
HP 14	7 1/2" x 7 1/2"

PREFABRICATED PILE SPLICE MAY BE USED WITH THE APPROVAL OF THE ENGINEER.

SPLICE PLATES TO BE THE SAME THICKNESS AS PILE WEB PLUS 1/16"

DETAIL OF PILE SPLICE

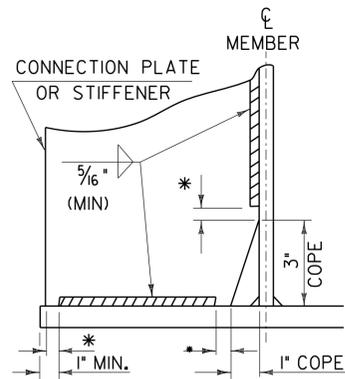
DETAILS ON THIS SHEET ARE "NOT TO SCALE" UNLESS NOTED OTHERWISE.

REVISIONS	
MAY 7, 2010	APPROVED FOR USE BY VAOT STRUCTURES SECTION
JUNE 4, 2010	MODIFIED NOTES

STRUCTURAL STEEL DETAILS & NOTES

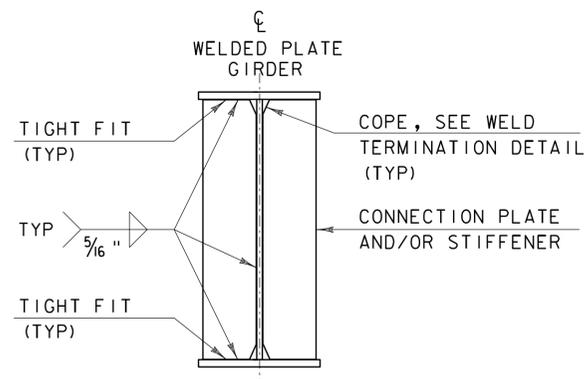


STRUCTURES DETAIL SD-6 01.00



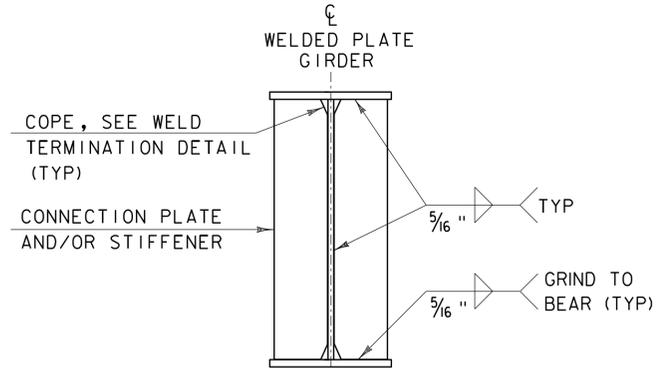
WELD TERMINATION AND COPING DETAILS FOR STEEL MEMBERS

*NO WELD FOR 3/8" MIN. 7/8" MAX. (EXCEPT MUST MAINTAIN 1" MINIMUM FROM EDGE OF FLANGE)

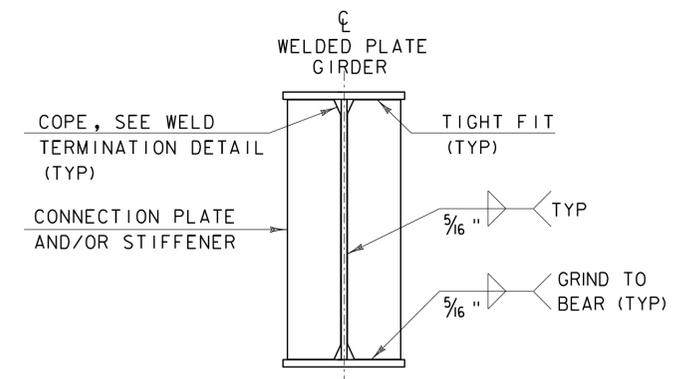


INTERMEDIATE CONNECTION PLATES AND/OR STIFFENERS FOR WELDED PLATE GIRDERS

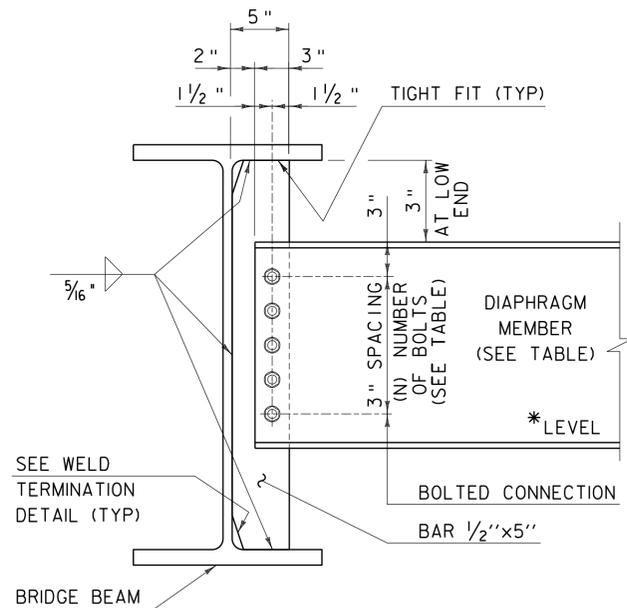
INTERMEDIATE DETAIL IS ONLY USED WHEN PLATE DOES NOT OCCUR AT AN ABUTMENT OR PIER.



ABUTMENT BEARING STIFFENERS AND/OR CONNECTION PLATES FOR WELDED PLATE GIRDERS



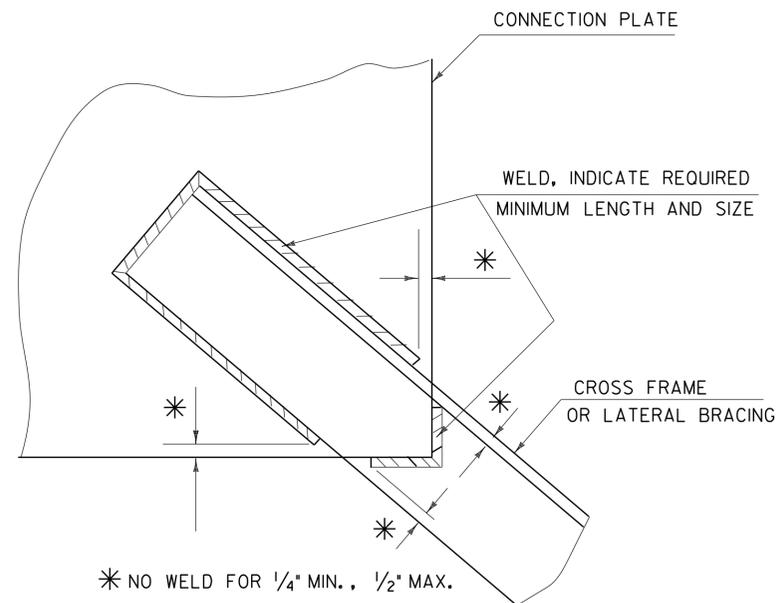
PIER BEARING STIFFENERS AND/OR CONNECTION PLATES FOR WELDED PLATE GIRDERS



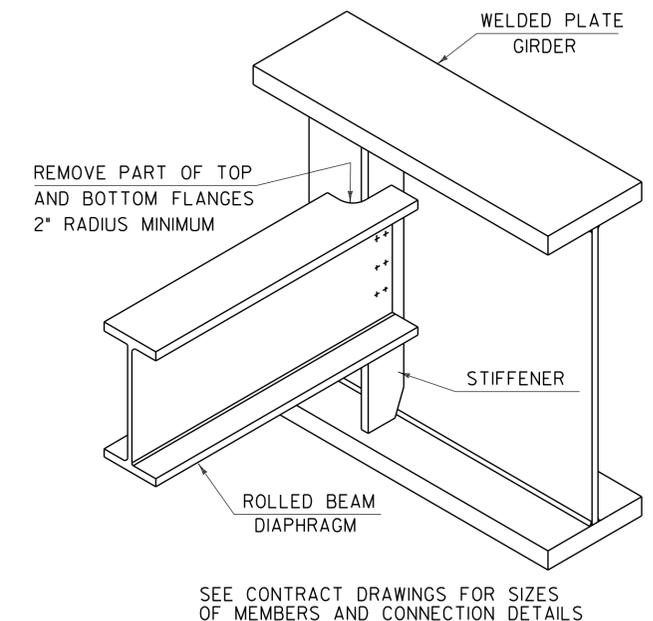
INTERMEDIATE DIAPHRAGMS FOR 24" TO 48" BRIDGE BEAMS

* IF CLEARANCE CANNOT BE MET, DIAPHRAGM MAY BE SLOPED.

	DEPTH	DIAPHRAGM MEMBER	(N) BOLTS
ROLLED BEAM	24"	C15x33.9	4
	30"		
	31"	MC18x42.7	5
	36"		
PLATE GIRDER WEB	37"	W21x44	6
	42"		
	31"	W27x84	7
	36"		
37"	W33x118	9	
42"			
	43"	W36x135	10
	48"		



WELD LOCATION DETAIL AT CROSS FRAMES AND LATERAL BRACING



ROLLED BEAM USED AS DIAPHRAGM

DETAILS ON THIS SHEET ARE "NOT TO SCALE" UNLESS NOTED OTHERWISE.

REVISIONS	
MAY 7, 2010	APPROVED FOR USE BY VAOT STRUCTURES SECTION
MAY 2, 2011	ADD INTERMEDIATE DIAPHRAGMS DETAIL & ADD NOT TO SCALE NOTE

STRUCTURAL STEEL PLATE GIRDER DETAILS AND NOTES



STRUCTURES DETAIL SD-6 02.00

ASPHALTIC PLUG JOINT NOTES

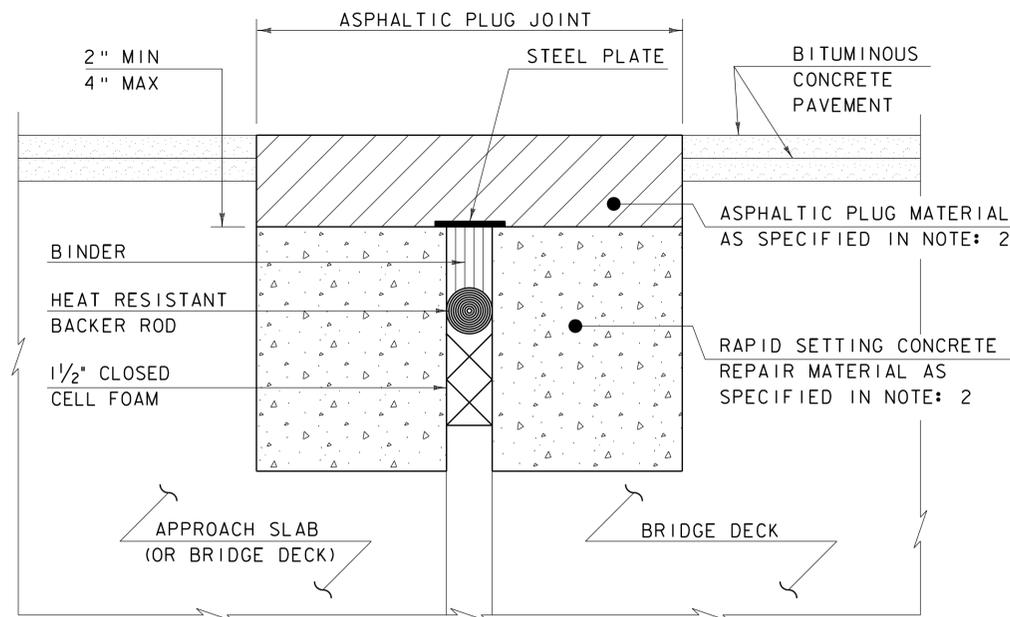
INSTALLATION:

1. LOCATE THE JOINT CENTRALLY OVER THE DECK OVERLAY EXPANSION GAP OR FIXED JOINT, MARKED OUT TO THE MANUFACTURER'S RECOMMENDED WIDTH.
2. REMOVE THE BITUMINOUS CONCRETE PAVEMENT FULL DEPTH AS SHOWN ON THE PLANS. THE PAVEMENT SHALL BE DRY AND SAW CUT TO THE LIMITS REQUIRED TO PLACE THE JOINT. A PNEUMATIC HAMMER AND CHISEL MAY BE USED ADJACENT TO THE CURB ONLY WHEN SAW CUTTING IS NOT POSSIBLE.
3. BLAST CLEAN THE JOINT AREA OF DEBRIS, ASPHALT AND SHEET MEMBRANE. THOROUGHLY DRY THE JOINT AREA WITH COMPRESSED AIR PRIOR TO APPLYING BINDER MATERIAL.
4. REPAIR MATERIAL GREATER THAN 4 INCHES FROM FINISHED GRADE WITH RAPID SETTING CONCRETE REPAIR MATERIAL WITH COARSE AGGREGATE MEETING THE REQUIREMENTS OF SUBSECTION 780.04.
5. PLACE PROPERLY SIZED HEAT RESISTANT BACKER ROD IN THE MOVEMENT GAP ALLOWING FOR 1" +/- OF BINDER ABOVE THE ROD.
6. HEAT AND PLACE THE BINDER MATERIAL AS RECOMMENDED BY THE MANUFACTURER.
7. PLACE 1/4" THICK BY 8" WIDE SECTIONS OF STEEL PLATE OVER THE CENTER OF THE MOVEMENT GAP. SECURE THE PLATES FROM MOVING BY INSERTING LOCATING PINS THROUGH THE PRE-STAMPED HOLES INTO BACKER ROD AND COVER WITH HOT BINDER. THE STEEL PLATES MAY BE OMITTED WHERE THE ENGINEER DETERMINES THAT THE APPROACH SLAB OR BRIDGE DECK WILL PROVIDE INADEQUATE SUPPORT AND WHERE VERTICAL MOVEMENT OF THE PLATES MIGHT OCCUR.
8. HEAT AND MIX THE BINDER MATERIAL AND AGGREGATE AS RECOMMENDED BY THE MANUFACTURER.
9. INSTALLATION OF MATERIAL, COMPACTION, AND TOP COATING SHALL BE AS RECOMMENDED BY THE MANUFACTURER.
10. IMMEDIATELY AFTER TOP COATING, CAST AN ANTI-SKID MATERIAL OVER THE JOINT TO REDUCE THE RISK OF TRACKING.
11. ONCE THE JOINT REACHES 82 DEG C (180 DEG F) +/-, WATER MAY BE USED TO EXPEDITE THE COOLING PROCESS.
12. PROTECT JOINT FROM TRAFFIC UNTIL THE MATERIAL HAS COOLED TO 51 DEG C (125 DEG F) +/-.

WEATHER LIMITATIONS

APPLY BINDER MATERIAL ONLY WHEN THE FOLLOWING CONDITIONS PREVAIL OR AS RECOMMENDED BY THE MANUFACTURER:

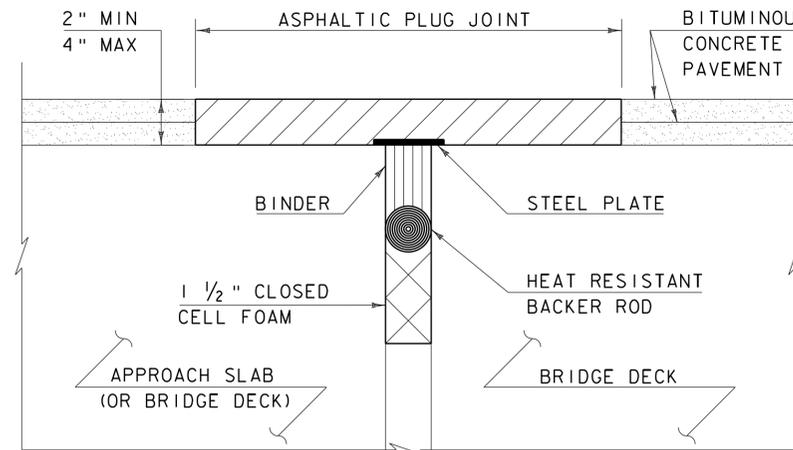
1. THE AMBIENT AIR TEMPERATURE IS AT LEAST 10 DEG C (50 DEG F) AND RISING.
2. THE ROAD SURFACE IS DRY.
3. WEATHER CONDITIONS OR OTHER CONDITIONS ARE FAVORABLE AND ARE EXPECTED TO REMAIN SO FOR THE PERFORMANCE OF SATISFACTORY WORK.



ASPHALTIC PLUG-JOINT DETAIL - REHAB

NOTES: (NOT TO SCALE)

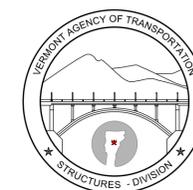
1. THE CONTRACTOR SHALL REMOVE ALL ASPHALTIC PLUG JOINT MATERIAL AND DETERIORATED CONCRETE AS DIRECTED BY THE ENGINEER. REMOVAL OF THE FIRST 4 INCHES OF MATERIAL SHALL BE INCLUDED IN THE BID PRICE FOR ITEM 516.10 BRIDGE EXPANSION JOINT, ASPHALTIC PLUG. ANY REMOVAL OF MATERIAL GREATER THAN 4 INCHES SHALL BE INCLUDED IN THE BID PRICE OF ITEM 580.20 RAPID SETTING CONCRETE REPAIR MATERIAL WITH COARSE AGGREGATE.
2. THE CONTRACTOR SHALL REPLACE REMOVED MATERIAL THAT IS LESS THAN 4" FROM FINISHED GRADE WITH ASPHALTIC PLUG JOINT MATERIAL MEETING THE REQUIREMENTS OF SUBSECTION 707.15. ALL REMOVED MATERIAL THAT IS GREATER THAN 4 INCHES FROM FINISHED GRADE SHALL BE REPLACED WITH RAPID SETTING CONCRETE REPAIR MATERIAL WITH COARSE AGGREGATE MEETING THE REQUIREMENTS OF SUBSECTION 780.04.
3. REINFORCING STEEL NOT SHOWN FOR CLARITY.



ASPHALTIC PLUG-JOINT DETAIL - NEW
(NOT TO SCALE)

REVISIONS	
MAY 7, 2010	APPROVED FOR USE BY VAOT STRUCTURES SECTION

BRIDGE JOINT
ASPHALTIC PLUG



STRUCTURES
DETAIL
SD-516.10