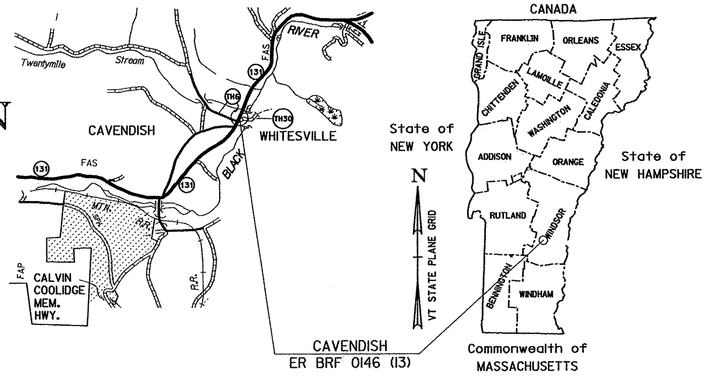
STATE OF VERMONT
AGENCY OF TRANSPORTATION

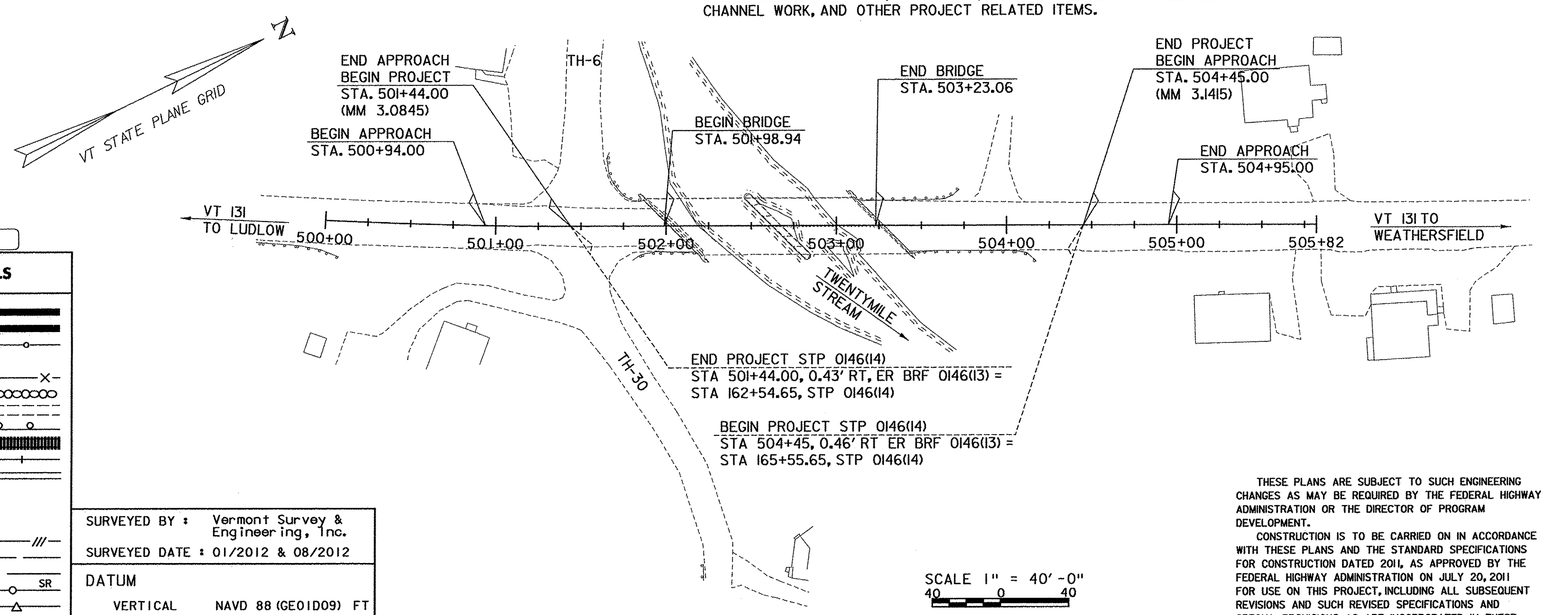


PROPOSED IMPROVEMENT
BRIDGE PROJECT
TOWN OF CAVENDISH
COUNTY OF WINDSOR
VT 131 (MAJOR COLLECTOR)
BRIDGE NO 1

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.



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

RECORD PLANS

CONTRACTOR: COLD RIVER BRIDGES, LLC– KEENE, NH

RESIDENT ENGINEER: TOM CHASE

CONSTRUCTION BEGAN: OCTOBER 24, 2013

CONSTRUCTION COMPLETE: SEPTEMBER 26, 2014

RECORD PLANS BY: TOM CHASE & CRAIG PIERCE

I HEREBY CERTIFY THAT ALL THE CONSTRUCTION REQUIRED BY THIS SET OF DRAWINGS HAS BEEN ACCOMPLISHED AS INDICATED HEREIN.

BY Thomas A. Chase RESIDENT ENGINEER

DATE 04/27/15

NOTE: Any further information concerning final quantities, amounts or other details relative to this project may be found at Central Files in the electronic archives.

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 SR SR SR
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

STATE OF VERMONT
JOSHUA K. OLUND
NO. 72818
Structural Part II
REGISTERED
PROFESSIONAL ENGINEER

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.

T-Y LIN INTERNATIONAL

DIRECTOR OF PROGRAM DEVELOPMENT
APPROVED Richard Fetcenko DATE 7-29-15

PROJECT MANAGER : ROB YOUNG, P.E.

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

SHEET 1 OF 49 SHEETS

STATE OF VERMONT
AGENCY OF TRANSPORTATION

PRELIMINARY INFORMATION SHEET (BRIDGE)

Version 12.01.01c

LRFD

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4	BRIDGE, EARTHWORK, & CHANNEL SECTIONS
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8	BRIDGE QUANTITY SHEET
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STRUCTURES DETAILS SHEETS

SD-501.00	CONCRETE DETAILS AND NOTES	05-07-2010
SD-502.00	CONCRETE DETAILS AND NOTES	10-10-2012
SD-601.00	STRUCTURAL STEEL DETAILS & NOTES	06-04-2010
SD-602.00	STRUCTURAL STEEL PLATE GIRDER DETAILS AND NOTES	05-02-2011
SD-516.10	BRIDGE JOINT ASPHALTIC PLUG	05-07-2010

STANDARDS LIST

A-76	STANDARDS FOR TOWN & DEVELOPMENT ROADS	03-03-2003
B-5	SLOPE GRADING, EMBANKMENTS, MUCK	06-01-1994
B-71	STANDARDS FOR RESIDENTIAL AND COMMERCIAL DRIVES	07-08-2005
E-100	CONSTRUCTION APPROACH SIGNS	01-02-2004
E-100A	SIDE ROAD CONSTRUCTION - APPROACH SIGNS	01-02-2004
E-102	CONSTRUCTION SIGN DETAILS	06-30-2003
E-102A	CONSTRUCTION SIGN DETAILS	05-01-2004
E-106	TRAFFIC CONTROL- MISCELLANEOUS DETAILS	03-01-2004
E-107	DELINEATION, BARRICADES AND DETOURS FOR CONSTRUCTION AREAS	06-30-2003
E-107A	BREAKAWAY BARRICADE DETAILS	06-08-2009
E-108	CONSTRUCTION ZONE LONGITUDINAL DROP OFFS	06-08-2009
E-108A	CONSTRUCTION ZONE LONGITUDINAL DROP OFFS FOR PAVING	06-08-2009
E-119	UTILITY WORK ZONE	03-01-2004
E-121	STANDARD SIGN PLACEMENT - CONVENTIONAL ROAD	08-08-1995
E-123	GUIDE SIGN PLACEMENT - MISCELLANEOUS DETAILS	03-16-2004
E-127	ROUTE MARKINGS AT RURAL INTERSECTIONS	08-08-1995
E-134	BRIDGE NUMBER PLAQUE	08-08-1995
E-136B	STATE ROUTE MARKER SIGN DETAILS	08-08-1995
E-154	WARNING SIGN DETAILS	05-01-2004
E-155	WARNING SIGN DETAILS	05-01-2004
E-164	SQUARE STEEL SIGN POST	06-08-2009
E-193	PAVEMENT MARKING DETAILS	08-18-1995
G-1B	BOX BEAM GUARD RAIL	06-01-1994
S-364A	BRIDGE RAILING, GALVANIZED 3 RAIL BOX BEAM	04-23-2012
S-364B	GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM	04-23-2012
S-364C	GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM	04-23-2012
S-364D	GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM	04-23-2012

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
2014	2100	240	54	11.6	220
2034	2200	250	54	16.3	330

20 year ESAL for flexible pavement from 2014 to 2034 : 1336000

40 year ESAL for flexible pavement from 2014 to 2054 : 2973000

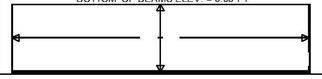
Design Speed : 40 mph

AS BUILT "REBAR" DETAILS

LEVEL I	LEVEL II	LEVEL III
TYPE:	TYPE:	TYPE:
GRADE:	GRADE:	GRADE:

TEMPORARY BRIDGE PROFILE ALONG TEMP CL

BOTTOM OF BEAMS ELEV. = 0.00 FT



FINAL HYDRAULIC REPORT

HYDROLOGIC DATA

DATE: 02-20-2013

DRAINAGE AREA: 14.9 SQ. MI.
CHARACTER OF TERRAIN: HILLY TO MOUNTAINOUS VALLEY SETTING
STREAM CHARACTERISTICS: STRAIGHT TO SINUOUS, LITTLE TO NO FLOODPLAIN
NATURE OF STREAMBED: SAND AND GRAVEL

Q 2.33 =	1650 CFS	Q50 =	5400 CFS
Q 10 =	3050 CFS	Q 100 =	6700 CFS
Q 25 =	4160 CFS	Q 500 =	10500 CFS

DATE OF FLOOD OF RECORD: AUGUST 28, 2011
ESTIMATED DISCHARGE: 6700 CFS
WATER SURFACE ELEVATION: 773.5 +/-
NATURAL STREAM VELOCITY: 12.1 FPS @ Q50 = 5,400 CFS
ICE CONDITIONS: LIGHT TO MODERATE
DEBRIS: HEAVY
DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? YES
IS ORDINARY RISE RAPID? YES
IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? NO
IF YES, DESCRIBE N/A

WATERSHED STORAGE: 1% HEADWATERS: X
UNIFORM: -
IMMEDIATELY ABOVE SITE: -

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: TWO-SPAN BRIDGE
YEAR BUILT: 1947
CLEAR SPAN (NORMAL TO STREAM): 82 FT
VERTICAL CLEARANCE ABOVE STREAMBED: 9 FT
WATERWAY OF FULL OPENING: 738 SQ FT
DISPOSITION OF STRUCTURE: COMPLETE REMOVAL
TYPE OF MATERIAL UNDER SUBSTRUCTURE: SAND AND GRAVEL

WATER SURFACE ELEVATIONS AT: ONE BRIDGE LENGTH UPSTREAM

Q 2.33 =	768.1 FT	VELOCITY =	8.9 FT/SEC
Q 10 =	769.1 FT	"	10.1 FT/SEC
Q 25 =	769.7 FT	"	11.2 FT/SEC
Q50 =	770.3 FT	"	12.1 FT/SEC
Q 100 =	770.8 FT	"	12.8 FT/SEC

LONG TERM STREAMBED CHANGES: OVERTOPPING OF UPSTREAM LEFT BANK AND BREACH OF NORTHERN APPROACH

IS THE ROADWAY OVERTOPPED BELOW Q100? YES
FREQUENCY: 5-YR AND GREATER
RELIEF ELEVATION: +/- 764.9 FT
DISCHARGE OVER ROAD @ Q100: 2406 CFS

UPSTREAM STRUCTURE

TOWN: CAVENDISH, VT — DISTANCE: 1600 FT
HIGHWAY #: T.H. 6 — STRUCTURE #: 43
CLEAR SPAN: 43 FT — CLEAR HEIGHT: 12 FT
YEAR BUILT: 1974 — FULL WATERWAY: 516 SF
STRUCTURE TYPE: SINGLE SPAN STEEL ROLLED BEAM BRIDGE

DOWNSTRUCTURE STRUCTURE

TOWN: N/A - CONFLUENCE WITH BLACK RIVER — DISTANCE: 900 FT
HIGHWAY #: N/A — STRUCTURE #: N/A
CLEAR SPAN: N/A — CLEAR HEIGHT: N/A
YEAR BUILT: N/A — FULL WATERWAY: N/A
STRUCTURE TYPE: N/A

LRFR LOAD RATING FACTORS

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:							

PILE DRIVING AND TESTING REQUIREMENTS

1. NOMINAL PILE DRIVING CAPACITY — Rndr: 390.00 KIP
2. PILE TEST RESISTANCE FACTOR — ϕ: 0.65
3. MAXIMUM PILE TIP ELEVATION — SEE BELOW
4. PILES MUST BE DRIVEN A MINIMUM OF 18 FT BELOW THE BOTTOM OF ABUTMENT ELEVATIONS, REGARDLESS IF REQUIRED DRIVING RESISTANCE HAS BEEN MET.

PROPOSED STRUCTURE

STRUCTURE TYPE: SINGLE SPAN STEEL GIRDER

CLEAR SPAN (NORMAL TO STREAM): 110 FT
VERTICAL CLEARANCE ABOVE STREAMBED: 8.5 FT
WATERWAY OF FULL OPENING: 935 SQ FT

WATER SURFACE ELEVATIONS AT: ONE BRIDGE LENGTH UPSTREAM

Q 2.33 =	768.1 FT	VELOCITY =	8.6 FT/SEC
Q 10 =	769.0 FT	"	10.6 FT/SEC
Q 25 =	769.6 FT	"	11.4 FT/SEC
Q50 =	770.3 FT	"	12.0 FT/SEC
Q 100 =	770.8 FT	"	13.0 FT/SEC

IS THE ROADWAY OVERTOPPED BELOW Q100? YES
FREQUENCY: 25-YR
RELIEF ELEVATION: +/- 764.9 FT
DISCHARGE OVER ROAD @ Q100: 677 CFS

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 768.4 FT
VERTICAL CLEARANCE: -1.9 FT @ Q100

SCOUR: ABUTMENT SCOUR NOT ANTICIPATED FOR Q100 OR Q500
CONTRACTION SCOUR NOT ANTICIPATED FOR Q100 OR Q500
REQUIRED CHANNEL PROTECTION: 4 FT THICK, STONE FILL, TYPE IV

PERMIT INFORMATION

AVERAGE DAILY FLOW:	30 CFS	DEPTH OR ELEVATION:
ORDINARY LOW WATER:	15 CFS	1.9 FT (BR. LENGTH UPSTREAM)
ORDINARY HIGH WATER:	710 CFS	4.7 FT (BRIDGE LENGTH UPSTREAM)

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: N/A
CLEAR SPAN (NORMAL TO STREAM): N/A
VERTICAL CLEARANCE ABOVE STREAMBED: N/A
WATERWAY AREA OF FULL OPENING: N/A

ADDITIONAL INFORMATION

TRAFFIC MAINTENANCE NOTES

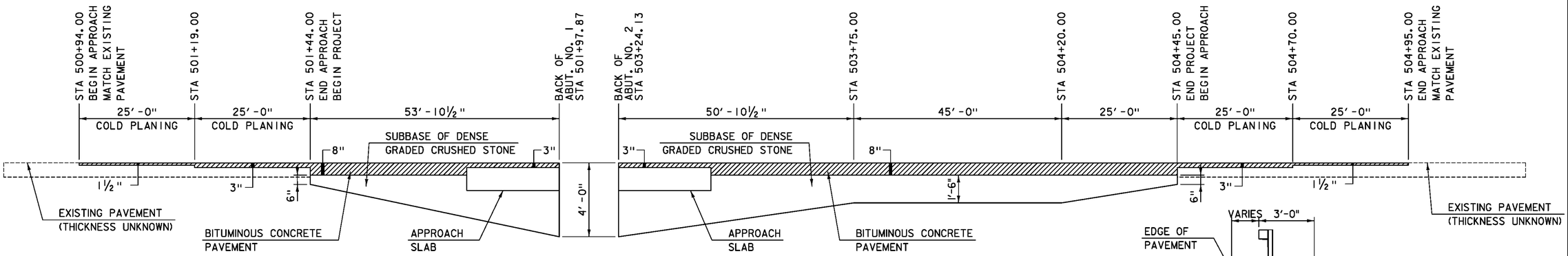
1. MAINTAIN TRAFFIC ON AN OFF SITE DETOUR.
2. TRAFFIC SIGNALS ARE NOT NECESSARY.
3. SIDEWALKS ARE NOT NECESSARY

DESIGN VALUES

1. DESIGN LIVE LOAD		HL-93
2. FUTURE PAVEMENT	d_p:	0.0 INCH
3. DESIGN SPAN	L:	122.00 FT
4. MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)	Δ:	---
5. PRESTRESSING STRAND	f_y:	---
6. PRESTRESSED CONCRETE STRENGTH	f'_c:	---
7. PRESTRESSED CONCRETE RELEASE STRENGTH	f'_{ci}:	---
8. SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET)	f'_c:	7.0 KSI
9. CONCRETE, HIGH PERFORMANCE CLASS A	f'_c:	4.0 KSI
10. CONCRETE, HIGH PERFORMANCE CLASS B	f'_c:	---
11. CONCRETE, CLASS C	f'_c:	---
12. REINFORCING STEEL	f_y:	60 KSI
13. STRUCTURAL STEEL AASHTO M270 (WEATHERING)	f_y:	50 KSI
14. SOIL UNIT WEIGHT	γ:	0.140 KCF
15. NOMINAL BEARING RESISTANCE OF SOIL	q_n:	---
16. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	ϕ:	---
17. NOMINAL BEARING RESISTANCE OF ROCK	q_n:	---
18. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	ϕ:	---
19. NOMINAL AXIAL PILE RESISTANCE	q_p:	1090.0 KIPS
20. PILE YIELD STRENGTH ASTM A572	f_y:	50 KSI
21. PILE SIZE		HP 12X74
22. EST. PILE LENGTHS (TWO SUBSTRUCTURES) (ABUTMENT 1 = 28 AND ABUTMENT 2 = 80) FT	L_p:	
23. PILE RESISTANCE FACTOR	ϕ:	0.50
24. LATERAL PILE DEFLECTION	Δ:	0.62 INCH
25. BASIC WIND SPEED	V_{3s}:	100 MPH
26. MINIMUM GROUND SNOW LOAD	p_g:	---
27. SEISMIC DATA PGA: 7 %g	S_s:	16 %g
	S_1:	5 %g

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

FILE NAME: **z11c318bdrpi.dgn** — PLOT DATE: 7/19/2013
PROJECT LEADER: **J. OLUND** — DRAWN BY: **S. MORGAN**
DESIGNED BY: **J. OLUND** — CHECKED BY: **D. MYERS**
PRELIMINARY INFORMATION SHEET — SHEET 2 OF 49

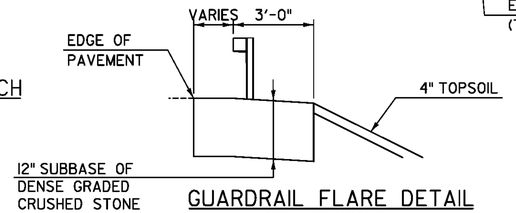


SUBBASE TAPER - SOUTH APPROACH

ALONG ℄ VT 131
NOT TO SCALE

SUBBASE TAPER - NORTH APPROACH

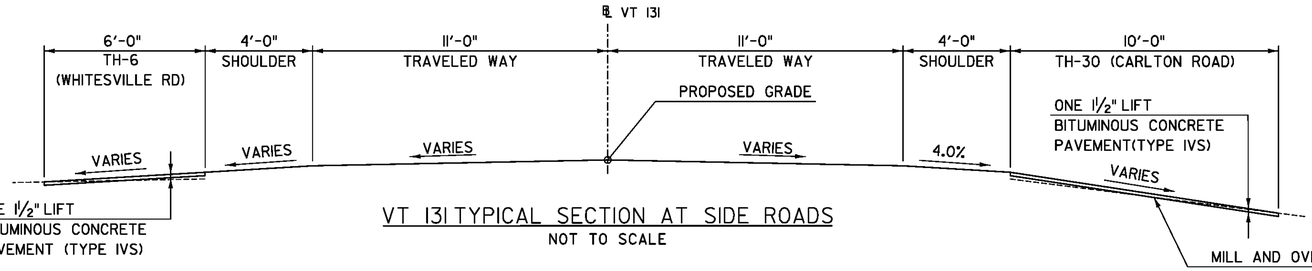
ALONG ℄ VT 131
NOT TO SCALE



GUARDRAIL FLARE DETAIL

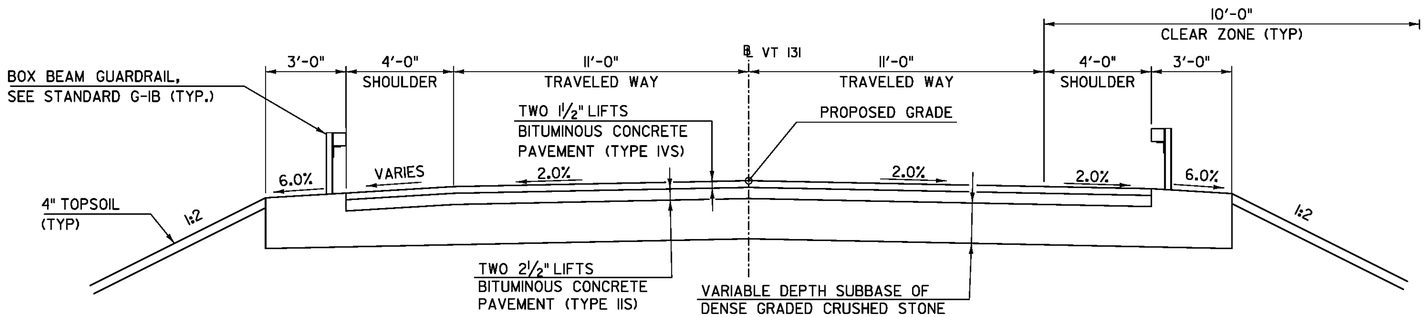
NOT TO SCALE

STA. 501+65.04, LT - STA. 501+85.19, LT
STA. 501+71.65, RT - STA. 501+87.20, RT
STA. 503+69.29, LT - STA. 503+86.19, LT



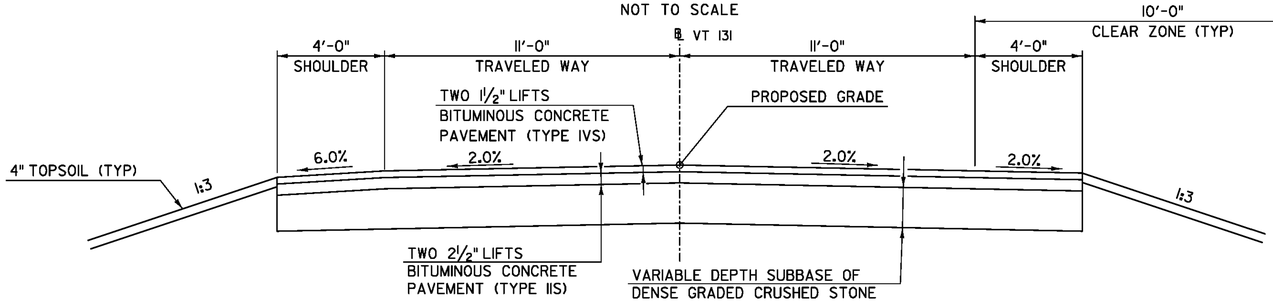
VT 131 TYPICAL SECTION AT SIDE ROADS

NOT TO SCALE



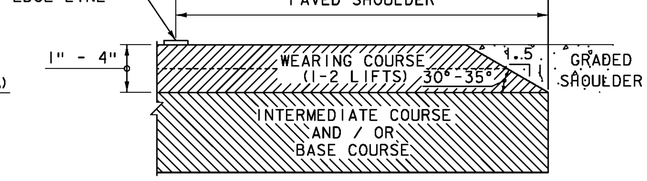
VT 131 TYPICAL SECTION WITH GUARDRAIL

NOT TO SCALE



VT 131 TYPICAL SECTION

NOT TO SCALE



SAFETY EDGE DETAIL

NOT TO SCALE

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)

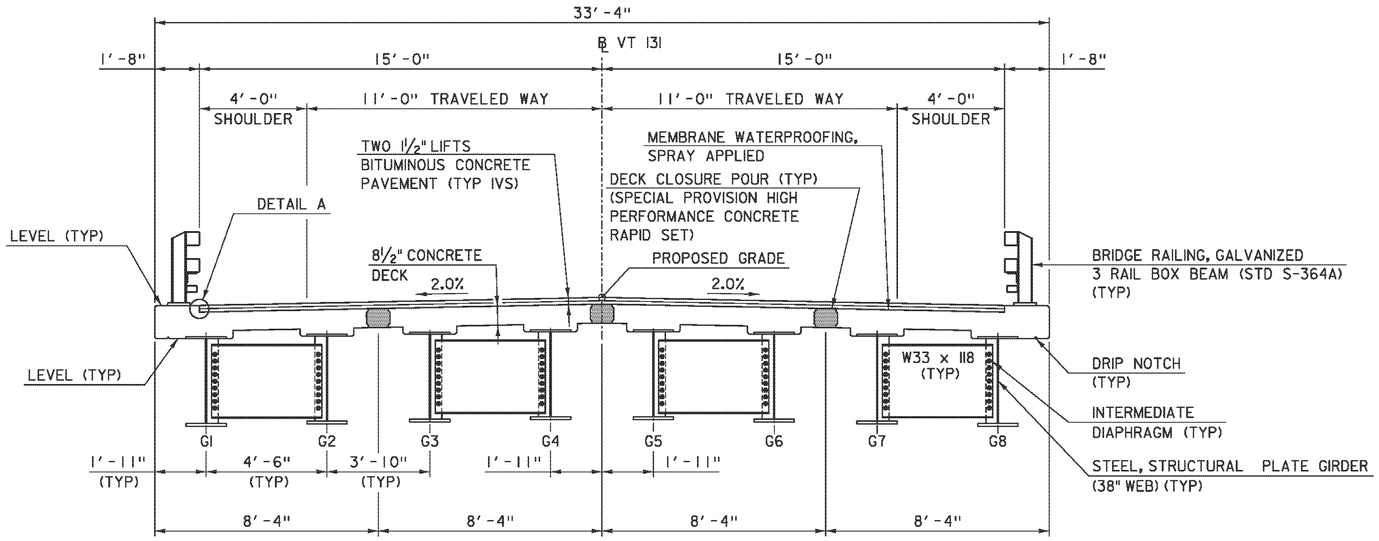
SURFACE	
- PAVEMENT (TOTAL THICKNESS)	+/- ¼"
- AGGREGATE SURFACE COURSE	+/- ½"
SUBBASE	+/- 1"
SAND BORROWS	+/- 1"

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

TYLIN INTERNATIONAL

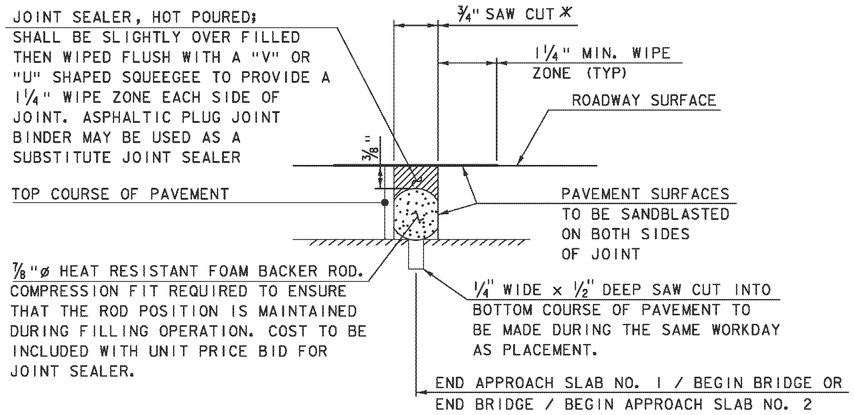
FILE NAME: z11c318bdr_typ_rd.dgn
PROJECT LEADER: J. OLUND
DESIGNED BY: J. HOWE
TYPICAL ROADWAY SECTIONS

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



BRIDGE TYPICAL SECTION

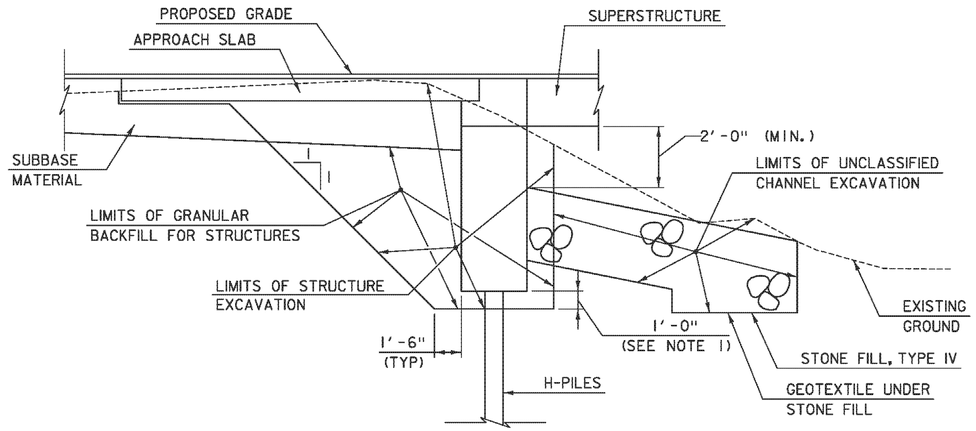
SCALE: ⅜" = 1'-0"



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.



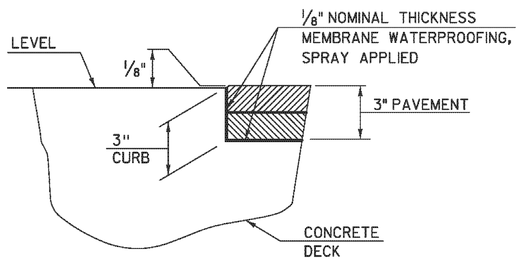
EARTHWORK TYPICAL SECTION

NOT TO SCALE

NOTES:

1. ONE FT UNDERCUT AS DETERMINED NECESSARY BY THE ENGINEER.

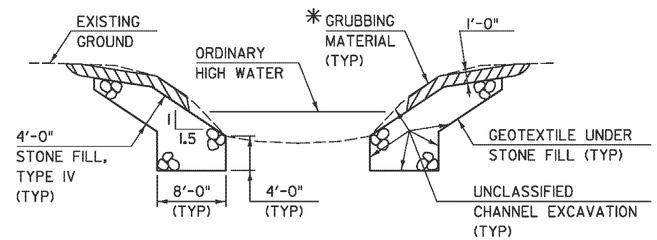
2. ACTUAL LIMITS OF STRUCTURE EXCAVATION TO BE DETERMINED BY THE CONTRACTOR. HOWEVER, ONLY THE EXCAVATION BETWEEN THE LIMITS SHOWN WILL BE PAID FOR UNDER ITEM 204.25, "STRUCTURE EXCAVATION." EXCAVATION BY THE CONTRACTOR OUTSIDE THESE LIMITS WILL BE AT THE EXPENSE OF THE CONTRACTOR.



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.

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

TYLIN INTERNATIONAL

FILE NAME: z11c318bdrtyp.dgn	PLOT DATE: 7/19/2013
PROJECT LEADER: J. OLUND	DRAWN BY: S. MORGAN
DESIGNED BY: J. OLUND	CHECKED BY: T. POULIN
BRIDGE, EARTHWORK, & CHANNEL SECTIONS	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.

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 1

SUMMARY OF ESTIMATED QUANTITIES

ROADWAY	TRAINING	EROSION CONTROL	BRIDGE	FULL C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND
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	

DETAILED SUMMARY OF QUANTITIES

QUANTITIES	UNIT	ITEMS
		EARTHWORKS SUMMARY
		FILL AVAILABLE
299.8	CY	COMMON EXCAVATION
10.2	CY	ROUNDING
310.0	**CY**	**TOTAL AVAILABLE FILL**
		FILL REQUIRED
49.9	CY	PLANIMETERED FILL
1.2	CY	FACTORED FILL (x 1.15)
1.0	CY	ROUNDING
58.4	**CY**	**TOTAL FILL REQUIRED**
251.6	**CY**	**TOTAL WASTE**

TYLIN INTERNATIONAL

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

FILE NAME: z11b292.xls
PROJECT LEADER: J. OLUND
DESIGNED BY: T. POULIN
QUANTITY SHEET #1

PLOT DATE: 07/19/2013
DRAWN BY: S. MORGAN
CHECKED BY: J. OLUND
SHEET 6 OF 49

STATE OF VERMONT
AGENCY OF TRANSPORTATION

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/DISINCENVTIVE) (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				
						1		LS	SUPPLEMENTAL AGREEMENT (CONTRACTOR - FABRICATED PRECAST CONCRETE STRUCTURES)(ABUTMENT 1)	900.545				
						1		LS	SUPPLEMENTAL AGREEMENT (CONTRACTOR - FABRICATED PRECAST CONCRETE STRUCTURES)(ABUTMENT 2)	900.545				
						1		LS	SUPPLEMENTAL AGREEMENT (CONTRACTOR - FABRICATED PRECAST CONCRETE STRUCTURES)(APPROACH SLAB 1)	900.545				
						1		LS	SUPPLEMENTAL AGREEMENT (CONTRACTOR - FABRICATED PRECAST CONCRETE STRUCTURES)(APPROACH SLAB 2)	900.545				
						1		LS	SUPPLEMENTAL AGREEMENT (CONTRACTOR - FABRICATED PRECAST CONCRETE STRUCTURES PRICE REDUCTION)	900.545				

TYLIN INTERNATIONAL

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

FILE NAME: z11b292.xls
PROJECT LEADER: J. OLUND
DESIGNED BY: T. POULIN
QUANTITY SHEET #2

PLOT DATE: 07/19/2013
DRAWN BY: S. MORGAN
CHECKED BY: J. OLUND
SHEET 7 OF 49

STATE OF VERMONT
AGENCY OF TRANSPORTATION

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/DISINCENVTIVE) (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 BRF 0146(13)

TYLIN INTERNATIONAL

FILE NAME: z11b282.xls
PROJECT LEADER: J. OLUND
DESIGNED BY: T. POULIN
BRIDGE QUANTITY SHEET

PLOT DATE: 07/19/2013
DRAWN BY: S. MORGAN
CHECKED BY: J. OLUND
SHEET 8 OF 49

GENERAL INFORMATION

SYMBOLOGY LEGEND NOTE

THE SYMBOLOGY ON THIS SHEET IS INTENDED TO COVER STANDARD CONVENTIONAL SYMBOLOGY. THE SYMBOLOGY IS USED FOR EXISTING & PROPOSED FEATURES WITH HEAVIER LINEWEIGHT, IN COMBINATION WITH PROJECT ANNOTATION, AS NOTED ON PROJECT PLAN SHEETS. THIS LEGEND SHEET COVERS THE BASICS. SYMBOLOGY ON PLANS MAY VARY, PLAN ANNOTATIONS AND NOTES SHOULD BE USED TO CLARIFY AS NEEDED.

R.O.W. ABBREVIATIONS (CODES) & SYMBOLS

POINT	CODE	DESCRIPTION
	CH	CHANNEL EASEMENT
	CONST	CONSTRUCTION EASEMENT
	CUL	CULVERT EASEMENT
	D&C	DISCONNECT & CONNECT
	DIT	DITCH EASEMENT
	DR	DRAINAGE EASEMENT
	DRIVE	DRIVEWAY EASEMENT
	EC	EROSION CONTROL
	I&M	INSTALL & MAINTAIN EASEMENT
	LAND	LANDSCAPE EASEMENT
	SR	SLOPE RIGHT
	UE	UTILITY EASEMENT
	(P)	PERMANENT EASEMENT
	(T)	TEMPORARY EASEMENT
▩	BNDNS	BOUND SET
⊡	BNDNS	BOUND TO BE SET
●	IPNS	IRON PIN SET
◎	IPNS	IRON PIN TO BE SET
⊠	CALC	CALCULATED ROW POINT
[DISTANCE]		DISTANCE CARRIED ON NEXT SHEET

COMMON TOPOGRAPHIC POINT SYMBOLS

POINT	CODE	DESCRIPTION
	APL	BOUND APPARENT LOCATION
	BM	BENCH MARK
	BND	BOUND
	CB	CATCH BASIN
	COMB	COMBINATION POLE
	DITHR	DROP INLET THROATED DNC
	EL	ELECTRIC POWER POLE
	FPOLE	FLAGPOLE
	GASFIL	GAS FILLER
	GP	GUIDE POST
	GSO	GAS SHUT OFF
	GUY	GUY POLE
	GUYW	GUY WIRE
	GV	GATE VALUE
	H	TREE HARDWOOD
	HCTRL	CONTROL HORIZONTAL
	HVCTRL	CONTROL HORIZ. & VERTICAL
	HYD	HYDRANT
	IP	IRON PIN
	IPIPE	IRON PIPE
	LI	LIGHT - STREET OR YARD
	MB	MAILBOX
	MH	MANHOLE (MH)
	MM	MILE MARKER
	PM	PARKING METER
	PMK	PROJECT MARKER
	POST	POST STONE/WOOD
	RRSIG	RAILROAD SIGNAL
	RRSL	RAILROAD SWITCH LEVER
	S	TREE SOFTWOOD
	SAT	SATELLITE DISH
	SHRUB	SHRUB
	SIGN	SIGN
	STUMP	STUMP
	TEL	TELEPHONE POLE
	TIE	TIE
	TSIGN	SIGN W/DOUBLE POST
	VCTRL	CONTROL VERTICAL
	WELL	WELL
	WSO	WATER SHUT OFF

THESE ARE COMMON VAOT SURVEY POINT SYMBOLS FOR EXISTING FEATURES, ALSO USED FOR PROPOSED FEATURES WITH HEAVIER LINEWEIGHT, IN COMBINATION WITH PROPOSED ANNOTATION.

PROPOSED GEOMETRY CODES

CODE	DESCRIPTION
PC	POINT OF CURVATURE
PI	POINT OF INTERSECTION
CC	CENTER OF CURVE
PT	POINT OF TANGENCY
PCC	POINT OF COMPOUND CURVE
PRC	POINT OF REVERSE CURVE
POB	POINT OF BEGINNING
POE	POINT OF ENDING
STA	STATION PREFIX
AH	AHEAD STATION SUFFIX
BK	BACK STATION SUFFIX
D	CURVE DEGREE OF (100FT)
R	CURVE RADUIS OF
T	CURVE TANGENT LENGTH
L	CURVE LENGTH OF
E	CURVE EXTERNAL DISTANCE

UTILITY SYMBOLOGY

UNDERGROUND UTILITIES

- UT — TELEPHONE
- UE — ELECTRIC
- UC — CABLE (TV)
- UEC — ELECTRIC+CABLE
- UET — ELECTRIC+TELEPHONE
- UCT — CABLE+TELEPHONE
- UECT — ELECTRIC+CABLE+TELEP.
- G — GAS LINE
- W — WATER LINE
- S — SANITARY SEWER (SEPTIC)

ABOVE GROUND UTILITIES (AERIAL)

- T — TELEPHONE
- E — ELECTRIC
- C — CABLE (TV)
- EC — ELECTRIC+CABLE
- ET — ELECTRIC+TELEPHONE
- AER E&T — ELECTRIC+TELEPHONE
- CT — CABLE+TELEPHONE
- ECT — ELECTRIC+CABLE+TELEP.
- UTILITY POLE GUY WIRE

PROJECT CONSTRUCTION SYMBOLOGY

PROJECT DESIGN & LAYOUT SYMBOLOGY

- CZ — CLEAR ZONE
- PLAN LAYOUT MATCHLINE

PROJECT CONSTRUCTION FEATURES

- TOP OF CUT SLOPE
- TOE OF FILL SLOPE
- STONE FILL
- BOTTOM OF DITCH ℄
- CULVERT PROPOSED
- STRUCTURE SUBSURFACE
- PROJECT DEMARCATION FENCE
- BARRIER FENCE
- TREE PROTECTION ZONE (TPZ)
- STRIPING LINE REMOVAL
- SHEET PILES

CONVENTIONAL BOUNDARY SYMBOLOGY

BOUNDARY LINES

- TOWN LINE — TOWN BOUNDARY LINE
- COUNTY LINE — COUNTY BOUNDARY LINE
- STATE LINE — STATE BOUNDARY LINE
- PROPOSED STATE R.O.W. (LIMITED ACCESS)
- PROPOSED STATE R.O.W.
- STATE ROW (LIMITED ACCESS)
- STATE ROW
- TOWN ROW
- PERMANENT EASEMENT LINE (P)
- TEMPORARY EASEMENT LINE (T)
- SURVEY LINE
- P/L — PROPERTY LINE (P/L)
- SR SR SR — SLOPE RIGHTS
- 6F — 6F PROPERTY BOUNDARY
- 4F — 4F PROPERTY BOUNDARY
- HAZ — HAZ — HAZARDOUS WASTE

EPSC LAYOUT PLAN SYMBOLOGY

EPSC MEASURES

- FILTER CURTAIN
- SILT FENCE
- SILT FENCE WOVEN WIRE
- CHECK DAM
- DISTURBED AREAS REQUIRING RE-VEGETATION
- EROSION MATTING

ENVIRONMENTAL RESOURCES

- WETLAND BOUNDARY
- RIPARIAN BUFFER ZONE
- WETLAND BUFFER ZONE
- SOIL TYPE BOUNDARY
- T&E — THREATENED & ENDANGERED SPECIES
- HAZ — HAZ — HAZARDOUS WASTE AREA
- AG — AGRICULTURAL LAND
- HABITAT — FISH & WILDLIFE HABITAT
- FLOOD PLAIN — FLOOD PLAIN
- OHW — ORDINARY HIGH WATER (OHW)
- STORM WATER
- USDA FOREST SERVICE LANDS
- WILDLIFE HABITAT SUIT/CONN

ARCHEOLOGICAL & HISTORIC

- ARCH — ARCHEOLOGICAL BOUNDARY
- HISTORIC DIST — HISTORIC DISTRICT BOUNDARY
- HISTORIC — HISTORIC AREA
- (H) HISTORIC STRUCTURE

CONVENTIONAL TOPOGRAPHIC SYMBOLOGY

EXISTING FEATURES

- ROAD EDGE PAVEMENT
- ROAD EDGE GRAVEL
- DRIVEWAY EDGE
- DITCH
- FOUNDATION
- FENCE (EXISTING)
- FENCE WOOD POST
- FENCE STEEL POST
- GARDEN
- ROAD GUARDRAIL
- RAILROAD TRACKS
- CULVERT (EXISTING)
- STONE WALL
- WALL
- WOOD LINE
- BRUSH LINE
- HEDGE
- BODY OF WATER EDGE
- LEDGE EXPOSED

T.Y.LIN INTERNATIONAL

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

FILE NAME: zllc318bdrlegend.dgn
PROJECT LEADER: J. OLUND
DESIGNED BY: S. KELLER
CONVENTIONAL SYMBOLOGY LEGEND

PLOT DATE: 7/19/2013
DRAWN BY: S. MORGAN
CHECKED BY: D. MYERS
SHEET 9 OF 49

GPS/NGS CONTROL POINTS

SPRINGFIELD VT CORS ARP

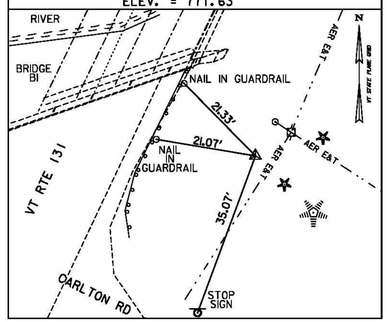
PID DJ8961
N = 284807.69
E = 1646390.48
ELLIP HEIGHT = 513.30

STATION IS A GPS CONTINOUSLY 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

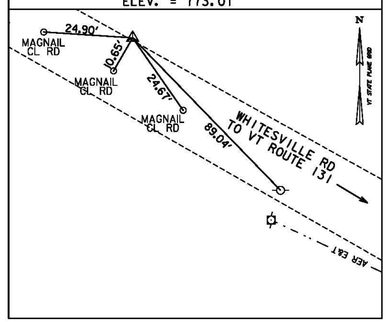
HVCTRL#10 5/8"REBAR SET FLUSH W/ YELLOW VSE CONTROL CAP

NORTH = 325123.75
EAST = 1615347.78
ELEV. = 771.63



HVCTRL#11 5/8"REBAR SET FLUSH W/ YELLOW VSE CONTROL CAP

NORTH = 325216.01
EAST = 1615072.01
ELEV. = 773.01

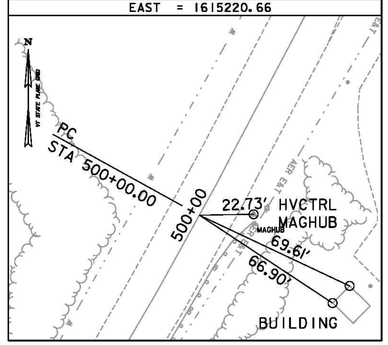


* MAIN TRAVERSE COMPLETED: DECEMBER 28, 2011 BY VSE, T. CATTANEO-PC, T. COMSTOCK

ALIGNMENT TIES

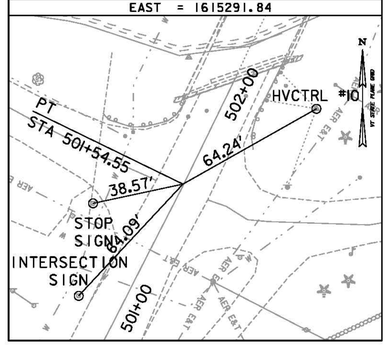
PC 500+00.00

NORTH = 324955.00
EAST = 1615220.66



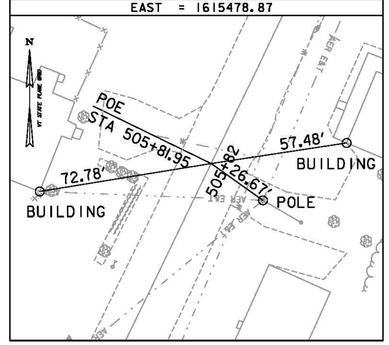
PT 501+54.55

NORTH = 325092.17
EAST = 1615291.84



POE 505+81.95

NORTH = 325476.47
EAST = 1615478.87



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

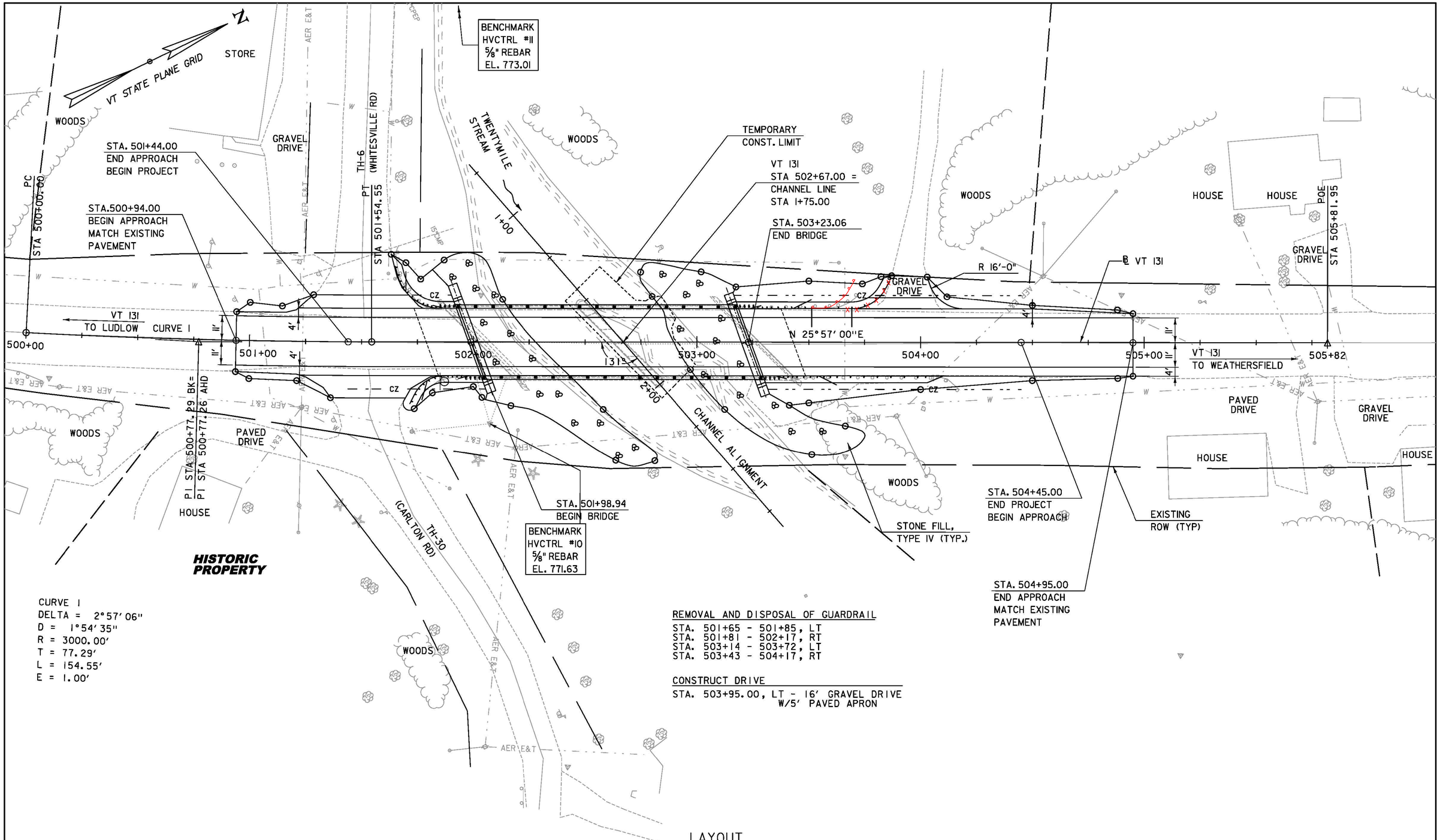
VERMONT SURVEY AND ENGINEERING

T.Y.LIN INTERNATIONAL

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

FILE NAME: z11c318bdr_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'

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

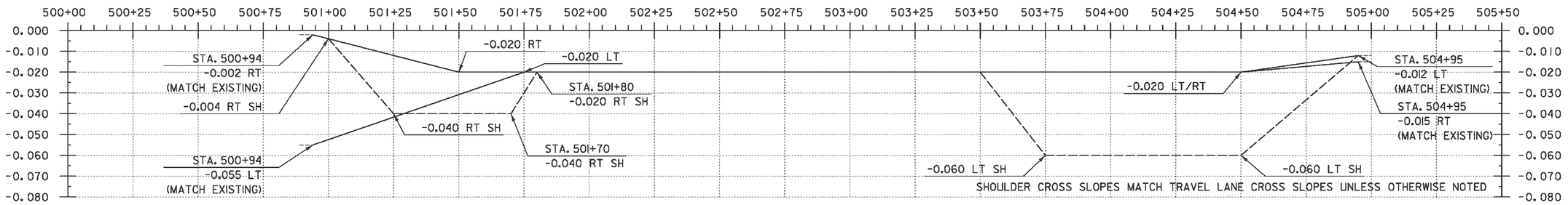
SCALE 1" = 20'-0"
20 0 20

T.Y.LIN INTERNATIONAL

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

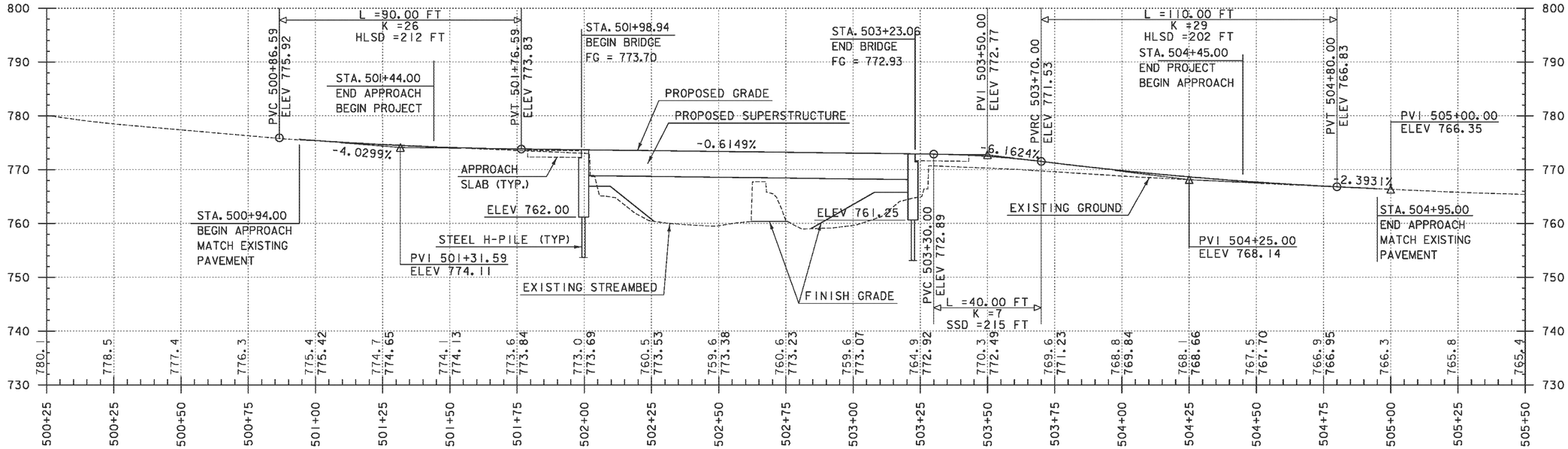
FILE NAME: z11c318bdr_nul.dgn
PROJECT LEADER: J. OLUND
DESIGNED BY: J. HOWE
LAYOUT SHEET

PLOT DATE: 7/19/2013
DRAWN BY: S. MORGAN
CHECKED BY: D. BRYANT
SHEET 11 OF 49



BANKING DIAGRAM - VT 131

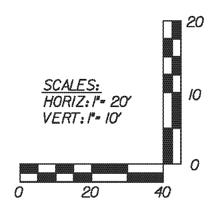
HORIZ:1"=20'
NO VERTICAL SCALE



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

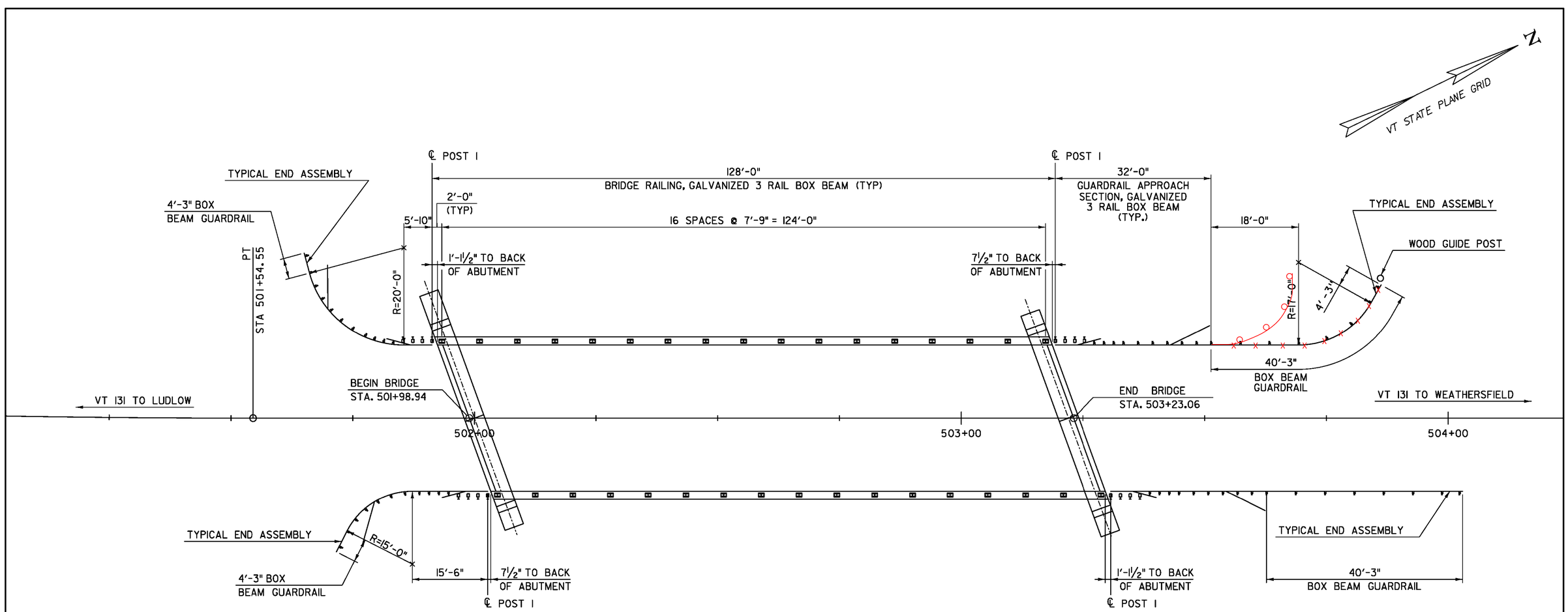


TYLIN INTERNATIONAL

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

FILE NAME: z11c318bdr_pro.dgn
PROJECT LEADER: J. OLUND
DESIGNED BY: J. HOWE
VT 131 PROFILE SHEET

PLOT DATE: 7/19/2013
DRAWN BY: J. HOWE
CHECKED BY: D. BRYANT
SHEET 12 OF 49



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 68.19
STA. 503+62.71 - 504+02.96, RT

GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM

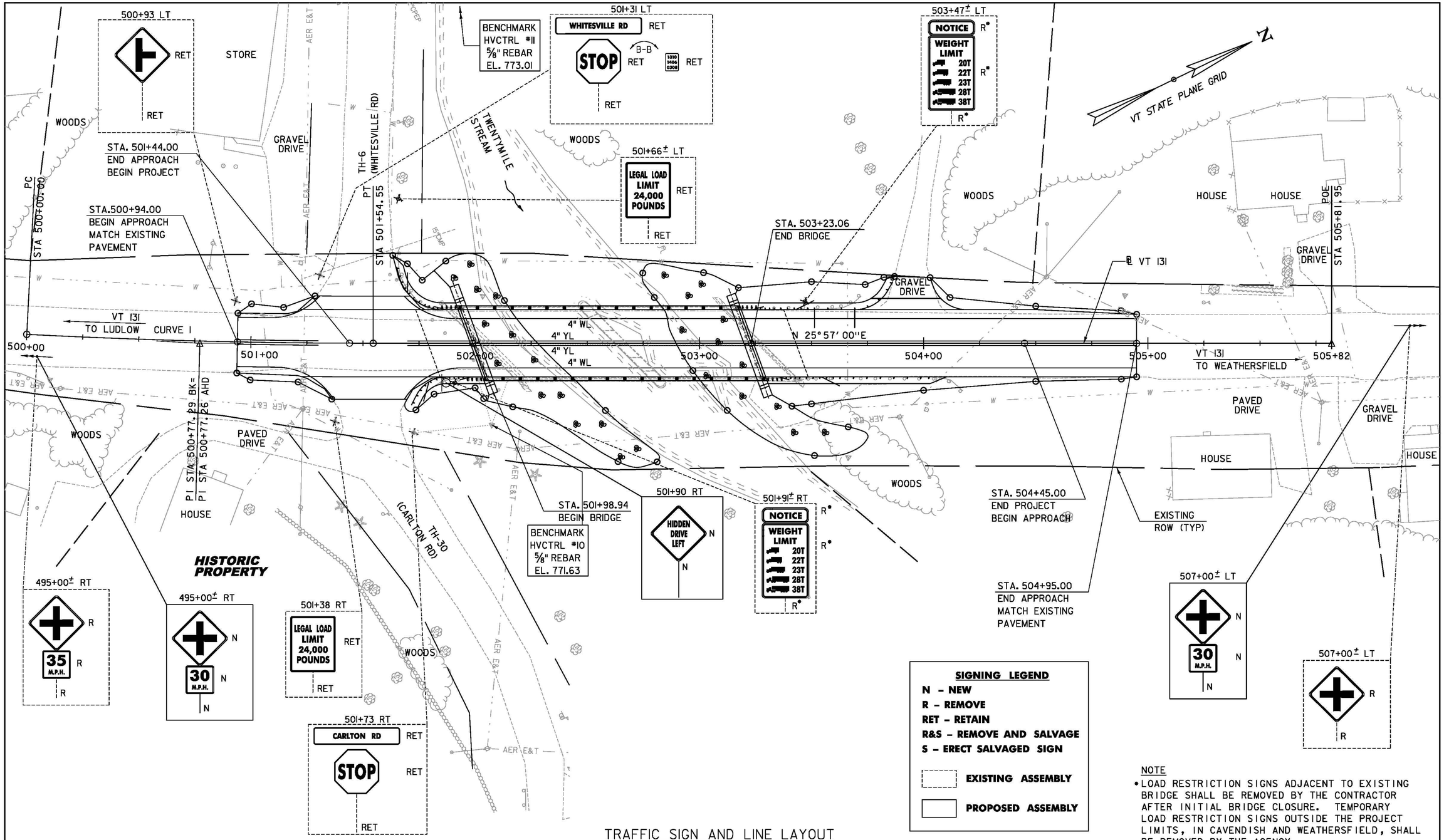
STA. 501+66.14 - 501+91.29, LT
STA. 501+73.84 - 502+02.71, RT
STA. 503+19.29 - 503+51.29, LT
STA. 503+30.71 - 504+62.71, RT

BRIDGE RAILING, GALVANIZED 3 RAIL BOX BEAM

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

PROJECT NAME:	CAVENDISH
PROJECT NUMBER:	ER BRF 0146(13)
FILE NAME: z11c318bdr_rail1ay.dgn	PLOT DATE: 7/19/2013
PROJECT LEADER: J. OLUND	DRAWN BY: S. MORGAN
DESIGNED BY: J. HOWE	CHECKED BY: D. BRYANT
RAIL LAYOUT SHEET	SHEET 13 OF 49

TYLIN INTERNATIONAL



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)

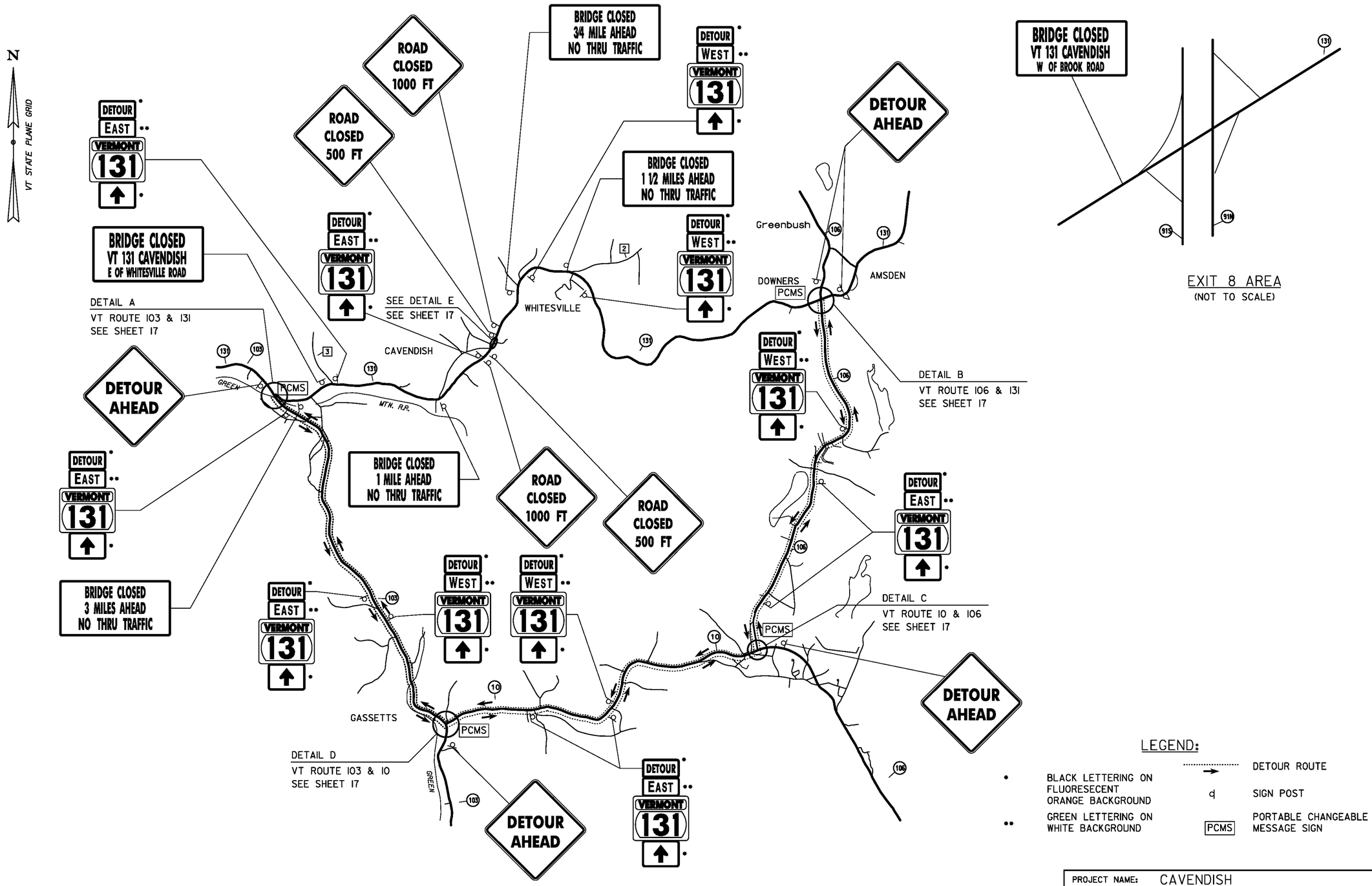
FILE NAME: z11c318bdr_sn1.dgn
PROJECT LEADER: J. OLUND
DESIGNED BY: T. KELLEY
TRAFFIC SIGNS AND LINES LAYOUT

PLOT DATE: 7/19/2013
DRAWN BY: T. KELLEY
CHECKED BY: D. BRYANT
SHEET 14 OF 49

STATE OF VERMONT
AGENCY OF TRANSPORTATION

TRAFFIC SIGN SUMMARY SHEET

MILEMARKER, STATION, OR SIGN NUMBER	SIGN LEGEND	SIGN DIMENSIONS EA	WIDTH (In)	HEIGHT (In)	NEW & SALVAGED SIGNS "A"	"B"	SALV SIGN	SALV TIS	EXIST POST RETAIN	SALVAGE	NEW SIGN POSTS NO. OF POSTS	FLANGED CHANNEL lb/ft 1.12	2.0	3.0	SQUARE STEEL (In) lb/ft 1.75	2.0	2.5	ANCHOR	SLEEVE	TUBULAR ALUMINUM Ø (In) lb/ft 3.0	4.0	4.0 MOD	FOUNDATION	TUBULAR STEEL Ø (In) lb/ft 3.0	3.5	4.0	5.0	W-SHAPE STEEL FTG. SIZE 24"	30"	WEIGHT	POST SIZE	SIGN FRAME REQUIRED	REMARKS	SIGN DETAIL DETAIL IN SHSM	DETAIL ON SHEET NUMBER	STD. SHEET NUMBER
												OPTION ITEMS								1.3	1.7	1.7		7.6	9.0	10.8	14.6									
APPROX. 644 FT SOUTH OF PROJECT, RT 495+00 ±		1	30	30	6.25						1	15.5				X		1															W2-1 M	X		
	30 M.P.H.	1	18	18	2.25																												W13-1P	X		
501+90, RT	HIDDEN DRIVE LEFT	1	30	30	6.25						1	13.5				X		1															VW-133			E-154
APPROX. 200 FT NORTH OF PROJECT, LT 507+00 ±		1	30	30	6.25						1	15.3				X		1															W2-1 M	X		
	30 M.P.H.	1	18	18	2.25																												W13-1P	X		



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

TRAFFIC CONTROL NOTES:

1. TRAFFIC WILL BE MAINTAINED UTILIZING A DETOUR OF VERMONT STATE ROUTES 103, 10, AND 106 SUCH AS THE ONE AS SHOWN ON THE TRAFFIC DETOUR SIGNING PLAN. THE DETOUR SHOWN ON THESE PLANS IS CONCEPTUAL. CONTRACTOR SHALL SUBMIT A DETAILED SITE SPECIFIC TRAFFIC CONTROL PLAN SHOWING BRIDGE CLOSURE AND SIGN LOCATION IN RELATION TO EXISTING SIGNS.

2. THE EXACT SIGN LOCATIONS WILL BE COORDINATED BETWEEN THE ENGINEER AND THE CONTRACTOR. SIGNS SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROLDEVICES (MUTCD), DATED 2009, AND ITS LATEST REVISIONS, THE LATEST EDITION OF THE STANDARD HIGHWAY SIGNS (SHS) BOOK, AND THE VERMONT STANDARD DETAILS.

3. TRAFFIC CONTROL WARNING SIGNS SHALL BE PROVIDED PER STANDARDS E-100, E-102, E-102A, AND MUTCD 2009. ADDITIONAL PROJECT CONSTRUCTION SIGNS SHALL BE INSTALLED AS REQUIRED BY THE ENGINEER. ALL ON AND OFF PROJECT SIGNS AND BARRICADES AS REQUIRED FOR THE DETOUR AND/OR ORDERED BY THE ENGINEER WILL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE PAID FOR UNDER THE ITEM 641.10, "TRAFFIC CONTROL".

4. WHERE PRACTICAL, DETOUR ROUTE MARKERS SHOULD BE INSTALLED ADJACENT TO EXISTING ROUTE MARKER ASSEMBLIES. CONFIRMATION ROUTE DETOUR MARKERS SHALL BE INSTALLED AT EACH LOCATION ALONG THE PARENT ROUTE WHERE THERE ARE EXISTING ROUTE MARKERS. ADDITIONAL CONFIRMATION ROUTE MARKERS MAY BE SPECIFIED BY THE ENGINEER AS NEEDED.

5. ALL SIGNS AND BARRICADES SHALL BE INSPECTED DAILY AND REPAIRED AS NECESSARY. ALL SIGNS AND BARRICADES SHALL BE CLEARED OF DUST AND DEBRIS WEEKLY.

6. PORTABLE CHANGEABLE MESSAGE SIGNS "PCMS" SHALL BE PLACED WHERE DESIGNATED BY THE ENGINEER. ONE SIGN EACH SHALL BE PLACED AT THE VT ROUTE 103/131 INTERSECTION, THE VT ROUTE 131/106 INTERSECTION, THE VERMONT ROUTE 103/10 INTERSECTION, AND THE VERMONT ROUTE 106/10 INTERSECTION 14 DAYS PRIOR TO THE START OF CONSTRUCTION TO WARN OF IMPENDING DETOURS. THESE SHALL THEN BE DEPLOYED TO LOCATIONS SPECIFIED BY THE ENGINEER ONCE CONSTRUCTION HAS BEGUN IF NECESSARY. PAYMENT FOR THESE SIGNS, INCLUDING RELOCATING DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER, SHALL BE INCLUDED IN ITEM 641.15 "PORTABLE CHANGEABLE MESSAGE SIGN." SAMPLE TEXT IS INCLUDED ON THE SIGN DETAIL SHEET.

7. THE STATE ROUTE MARKERS USED FOR THE DETOUR AS SHOWN ON THE PLANS SHALL FOLLOW STANDARDS E-127 AND E-136B. THESE SIGNS SHALL BE REMOVED AT THE END OF THE CONSTRUCTION PERIOD. THESE SIGNS AND THEIR REMOVAL SHALL BE PAID FOR UNDER ITEM 641.10 "TRAFFIC CONTROL" AND WILL BECOME THE PROPERTY OF THE STATE ONCE CONSTRUCTION IS COMPLETE. SEE SPECIAL PROVISIONS FOR ADITIONAL INFORMATION ADN REQUIREMENTS.

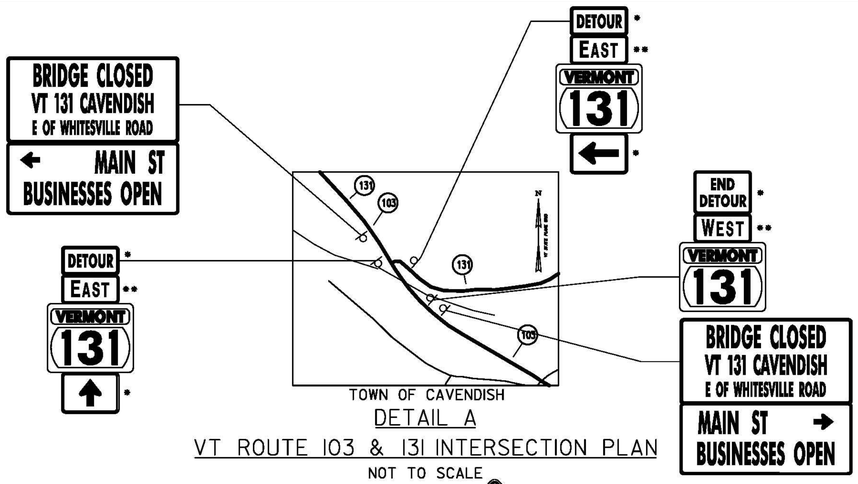
8. ACCESS TO ALL EXISTING DRIVES AND SIDE ROADS SHALL BE MAINTAINED AT ALL TIMES DURING ALL PHASES OF CONSTRUCTION.

9. INSTALLATION OF DETOUR SIGNS SHALL NOT BLOCK ANY EXISTING TRAFFIC CONTROL SIGN ASSEMBLIES AND SHALL MODIFY OR BE PLACED ADJACENT TO EXISTING SIGN ASSEMBLIES WHEN POSSIBLE. THE CONTRACTOR SHALL MAINTAIN AT LEAST 200 FEET BETWEEN SIGN ASSEMBLIES WHENEVER POSSIBLE.

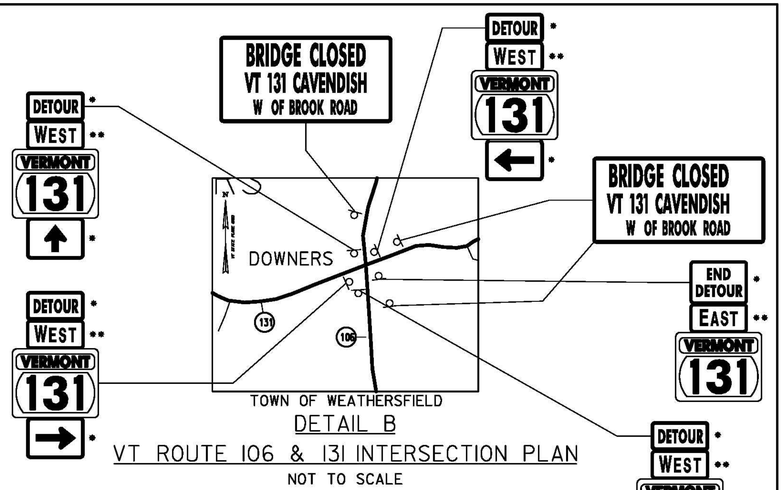
10. EXISTING SIGNS THAT ARE IN CONFLICT WITH THE TRAFFIC FLOW OF THE DETOUR SHALL BE REMOVED OR COVERED BY THE CONTRACTOR. ALL SIGNS REMOVED OR COVERED SHALL BE REPLACED OR UNCOVERED WHEN THE TRAFFIC CONTROL PLAN IS DISASSEMBLED. PAYMENT FOR THIS WORK WILL BE INCIDENTAL TO ITEM 641.10 "TRAFFIC CONTROL".

11. TEMPORARY CONCRETE BARRIER SHALL BE FURNISHED IN ACCORDANCE WITH SECTION 621 AND PLACED AT THE BRIDGE EXTENTS. PAYMENT FOR THIS WORK WILL BE INCIDENTAL TO ITEM 641.10 "TRAFFIC CONTROL".

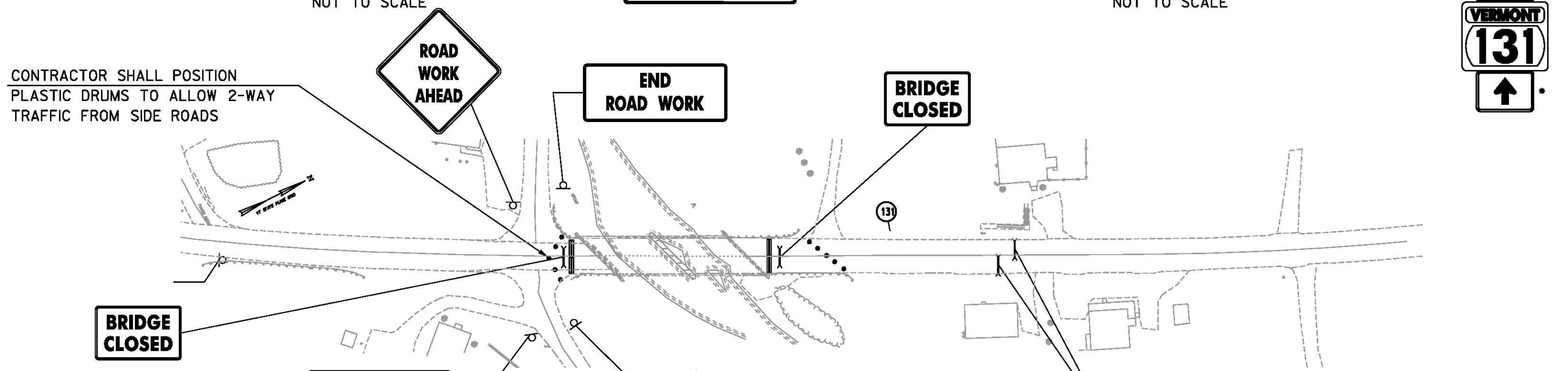
12. CONTACT DIG-SAFE AT 1-888-344-7233 PRIOR TO BREAKING GROUND TO INSTALL ANY SIGN POSTS.



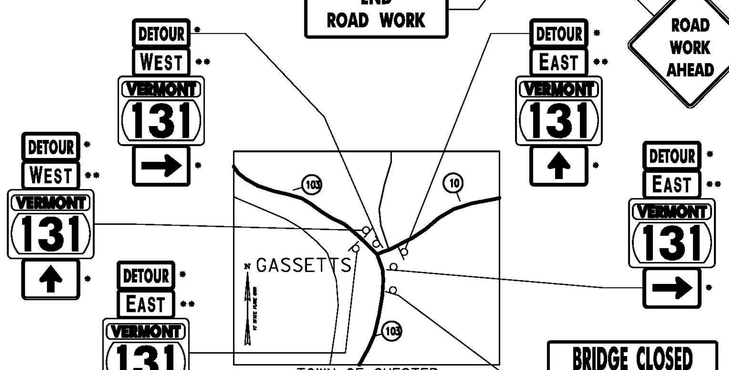
DETAIL A
VT ROUTE 103 & 131 INTERSECTION PLAN
NOT TO SCALE



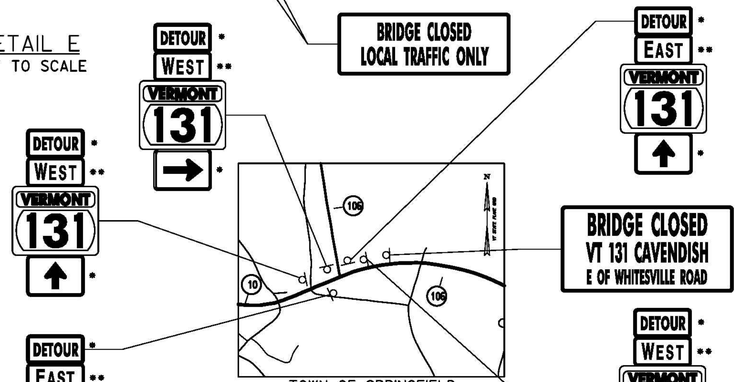
DETAIL B
VT ROUTE 106 & 131 INTERSECTION PLAN
NOT TO SCALE



DETAIL E
NOT TO SCALE



DETAIL D
VT ROUTE 103 & 10 INTERSECTION PLAN
NOT TO SCALE



DETAIL C
VT ROUTE 10 & 106 INTERSECTION PLAN
NOT TO SCALE

LEGEND:

- SIGN POST
- TYPE III BARRICADE
- PLASTIC DRUM
- * BLACK LETTERING ON FLUORESCENT ORANGE BACKGROUND
- ** GREEN LETTERING ON WHITE BACKGROUND
- PCMS PCMS
- CONCRETE BARRIER

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

TYLIN INTERNATIONAL

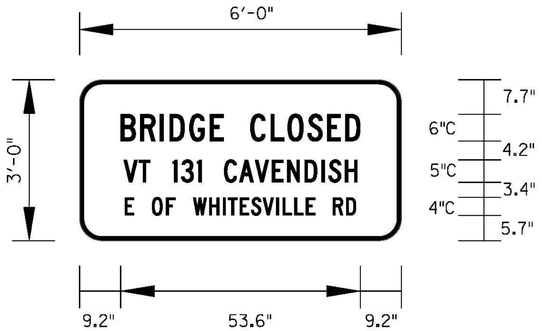
FILE NAME: z11c318bdr_detsign.dgn	PLOT DATE: 7/19/2013
PROJECT LEADER: J. OLUND	DRAWN BY: S. MORGAN
DESIGNED BY: D. BURHANS	CHECKED BY: D. BRYANT
DETOUR DETAILS & NOTES	SHEET 17 OF 49

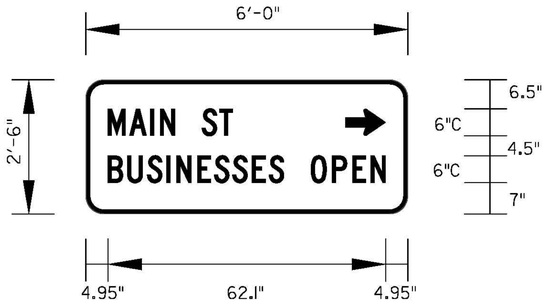
	B	R	I	D	G	E	
	W	I	L	L		B	E
	C	L	O	S	E	D	

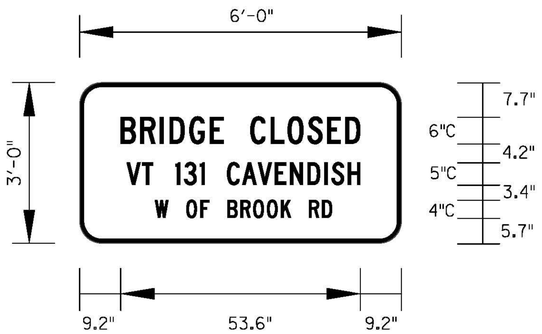
	M	M	M		D	D	
			T	O			
	M	M	M		D	D	

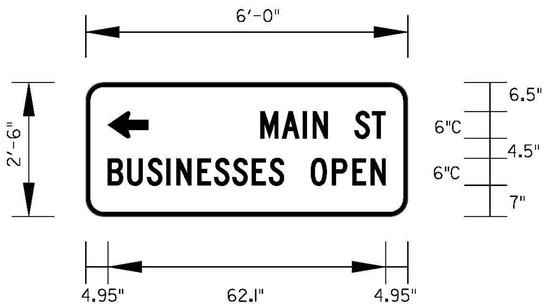
PORTABLE CHANGEABLE MESSAGE SIGN

MMM = MONTH
DD = DAY









CONSTRUCTION SIGNS FOR DETOUR
SIGN DIMENSIONS ARE SHOWN IN INCHES

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

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

T.Y.LIN INTERNATIONAL

FILE NAME: z11c318bdr_detsign02.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 5/8"
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
RQD	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
gry	Gray	wh	White
gn	Green	yel	Yellow
lt	Light	mltc	Multicolored
or	Orange		

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 > 0.0787" (#10 sieve).

SAND - Particles of rock < 0.0787" (#10 sieve) and > 0.0029" (#200 sieve).

SILT - Soil < 0.0029" (#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.

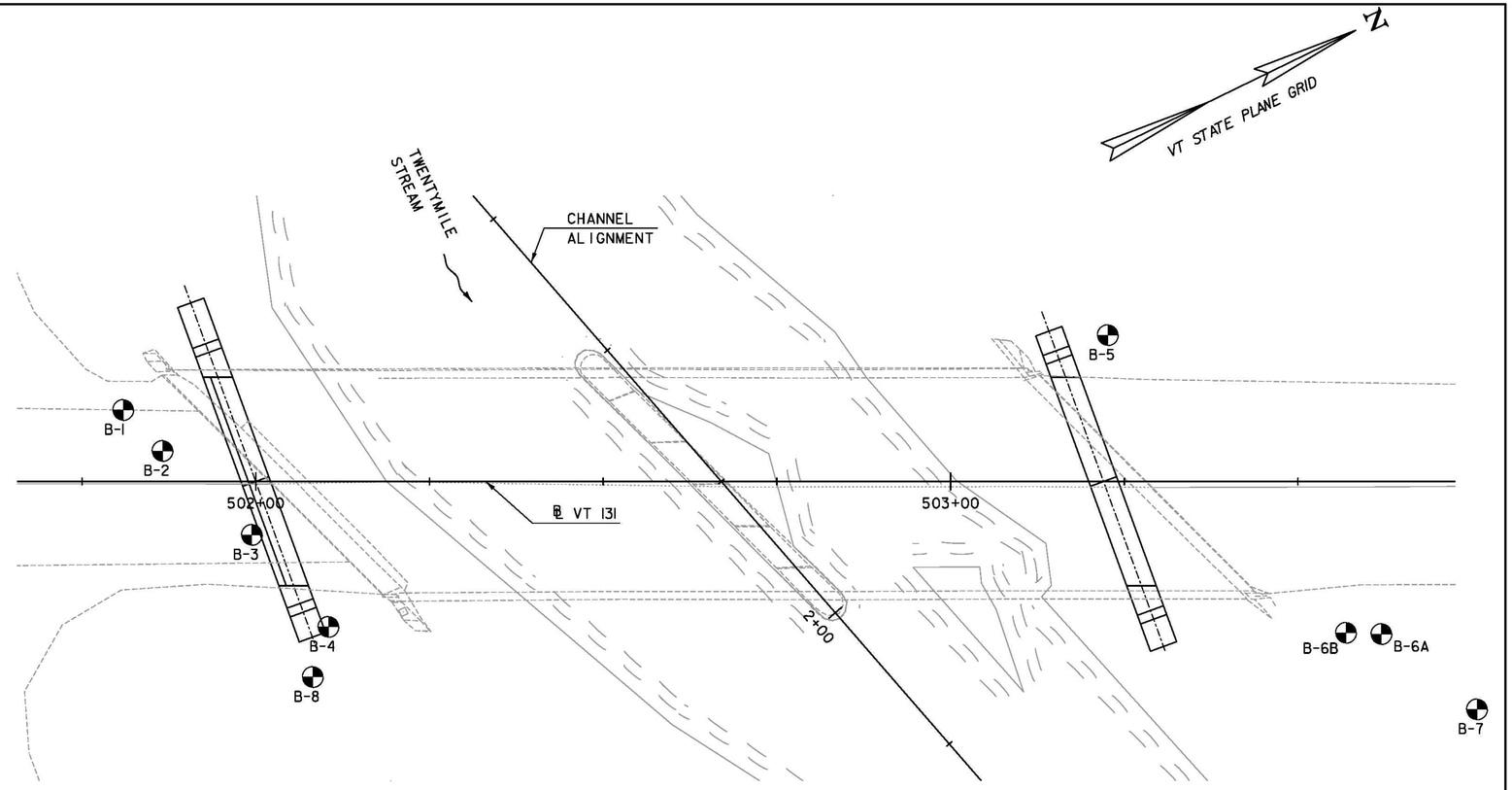
MUCK - Soft organic soil (containing > 10% organic material.

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

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

GENERAL NOTES

1. The subsurface explorations shown herein were made between February 29, 2012 and November 5, 2012 by GeoDesign, Inc.
2. 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.
3. 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.
4. 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.
5. 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.
6. 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.

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

TYLIN INTERNATIONAL

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

FILE NAME: z11c318bdrborinfo.dgn
PROJECT LEADER: J. OLUND
DESIGNED BY: J. OLUND
BORING INFORMATION & LAYOUT SHEET

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

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH SECTION
SUBSURFACE INFORMATION

BORING LOG

Cavendish ER BR 0146(13)

Cavendish, Vermont

Boring No.: B-1
Page No.: 1 of 2
Pin No.: 11c318
Checked By: JAG

Boring Crew: B. DeLude (SJB), J.Gilman (GeoDesign)
Date Started: 3/12/12 Date Finished: 3/14/12
VTSPG NAD83: N 325120.38 ft E 1615294.13 ft
Station: Not Available Offset: Not Available
Ground Elevation: 773.26 ft

	Casing	Sampler
Type:	FJ	SS
I.D.:	4 in	1.38 in
Hammer Wt:	140 lb.	140 lb.
Hammer Fall:	30 in.	30 in.
Hammer/Rod Type:	Auto/AWJ	
Rig:	Diedrich D-50	C_E = 1.5

Groundwater Observations[3]

Date	Depth (ft)	Notes
03/13/12	12.5	Wet Sample
03/14/12	15.0	In Casing Overnight

Depth (ft)	Strata[1]	CLASSIFICATION OF MATERIALS (Description)	Well Diagram	Run (Dip deg.)	Core Rec. % (RQD %)	Drill Rate minutes/ft	Blows/6"[2] (N Value)	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		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 3.5 4 3.5					
40		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					
45		Hole stopped @ 46.5 ft									

BOTTOM OF ABUT NO. I
EL. 762.0

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

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.

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

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH SECTION
SUBSURFACE INFORMATION

BORING LOG

Cavendish ER BR 0146(13)

Cavendish, Vermont

Boring No.: B-1
Page No.: 2 of 2
Pin No.: 11c318
Checked By: JAG

Boring Crew: B. DeLude (SJB), J.Gilman (GeoDesign)
Date Started: 3/12/12 Date Finished: 3/14/12
VTSPG NAD83: N 325120.38 ft E 1615294.13 ft
Station: Not Available Offset: Not Available
Ground Elevation: 773.26 ft

Type: FJ SS
I.D.: 4 in 1.38 in
Hammer Wt: 140 lb. 140 lb.
Hammer Fall: 30 in. 30 in.
Hammer/Rod Type: Auto/AWJ
Rig: Diedrich D-50 C_E = 1.5

Groundwater Observations[3]

Date	Depth (ft)	Notes
03/13/12	12.5	Wet Sample
03/14/12	15.0	In Casing Overnight

Depth (ft)	Strata[1]	CLASSIFICATION OF MATERIALS (Description)	Well Diagram	Run (Dip deg.)	Core Rec. % (RQD %)	Drill Rate minutes/ft	Blows/6"[2] (N Value)	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 888-044 CAVENDISH ER BRF 0146(13) VERMONT AOT.GDT 5/20/13

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

TYLIN INTERNATIONAL

FILE NAME: z11c318bdrbor1.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

Cavendish ER BR 0146(13)

Cavendish, Vermont

Boring No.: B-2
Page No.: 1 of 1
Pin No.: 11c318
Checked By: JAG

Boring Crew: B. DeLude (SJB), J.Gilman (GeoDesign)
Date Started: 3/14/12 Date Finished: 3/15/12
VTSPG NAD83: N 325122.89 ft E 1615301.91 ft
Station: Not Available Offset: Not Available
Ground Elevation: 773.27 ft

	Casing	Sampler
Type:	FJ	SS
I.D.:	4 in	1.38 in
Hammer Wt:	140 lb.	140 lb.
Hammer Fall:	30 in.	30 in.
Hammer/Rod Type:	Auto/AWJ	
Rig:	Diedrich D-50	C_E = 1.5

Groundwater Observations[3]

Date	Depth (ft)	Notes
03/15/12		See note 2

Depth (ft)	Strata[1]	CLASSIFICATION OF MATERIALS (Description)	Well Diagram	Blows/6" (N Value)[2]	Moisture Content %	Gravel %	Sand %	Fines %
5		Inferred Fill. (Inferred from B-1).						
10								
15		Inferred Silty Sand & Gravel with Cobbles and Boulders. (Inferred from B-1)						
20								
25								
30								
35		Hole stopped @ 32.5 ft Rollerbit refusal on inferred bedrock.						
40								
45								

BOTTOM OF
ABUT NO. 1
EL. 762.0

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

Remarks:
1) Ground surface elevation and exploration location surveyed by Vermont Survey and Engineering, Inc.
2) Purpose of boring was to install PVC casing for geophysical testing. Therefore, no groundwater observations were made, and strata descriptions were inferred from B-1.
3) Driller inferred advance through boulder from approximately 12' to 15' deep.
4) Driller noted that roller bit advance slowed due to increased resistance at 32.3' deep. Advanced to 32.5' deep with consistent hard resistance. Inferred bedrock.
5) Boring terminated at 32.5' deep. 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.

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 - BRR-0414 CAVENDISH ER BRF 0146(13) VERMONT AOT.GDT 5/30/13

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

TYLIN INTERNATIONAL

FILE NAME: z11c318bdrbor2.dgn
PROJECT LEADER: J. OLUND
DESIGNED BY: J. OLUND
BORING LOGS 2

PLOT DATE: 7/19/2013
DRAWN BY: S. MORGAN
CHECKED BY: T. POULIN
SHEET 21 OF 49

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH SECTION
SUBSURFACE INFORMATION

BORING LOG

Cavendish ER BR 0146(13)

Cavendish, Vermont

Boring No.: B-3
Page No.: 1 of 1
Pin No.: 11c318
Checked By: JAG

Boring Crew: B. DeLude (SJB), J.Gilman (GeoDesign)
Date Started: 3/08/12 Date Finished: 3/08/12
VTSPG NAD83: N 325129.17 ft E 1615318.39 ft
Station: Not Available Offset: Not Available
Ground Elevation: 772.99 ft

	Casing	Sampler
Type:	AUGER	SS
I.D.:	4.25 in	1.38 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:		Auto/NWJ
Rig:	Diedrich D-50	C_E = 1.5

Groundwater Observations[2]

Date	Depth (ft)	Notes
03/08/12	13.5	Wet Sample

Depth (ft)	Strata[1]	CLASSIFICATION OF MATERIALS (Description)	Well Diagram	Blows/6" (N Value)[3]	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)				
20		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)				
25		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)				
30		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)				
35		Hole stopped @ 35.0 ft Borehole terminated due to lost auger plug in hole.						
40		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.						
45								

BOTTOM OF ABUT NO. 1 EL. 762.0

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

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 BRF 0146.GPJ VERMONT ADT.GDT 5/29/13

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

TYLIN INTERNATIONAL

FILE NAME: z11c318bdrbor3.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

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH SECTION
SUBSURFACE INFORMATION

BORING LOG

Cavendish ER BR 0146(13)

Cavendish, Vermont

Boring No.: B-4
Page No.: 1 of 1
Pin No.: 11c318
Checked By: JAG

Boring Crew: B. DeLude (SJB), J.Gilman (GeoDesign)
Date Started: 3/06/12 Date Finished: 3/07/12
VTSPG NAD83: N 325133.28 ft E 1615335.10 ft
Station: Not Available Offset: Not Available
Ground Elevation: 772.14 ft

	Casing	Sampler
Type:	AUGER	SS
I.D.:	4.25 in	1.38 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:	Auto/NWJ	
Rig:	Diedrich D-50	C_E = 1.5

Groundwater Observations[2]

Date	Depth (ft)	Notes
03/06/12	20.0	Wet sample
03/07/12	12.0	In Augers Overnight

Depth (ft)	Strata[1]	CLASSIFICATION OF MATERIALS (Description)	Well Diagram	Run (Dip deg.)	Core Rec. % (RQD %)	Drill Rate minutes/ft.	Blows/6" (N Value)	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
		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" (R)						
5		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		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
							22-25-50/3" (R)		63.1	25.9	11.0	NP	NP
15		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.)					36-30-35-41 (65)						
20		S5 (15'-17'): Similar description as S4 except very dense. Rec. = 1.5 ft					50/0" (R)						
		S6 (17'): Refusal, no recovery. Rec. = 0.0 ft											
		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		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)						
30		C1 (32.5' to 36.5'): (Top 16"): Gray, hard, fresh, fine grained Boulder. (Bottom 14"): Gravel and Rock fragments.		C1	63 (38)	3 2 3 2							
35		Hole stopped @ 36.5 ft. Borehole abandoned after coring through boulder.											
40													
45													

BOTTOM OF ABUT NO. 1 EL. 762.0

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

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.

GEOFESIGN BORING LOG - NO STA- OFFSET B88-044 CAVENDISH ER BRF 0146(13) VERMONT AOT.GDT 5/30/13

PROJECT NAME:	CAVENDISH
PROJECT NUMBER:	ER BRF 0146(13)
FILE NAME:	z11c318bdrbor4.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

TYLIN INTERNATIONAL

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH SECTION
SUBSURFACE INFORMATION

BORING LOG

Cavendish ER BR 0146(13)

Cavendish, Vermont

Boring No.: B-5
Page No.: 1 of 1
Pin No.: 11c318
Checked By: JAG

Boring Crew: B. DeLude (SJB), J. McIntyre (GeoDesign)
Date Started: 2/29/12 Date Finished: 2/29/12
VTSPG NAD83: N 325252.49 ft E 1615346.45 ft
Station: Not Available Offset: Not Available
Ground Elevation: 770.41 ft

	Casing	Sampler
Type:	AUGER	SS
I.D.:	4.25 in	1.38 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:		Auto/NWJ
Rig:	Diedrich D-50	C_E = 1.5

Groundwater Observations[2]

Date	Depth (ft)	Notes
02/29/12	15.0	Wet Sample

Depth (ft)	Strata[1]	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)[3]	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
5		S1 (5'–5.5'): Refusal. Rock fragment approximately 3" long recovered. Rec. = 0.25 ft	54 (R)						
10		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		S3 (15'–15.08'): Refusal. Gravel piece. Wet spoon. Rec. = 0.08 ft	50/1" (R)						
20		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.							
30		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.							
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

GEOVISION BORING LOG - NO STA- OFFSET 888-044 CAVENDISH ER BRF 0146(13) VERMONT AOTGDT 5/20/13

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

T.Y.LIN INTERNATIONAL

FILE NAME: z11c318bdrbor5.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

Cavendish ER BR 0146(13)

Cavendish, Vermont

Boring No.: B-6A
Page No.: 1 of 1
Pin No.: 11c318
Checked By: JAG

Boring Crew: B. DeLude (SJB), J. McIntyre (GeoDesign)
Date Started: 2/29/12 Date Finished: 2/29/12
VTSPC NAD83: N 325269.08 ft E 1615402.33 ft
Station: Not Available Offset: Not Available
Ground Elevation: 769.37 ft

	Casing	Sampler
Type:	AUGER	SS
I.D.:	4.25 in	1.38 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:	Auto/NWJ	
Rig:	Diedrich D-50	C_E = 1.5

Groundwater Observations[2]

Date	Depth (ft)	Notes
02/29/12		None Observed

Depth (ft)	Strata[1]	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)[3]	Moisture Content %	Gravel %	Sand %	Fines %
5		Inferred Fill. (Inferred from B-5).					
10		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.

GEODESIGN BORING LOG - NO STA- OFFSET 888-104 CAVENDISH ER BRF 0146(13) VERMONT AOT.GDT 5/20/13

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: z11c318bdrbor6.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

Cavendish ER BR 0146(13)

Cavendish, Vermont

Boring No.: B-6B
Page No.: 1 of 1
Pin No.: 11c318
Checked By: JAG

Boring Crew: B. DeLude (SJB), J. Gaudette (GeoDesign)
Date Started: 3/08/12 Date Finished: 3/08/12
VTSPG NAD83: N 325264.58 ft E 1615399.94 ft
Station: Not Available Offset: Not Available
Ground Elevation: 769.87 ft

	Casing	Sampler
Type:	AUGER	SS
I.D.:	4.25 in	1.38 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:		Auto/NWJ
Rig:	Diedrich D-50	C_E = 1.5

Groundwater Observations[a]

Date	Depth (ft)	Notes
03/08/12	14.5	Wet Sample

Depth (ft)	Strata[b]	CLASSIFICATION OF MATERIALS (Description)	Blows/6" (N Value)[c]	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
5		Inferred Fill. (Inferred from B-5).							
10		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
		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
15		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)						
		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		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)						
		Hole stopped @ 20.3 ft Hollow stem auger refusal on inferred boulder.							

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.

GEODESIGN BORING LOG - NO STA - OFFSET 688-04.4 CAVENDISH ER BRF 0146.GPJ VERMONT AGT.GDT 5/20/13

BOTTOM OF
ABUT NO. 2
EL. 761.25

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

PROJECT NAME:	CAVENDISH
PROJECT NUMBER:	ER BRF 0146(13)
FILE NAME: z11c318bdrbor7.dgn	PLOT DATE: 7/19/2013
PROJECT LEADER: J. OLUND	DRAWN BY: S. MORGAN
DESIGNED BY: J. OLUND	CHECKED BY: T. POULIN
BORING LOGS 7	SHEET 26 OF 49

TYLIN INTERNATIONAL

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH SECTION
SUBSURFACE INFORMATION

BORING LOG

Cavendish ER BR 0146(13)

Cavendish, Vermont

Boring No.: B-7
Page No.: 1 of 2
Pin No.: 11c318
Checked By: DTH

Boring Crew: T. Farrell (SJB), R. Marshall (GeoDesign)
Date Started: 10/29/12 Date Finished: 11/01/12
VTSPG NAD83: N 325276.70 ft E 1615418.10 ft
Station: Not Available Offset: Not Available
Ground Elevation: 771 ft

	Casing	Sampler
Type:	FJ	SS
I.D.:	3 in	1.38 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:	Auto/AWJ	
Rig:	CME 550X ATV	C_E = 1.5

Groundwater Observations[a]

Date	Depth (ft)	Notes
10/30/12	13.0	In casing (20 min)
10/31/12	15.8	In casing (16 hrs)

Depth (ft)	Strata[m]	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (RQD %)	Drill Rate minutes/ft	Blows/6" (N Value)[n]	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
0		Inferred Fill.										
10		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)						
		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)						
15		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)						
		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)						
20		S5 (19.5'–19.58'): Refusal, no recovery. Rec. = 0.0 ft				50/1" (R)						
25		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
30		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)						
35		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
40		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)						
45		C1 (43.9'–44.4'): Inferred cobble (no recovery).	C1	0		50/1" (R)						
		S10 (44.5'–44.58'): Refusal, coarse GRAVEL (quartzite fragments). Rec. = 0.08 ft	C2	55	9 5 3 3 3							
		C2 (45.2'–50.2'): Boulder and Cobble fragments with subrounded Gravel; largest fragment 14".										

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

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH SECTION
SUBSURFACE INFORMATION

BORING LOG

Cavendish ER BR 0146(13)

Cavendish, Vermont

Boring No.: B-7
Page No.: 2 of 2
Pin No.: 11c318
Checked By: DTH

Boring Crew: T. Farrell (SJB), R. Marshall (GeoDesign)
Date Started: 10/29/12 Date Finished: 11/01/12
VTSPG NAD83: N 325276.70 ft E 1615418.10 ft
Station: Not Available Offset: Not Available
Ground Elevation: 771 ft

Casing: Type: FJ; I.D.: 3 in; Hammer Wt: N.A.; Hammer Fall: N.A.; Hammer/Rod Type: Auto/AWJ; Rig: CME 550X ATV
Sampler: SS; 1.38 in; 140 lb.; 30 in.; C_E = 1.5

Groundwater Observations[a]

Date	Depth (ft)	Notes
10/30/12	13.0	In casing (20 min)
10/31/12	15.8	In casing (16 hrs)

Depth (ft)	Strata[m]	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (RQD %)	Drill Rate minutes/ft	Blows/6" (N Value)[n]	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
55		C3 (50.2'–54.5'): Cobble fragments with Gravel; largest fragment 4".	C3	59								
		C4 (54.5'–60.6'): Cobble fragments with coarse Sand and fine to coarse Gravel; largest fragment 3".	C4	16	3 3 3 20 8 2							
60		Hole stopped @ 60.6 ft Borehole terminated after breaking spin casing shoe.										

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.

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 888–294 CAVENDISH ER BRF 0146(13) VERMONT AOT.GDT 5/20/13

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

TYLIN INTERNATIONAL

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

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH SECTION
SUBSURFACE INFORMATION

BORING LOG

Cavendish ER BR 0146(13)

Cavendish, Vermont

Boring No.: B-8
Page No.: 1 of 2
Pin No.: 11c318
Checked By: DTH

Boring Crew: T. Farrell (SJB), A. Barribault (GeoDesign)
Date Started: 11/01/12 Date Finished: 11/05/12
VTSPG NAD83: N 325128.10 ft E 1615340.60 ft
Station: Not Available Offset: Not Available
Ground Elevation: 772 ft

	Casing	Sampler
Type:	FJ	SS
I.D.:	3 in	1.38 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:	Auto/AWJ	
Rig:	CME 550X ATV	C_E = 1.5

Groundwater Observations[a]

Date	Depth (ft)	Notes
11/05/12		See note 4.

Depth (ft)	Strata[e]	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (RQD %)	Drill Rate minutes/ft	Blows/6"[d] (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.	C1	77 (70)	2 1.75 1.7 2.5 2							
		Hole stopped @ 45.5 ft Borehole terminated due to crooked hole.										

BOTTOM OF ABUT. NO. 1 EL. 762.0

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

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 888–244 CAVENDISH ER BRF 0146(13) VERMONT ADT.GDT 5/20/13

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIALS & RESEARCH SECTION
SUBSURFACE INFORMATION

BORING LOG

Cavendish ER BR 0146(13)

Cavendish, Vermont

Boring No.: B-8
Page No.: 2 of 2
Pin No.: 11c318
Checked By: DTH

Boring Crew: T. Farrell (SJB), A. Barribault (GeoDesign)
Date Started: 11/01/12 Date Finished: 11/05/12
VTSPG NAD83: N 325128.10 ft E 1615340.60 ft
Station: Not Available Offset: Not Available
Ground Elevation: 772 ft

	Casing	Sampler
Type:	FJ	SS
I.D.:	3 in	1.38 in
Hammer Wt:	N.A.	140 lb.
Hammer Fall:	N.A.	30 in.
Hammer/Rod Type:	Auto/AWJ	
Rig:	CME 550X ATV	C_E = 1.5

Groundwater Observations[a]

Date	Depth (ft)	Notes
11/05/12		See note 4.

Depth (ft)	Strata[e]	CLASSIFICATION OF MATERIALS (Description)	Run (Dip deg.)	Core Rec. % (RQD %)	Drill Rate minutes/ft	Blows/6"[d] (N Value)	Moisture Content %	Gravel %	Sand %	Fines %	LL %	PI %
55		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.										
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 888–244 CAVENDISH ER BRF 0146(13) VERMONT ADT.GDT 5/20/13

TYLIN INTERNATIONAL

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

FILE NAME: z11c318bdrbor9.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

APPROX INV
EL 759.0

APPROXIMATE LOCATION OF 8" HDPE
UNDERGROUND WATERMAIN BENEATH
STREAM BED

APPROXIMATE LOCATION OF 8" DI
UNDERGROUND WATERMAIN (TYP)

℄ BEARING ABUT NO 2
STA 503+22.00
FG = 773.15

APPROX INV
EL 758.5

WINGWALL NO 1

WINGWALL NO 3

GRAVEL
DRIVE

PT
STA 501+54.55

H:1.5

℄ BEARING ABUT. NO 1
STA 502+00.00
FG = 773.76

CZ

END APPROACH SLAB NO 1
BEGIN BRIDGE
STA 501+98.94
FG = 773.77

POC
ML STA 502+67.00 =
CHANNEL STA 1+75.00

70° (TYP)

END APPROACH SLAB NO 2
STA 503+43.06
FG = 773.05

TO LUDLOW

TO WEATHERSFIELD

END APPROACH
BEGIN PROJECT
STA 501+44.00

BEGIN APPROACH
SLAB NO 1
STA 501+78.94
FG = 773.87

502+00

503+00

504+00

131°

END BRIDGE
BEGIN APPROACH SLAB NO 2
STA 503+23.06
FG = 773.15

1+00

2+00

TWENTYMILE STREAM

BRIDGE PLAQUE
(SEE SHEET 33)

WINGWALL NO 2

WINGWALL NO 4

STONE FILL,
TYPE IV (TYP)

EXISTING ROW (TYP.)

15"CMP

AER E&T

VT STATE PLANE GRID

N

PLAN

128'-0" (PAY LIMITS FOR BRIDGE RAILING, GALVANIZED 3 RAIL BOX BEAM, EACH SIDE)

124'-1⅝" (BACK OF ABUT NO 1 TO BACK OF ABUT NO 2)

122'-0" ℄ BEARING TO ℄ BEARING)

GUARDRAIL APPROACH
SECTION, GALVANIZED
3 RAIL BOX BEAM (TYP)

790
780
770
760
750

FIX

FIX

STONE FILL,
TYPE IV (TYP.)

ELEVATION AT DOWNSTREAM FASCIA

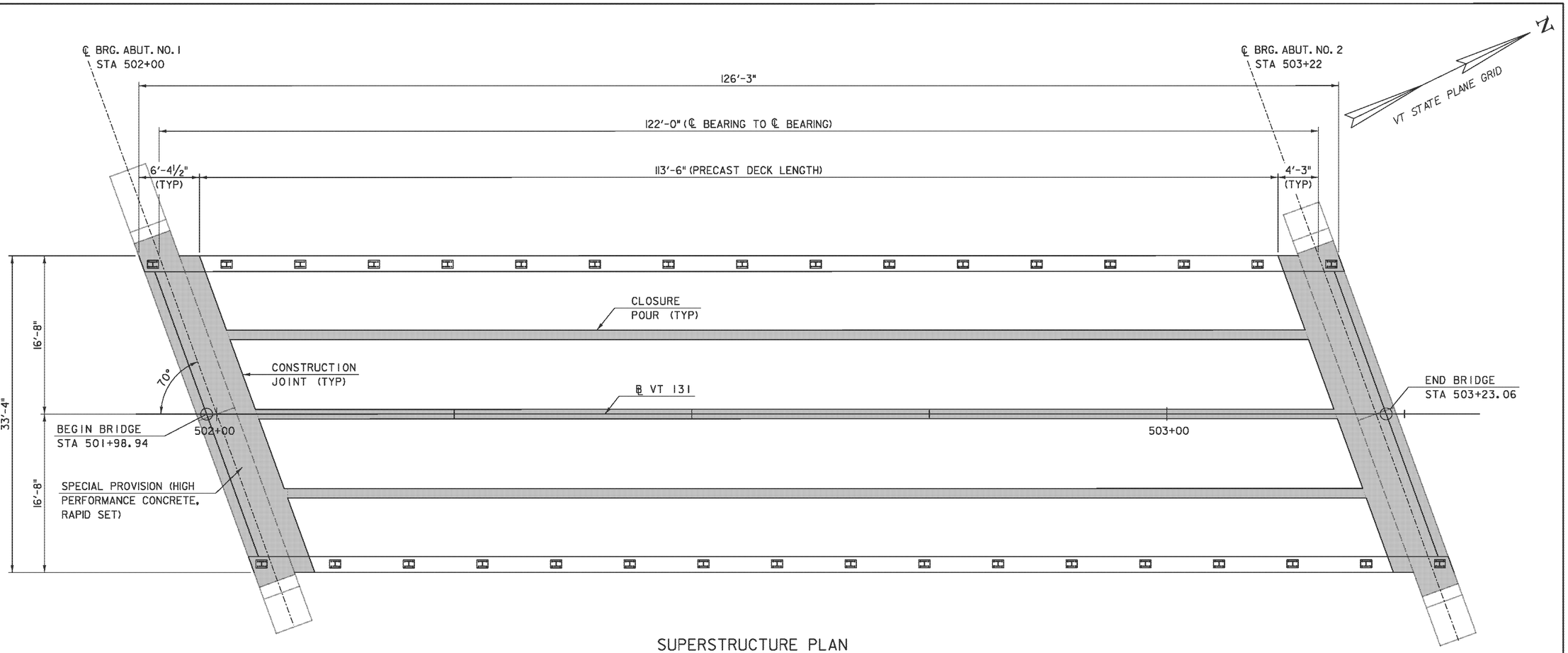
SCALE 1" = 10'-0"
10 0 10

T.Y.LIN INTERNATIONAL

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

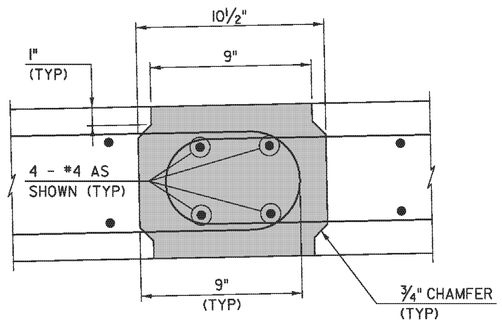
FILE NAME: z11c318bdrpe.dgn
PROJECT LEADER: J. OLUND
DESIGNED BY: T. POULIN
PLAN & ELEVATION

PLOT DATE: 7/19/2013
DRAWN BY: T. POULIN
CHECKED BY: J. OLUND
SHEET 29 OF 49



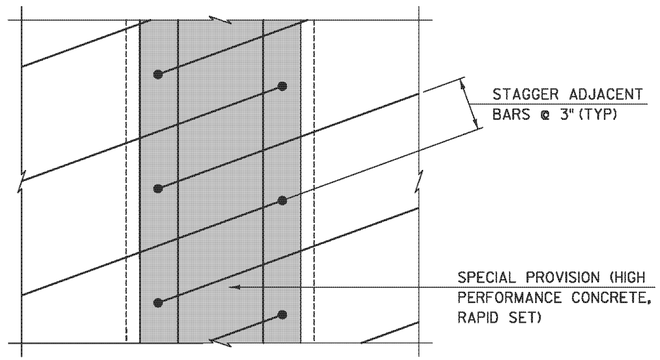
SUPERSTRUCTURE PLAN

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



CLOSURE POUR DETAIL SECTION

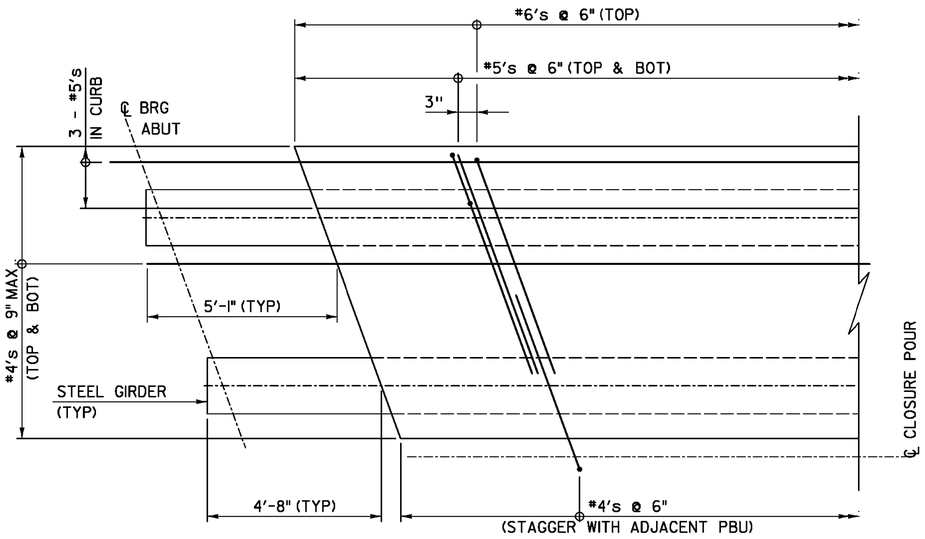
SCALE: 3" = 1'-0"



CLOSURE POUR DETAIL PLAN

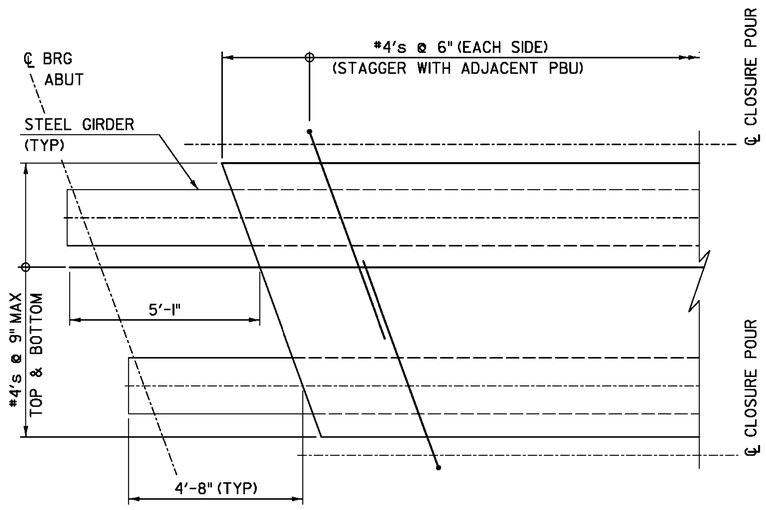
SCALE: 3" = 1'-0"

PROJECT NAME:	CAVENDISH
PROJECT NUMBER:	ER BRF 0146(13)
T.Y. LIN INTERNATIONAL	
FILE NAME: z11o318bdrsupl.dgn	PLOT DATE: 7/19/2013
PROJECT LEADER: J. OLUND	DRAWN BY: S. MORGAN
DESIGNED BY: S. KELLER	CHECKED BY: D. MYERS
SUPERSTRUCTURE PLAN	SHEET 30 OF 49



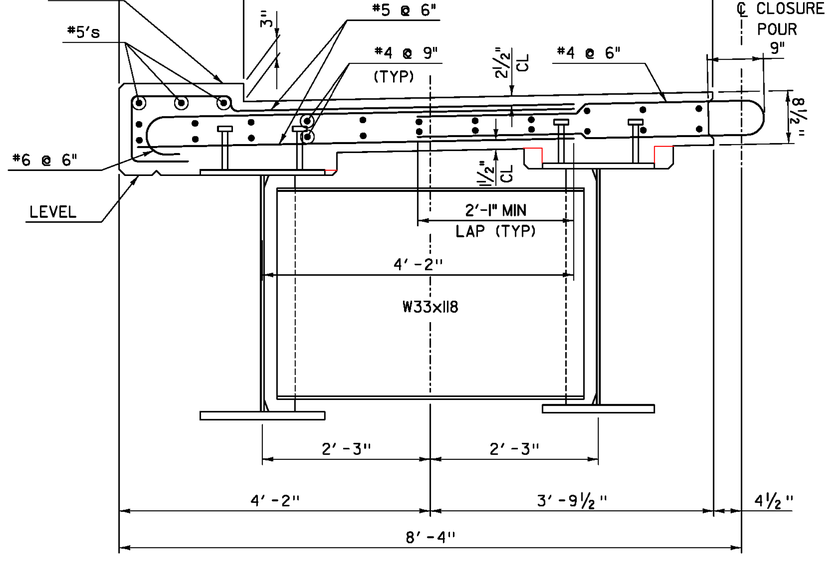
EXTERIOR UNIT - PLAN

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



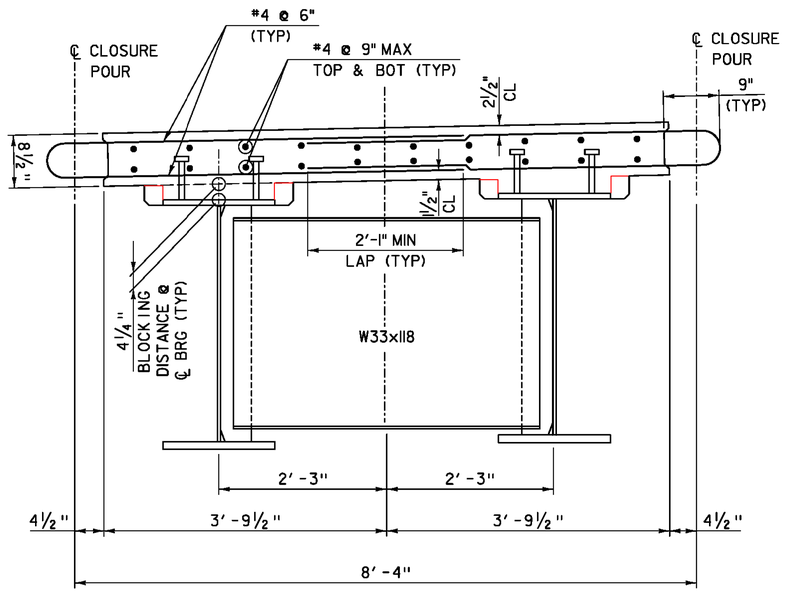
INTERIOR UNIT - PLAN

SCALE: 1" = 1'-0"



EXTERIOR UNIT - SECTION

SCALE: 1" = 1'-0"



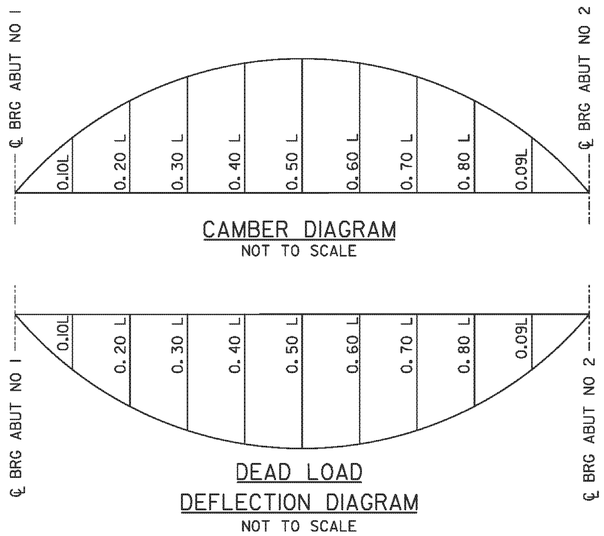
INTERIOR UNIT - SECTION

SCALE: 1" = 1'-0"

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

PROJECT NAME:	CAVENDISH
PROJECT NUMBER:	ER BRF 0146(13)
FILE NAME: zllc318bdrsup2.dgn	PLOT DATE: 7/19/2013
PROJECT LEADER: J. OLUND	DRAWN BY: S. MORGAN
DESIGNED BY: S. KELLER	CHECKED BY: D. MYERS
SUPERSTRUCTURE DETAILS	SHEET 31 OF 49

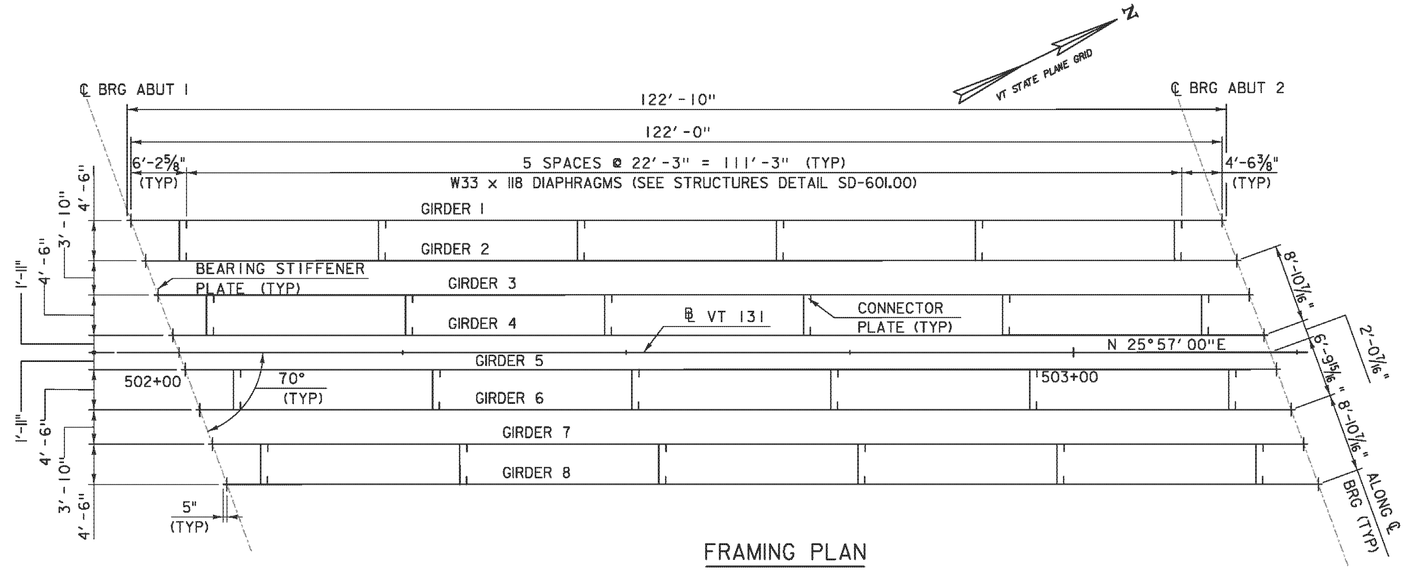
TY LIN INTERNATIONAL



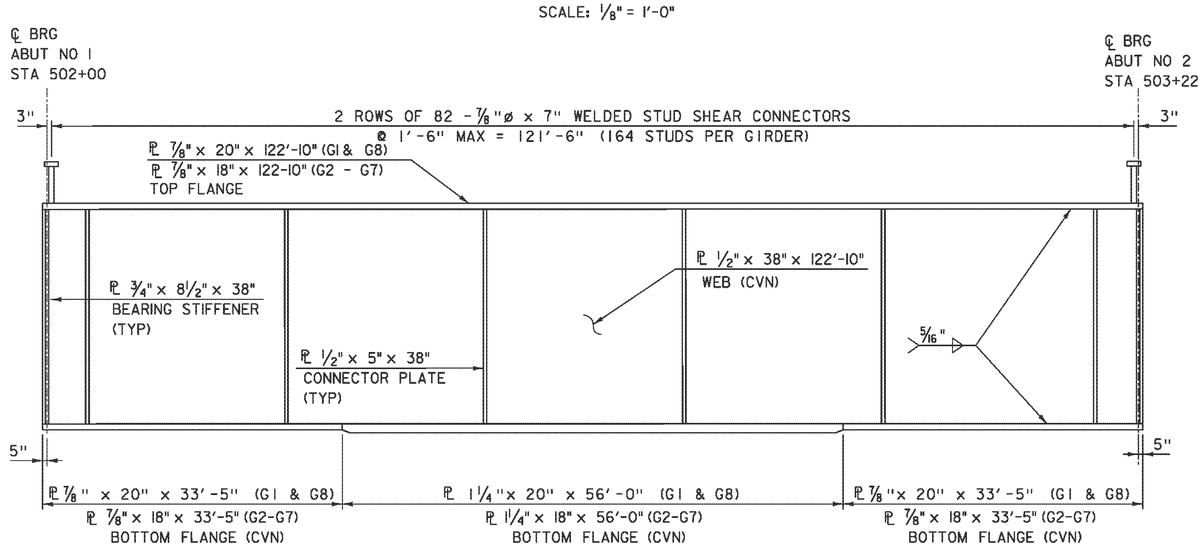
CAMBER DIAGRAM
NOT TO SCALE

DEAD LOAD DEFLECTION DIAGRAM
NOT TO SCALE

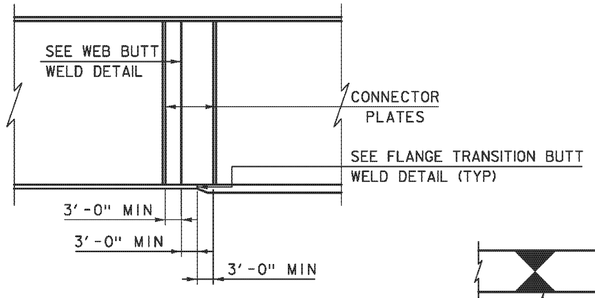
GIRDER	LOCATION	0.10	0.20	0.30	0.40	0.50	0.60	0.70	0.80	0.90
EXTERIOR GIRDERS (G1, G8)	STEEL DL DEFLECTION	11/16	1 5/16	1 3/4	2 1/16	2 3/16	2 1/16	1 3/4	1 5/16	11/16
	SLAB & SDL DEFLECTION	2 7/16	4 9/16	6 1/8	7 3/16	7 1/2	7 3/16	6 1/8	4 9/16	2 7/16
	TOTAL DL DEFLECTION	3 1/8	5 7/8	7 15/16	9 1/4	9 11/16	9 1/4	7 15/16	5 13/16	3 1/8
	RESIDUAL CAMBER	9/16	1	1 1/4	1 7/16	1 1/2	1 7/16	1 1/4	1	9/16
	REQUIRED TOTAL CAMBER	3 11/16	6 7/8	9 3/16	10 11/16	11 3/16	10 11/16	9 3/16	6 13/16	3 11/16
INTERIOR GIRDERS (G2, G3, G4, G5, G6, G7)	STEEL DL DEFLECTION	11/16	1 5/16	1 13/16	2 1/8	2 1/4	2 1/8	1 13/16	1 5/16	11/16
	SLAB & SDL DEFLECTION	2 1/16	3 15/16	5 5/16	6 3/16	6 1/2	6 3/16	5 5/16	3 15/16	2 1/16
	TOTAL DL DEFLECTION	2 13/16	5 1/4	7 1/8	8 5/16	8 3/4	8 5/16	7 1/8	5 1/4	2 13/16
	RESIDUAL CAMBER	9/16	1	1 1/4	1 7/16	1 1/2	1 7/16	1 1/4	1	9/16
	REQUIRED TOTAL CAMBER	3 3/8	6 1/4	8 3/8	9 3/4	10 1/4	9 3/4	8 3/8	6 1/4	3 3/8



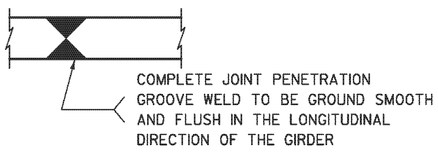
FRAMING PLAN
SCALE: 1/8" = 1'-0"



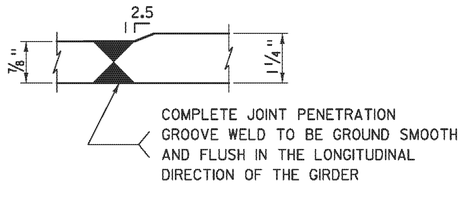
GIRDER ELEVATION
NOT TO SCALE



WELDED SPLICE TRANSITION
NOT TO SCALE

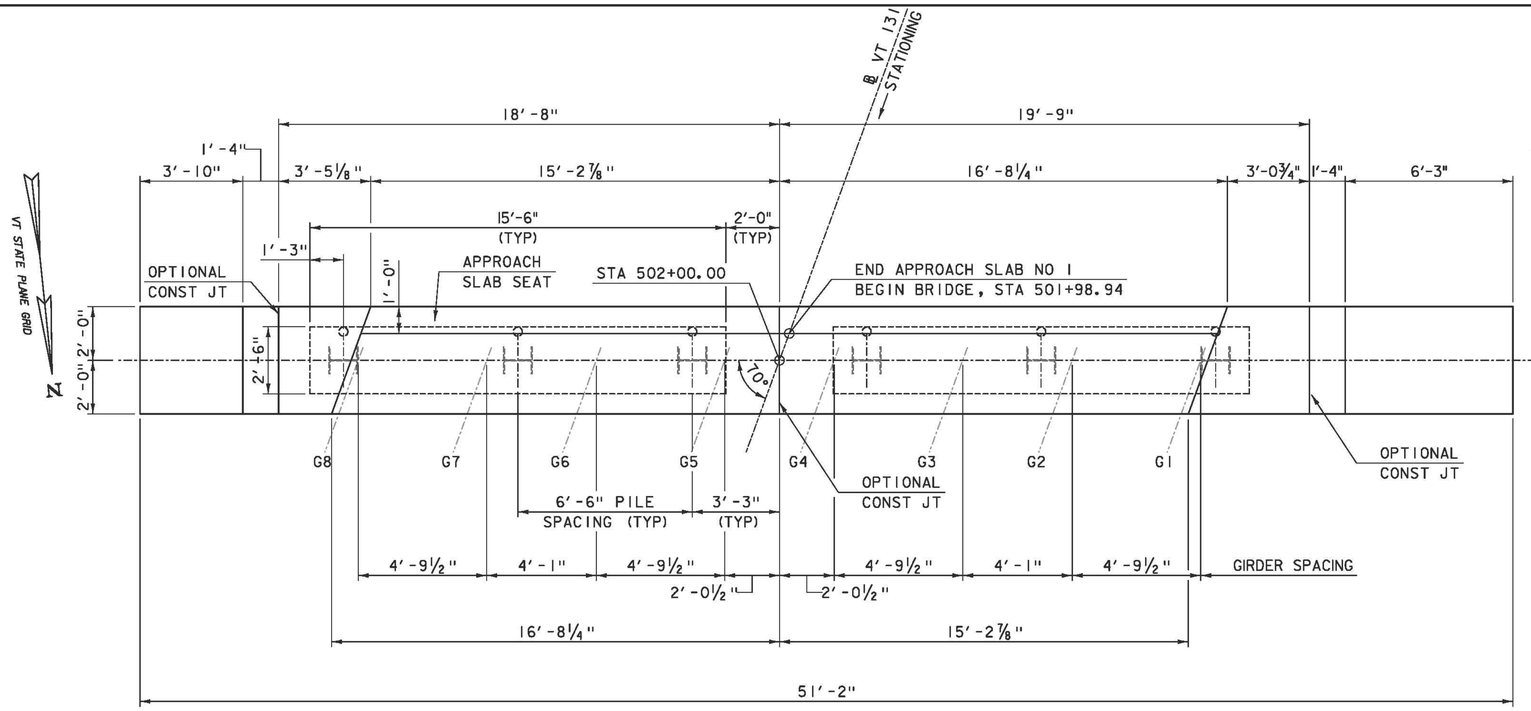


FLANGE OR WEB BUTT WELD
NOT TO SCALE



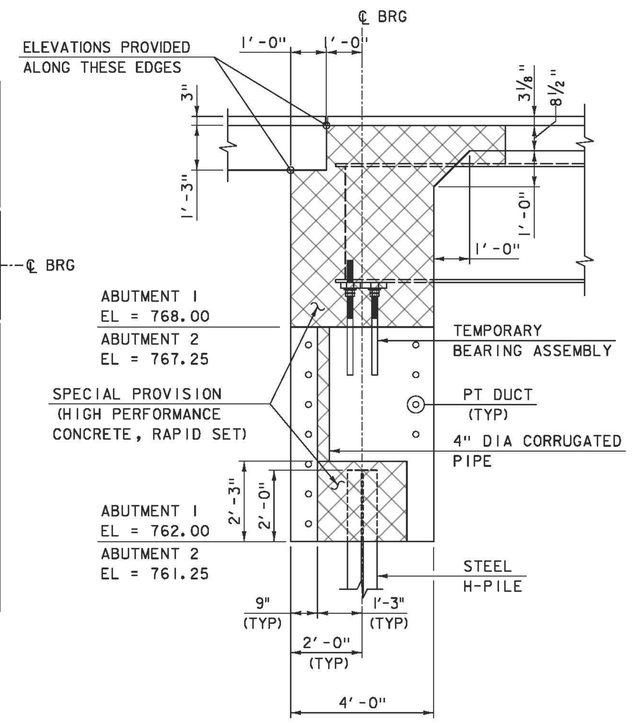
FLANGE TRANSITION BUTT WELD
NOT TO SCALE

PROJECT NAME:	CAVENDISH
PROJECT NUMBER:	ER BRF 0146(13)
T.Y.LIN INTERNATIONAL	FILE NAME: z11c318bdr-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



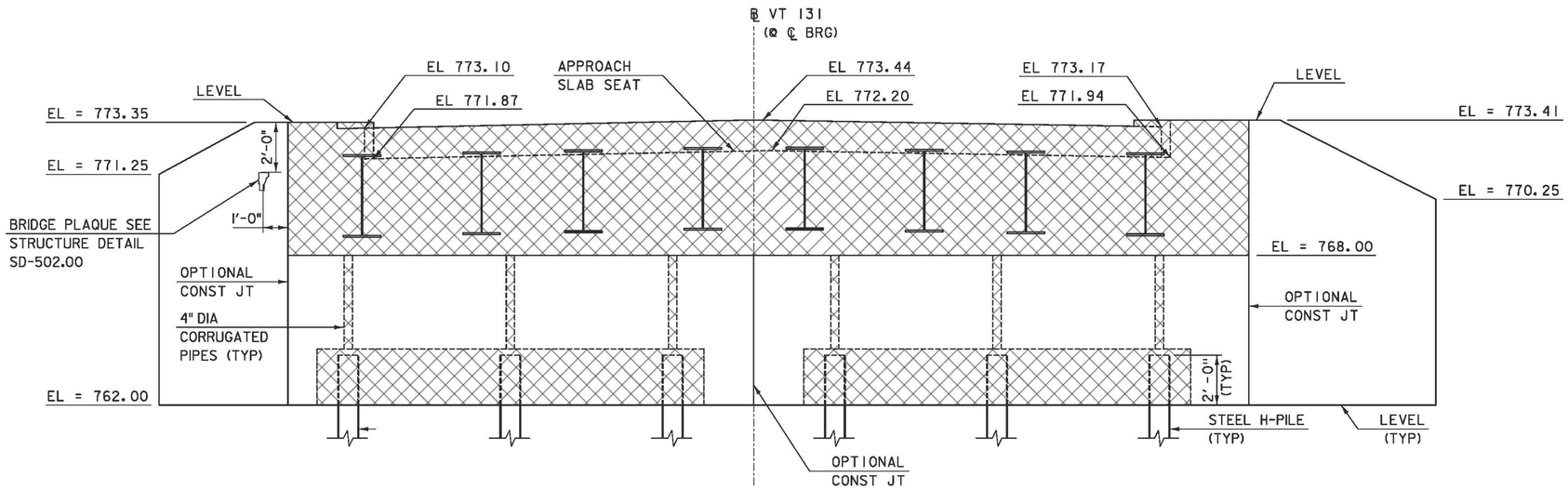
ABUTMENT 1 - PLAN

SCALE: ⅜" = 1′-0"



ABUTMENT - TYPICAL SECTION

SCALE: ½" = 1′-0"
(DIMENSIONS ARE NORMAL TO ABUTMENT)



ABUTMENT 1 - ELEVATION

SCALE: ⅜" = 1′-0"

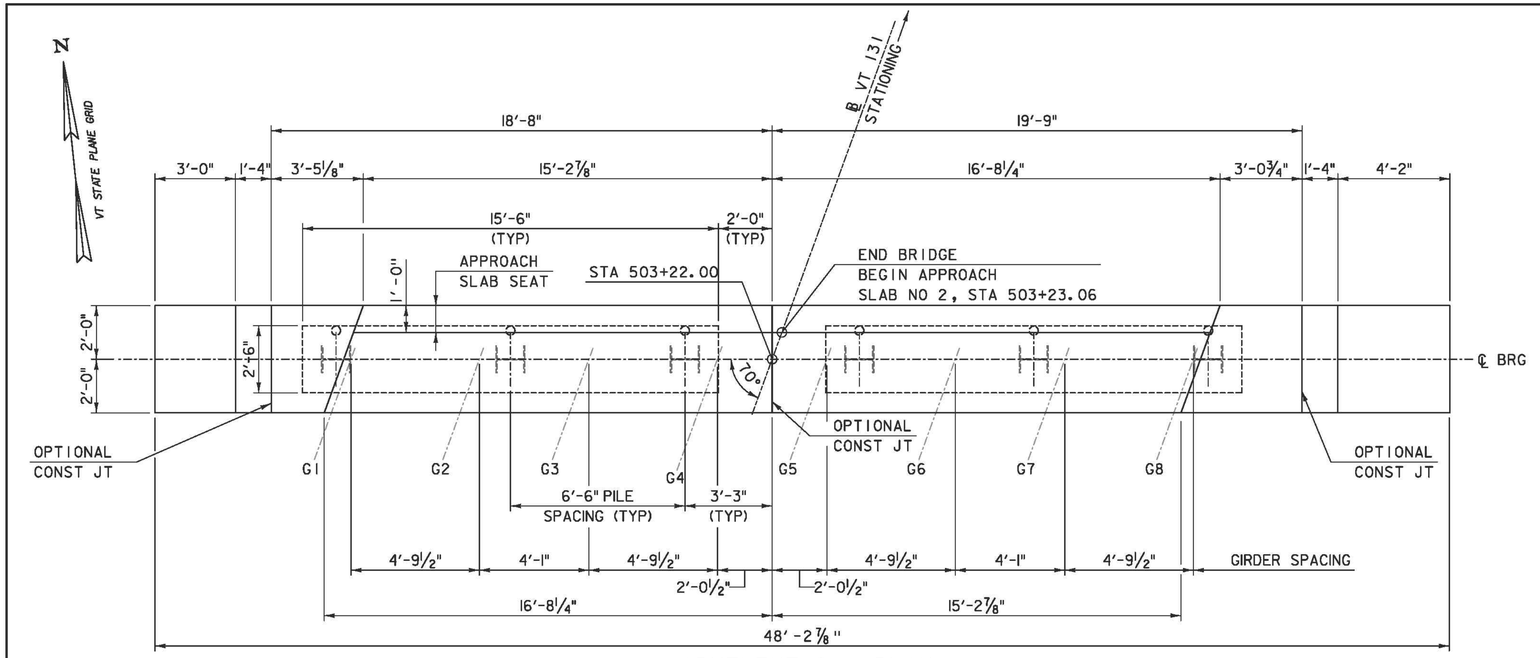
BOTTOM OF GIRDER ELEVATIONS	
GIRDER	ELEVATION
G1	768.79
G2	768.87
G3	768.94
G4	769.02
G5	769.01
G6	768.91
G7	768.83
G8	768.73

TYLIN INTERNATIONAL

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

FILE NAME: z11c318bdrabut1.dgn
PROJECT LEADER: J. OLUND
DESIGNED BY: D. MYERS
ABUTMENT 1 PLAN, ELEVATION & SECTION

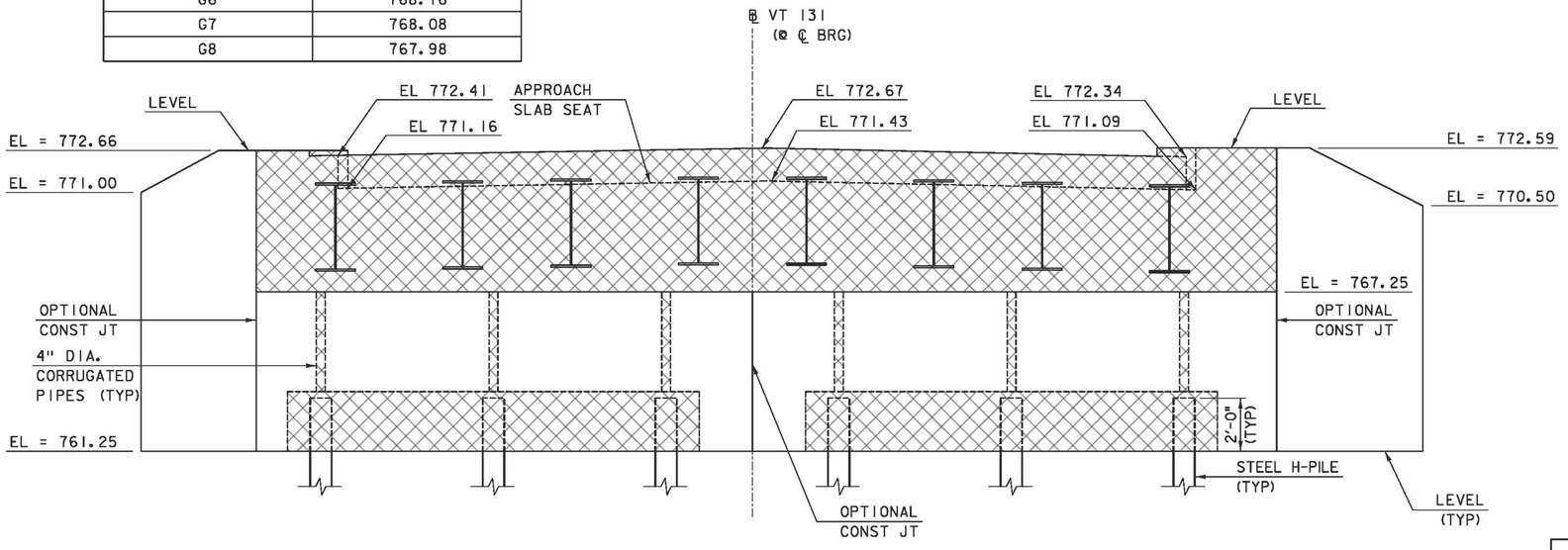
PLOT DATE: 7/19/2013
DRAWN BY: T. KELLEY
CHECKED BY: J. OLUND
SHEET 33 OF 49



ABUTMENT 2 - PLAN

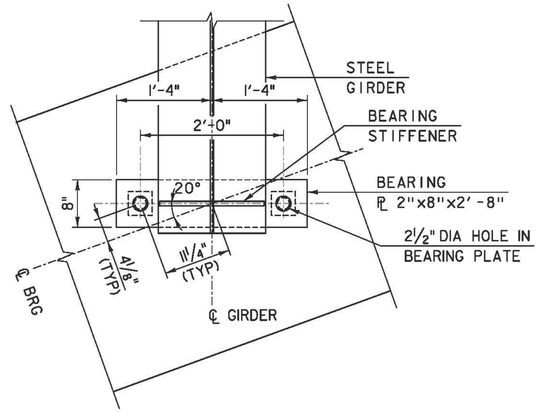
SCALE: ⅜" = 1'-0"

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



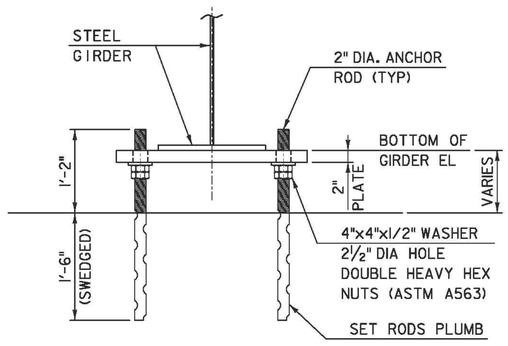
ABUTMENT 2 - ELEVATION

SCALE: ⅜" = 1'-0"



TEMPORARY BEARING ASSEMBLY PLAN

SCALE: 1" = 1'-0"



TEMPORARY BEARING ASSEMBLY ELEVATION

SCALE: 1" = 1'-0"

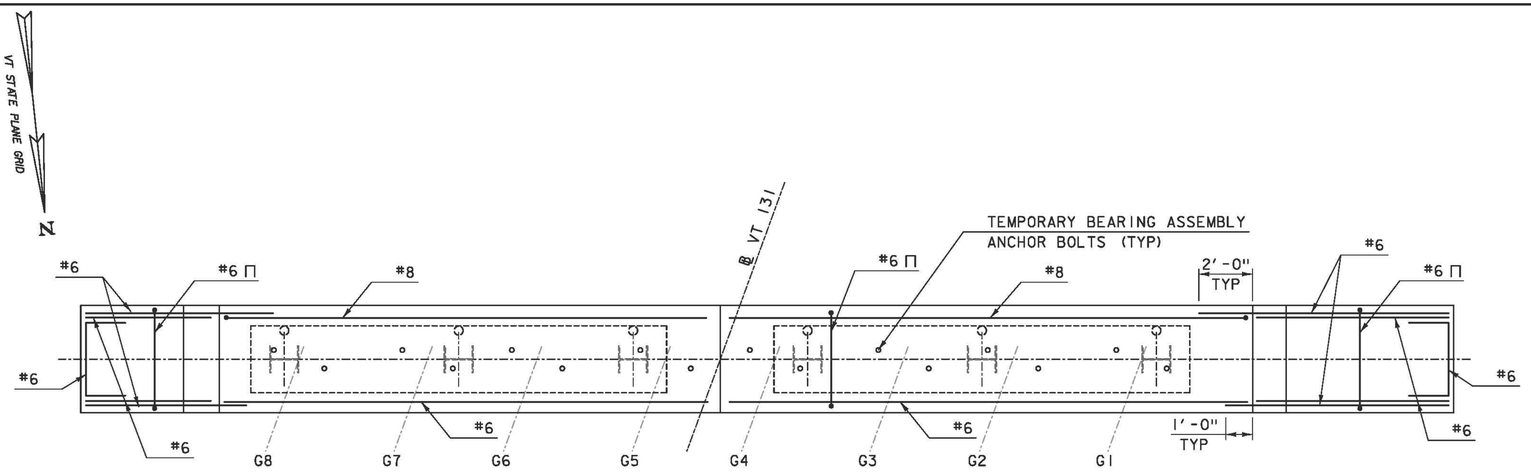
TEMPORARY BEARING NOTES

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)

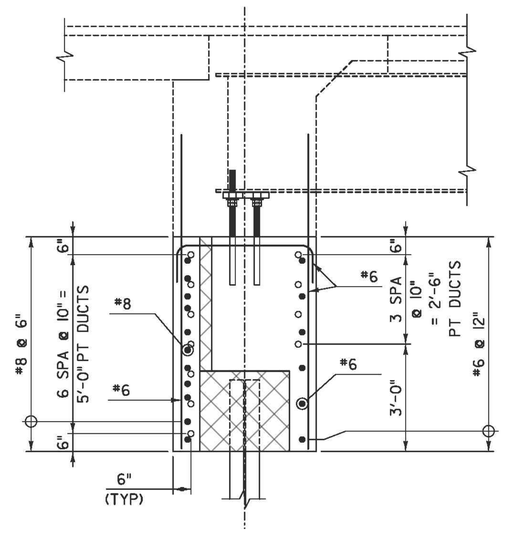
T.Y.LIN INTERNATIONAL

FILE NAME: z11c318bdrabut2.dgn	PLOT DATE: 7/19/2013
PROJECT LEADER: J. OLUND	DRAWN BY: T. KELLEY
DESIGNED BY: D. MYERS	CHECKED BY: J. OLUND
ABUT 2 PLAN & ELEV AND BRG DETAILS	SHEET 34 OF 49



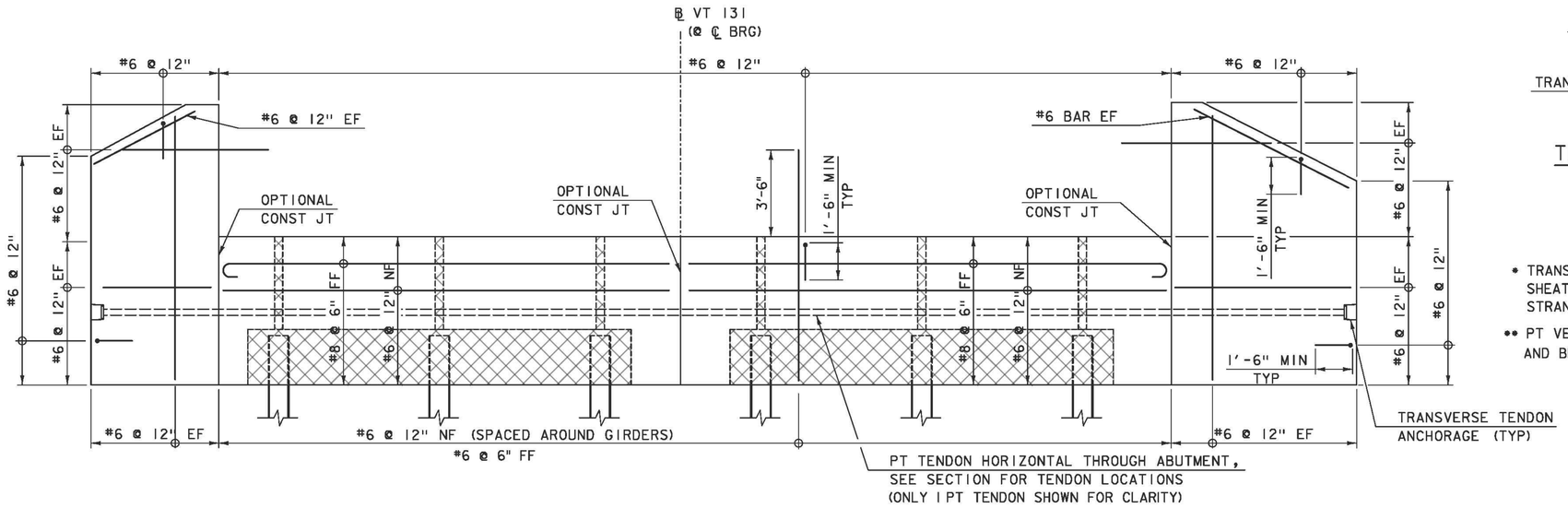
ABUTMENT REINFORCEMENT PLAN

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



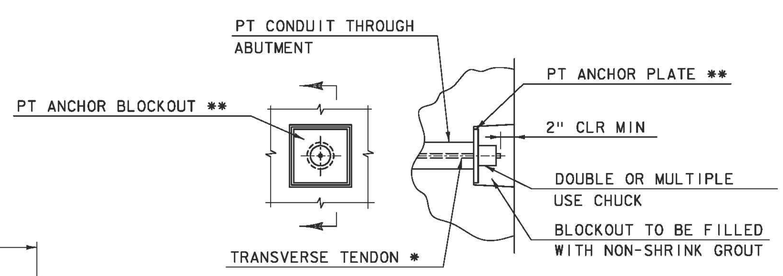
ABUTMENT REINFORCEMENT SECTION

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



ABUTMENT REINFORCEMENT ELEVATION

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



TRANSVERSE TENDON ANCHORAGE DETAIL

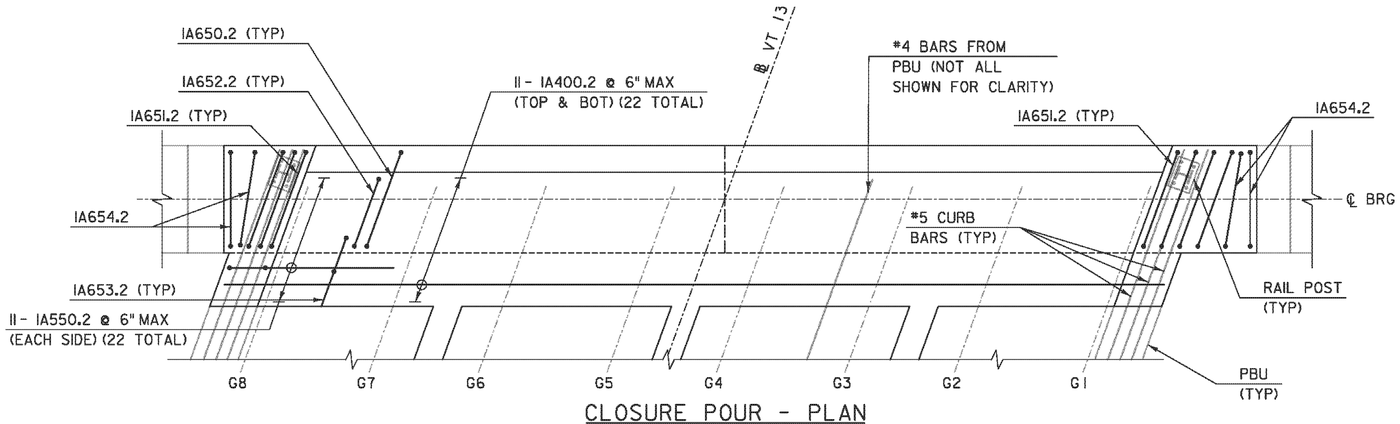
NOT TO SCALE

* TRANSVERSE TENDONS SHALL BE COVERED BY A SEAMLESS POLYPROPYLENE SHEATH (WITH CORROSION INHIBITER GREASE BETWEEEN 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.

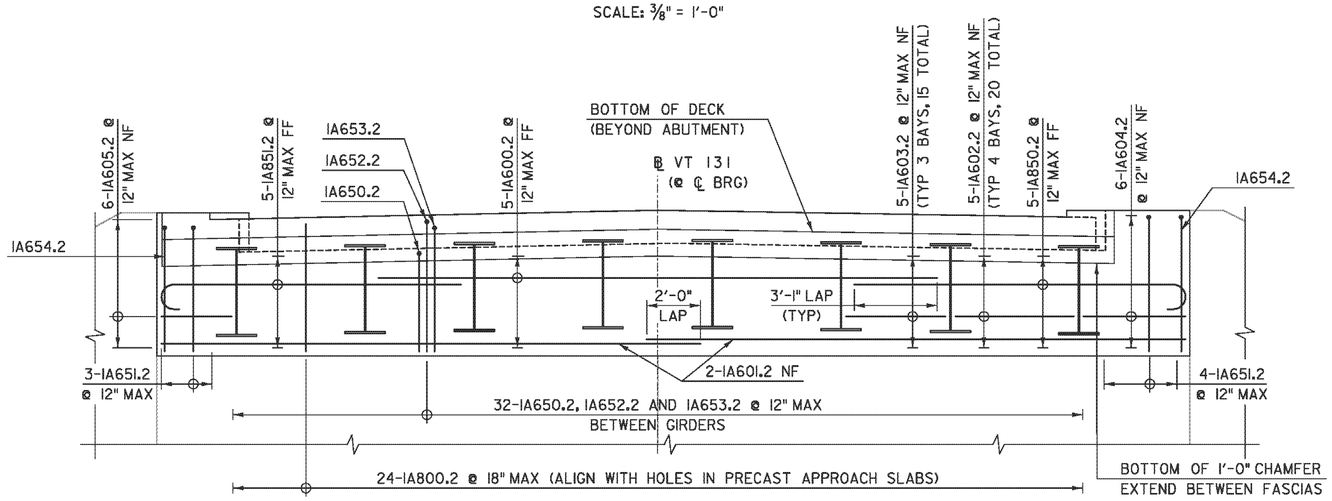
TYLIN INTERNATIONAL

PROJECT NAME: CAVENDISH	
PROJECT NUMBER: ER BRF 0146(13)	
FILE NAME: z11c318bdrabutr.dgn	PLOT DATE: 7/19/2013
PROJECT LEADER: J. OLUND	DRAWN BY: S. MORGAN
DESIGNED BY: D. MYERS	CHECKED BY: J. OLUND
ABUTMENT REINFORCEMENT	SHEET 35 OF 49



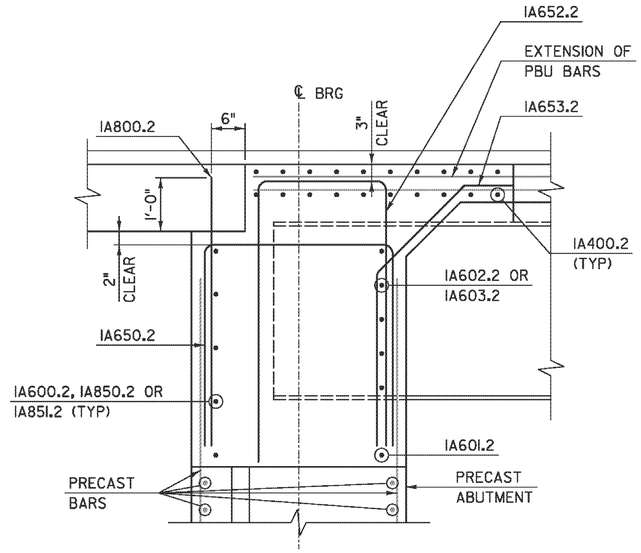
CLOSURE POUR - PLAN

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



CLOSURE POUR - ELEVATION

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



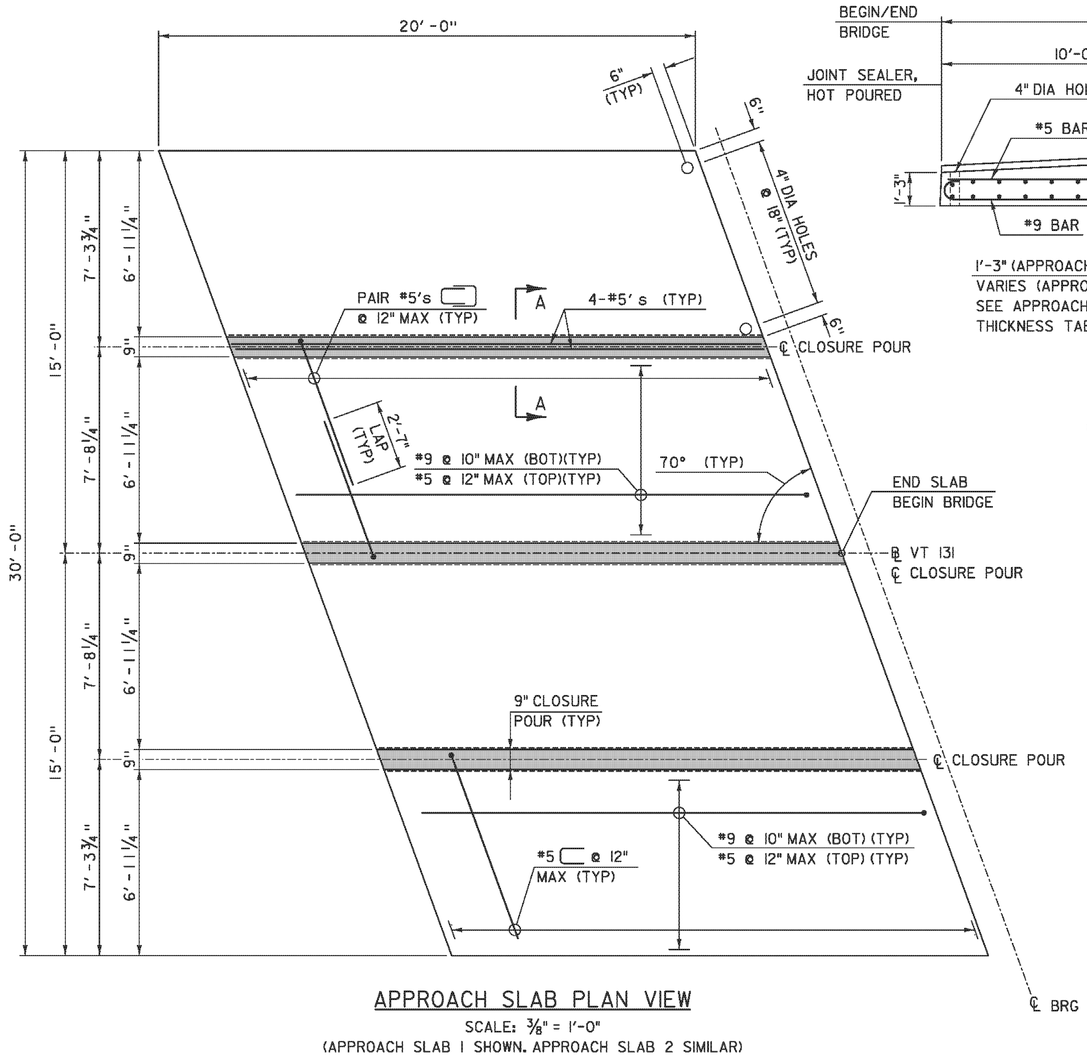
CLOSURE POUR - SECTION

SCALE: 3/4" = 1'-0"

NOTE:

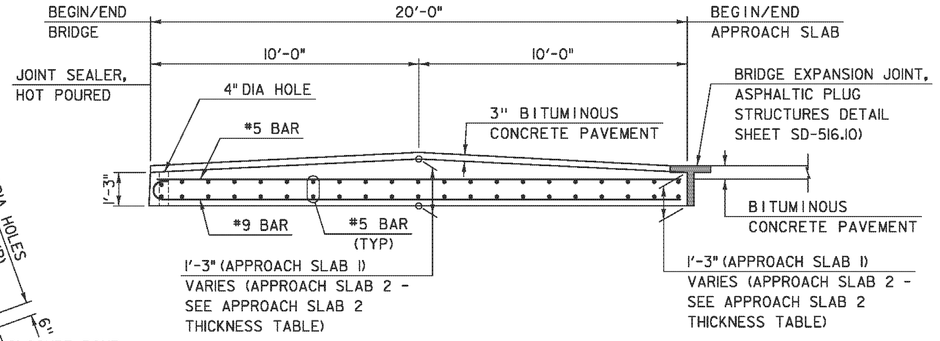
ABUTMENT 1 REINFORCEMENT SHOWN. ABUTMENT 2 REINFORCEMENT SIMILAR BUT WITH BAR DESIGNATION PREFIX 2A INSTEAD OF 1A. SEE REINFORCING STEEL SCHEDULE ON SHEET 38.

PROJECT NAME: CAVENDISH	
PROJECT NUMBER: ER BRF 0146(13)	
TYLIN INTERNATIONAL	
FILE NAME: z1c318bdrclospour.dgn	PLOT DATE: 7/19/2013
PROJECT LEADER: J. OLUND	DRAWN BY: S. MORGAN
DESIGNED BY: D. MYERS	CHECKED BY: T. POULIN
ABUTMENT CLOSURE POUR DETAILS	SHEET 36 OF 49



APPROACH SLAB PLAN VIEW

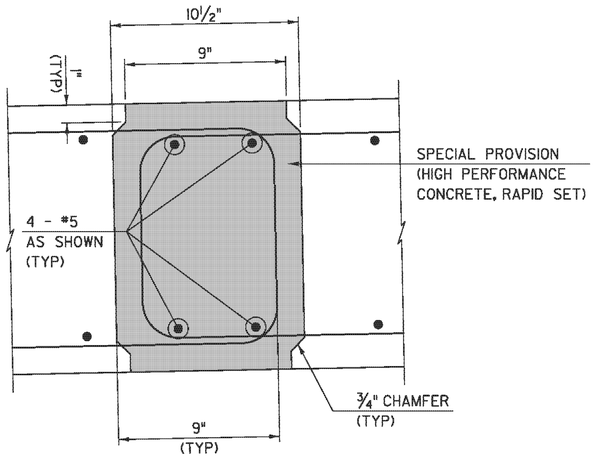
SCALE: ⅜" = 1'-0"
(APPROACH SLAB 1 SHOWN. APPROACH SLAB 2 SIMILAR)



APPROACH SLAB ELEVATION VIEW

SCALE: ⅜" = 1'-0"
(APPROACH SLAB 2 SHOWN. APPROACH SLAB 1 SIMILAR)

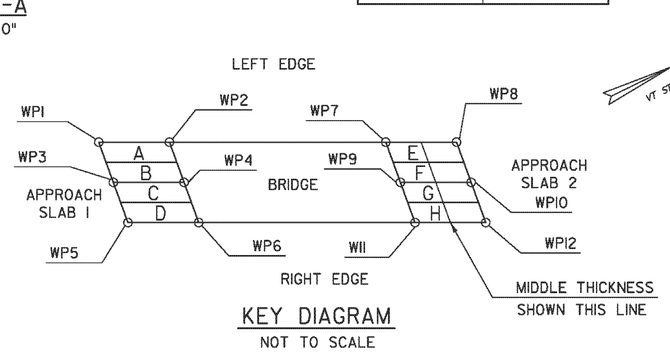
SLAB NO. 2 THICKNESS TABLE		
	LEFT EDGE	RIGHT EDGE
MIDDLE A.S.#2 - PANEL E	1'-4⅜"	1'-4⅜"
MIDDLE A.S.#2 - PANEL F	1'-4⅜"	1'-4⅜"
MIDDLE A.S.#2 - PANEL G	1'-4⅜"	1'-4⅛"
MIDDLE A.S.#2 - PANEL H	1'-4⅛"	1'-3⅞"
END A.S.#2 - PANEL E	1'-5⅜"	1'-5"
END A.S.#2 - PANEL F	1'-5"	1'-4½"
END A.S.#2 - PANEL G	1'-4⅜"	1'-3¾"
END A.S.#2 - PANEL H	1'-3¾"	1'-3"



SECTION A-A

SCALE: 3" = 1'-0"

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:

1. 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.
2. 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.
3. 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.
4. 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)".
5. PAYMENT FOR CONCRETE CLOSURE POURS SHALL BE MADE UNDER ITEM 900.608, "SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET)".
6. APPROACH SLAB REINFORCING STEEL SHOWN IS TYPICAL FOR EACH PANEL.

PROJECT NAME:	CAVENDISH
PROJECT NUMBER:	ER BRF 0146(13)
FILE NAME: zila318bdrapprslab.dgn	PLOT DATE: 7/19/2013
PROJECT LEADER: J. OLUND	DRAWN BY: S. MORGAN
DESIGNED BY: T. POULIN	CHECKED BY: J. OLUND
APPROACH SLAB DETAILS	SHEET 37 OF 49

TYLIN INTERNATIONAL

STATE OF VERMONT
AGENCY OF TRANSPORTATION

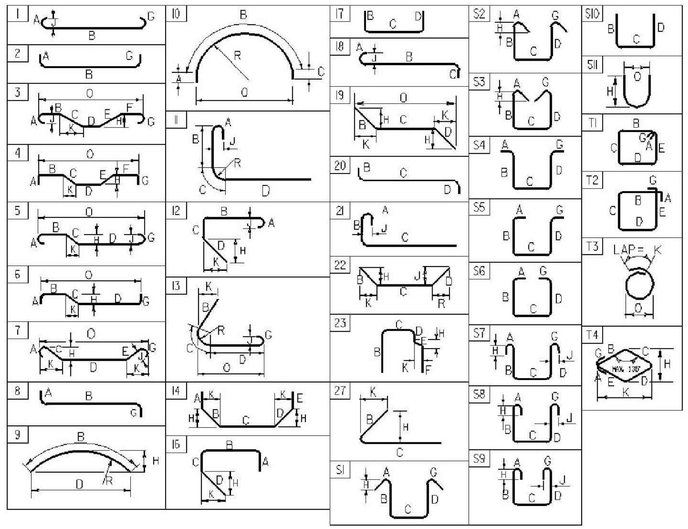
REINFORCING STEEL SCHEDULE

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"			3'- 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"			1'- 5"		1'- 5"		
✳	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"			3'- 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"			1'- 5"		1'- 5"		
	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"									

ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O

~ NOTES ~

1. 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.
2. 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".
3. BARS WHICH REQUIRE MORE ACCURATE BENDING THAN STANDARD PRACTICES SHOULD HAVE LIMITS INDICATED.
4. ALL DIMENSIONS ARE OUT TO OUT OF BAR EXCEPT "A" AND "G" ON STANDARD 180 DEGREE AND 135 DEGREE HOOKS.
5. "J" DIMENSION ON 180 DEGREE HOOKS TO BE SHOWN ONLY WHERE NECESSARY TO RESTRICT HOOK SIZE. OTHERWISE, STANDARD HOOKS ARE TO BE USED.
6. "H" DIMENSION ON STIRRUPS TO BE SHOWN ONLY WHEN NECESSARY TO MAINTAIN CLEARANCES.
7. WHERE SLOPE DIFFERS FROM 45 DEGREES, DIMENSIONS "H" AND "K" MUST BE SHOWN.
8. ▲ DENOTES BARS TO BE CUT IN FIELD.
9. ✳ DENOTES ONE EXTRA BAR ADDED FOR TESTING PURPOSES.
10. **.2 IN BAR MARK SUFFIX DENOTES LEVEL II REINFORCING STEEL.**
11. E IN BAR MARK PREFIX DENOTES EPOXY COATED REINFORCING STEEL.



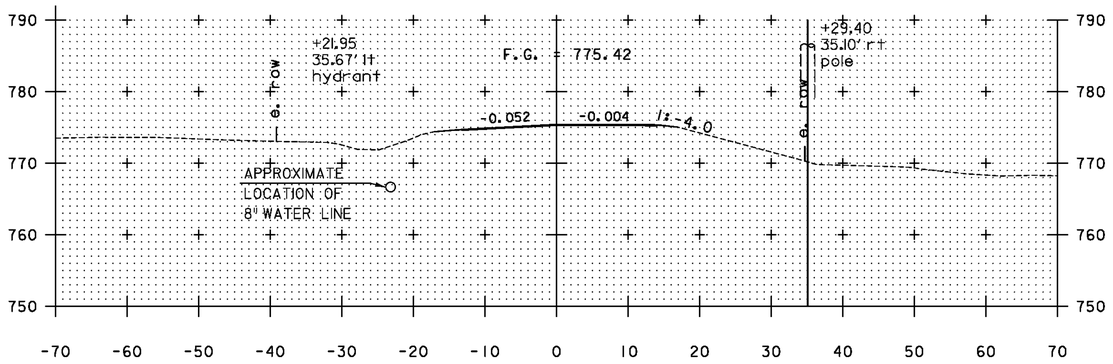
ASTM STANDARD REINFORCING BARS

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

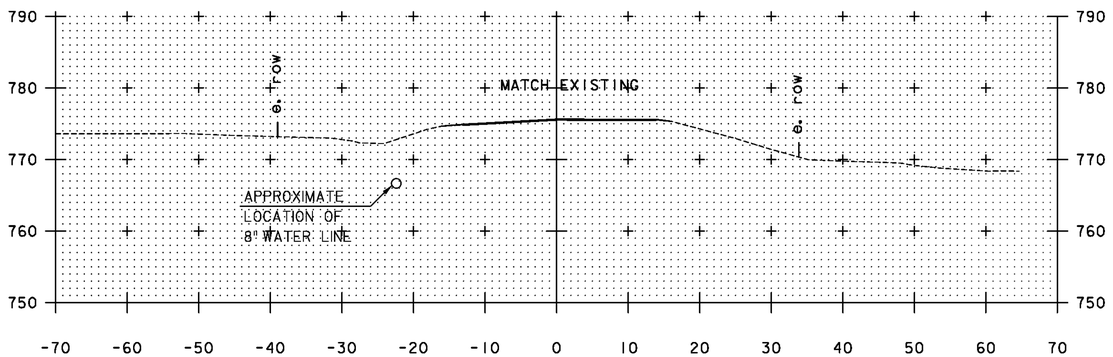
PROJECT NAME: **CAVENDISH**
PROJECT NUMBER: **ER BRF 0146(13)**

FILE NAME: **z11c318rss.xls**
PROJECT MANAGER: **J. OLUND**
DESIGNED BY: **T. POULIN**
REINFORCING STEEL SCHEDULE

PLOT DATE: **6/11/2013**
DRAWN BY: **T. POULIN**
CHECKED BY: **J. OLUND**
SHEET **38** OF **49**

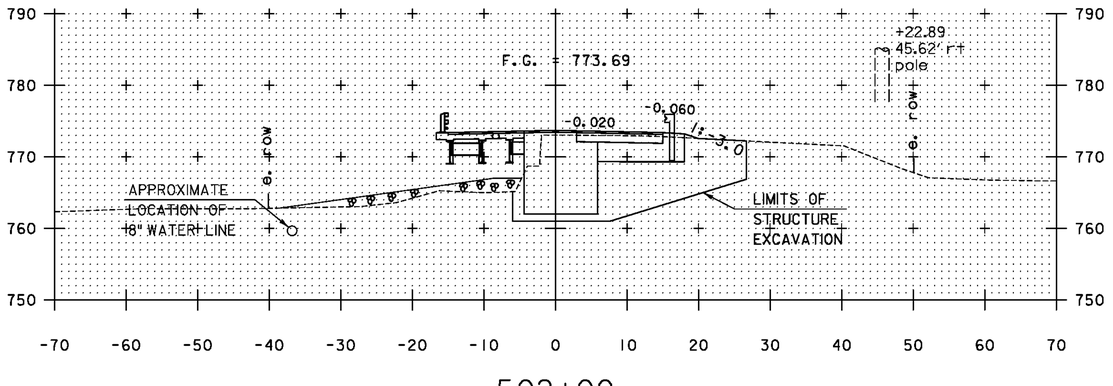


501+00



500+94

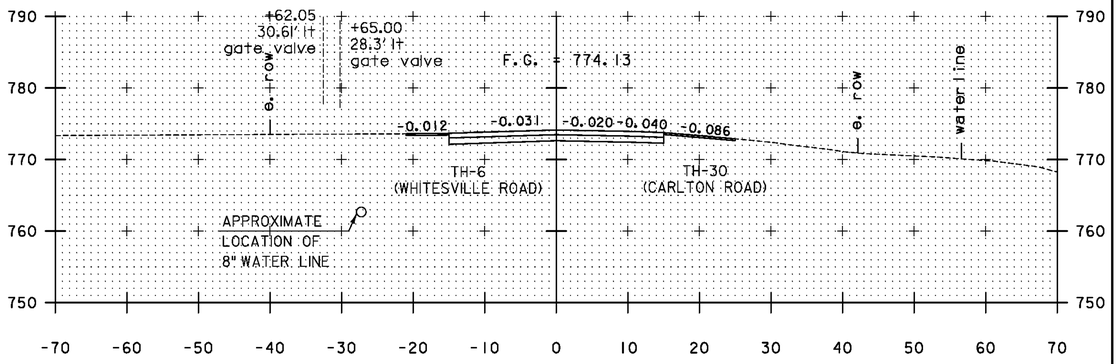
BEGIN APPROACH



502+00

STA 501+98.94

BEGIN BRIDGE



501+50

STA 501+44

END APPROACH

BEGIN PROJECT

SCALE 1" = 10'-0"

10 0 10

STA. 500+94 TO STA. 502+00

PROJECT NAME: CAVENDISH

PROJECT NUMBER: ER BRF 0146(13)

TYLIN INTERNATIONAL

FILE NAME: z11c318bdr_xs.dgn

PROJECT LEADER: J. OLUND

DESIGNED BY: J. HOWE

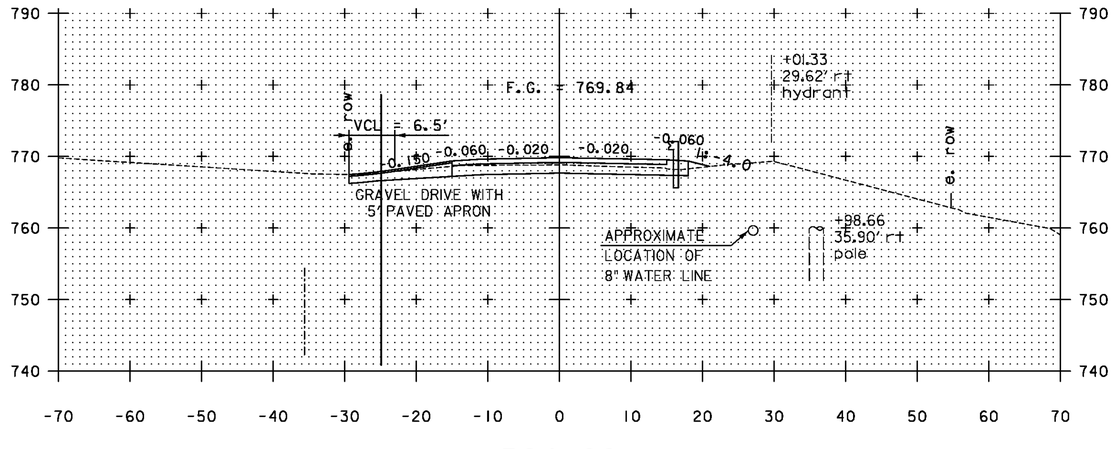
VT 131 CROSS SECTIONS 1

PLOT DATE: 7/19/2013

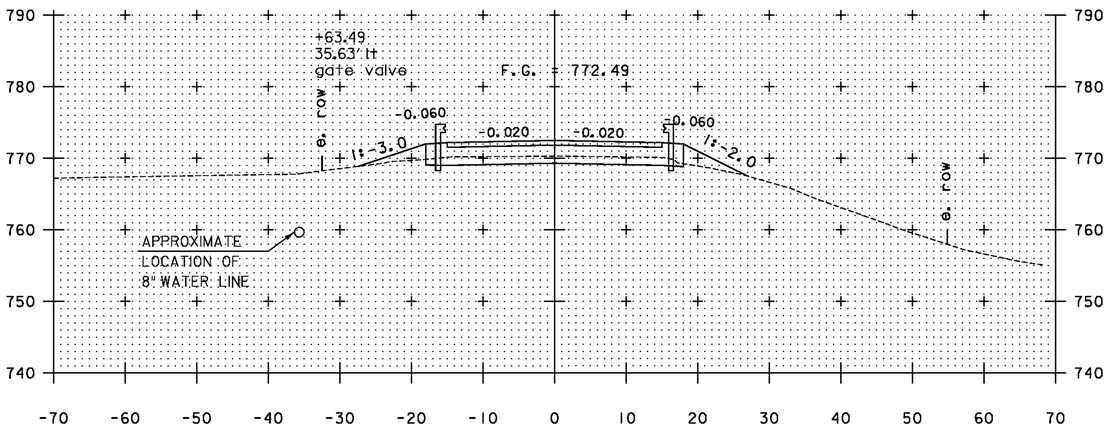
DRAWN BY: J. DAVIS

CHECKED BY: D. BRYANT

SHEET 39 OF 49

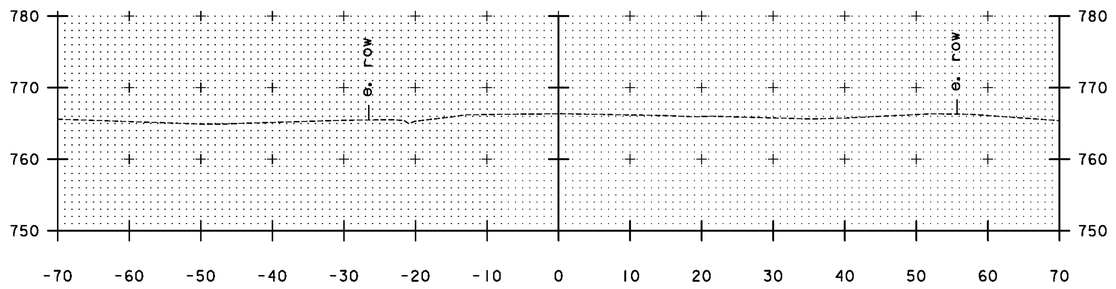


504+00



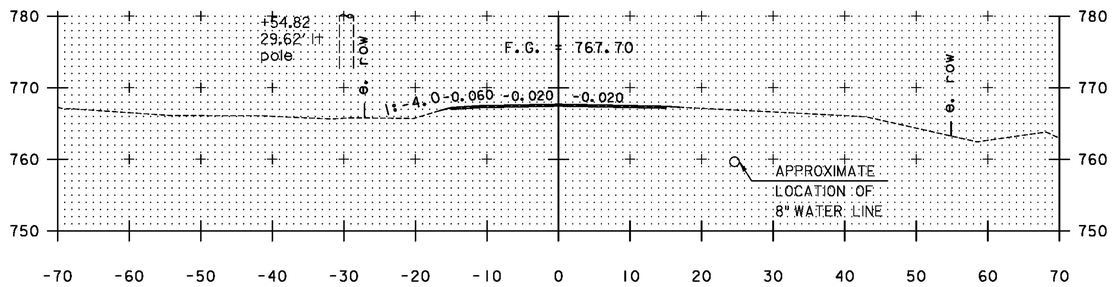
503+50

STA 503+23.06
END BRIDGE



505+00

STA 504+95
END APPROACH
MATCH EXISTING PAVEMENT



504+50

STA 504+45
END PROJECT
BEGIN APPROACH

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

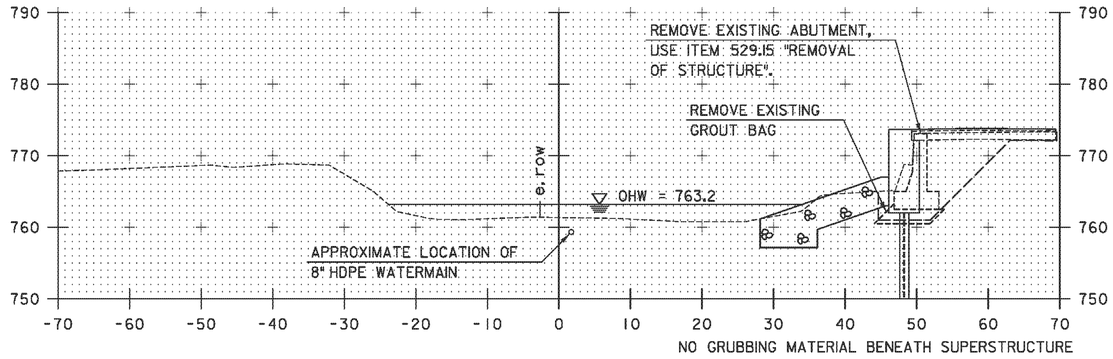
STA. 503+50 TO STA. 505+00

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

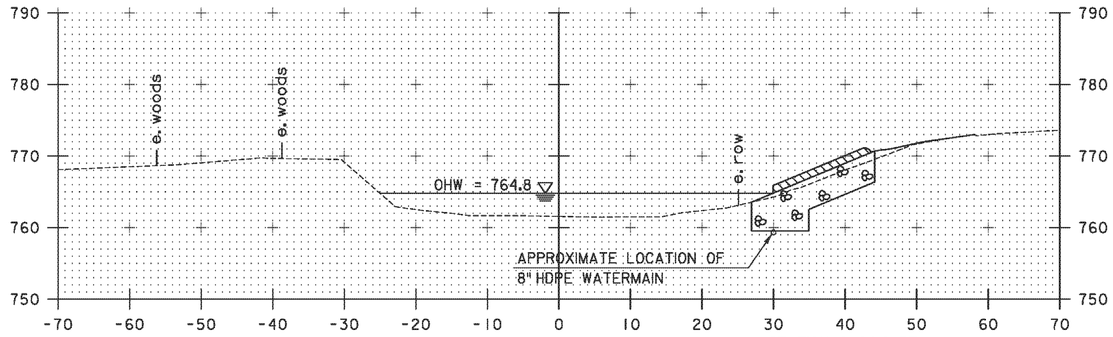
TYLIN INTERNATIONAL

FILE NAME: z11c318bdr_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

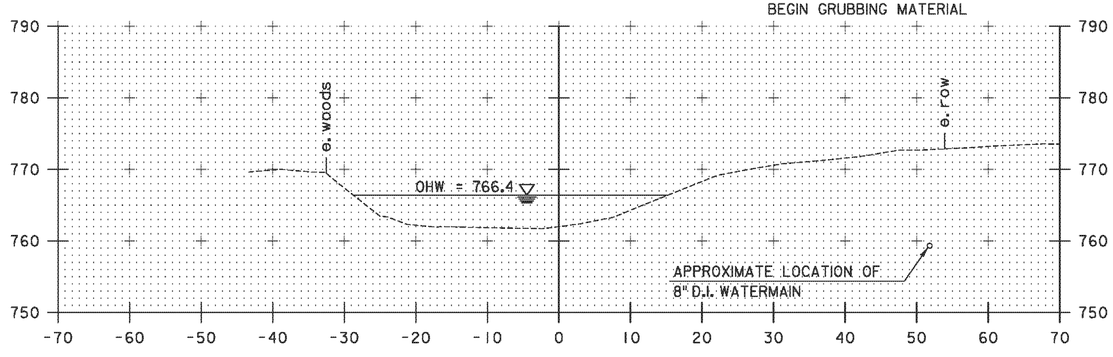


1+25

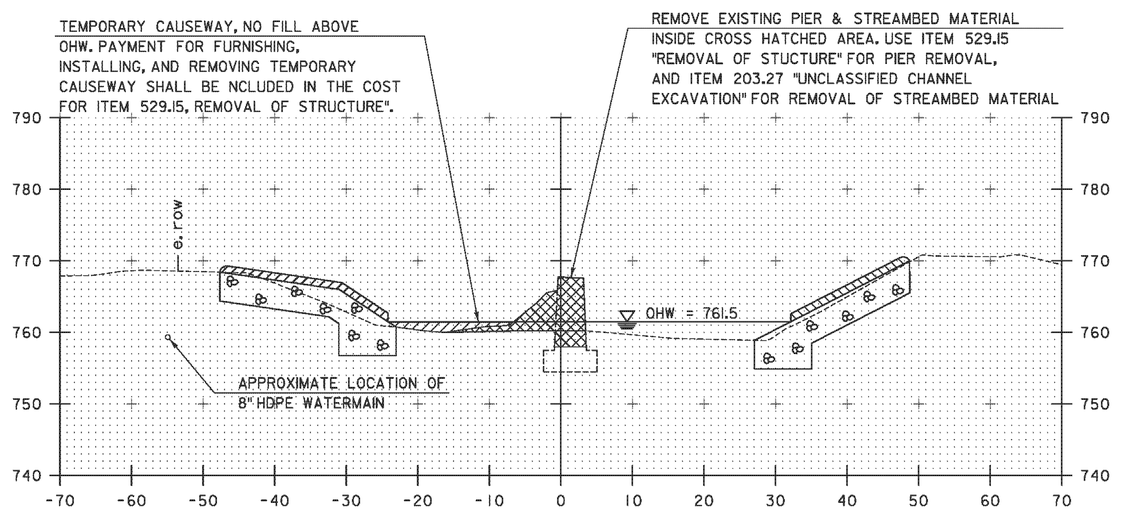


STATION 0+94.8 RT
BEGIN UNCLASSIFIED CHANNEL EXCAVATION
BEGIN GEOTEXTILE UNDER STONE FILL
BEGIN STONE FILL, TYPE IV
BEGIN GRUBBING MATERIAL

1+00

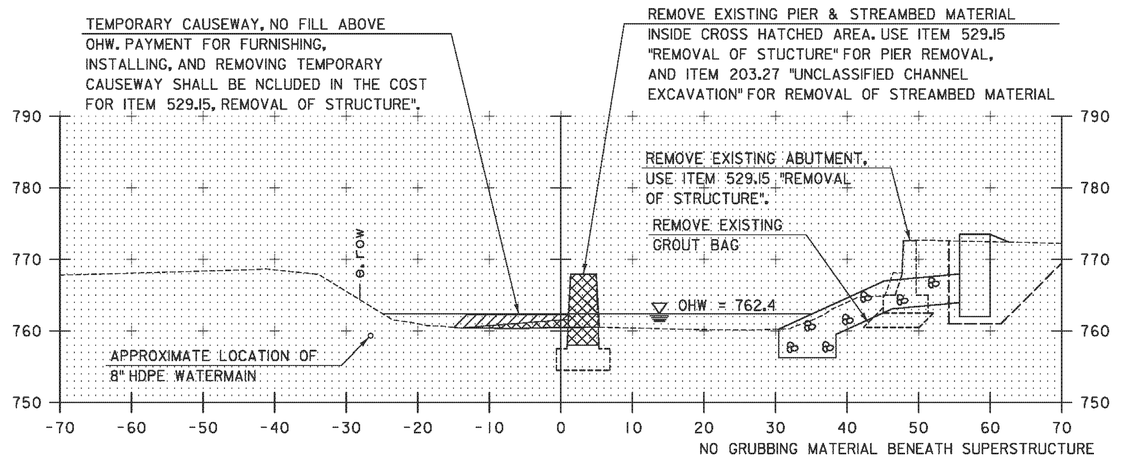


0+75



STATION 1+54.9 LT
BEGIN UNCLASSIFIED CHANNEL EXCAVATION
BEGIN GEOTEXTILE UNDER STONE FILL
BEGIN STONE FILL, TYPE IV
BEGIN GRUBBING MATERIAL

1+75



1+50

STA. 0+75 TO STA. 1+75

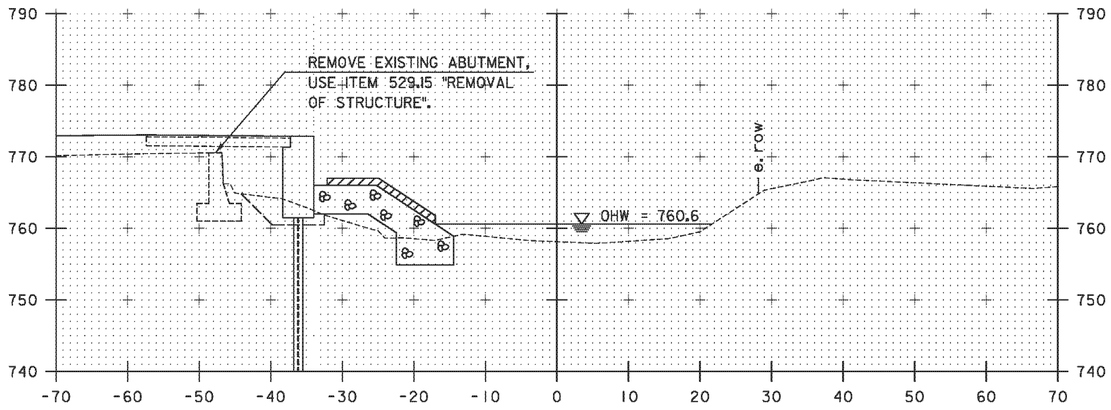
SCALE 1" = 10'-0"
10 0 10

TYLIN INTERNATIONAL

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

FILE NAME: z11c318bdr_chl.dgn
PROJECT LEADER: J. OLUND
DESIGNED BY: T. POULIN
CHANNEL CROSS SECTIONS 1

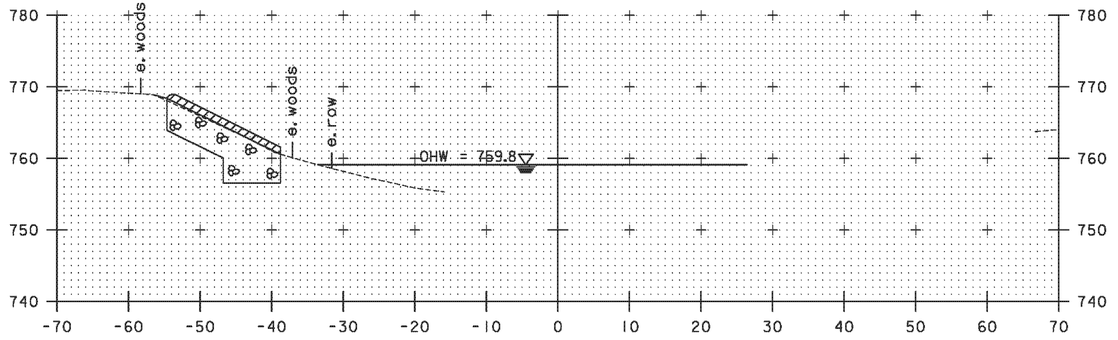
PLOT DATE: 7/19/2013
DRAWN BY: T. POULIN
CHECKED BY: J. OLUND
SHEET 41 OF 49



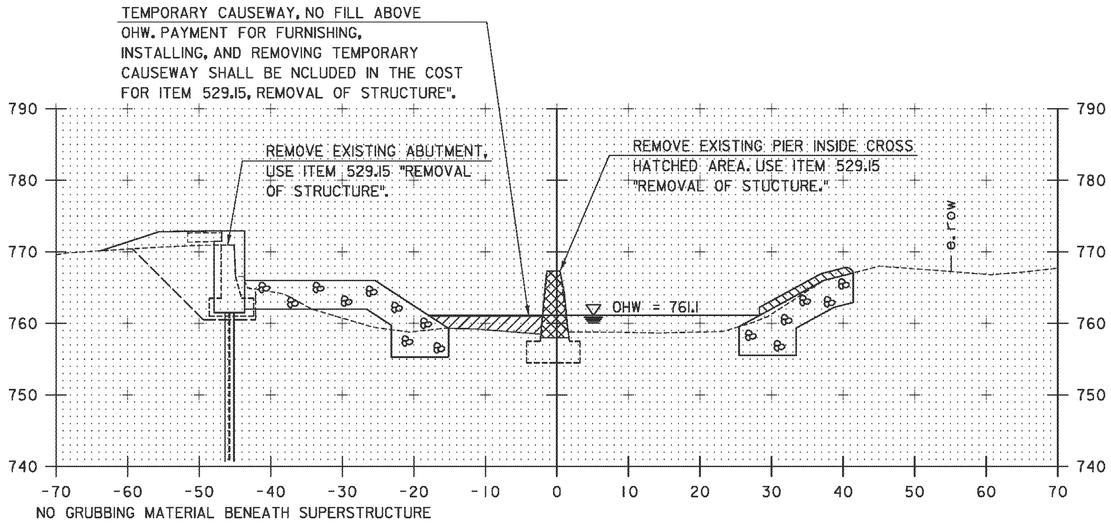
2+25

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

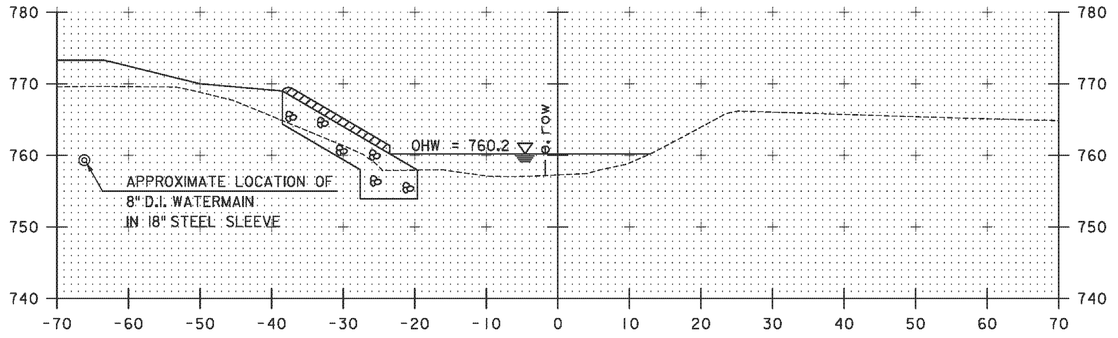


2+75



NO GRUBBING MATERIAL BENEATH SUPERSTRUCTURE

2+00



2+50

STA. 2+00 TO STA. 2+75

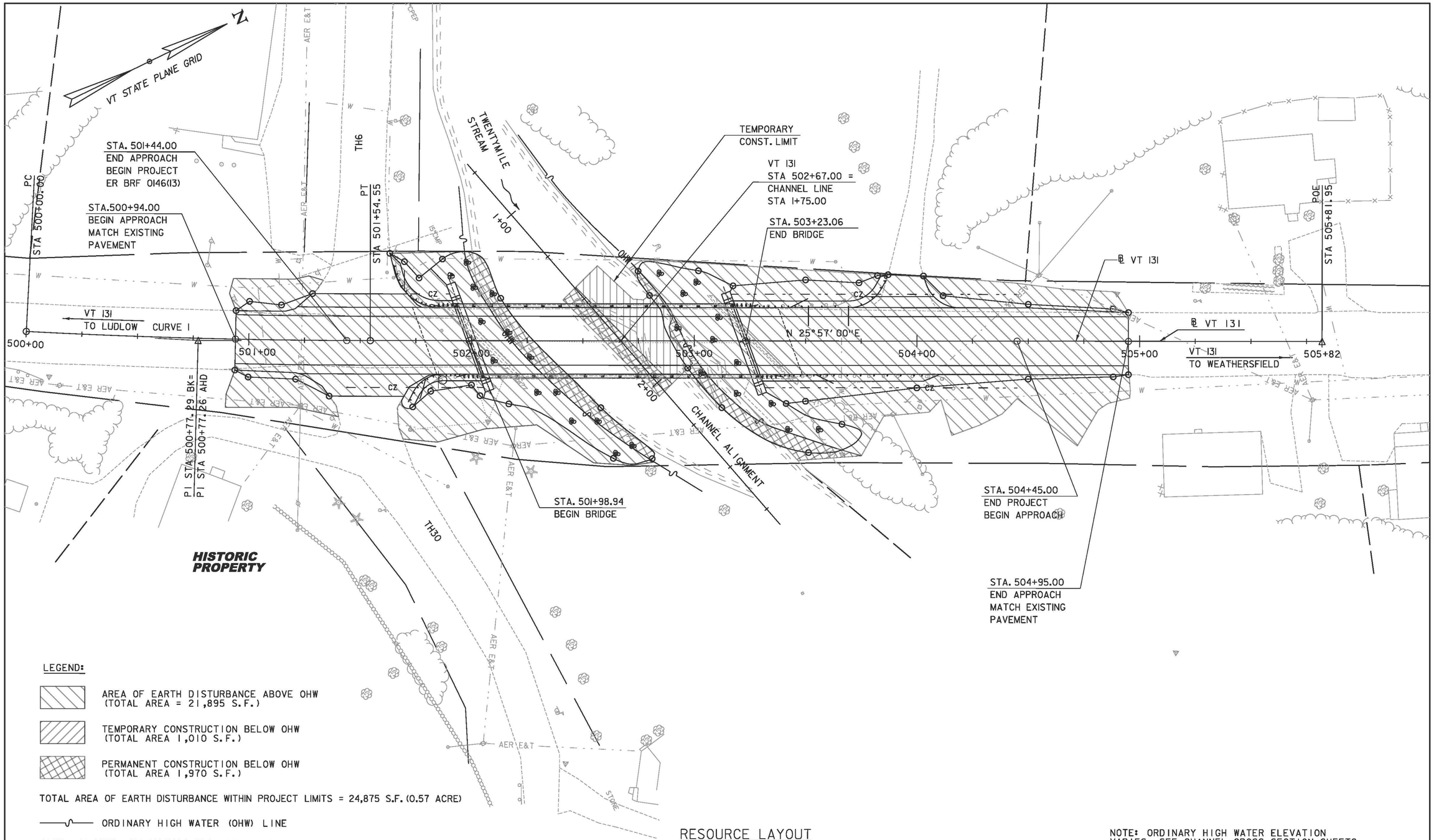
SCALE 1" = 10'-0"
10 0 10

TYLIN INTERNATIONAL

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

FILE NAME: z11c318bdr_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



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.

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

T.Y.LIN INTERNATIONAL

PROJECT NAME:	CAVENDISH
PROJECT NUMBER:	ER BRF 0146(13)
FILE NAME: z11c318bdr_RI.dgn	PLOT DATE: 7/19/2013
PROJECT LEADER: J. OLUND	DRAWN BY: D. BURHANS
DESIGNED BY: D. BURHANS	CHECKED BY: D. BRYANT
RESOURCE LAYOUT	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 PREDOMINATLY IN THE VICINITY OF THE RESIDENTAL 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 SHEEPSCOT.

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 ON 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 EROSIVE 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.

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

TYLIN INTERNATIONAL

FILE NAME: z11c318bdr_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

TREES

STA. 501+44.00
END APPROACH
BEGIN PROJECT

STA.500+94.00
BEGIN APPROACH
MATCH EXISTING
PAVEMENT

GRASS

VT 131
TO LUDLOW

TH 6

AER E&T

CHANNEL ALIGNMENT

1+00

2+00

GRAVEL/
GRASS

TREES

STA. 504-95.00
END APPROACH
MATCH EXISTING
PAVEMENT

GRASS

N 25°57' 00"E

℄ VT 131

500+00 501+00 502+00 503+00 504+00 505+00 505+82

VT 131 TO
WESTHERSFIELD

STA. 504+45.00
END PROJECT
BEGIN APPROACH

GRAVEL/
GRASS

BRUSH/
TREES

GRASS

TREES

HISTORIC
PROPERTY

TH 30

GRASS

TWENTYMILE
STREAM

SOIL CLASSIFICATION

CROGHAN AND SHEEPSCOT
FINE SANDY LOAMS
0 TO 8% SLOPES
"K FACTOR" 0.17
LOW ERODIBILITY

SOIL CLASSIFICATION

PODUNK
FINE SANDY LOAM
0 TO 3% SLOPES
OCCASIONALLY FLOODED
"K FACTOR" 0.24
LOW ERODIBILITY

EPSC EXISTING CONDITIONS

LEGEND:

SOIL CLASSIFICATION BOUNDRY

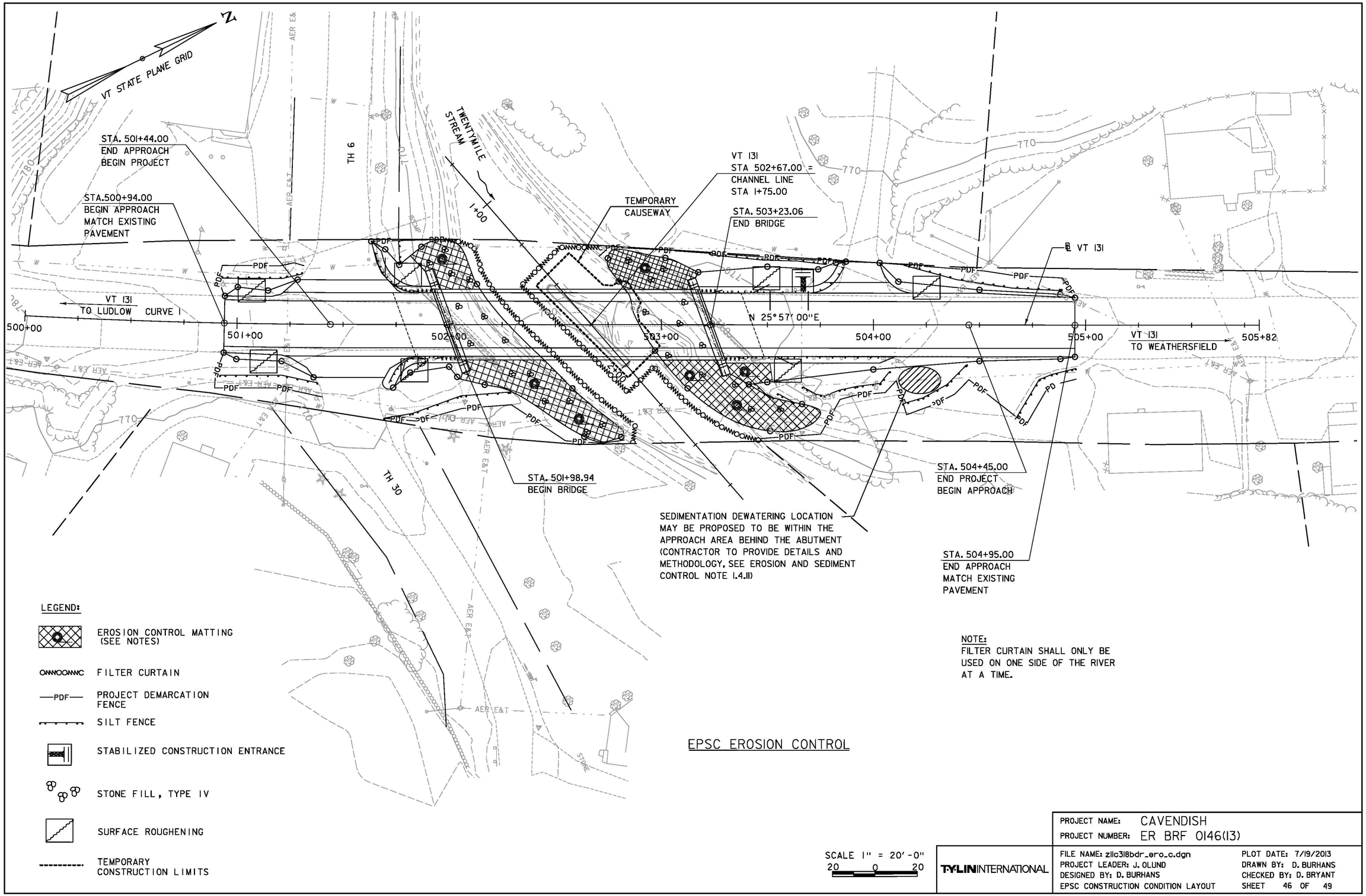
SCALE 1" = 20'-0"
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TYLIN INTERNATIONAL

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

FILE NAME: z11c318bdr_ero_e.dgn
PROJECT LEADER: J. OLUND
DESIGNED BY: D. BURHANS
EPSC EXISTING CONDITION LAYOUT

PLOT DATE: 7/19/2013
DRAWN BY: D. BURHANS
CHECKED BY: D. BRYANT
SHEET 45 OF 49



LEGEND:

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

NOTE:
FILTER CURTAIN SHALL ONLY BE USED ON ONE SIDE OF THE RIVER AT A TIME.

EPSC EROSION CONTROL

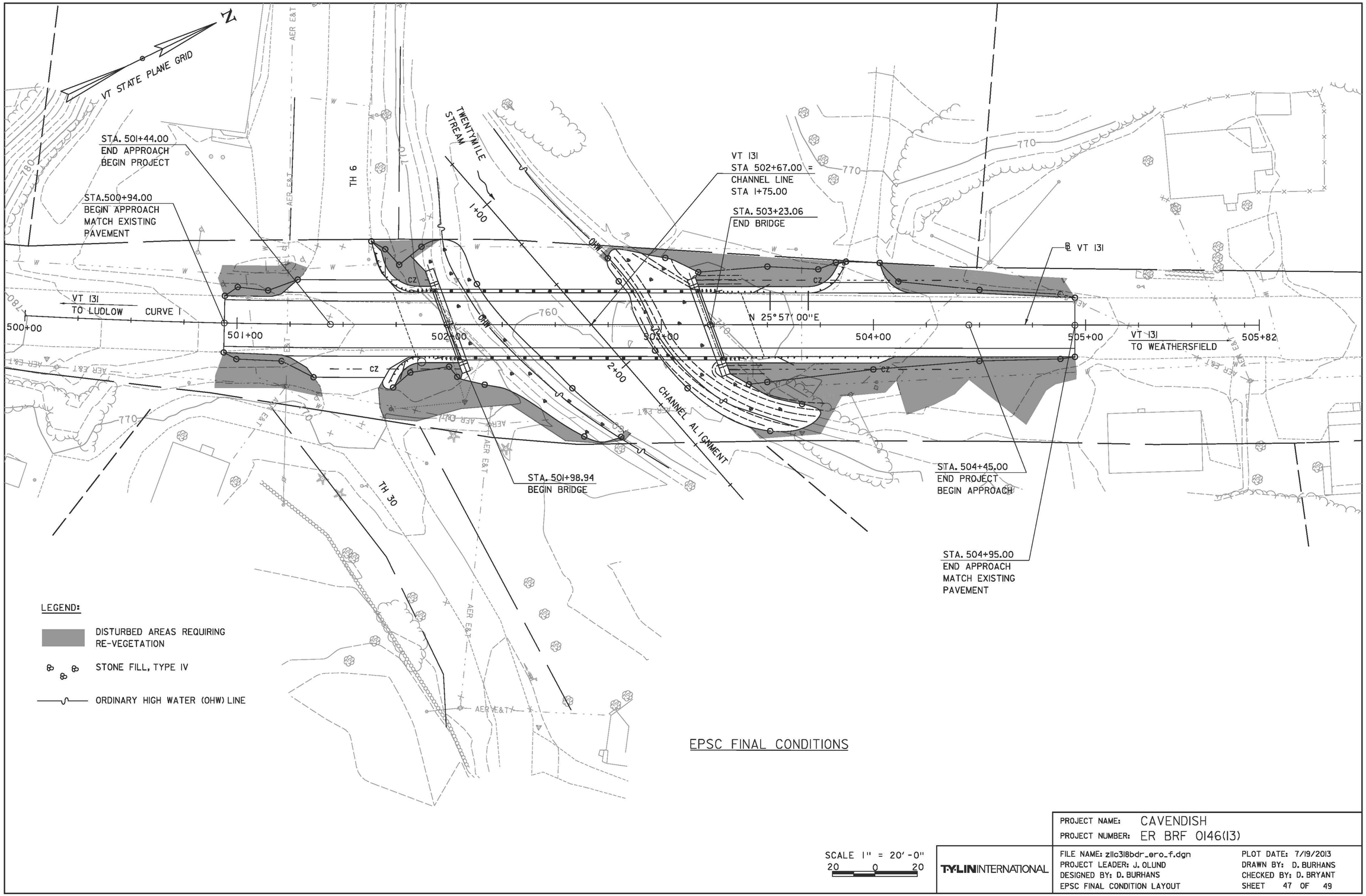
SCALE 1" = 20'-0"
20 0 20

TYLIN INTERNATIONAL

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

FILE NAME: z11c318bdr_ero_c.dgn
PROJECT LEADER: J. OLLIND
DESIGNED BY: D. BURHANS
EPSC CONSTRUCTION CONDITION LAYOUT

PLOT DATE: 7/19/2013
DRAWN BY: D. BURHANS
CHECKED BY: D. BRYANT
SHEET 46 OF 49



EPSC FINAL CONDITIONS

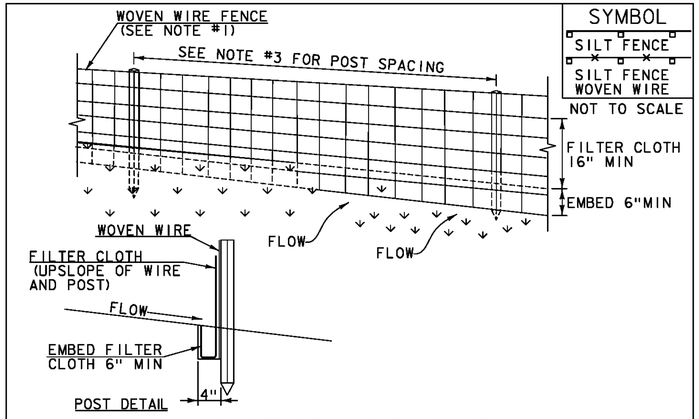
SCALE 1" = 20'-0"
20 0 20

T.Y.LIN INTERNATIONAL

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

FILE NAME: z11c318bdr_ero_f.dgn
PROJECT LEADER: J. OLUND
DESIGNED BY: D. BURHANS
EPSC FINAL CONDITION LAYOUT

PLOT DATE: 7/19/2013
DRAWN BY: D. BURHANS
CHECKED BY: D. BRYANT
SHEET 47 OF 49



CONSTRUCTION SPECIFICATIONS

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 6" MAX. MESH OPENING.
2. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI100X, 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.

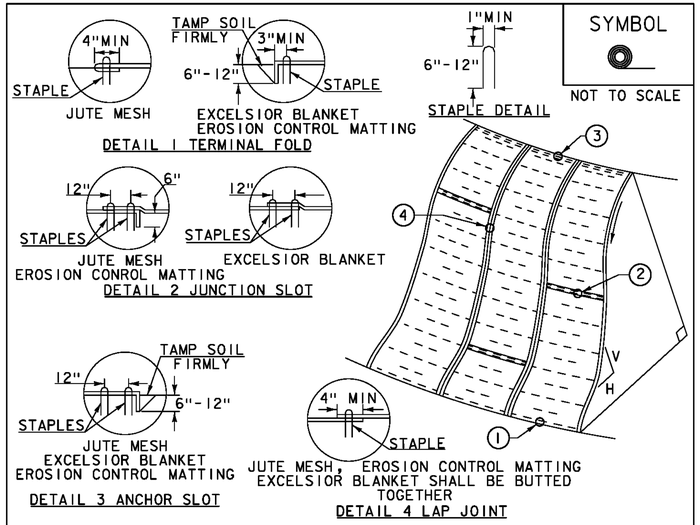
ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

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



CONSTRUCTION SPECIFICATIONS

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'X225' ROLL OF MATERIAL AND 125 STAPLES ARE REQUIRED PER 4'X150' 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

LBS/AC					
% WEIGHT	BROADCAST	HYDROSEED	NAME	GERM %	PURITY %
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

LBS/AC					
% WEIGHT	BROADCAST	HYDROSEED	NAME	GERM %	PURITY %
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)
- FILTER CURTAIN
- PDF — PROJECT DEMARCATION FENCE
- SILT FENCE
- STABILIZED CONSTRUCTION ENTRANCE
- STONE FILL, TYPE IV
- SURFACE ROUGHENING
- TEMPORARY CONSTRUCTION LIMITS

TYLIN INTERNATIONAL

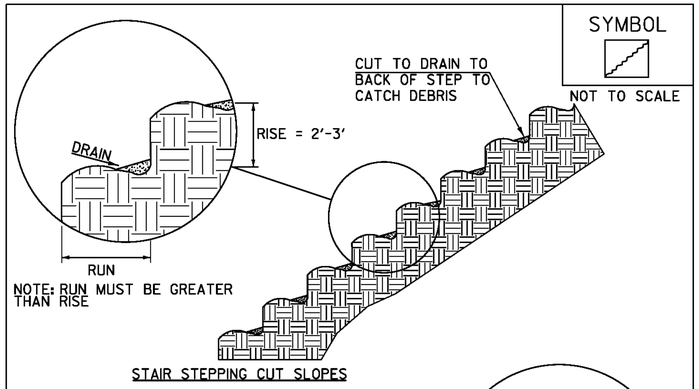
PROJECT NAME: CAVENDISH
PROJECT NUMBER: ER BRF 0146(13)

FILE NAME: z11c318bdr_epsc_detsl.dgn
PROJECT LEADER: J. OLUND
DESIGNED BY: D. BURHANS
EPSC DETAILS 1

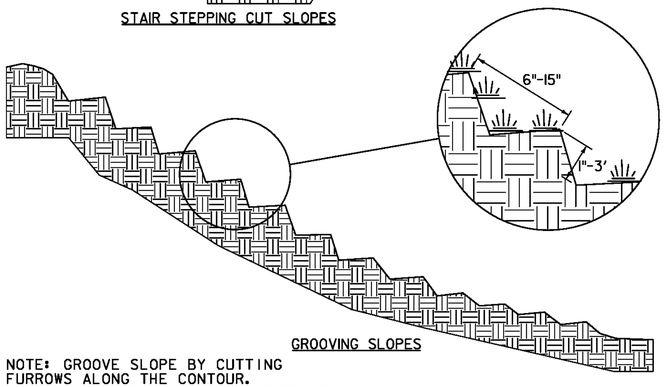
PLOT DATE: 7/19/2013
DRAWN BY: S. MORGAN
CHECKED BY: D. BRYANT
SHEET 48 OF 49

SYMBOL

NOT TO SCALE



STAIR STEPPING CUT SLOPES



GROOVING SLOPES

NOTE: GROOVE SLOPE BY CUTTING FURROWS ALONG THE CONTOUR. IRREGULARITIES IN THE SOIL SURFACE CATCH RAINWATER AND RETAIN LIME, FERTILIZER AND SEED.

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

SURFACE ROUGHENING

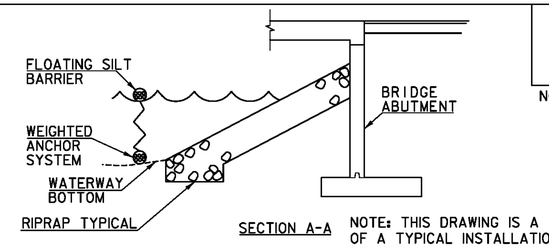
NOTES:
REFER TO "THE VERMONT STANDARDS & SPECIFICATIONS FOR EROSION PREVENTION & SEDIMENT CONTROL -2006- " FROM THE VT AGENCY OF NATURAL RESOURCES FOR ADDITIONAL GUIDANCE.

THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT

REVISIONS	
APRIL 1, 2008	WHF
JANUARY 13, 2009	WHF

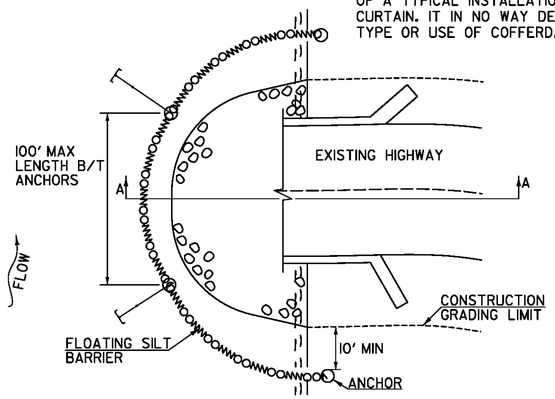
SYMBOL

NOT TO SCALE



SECTION A-A

NOTE: THIS DRAWING IS A DEPICTION OF A TYPICAL INSTALLATION OF FILTER CURTAIN. IT IN NO WAY DEFINES THE TYPE OR USE OF COFFERDAM IF USED.



CONSTRUCTION SPECIFICATIONS

1. FILTER CURTAIN SHALL NOT BE PLACED ACROSS A FLOWING WATERWAY, OR IN A WATERWAY WITH STREAM VELOCITIES GREATER THAN 1.5 FEET/SECOND.
2. MAXIMUM 100' LENGTH BETWEEN ANCHORS.
3. LAST SECTION SHALL TERMINATE A MINIMUM OF 10' BEYOND LIMIT OF DISTURBANCE.
4. THE WEIGHTED ANCHOR SYSTEM SHALL BE A TYPE WHICH ALLOWS THE CURTAIN TO CONFORM TO THE BOTTOM OF THE WATERWAY.
5. THE CURTAIN SHALL BE REMOVED BY SLOWLY PULLING TOWARD THE SHORE MINIMIZING THE ESCAPE OF SEDIMENTS INTO WATERWAY.

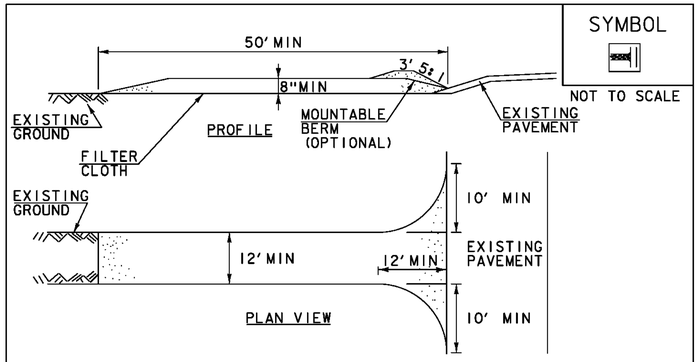
FILTER CURTAIN

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 649 FOR GEOTEXTILE FOR FILTER CURTAIN (PAY ITEM 649.61).

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

SYMBOL

NOT TO SCALE



CONSTRUCTION SPECIFICATIONS

1. STONE SIZE- USE 1-4" STONE, RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH- NOT LESS THAN 50' (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30' MINIMUM LENGTH APPLIES).
3. THICKNESS- NOT LESS THAN 8".
4. WIDTH- 12' MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. 24' IF SINGLE ENTRANCE TO SITE.
5. GEOTEXTILE MUST BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING STONE.
6. SURFACE WATER- ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED BENEATH THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE- THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY, ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED ACCORDING TO PERMIT REQUIREMENTS.

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

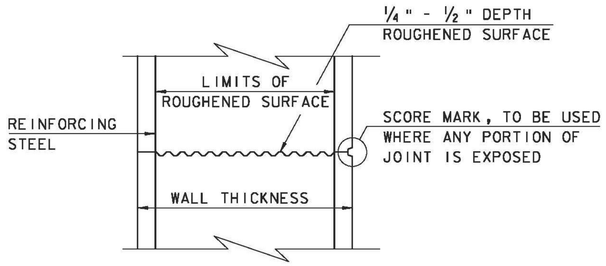
PROJECT NAME:	CAVENDISH
PROJECT NUMBER:	ER BRF 0146(13)

TYLIN INTERNATIONAL

FILE NAME: z11c318bdr_epsc_dets2.dgn	PLOT DATE: 7/19/2013
PROJECT LEADER: J. OLUND	DRAWN BY: S. MORGAN
DESIGNED BY: D. BURHANS	CHECKED BY: D. BRYANT
EPSC DETAILS 2	SHEET 49 OF 49

CONCRETE GENERAL NOTES

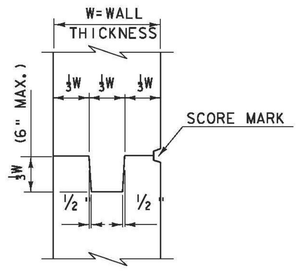
1. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1" x 1"



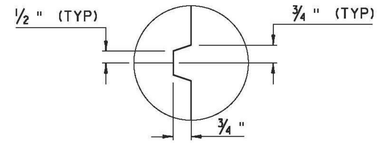
TYPICAL HORIZONTAL CONSTRUCTION JOINT
(NOT TO SCALE)

1. THE SURFACE OF THE CONCRETE CONSTRUCTION JOINTS SHALL BE CLEANED AND FREE OF LAITANCE.

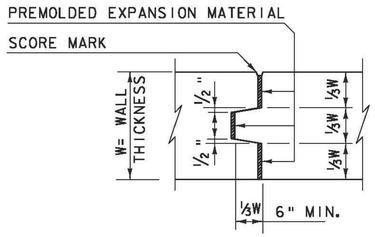
2. IMMEDIATELY BEFORE NEW CONCRETE IS PLACED, ALL CONSTRUCTION JOINTS SHALL BE WETTED AND STANDING WATER REMOVED.



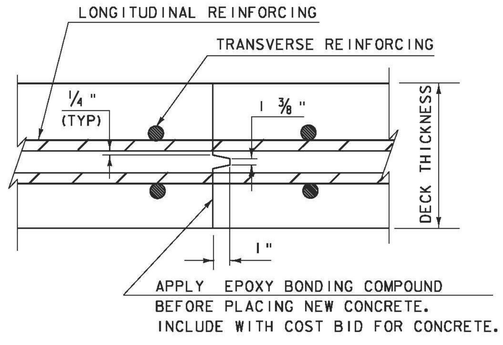
TYPICAL CONCRETE CONSTRUCTION JOINT
(NOT TO SCALE)



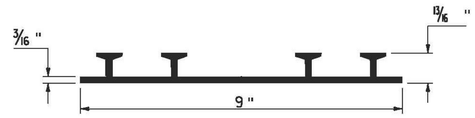
SCORE MARK DETAIL
(NOT TO SCALE)



TYPICAL CONCRETE EXPANSION JOINT
(NOT TO SCALE)



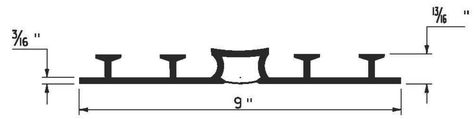
TRANSVERSE BRIDGE SLAB
CONSTRUCTION JOINT DETAILS
(NOT TO SCALE)



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.

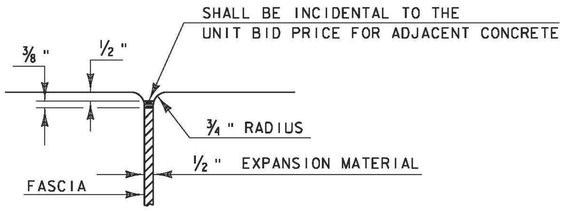
OTHER CONFIGURATIONS OF WATERSTOP MAY BE USED UPON APPROVAL OF THE ENGINEER.



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.



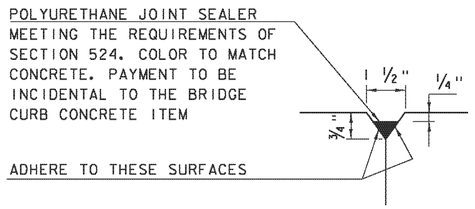
JOINT BETWEEN FASCIA
AND WINGWALL
(NOT TO SCALE)

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

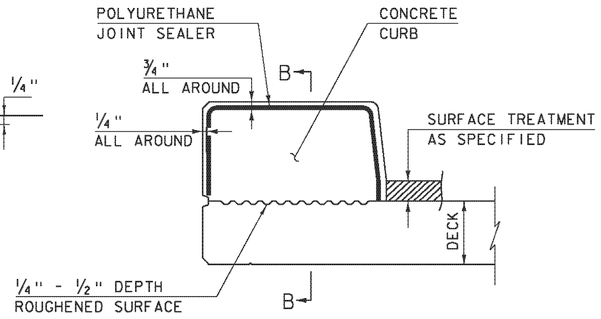
CONCRETE DETAILS AND NOTES

VERMONT AGENCY OF TRANSPORTATION
STRUCTURES - SECTION

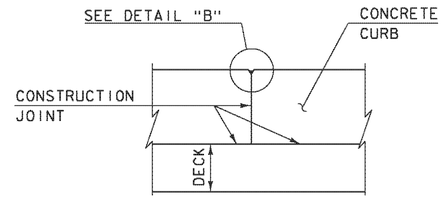
STRUCTURES
DETAIL
SD-501.00



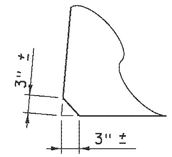
DETAIL "B"
(NOT TO SCALE)



CONCRETE CURB JOINT SECTION
(NOT TO SCALE)

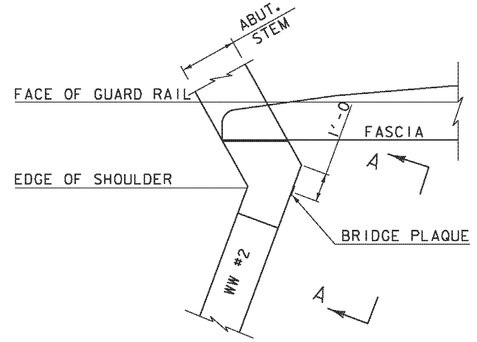


SECTION B - B
(NOT TO SCALE)



ACUTE ANGLE CLIP DETAIL
(NOT TO SCALE)

1. SEE TYPICAL HORIZONTAL CONSTRUCTION JOINT DETAIL FOR ADDITIONAL INFORMATION



PLAN

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.

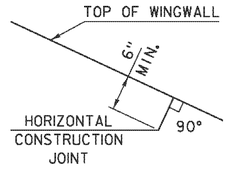
2. IF THE CONTRACTOR CHOOSES NOT TO USE AN APPROVED SHRINKAGE REDUCING ADMIXTURE, THE CURBS SHALL BE CONSTRUCTED WITH CONSTRUCTION JOINTS SPACED AT A MAXIMUM OF 15'-0" CENTER TO CENTER AND 2'-0" MINIMUM FROM THE CENTER OF NEAREST BRIDGE RAILING POST.

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.

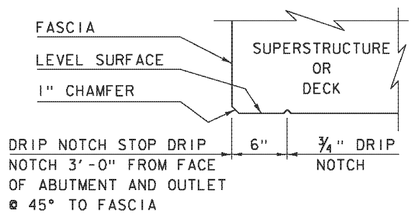
4. WHEN CURB JOINTS ARE USED THE CURBS SHALL BE PLACED IN ALTERNATE SECTIONS WITH A MINIMUM OF 48 HOUR DELAY BETWEEN ADJACENT PLACEMENTS.

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.

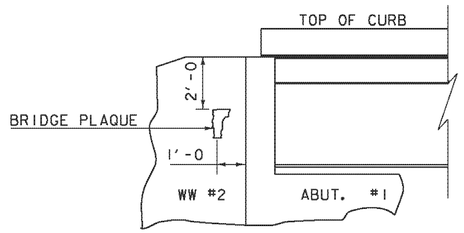
6. THE JOINT SPACING AND DETAILS SHOWN SHALL APPLY TO SIDEWALKS WHEN SHOWN IN THE PLANS.



HORIZONTAL WINGWALL CONSTRUCTION JOINT
(NOT TO SCALE)



DRIP NOTCH DETAIL
(NOT TO SCALE)



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

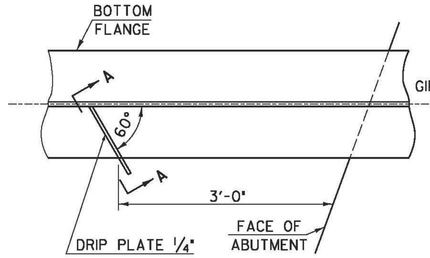
CONCRETE DETAILS AND NOTES

VERMONT AGENCY OF TRANSPORTATION
STRUCTURES - SECTION

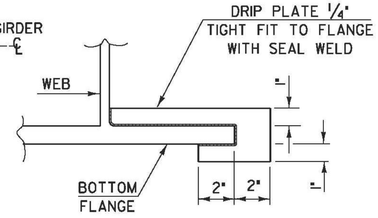
STRUCTURES DETAIL
SD-502.00

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 506.19, 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 506.19.
3. ALL WELDING SHALL CONFORM TO THE PROVISIONS OF SUBSECTION 506.10.
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.

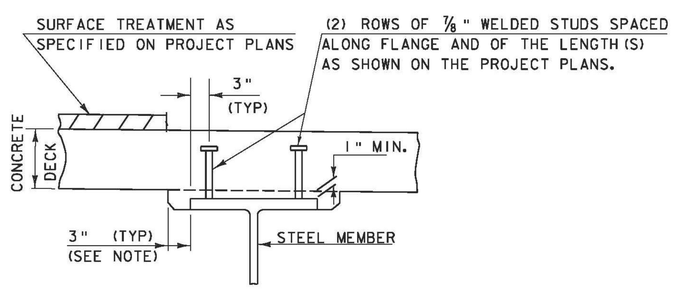


PLAN DRIP PLATE



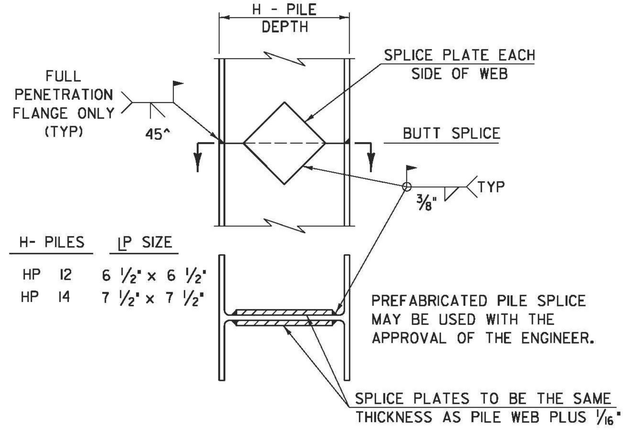
SECTION A - A

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



DETAIL OF PILE SPLICE

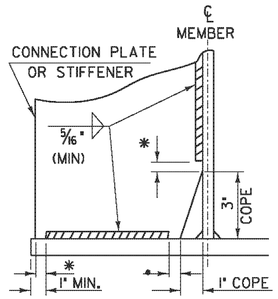
DETAILS ON THIS SHEET ARE "NOT TO SCALE" UNLESS NOTED OTHERWISE.

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

STRUCTURAL STEEL DETAILS & NOTES

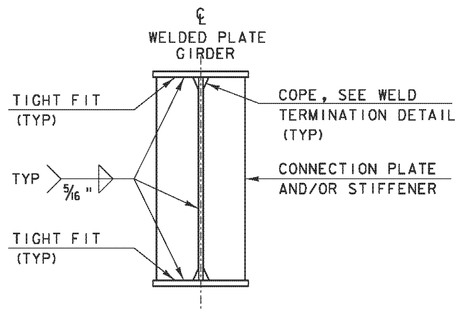
VERMONT AGENCY OF TRANSPORTATION
STRUCTURES - SECTION

STRUCTURES DETAIL
SD-601.00



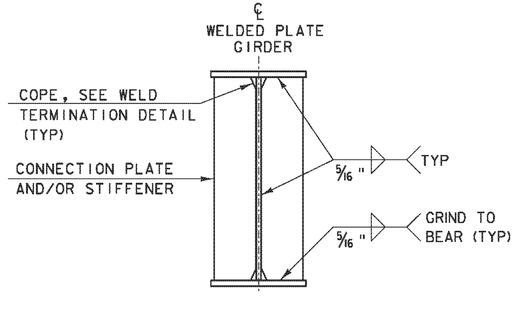
WELD TERMINATION AND COPING DETAILS FOR STEEL MEMBERS

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

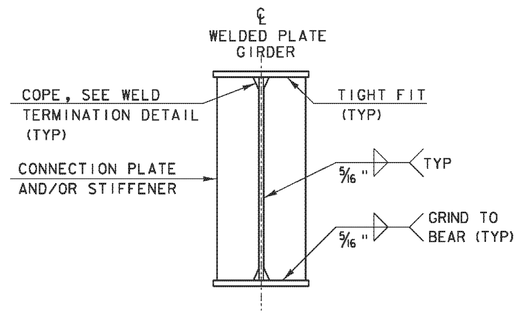


INTERMEDIATE CONNECTION PLATES AND/OR STIFFENERS FOR WELDED PLATE GIRDERS

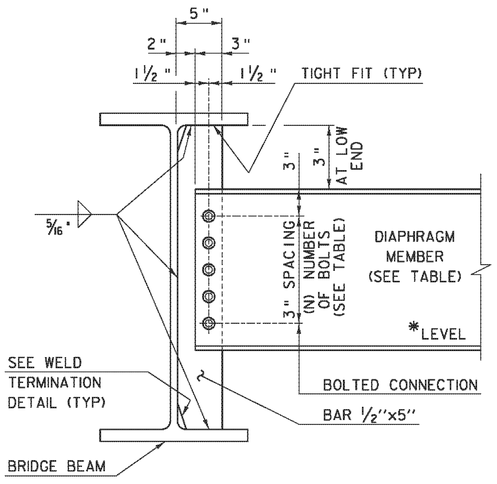
INTERMEDIATE DETAIL IS ONLY USED WHEN PLATE DOES NOT OCCUR AT AN ABUTMENT OR PIER.



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



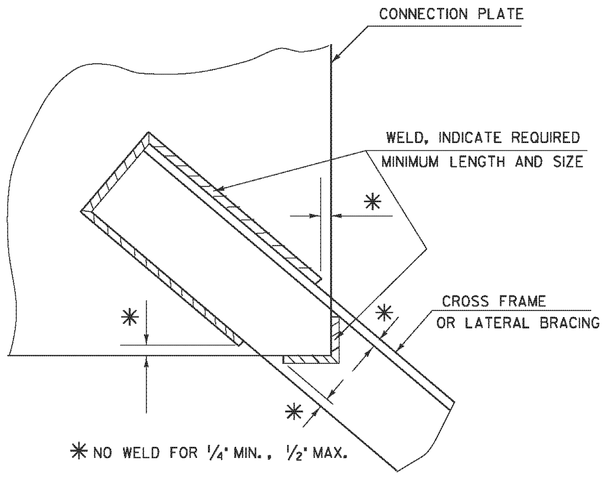
PIER BEARING STIFFENERS AND/OR CONNECTION PLATES FOR WELDED PLATE GIRDERS



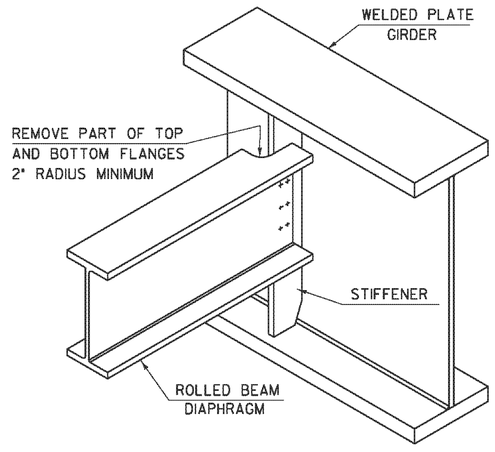
DEPTH		DIAPHRAGM MEMBER	(N) BOLTS
ROLLED BEAM	24" 30"	C15x33.9	4
	31" 36"	MC18x42.7	5
	37" 42"	W21x44	6
PLATE GIRDER WEB	31" 36"	W27x84	7
	37" 42"	W33x118	9
	43" 48"	W36x135	10

INTERMEDIATE DIAPHRAGMS FOR 24" TO 48" BRIDGE BEAMS

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



WELD LOCATION DETAIL AT CROSS FRAMES AND LATERAL BRACING



SEE CONTRACT DRAWINGS FOR SIZES OF MEMBERS AND CONNECTION DETAILS

ROLLED BEAM USED AS DIAPHRAGM

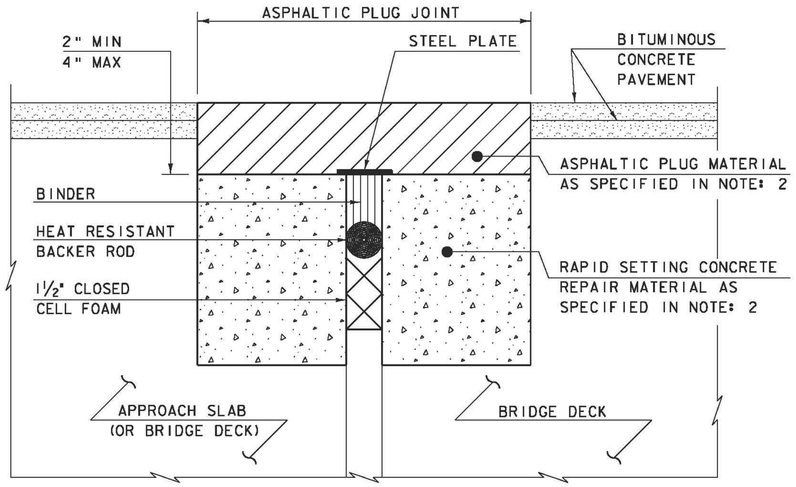
DETAILS ON THIS SHEET ARE "NOT TO SCALE" UNLESS NOTED OTHERWISE.

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

VERMONT AGENCY OF TRANSPORTATION
STRUCTURES - SECTION

STRUCTURES DETAIL
SD-602.00



ASPHALTIC PLUG-TYPE JOINT DETAIL - REHAB

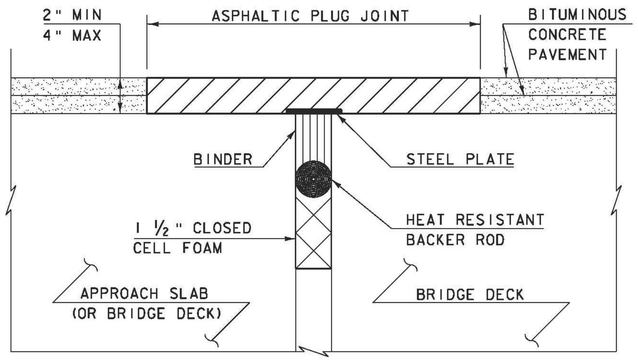
(NOT TO SCALE)

NOTES:

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 COURSE 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-TYPE JOINT DETAIL - NEW

(NOT TO SCALE)

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:

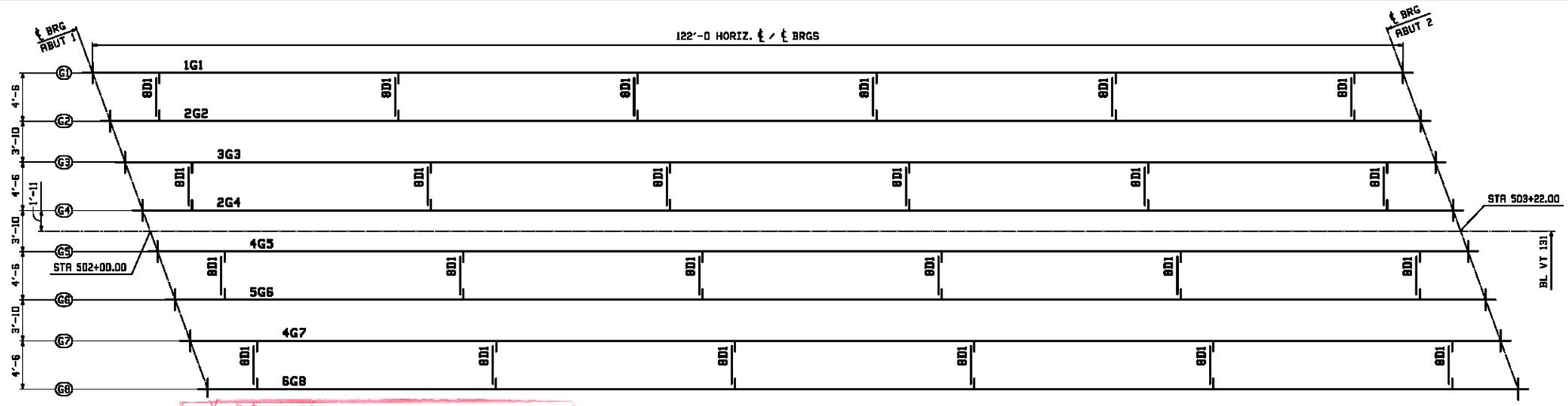
1. THE AMBIENT AIR TEMPERATURE IS AT LEAST 10 DEG C (50 DEG F) AND RISING.
2. THE ROAD SURFACE IS DRY.
3. WEATHER CONDITIONS OR OTHER CONDITIONS ARE FAVORABLE AND ARE EXPECTED TO REMAIN SO FOR THE PERFORMANCE OF SATISFACTORY WORK.

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

BRIDGE JOINT
ASPHALTIC PLUG

VERMONT AGENCY OF TRANSPORTATION
STRUCTURES - DIVISION

STRUCTURES DETAIL
SD-516.10

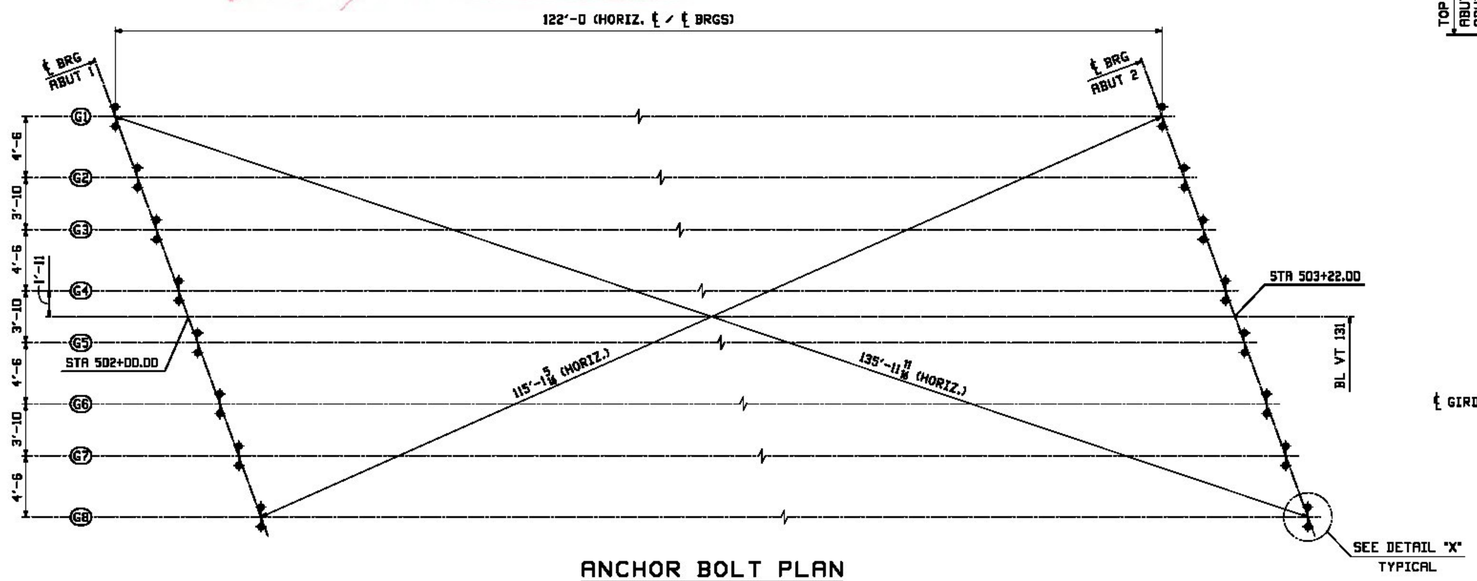


FRAMING PLAN

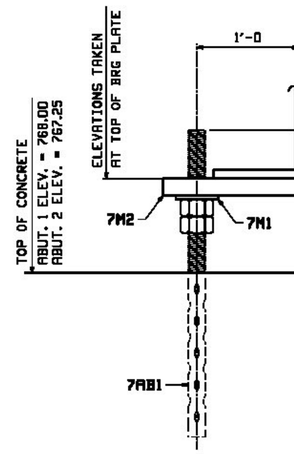
No Exception Taken
Make Correction as Noted
Submit Specified Item
Revise and Resubmit as Noted
Rejected
Checking is for general compliance with the design concept of the project and general compliance with the information given in the contract documents only. Any action shown is not an approval and is subject to the requirements of the plans and specifications. Any action shown on a specific item shall not indicate the checking of an assembly of which the item is a component. Contractor is solely responsible for: dimensions which shall be confirmed and correlated at the job site, fabrication processes, techniques of construction, safety precautions; and coordination of its work with that of all other trades and the satisfactory performance of its work.
Reviewed By: _____ Date: 12-03-2013
T-Y-LIN INTERNATIONAL

Vermont Agency of Transportation
RECEIVED
ON: November 25, 2013
and Checked for
CONFORMANCE
BY: Rob Young DATE: 12/10/2013

NOTE: REVIEW OF THIS DRAWING IS FOR BEARING ASSEMBLY CONFORMANCE ONLY

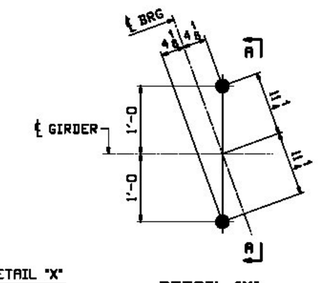


ANCHOR BOLT PLAN



SECTION A-A

GIRDER LINE	ELEVATIONS ABUT. 1	ELEVATIONS ABUT. 2
G1	768.79	768.04
G2	768.87	768.12
G3	768.94	768.19
G4	769.02	768.27
G5	769.01	768.26
G6	768.91	768.16
G7	768.83	768.08
G8	768.73	767.98



DETAIL "X"
TYPICAL

REV.	DATE	REMARKS	DWN	CHK	APVL	SHOP
0						

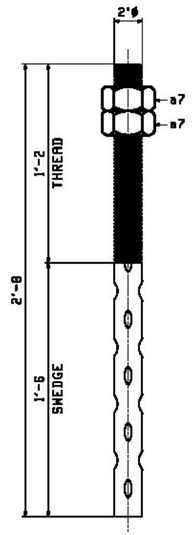
MATERIAL:	SURFACE PREP. & PAINT:	HOLES:	SHOP BOLTS:
		AS NOTED	AS NOTED

DESCRIPTION: FRAMING PLAN & ANCHOR BOLT PLAN

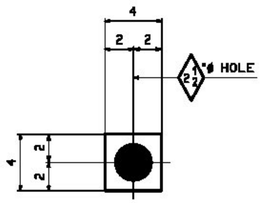
CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. PHONE (207) 780-6722
SOUTH PORTLAND, ME 04106 FAX. (207) 780-6726

TEMSOR 36234

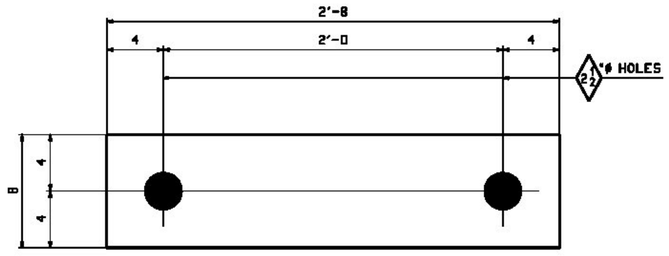
STRUCTURE:	VT RTE 131 OVER TWENTYMILE STREAM WINDSOR COUNTY VERMONT AGENCY OF TRANSPORTATION	DRAWN: EEO	DATE: 11/20
		CHKD: DO	DATE: 11/20
LOCATION:	CAVENDISH, VERMONT	JOB NO.	DWG NO.
PROJ NO.	ER BRF 0146(13)	541	E1
CUSTOMER:	COLD RIVER BRIDGES, LLC		REV. 0



32 ~ ANCHOR BOLTS ~ 7AB1



32 ~ PLATE WASHER ~ 7M1



16 ~ BEARING PLATE ~ 7M2

No Exception Taken
Make Correction as Noted
Submit Specified Item
Revise and Resubmit as Noted
Rejected

T-Y-LININTERNATIONAL

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BY: Rob Young DATE: 12/10/2013

RUN INFO		SHIP	BILL OF MATERIAL					JOB NO.	DRAWING NO.	REV.
								541	7	
PAGE	LINE	MARK	QTY	MARK	MATERIAL	LENGTH FT	LENGTH INCHES	REMARKS	WT	PROCUREMENT NOTES
		7AB1	32		ANCHOR BOLTS			GALV.	34	
3	B		32		2 ø ROD	2	8	F1554-55	29	
3	D		64		2 ø HHN			M563	3	
3	C	7M1	32		PL 1/2x4	0	4	GALV. M709-36M	2	
3	F	7M2	16		PL 2x8	2	8	A709-50W	145	

NO NEED TO GALVANIZE, BUT ACCEPTABLE

NOTES:

1. SEE SHEET GN1 FOR GENERAL NOTES.
2. GALVANIZE AFTER FABRICATION.

REV.	DATE	REMARKS	DWN	CHK	APVL	SHOP
0						

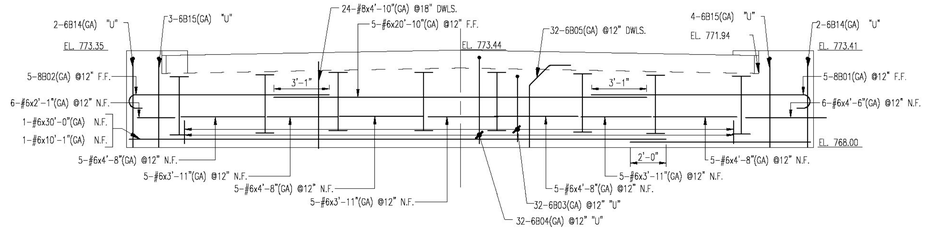
MATERIAL:	SURFACE PREP. & PAINT:	HOLES:	SHOP BOLTS:
AS NOTED	AS NOTED	AS NOTED	AS NOTED

DESCRIPTION: ANCHOR BOLT & BEARING PLATE DETAILS

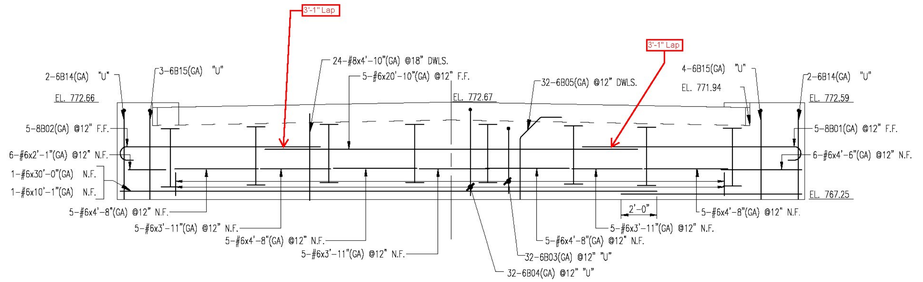
CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. PHONE (207) 780-6722
SOUTH PORTLAND, ME 04106 FAX. (207) 780-6726

TEKLA XG24

STRUCTURE: VT RTE 131 OVER TWENTYMILE STREAM WINDSOR COUNTY VERMONT AGENCY OF TRANSPORTATION		DRAWN: EEO	DATE: 11/19
		CHKD: DO	DATE: 11/20
LOCATION: CAVENDISH, VERMONT		JOB NO.	DWG NO.
PROJ NO. ER BRF 0146(13)		541	7
CUSTOMER: COLD RIVER BRIDGES, LLC			REV. △



ABUTMENT 1 CLOSURE POUR

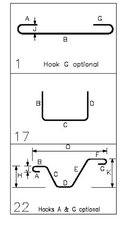


ABUTMENT 2 CLOSURE POUR

FOR THE 8B01 & 8B02 THE ONLY DIMENSIONS THAT CAN CHANGE IS THE "B" DIMENSION. THE "A" & "J" ARE THE STANDARDS FOR THE BAR SIZE THE 8" "J" DIMENSION IS TO SMALL TO BEND. PLEASE VERIFY IT IS OK TO LEAVE AS IS.

Drawing Sheet : R02A — BAR LIST

Bar Mark	Qty	Size	Total Length	Type	'A'	'B'	'C'	'D'	'E'	'F'	'G'	'H'	'J'	'K'	'O'	'R'
8B01	10	#8	13'-8"	1	1'-3"	12'-3"					0"		10"			
8B02	10	#8	12'-5 X"	1	1'-3"	11'-2 X"					0"		10"			
6B03	54	#6	11'-1 X"	17		3'-8"	3'-9 X"	3'-8"								
6B04	54	#6	12'-5"	17		4'-10"	2'-8"	4'-10"								
6B05	54	#6	5'-3"	22	0"	0"	1'-2 X"	1'-7 X"	3'-5 X"	0"	0"	10 X"		3'-5 X"	4'-10"	
6B15	14	#6	13'-9 X"	17		5'-0"	3'-9 X"	5'-0"								
6B14	5	#6	12'-7"	17		5'-0"	3'-7"	5'-0"								



No.	Description	Date	By
3	CORRECTION/APPROVAL	3-14-14	TRH
2	CORRECTIONS/APPROVAL	2-17-14	TRH
1	CORRECTIONS/ APPROVAL	1-16-14	TRH
0	APPROVAL	12-18-13	TRH

Revisions and Issue Record

The full intent and purpose of this drawing is the placing of reinforcing steel bars ONLY. It is NOT to be used as a means of communication between the Architect, Engineer, Contractor or any other Sub-trades.

THIS DRAWING IS NOT TO BE SCALED.

HarrisRebar Barker Steel — National Strength. Local Service.

DETAILED AT:
CANAAN
NEW HAMPSHIRE

Project: BRIDGE REPLACEMENT #1
CAVENDISH, VT

Drawing: CLOSURE POURS

Customer: COLD RIVER BRIDGES

Engineer:

Refer to Release:

Date	Drawn	Chkd.	JOB No.	Dwg. No.
12-16-13	TRH		10050769	R02A

LAP CHART-U.N.O.

#11		
#10		
#9		
#8		
#7		
#6		
#5		
#4		
#3		
SIZE	TOP BARS ★	OTHER BARS

★ -Top bars are horiz. bars with more than 12" of concrete cast below the bars.

T.Y. LIN INTERNATIONAL

THE STAMPED DOCUMENTS ARE HEREBY:

____ APPROVED
__X__ APPROVED AS NOTED
____ REVISE AND RESUBMIT

SEE TRANSMITTAL FOR ADDITIONAL INFORMATION AS APPLICABLE.

THIS REVIEW IS FOR GENERAL CONFORMANCE WITH DESIGN CONCEPT ONLY. ANY DEVIATION FROM THE PLANS OR SPECIFICATIONS NOT CLEARLY NOTED BY THE CONTRACTOR HAS NOT BEEN REVIEWED. REVIEW BY THE ENGINEER SHALL NOT RELIEVE THE CONTRACTOR OF THE CONTRACTUAL RESPONSIBILITY FOR ANY ERRORS OR DEVIATION FROM THE CONTRACT REQUIREMENTS.

JOSH OLUND — REVIEWER — 03/18/2014 — DATE

Vermont Agency of Transportation

RECEIVED
ON: March 17, 2014
and Checked for
CONFORMANCE
BY: Rob Young DATE: 03/24/2014

W:\Util\Projects\10050769\Placing Drawings\DWGs\R02.dwg

CAVENDISH ER BRF 0146 (13)
CONTRACTOR FABRICATED PBU UNITS

SHEET1:PBU PLAN
SHEET2:PBU PLAN UNITS 1&2
SHEET3:PBU PLAN UNITS 3&4
SHEET4:PBU TYPICAL DETAILS
SHEET5:CLOSURE POUR DETAILS
SHEET6:PBU INSERT-LAYOUT
SHEET7:PBU RE-BAR
~~SHEET7A:PBU RE-BAR~~
SHEET8:QC PROCEDURES/PLAN
SHEET9:QC PROCEDURES/PLANS
SHEET10:PBU CASTING PLAN
SHEET11: CONCRETE MIX DESIGNS
SHEET12: BRIDGE ANCHORAGE
(ADDED 2-19-14)

(REVISION #1 2/17/2014)
(REVISION #2 3/17/2014)

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03/21/2014 — DATE

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It should be understood that the Erection plan needs to be submitted and accepted before the structural steel gets to the site.

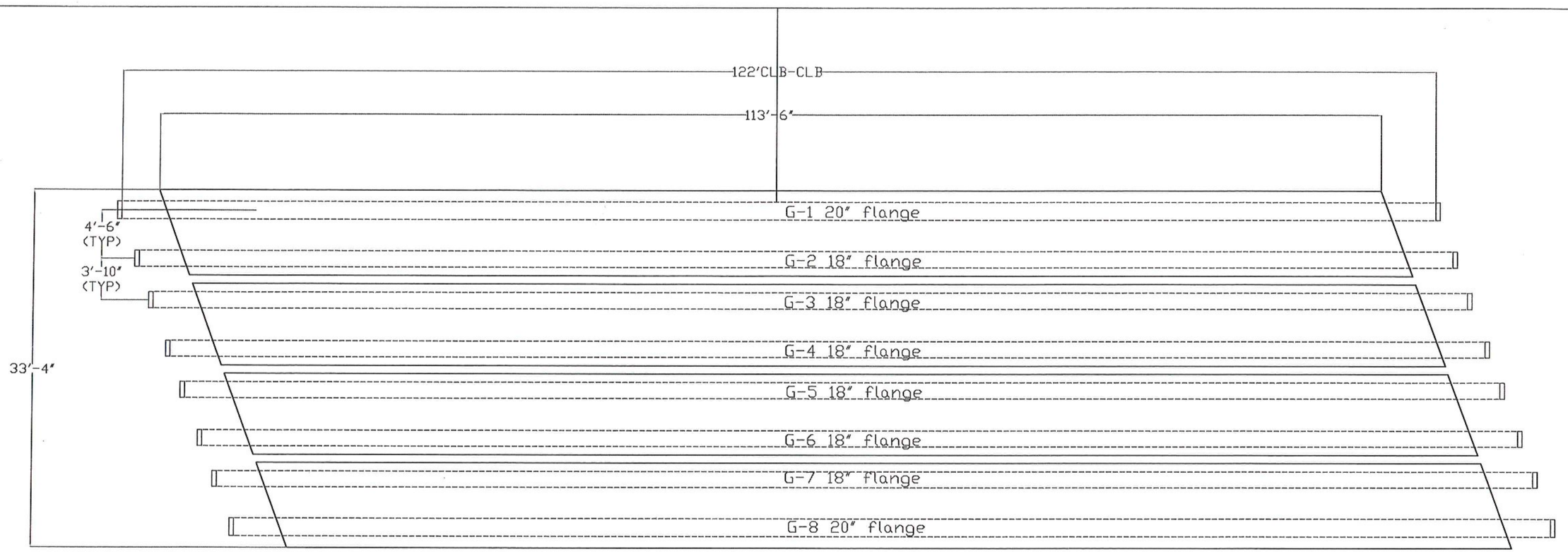
COLD RIVER BRIDGES, LLC
10 LANBRO LANE
TEL 603-756-9300 WALPOLE, NH FAX 603-756-9303

CAVENDISH ER BRF 0146(13)

COVER SHEET/INDEX

SHEET NUMBER
COVER

DATE: 2-17-14 scale:



NOTES:
FINISHES
TOP-SCREED
SIDES-FORM WIRE BRUSH&POWER WASH
BOTTOM-FORM
ENDS-FORM WIRE BRUSH&POWER WASH

CONCRETE- VERMONT CLASS HPC A fc'-5000 psi @ 28 days

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(REVISION #1 2/17/2014) (REVISION #2 3/17/2014)

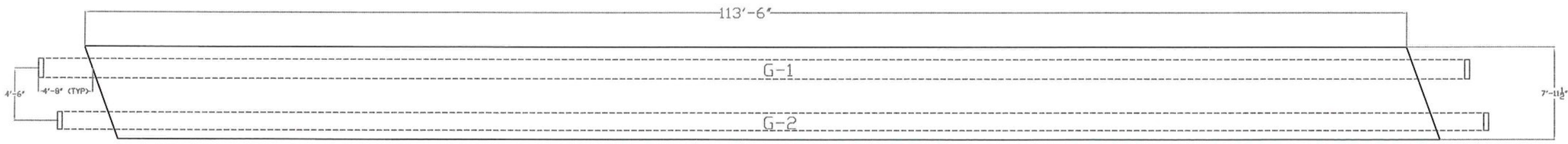
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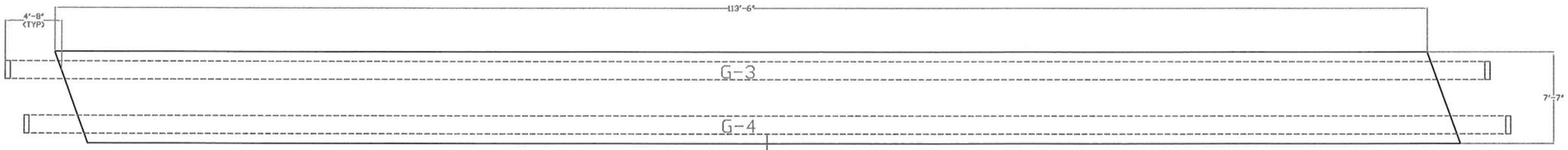
PBU PLAN

SHEET NUMBER 1

DATE: 2-17-14 scale:



PBU #1 EXTERIOR UNIT



PBU #2 INTERIOR UNIT

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BY: Rob Young **DATE:** 03/24/2014

(REVISION #1 2/17/2014) (REVISION #2 3/17/2014)

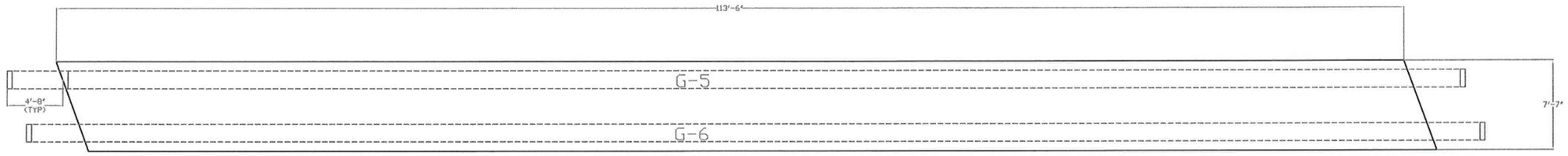
COLD RIVER BRIDGES, LLC
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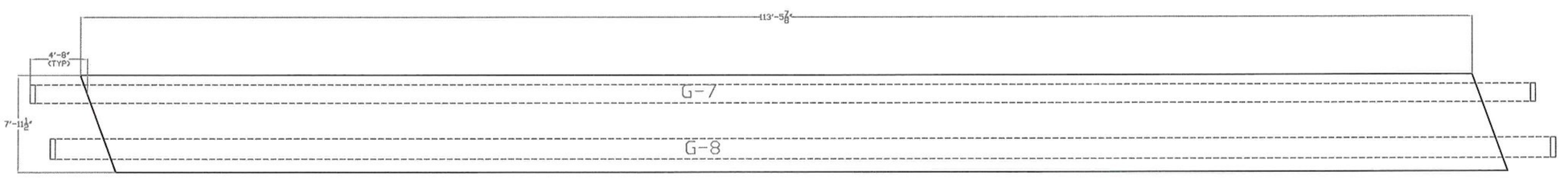
PBU #1, AND #2

SHEET NUMBER 2

DATE: 2-17-14 scale:



PBU #3 INTERIOR UNIT



PBU #4 EXTERIOR UNIT

T.Y. LIN INTERNATIONAL

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(REVISION #1 2/17/2014) (REVISION #2 3/17/2014)

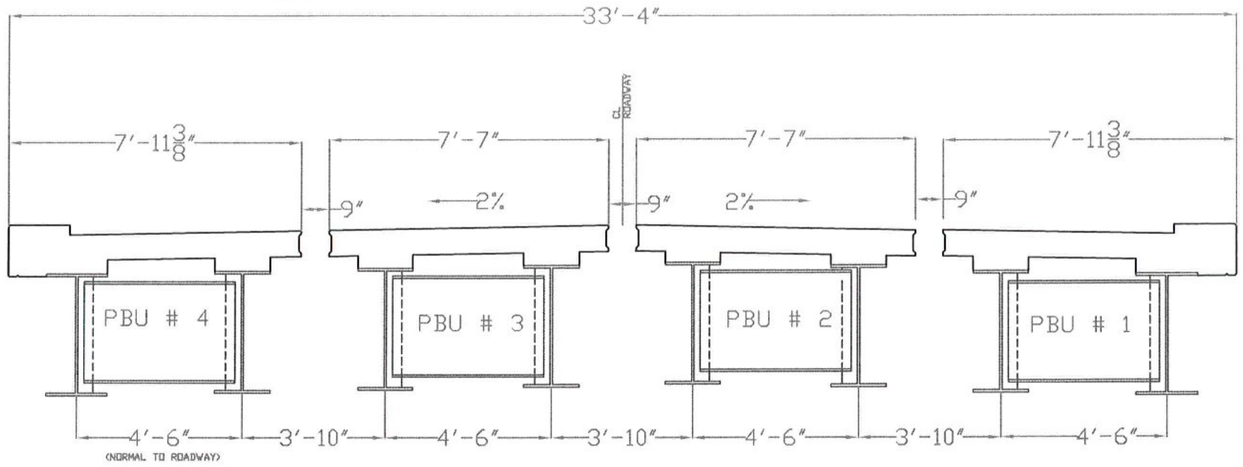
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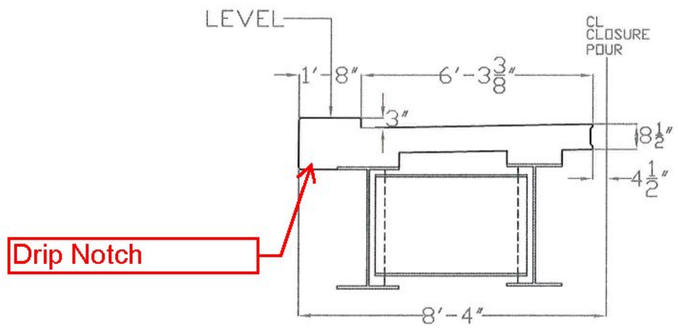
CAVENDISH ER BRF 0146(13)

PBU #3 AND #4

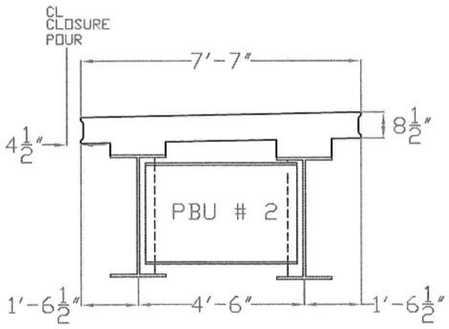
SHEET NUMBER 3

DATE: 2-17-14 SCALE:





TYPICAL EXTERIOR PBU



TYPICAL INTERIOR PBU

T.Y. LIN INTERNATIONAL

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__x__ APPROVED
____ APPROVED AS NOTED
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03/21/2014 — DATE

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BY: Rob Young DATE: 03/24/2014

** SEE STRUCTURAL STEEL DRAWINGS
FOR GIRDER INFORMATION AND LAY-OUT

(REVISION #1 2/17/2014)
(REVISION #2 3/17/2014)

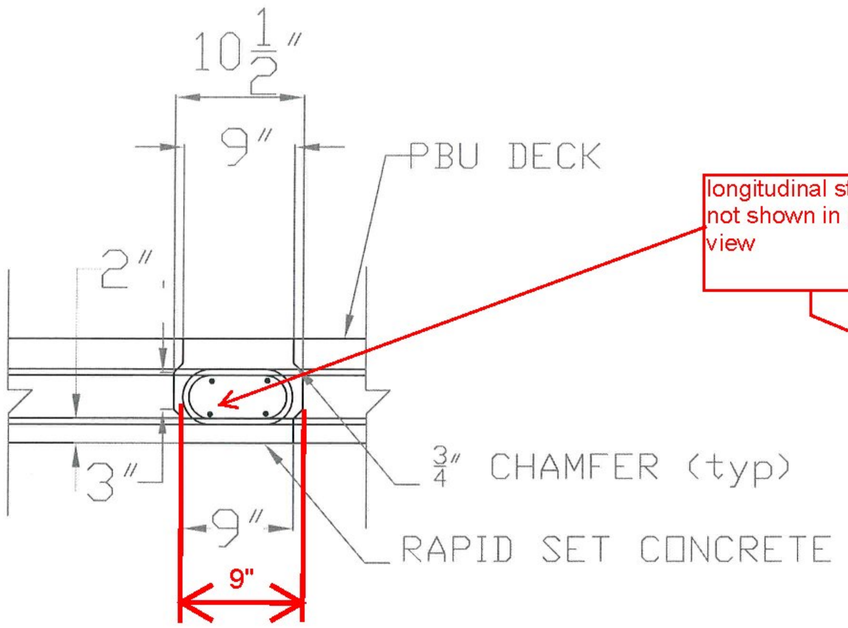
COLD RIVER BRIDGES, LLC
10 LANBRO LANE
TEL 603-756-9300 WALPOLE, NH FAX 603-756-9303

CAVENDISH ER BRF 0146(13)

PBU DETAILS

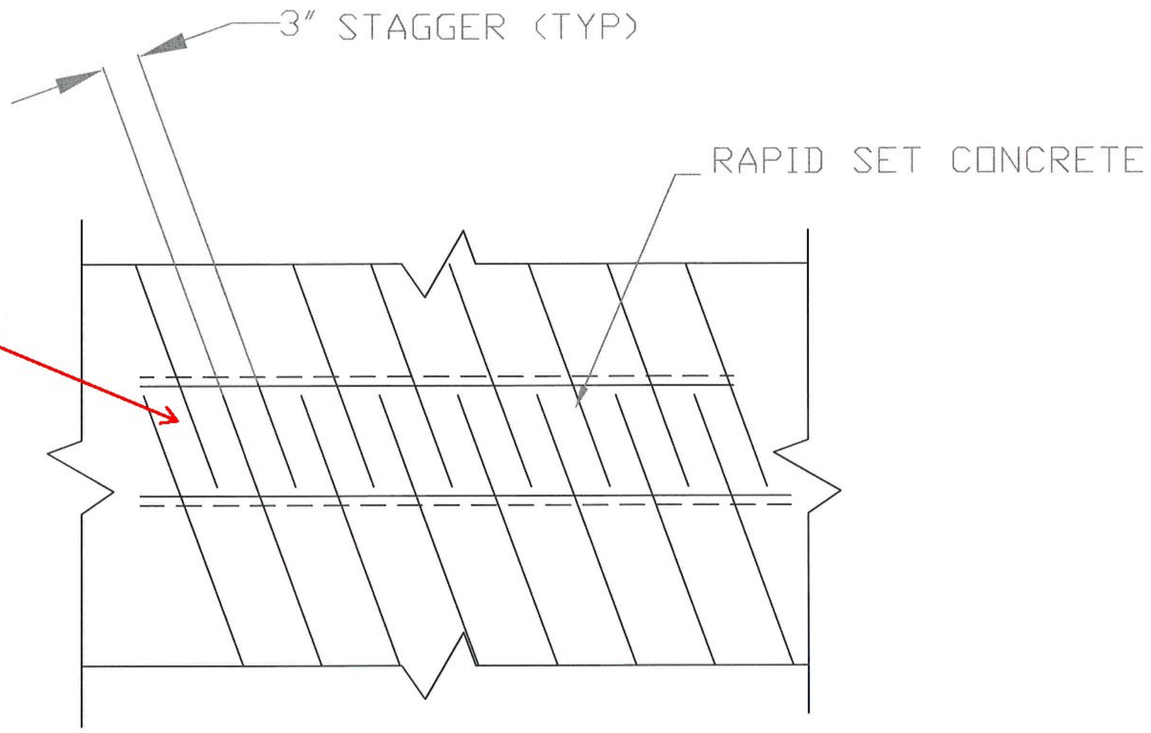
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DATE: 2/17/14 SCALE:



CLOSURE POUR SECTION

longitudinal steel not shown in plan view



CLOSURE POUR PLAN

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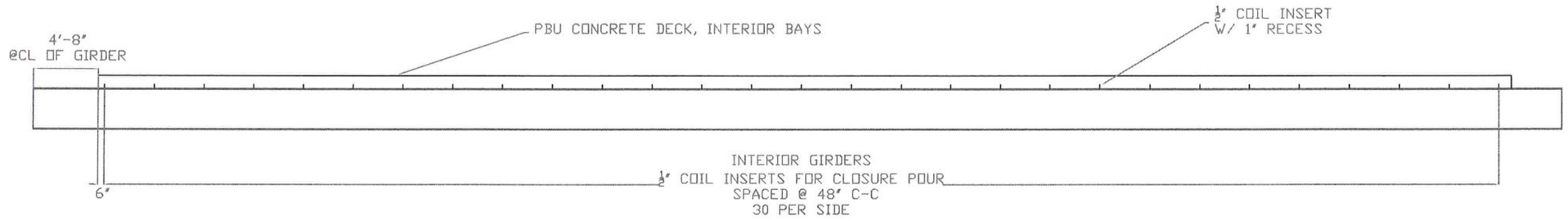
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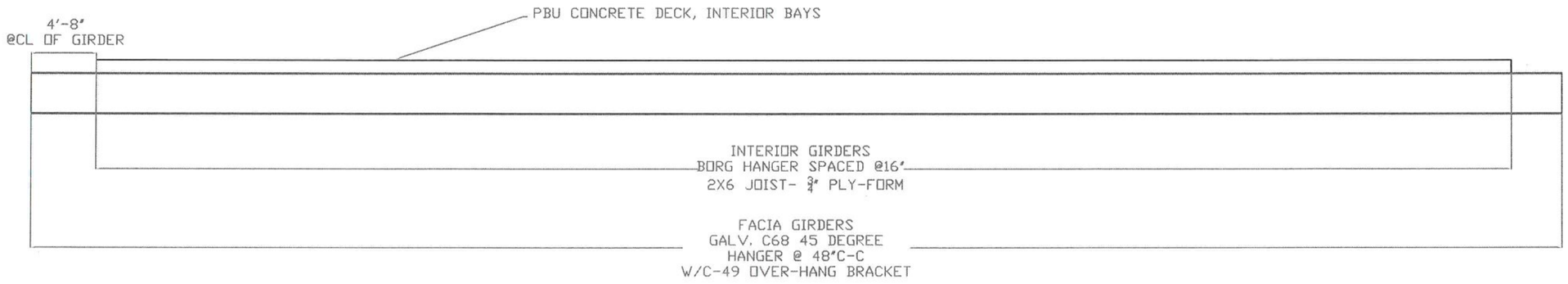
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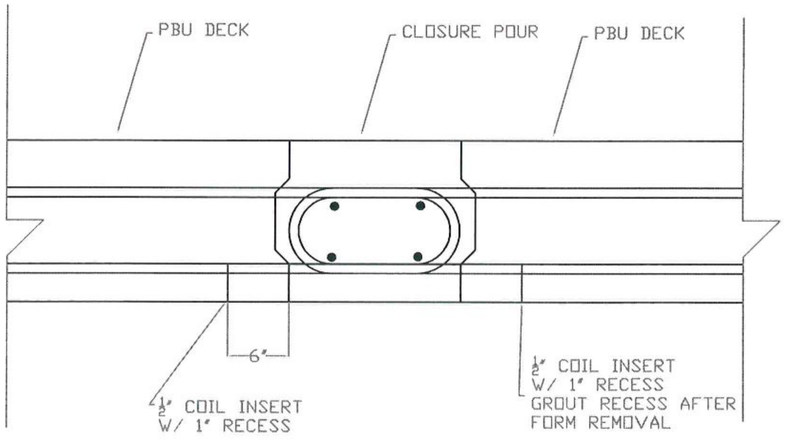
CLOSURE POUR DETAILS

SHEET NUMBER 5

DATE: 2-17-14 scale:







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PBU CLOSURE POUR
COIL INSERT LAY-OUT

DATE: 1-6-14 Scale:

SHEET NUMBER
6

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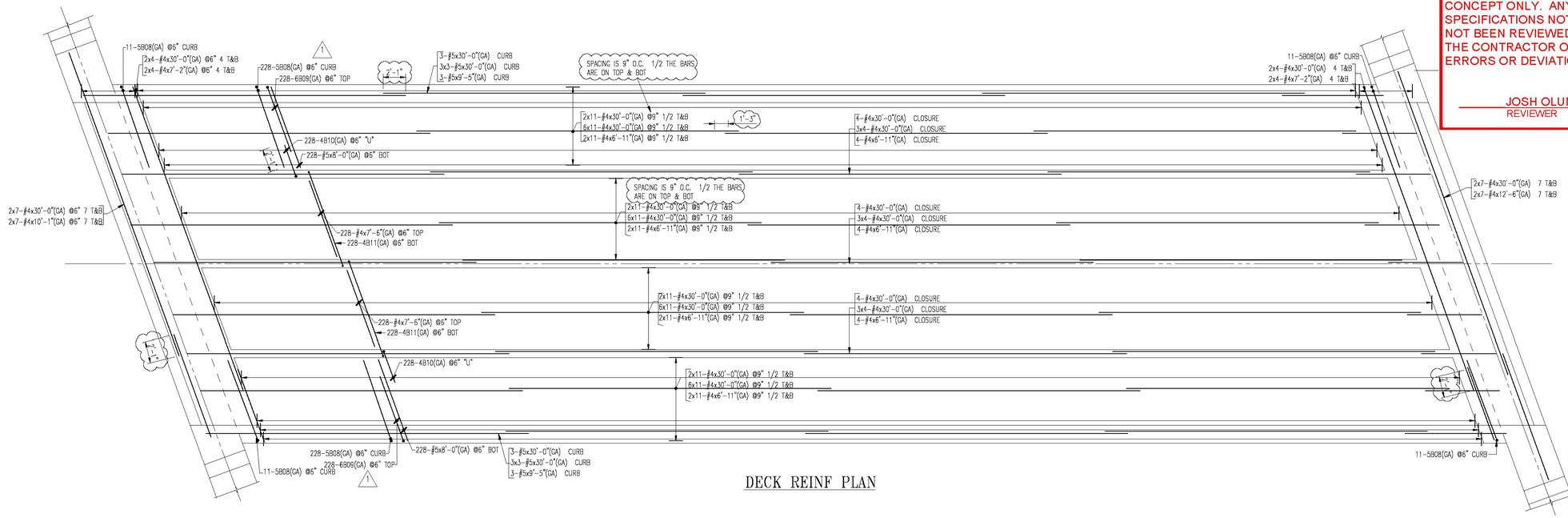
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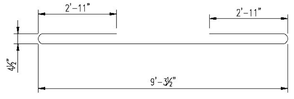
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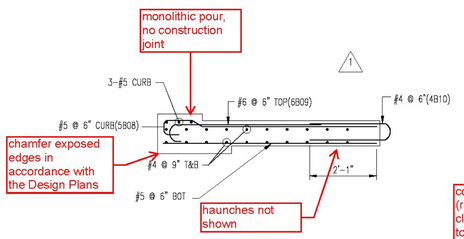
JOSH OLUND — REVIEWER
03/21/2014 — DATE



DECK REINF PLAN

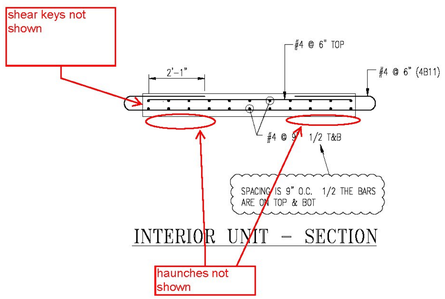


SPECIAL SKETCH 4B11 TYPE H10



EXTERIOR UNIT - SECTION

concrete cover (reinforcement clear cover) needs to be in accordance with the design plans

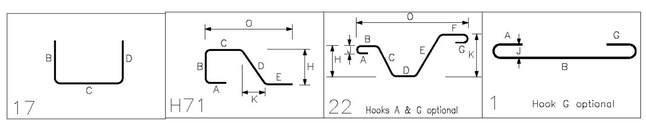


INTERIOR UNIT - SECTION

Drawing Sheet : R02					BAR LIST												
Bar Mark	Qty	Size	Total Length	Type	'A'	'B'	'C'	'D'	'E'	'F'	'G'	'H'	'J'	'K'	'L'	'M'	'N'
4B10	456	#4	6'-6 ⅜"	17		3'-1"	4 ⅜"	3'-1"									
4B11	456	#4	15'-7"	H10		15'-7"							4 ⅜"		9'-3 ⅜"		
5B08	500	#5	9'-3 ⅜"	H71	7"	7"		1'-1"	5 ⅜"	5'-6"			3 ⅜"		4 ⅜"	7'-11 ⅜"	
6B09	456	#6	7'-7"	1	9"	6'-5"					0"			6"			

ENG. AND ARCH. PLEASE VERIFY ALL CLOUDED AREAS

(GA) IS DUAL COATED REINF



LAP CHART-U.N.O.

#11		
#10		
#9		
#8		
#7		
#6		
#5		
#4		
#3		
SIZE	TOP BARS ★	OTHER BARS

★ -Top bars are horiz. bars with more than 12"of concrete cast below the bars.

No.	Description	Date	By
3	CORRECTIONS/ APPROVAL	3-14-14	TRH
2	CORRECTIONS/APPROVAL	2-17-14	TRH
1	CORRECTIONS/ APPROVAL	1-16-14	TRH
0	APPROVAL	12-18-13	TRH

Revisions and Issue Record

The full intent and purpose of this drawing is the placing of reinforcing steel bars ONLY. It is NOT to be used as a means of communication between the Architect, Engineer, Contractor or any other Sub-Trades.

THIS DRAWING IS NOT TO BE SCALED.

HarrisRebar Barker Steel — National Strength. Local Service.

DETAILED AT:
CANAAN
NEW HAMPSHIRE

Project: BRIDGE REPLACEMENT #1
CAVENDISH, VT

Drawing: DECK REINF

Customer: COLD RIVER BRIDGES

Engineer:

Refer to Release:

Date	Drawn	Chkd.	JOB No.	Dwg. No.
12-16-13	TRH		10050769	R02

W:\thill\Projects\10050769\Placing Drawings\DWGs\R02.dwg

QUALITY CONTROL PROCEDURES-PORTABLE BRIDGE UNITS.

1.CARROLL CONCRETE WILL BE RESPONSIBLE FOR THE CONTRACTOR./SUPPLIOR QC TESTING DURING CONCRETE PLACEMENT .CARROLL CONCRETE WILL SUPPLY AN ON SITE TECHNICIAN TO MONITOR AND DOCUMENT AIR CONTENT, WATER CEMENT RATIONS AND SLUMP OF EACH TRUCK.CARROLL CONCRETE WILL ALSO PRODUCE CONCRETE TEST CYLINDERS FOR 7,14,28 DAY STRENGTHS.CARROLL CONCRETES QC TECH WILL BE RESPONSIBLE FOR ANY ADJUSTMENTS TO THE CONCRETE AT THE PLANT AND OR IN THE FIELD TO MEET THE REQUIRED SPECIFICATIONS.
2.A PRE-PRODUCTION MEETING SHALL BE HELD BETWEEN THE CONTRACTOR AND RESIDENT ENGINEER BEFORE CONCRETE PLACEMENT.
3. VTRANS WILL RETAIN THEIR RESPONSIBILITIES FOR QUALITY ACCEPTANCE TESTING.
4. FOUR EXTRA CYLINDER SETS PER CONCRETE PLACEMENT SHALL BE TAKEN FOR EARLY STRENGTH BREAKS.
5. ALL INSIDE FORM DIMENSION AND R-BAR SPACING AND CLEARANCES SHALL BE REVIEWED AND DOCUMENTED ON THE PRE-POUR INSPECTION SHEET BY THE CONTRACTOR AND THE RESIDENT ENGINEER BEFORE CASTING IS COMMENCED.ANY DEFICIENCIES SHALL BE CORRECTED TO MEET THE TOLERANCES BELOW.
6. BEFORE FORMS ARE ERECTED THE CONTRACTOR WILL PROFILE THE GIRDERS AT THE CASTING SITE THIS INFORMATION WILL BE USED TO DETERMINE BLOCKING DISTANCES AS DIRECTED BY THE ENGINEER.
7. FORMS SHALL HAVE A GENEROUS COATING OF FORM OIL APPLIED. . CAUTION WILL BE TAKEN NOT TO HAVE PONDING OF FORM OIL IN THE BASE OF THE FORM OR ON ANY R-BAR.
8. ALL PRE-CAST WILL BE INSPECTED BY BOTH THE CONTRACTOR AND THE RESIDENT ENGINEER AND DOCUMENTED ON THE POST POUR INSPECTION SHEET.

9. CURE WILL MEET THE REQUIREMENTS OF SECTION 501.17

PORTABLE BRIDGE UNIT DIMENSIONAL TOLERANCES

+- $\frac{1}{4}$"-REINFORCING PLACEMENT +-1/4" COVER AND CLEARANCE 1" BAR SPACING .
LENGTH (EACH UNIT) +- $\frac{3}{4}$" (Length of adjacent units shouldn't vary by more than $\frac{3}{4}$")
WIDTH +- $\frac{3}{8}$"
DEVIATION FROM FROM DIAGONALS +-3/4" (Horizontal)
DEVIATION SQUARENESS OR SKEW +- $\frac{3}{4}$"
HORIZONTAL ALIGNMENT +- $\frac{3}{8}$"

10.FIELD INSTALLATION TOLERANCES
VERTICAL DEVIATION BETWEEN UNITS PRIOR TO GROUTING- +-1/4" (VERTICAL DEVIATIONS EXCEEDING 1/4" SHALL BE GROUND WITH DIAMOND CUP WHEELS OR OTHER MECHANICAL METHODS) THE CASTING OF ALL PBU UNITS WILL HAPPEN SIMULTANEOUSLY WITH A SINGLE SCREED MACHINE SPANNING THE ENTIRE WIDTH OF PBU 1-4. THIS SHOULD MINIMIZE ANY IRREGULARITIES IN THE JOINTS
DEVIATION IN JOINT WIDTH-+- $\frac{3}{8}$"

11. EACH PIECE OF PRE-CAST SHALL BE MARKED WITH ITS UNIT NUMBER AND CASTING DATE
12. CURING WILL MEET THE REQUIREMENTS OF SUBSECTION 501.17 (2) BURLAP CURE. PLACEMENT OF BURLAP WILL FOLLOW THE PROGRESS OF THE SCREED MACHINE FROM A WORK-PLATFORM WITH A LAG TIME NOT TO EXCEED 10 MINUTES.CRB WILL HAVE A POWER WASHER ON SITE FOR THE PURPOSE OF FOGGING AS NECESSARY. THE PROJECT SUPERINTENDENT WILL BE RESPONSIBLE FOR MONITORING THE CURE. ANY ADJUSTMENTS REQUIRED OR REQUESTED BY THE RESIDENT ENGINEER WILL BE MADE TO MAINTAIN THE PROPER CUREING OF THE PBU UNITS. CRB WILL CHECK THE CURE DAILY INCLUDING WEEKENDS AND OTHER NON WORKING DAYS.ALL CUREING ACTIVITIES WILL BE DOCUMENTED ON THE CONTRACTORS DAILY REPORT.
13. CONCRETE FINISHING.
PBU FINISH WILL BE A VIBRATORY SCREED FINISH, THE MORRISON SCREED WILL SPAN THE ENTIRE WIDTH OF THE PBU UNITS AND WILL RIDE ON THE FASCIA PANELS. DRY RUNS WILL BE PERFORMED AND ADJUSTMENTS WILL BE MADE TO THE SCREED TO THE SATISFACTION OF THE ENGINEER. TOLERANCE FOR SCREED MACHINE +-1/4". HAND FINISHING WILL BE ALLOWED ONLY WERE IT IS NOT POSSIBLE TO USE THE SCREED MACHINE. MAGNESIUM BULL FLOATS IF NECESSARY WILL BE USED FROM A WORK BRIDGE POSITIONED BEHIND THE SCREED TO REMOVE ANY IRREGULARITIES IN THE CONCRETES SURFACE..

ratio

additional tolerances noted in the special provision need to be adhered to as well

curing

T.Y. LIN INTERNATIONAL

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(REVISION #1 2/17/2014)(REVISION #2 3/17/2014)

COLD RIVER BRIDGES, LLC
10 LANBRO LANE
TEL 603-756-9300 WALPOLE, NH FAX 603-756-9303

CAVENDISH ER BRF 0146(13)

QC PROCEDURES/PLAN

SHEET NUMBER 8

DATE: 1-8-14 scale:

REPAIR OF UNITS:
1.Minor defects in the PBU units shall be fixed using an overhead and vertical repair material from the Vermont Agency of Transportation Appoved Products list.
2. Cracking .01" or less shall be sealed with a penetrating sealing from the Vermont Agency of Transportation Approved Products list.
Crack widths measuring .01"-.08" shall be filled with an epoxy injected crack filler from the Vermont Agency of Transportation Approved Products List.
Production Site Handling: Units shall not be lifted or moved unitl design strength has been met.
Pre-Assembly: Cold River Bridges will be casting the PBU Units on site. Each unit will be constructed adjacent to the location of the new bridge. PBU units will be cast simultaniously. The unit will be cast at the same time with only 19" between bulk-heads
pre-assembly will not be required.
Shipping and Handling: PBU units will be constructed on site and latterally moved into place on rollers. The PBU Units will be jacked down onto the final bearing.
Do to time restrictions during the BCP any repair work (if needed) will be repaired before the pbu units are in final placement.

Repairs prior to final placement of PBU's does not relieve the Contractor from repairing defects or damage (if necessary) to the PBU's during placement and subsequent construction activities.

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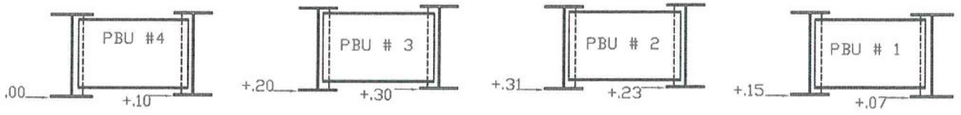
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QC PROCEDURES/PLAN

SHEET NUMBER 9

DATE: 1-7-14 scale:



BEARING ADJUSTMENT FOR CASTING BED

CASTING SEQUENCE:
1.SET CONCRETE BLOCKS ON COMPACTED SUB-GRADE
2.INSTALL HARDWOOD BLOCKING, DOUBLE BEAMS,AND 12X25 CHANNEL TRACK.
3.SET INDIVIDUAL PLATE GIRDERS,SHIM TO GRADE.
5.BOLT AND TORQUE INDIVIDUAL PBU SECTIONS.
6.PROFILE INDIVIDUAL GIRDERS AND CALCULATE BLOCKING DISTANCE****
6.TIE R-BAR, BUILD BULK-HEADS PBU-UNITS 1-4
7.SET SCREED, TEST RUN
8.CAST PBU DECK SECTIONS 1-4,SIMUTANEOUSLY

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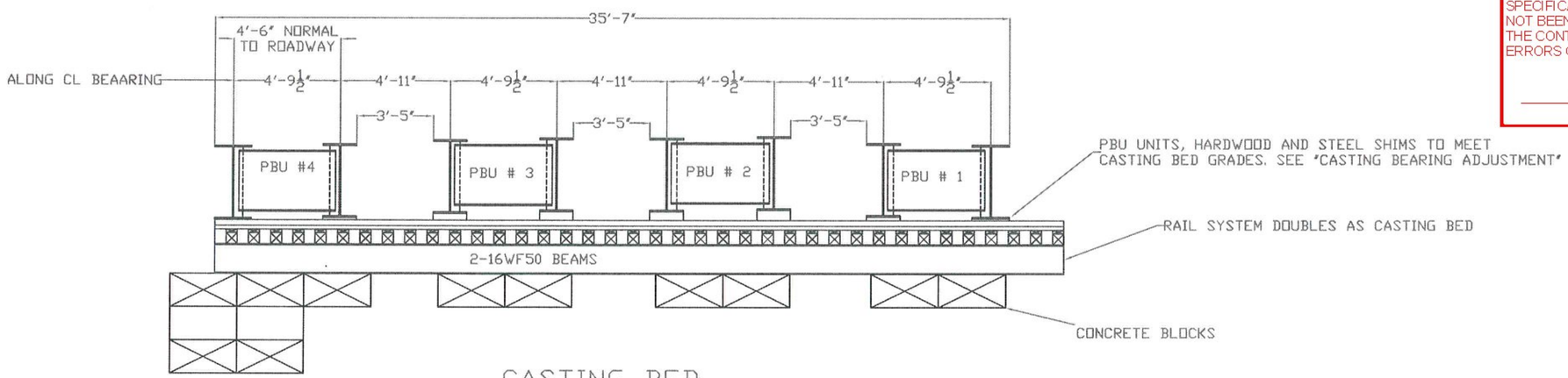
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CASTING BED

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PBU-CASTING PLAN

SHEET NUMBER 10

DATE: 2-17-14 scale:

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIAL AND RESEARCH SECTION - STRUCTURAL CONCRETE UNIT

STRUCTURAL CONCRETE MIX DESIGN SUBMISSION

Agency Use Only	
Mix ID	PP14-060
Mix Design #	060
Approved by	jwild
Approved Date	2/11/2014
Spec Book Year	2011

Concrete class: Precast Prestressed
Additional Description:
Ready Mix Supplier: CARROLL CONCRETE - CHARLESTOWN, NH
Designed By: Scott Jordan
Design strength: 5000 PSI
Design by dry weight or saturated surface dry: SSD

Mix designs are valid for a 12 month period from date of approval or unless there is a change in material, material property or design parameter.

Cement: 701.02 Source: / Brand Name:			Specific Gravity		lb/cy	0.00 cf
Cement Type III: 701.04 Source: / Brand Name:			Specific Gravity		lb/cy	0.00 cf
Blended Cement: 701.08 Source: LAFARGE - TERCEM - MONTREAL, EAST PLANT / Brand Name:			Specific Gravity	3.020	705 lb/cy	3.74 cf
Cement with Slag: 701.07 Source: / Brand Name:			Specific Gravity		lb/cy	0.00 cf
Pozzolan: 725.03(a) Source: / Brand Name:			Specific Gravity		lb/cy	0.00 cf
Fly Ash: 725.03(a) Source: / Brand Name:			Specific Gravity		lb/cy	0.00 cf
Silica Fume: 725.03(b) Source: / Brand Name:			Specific Gravity		lb/cy	0.00 cf
Slag: 725.03(c) Source: / Brand Name:			Specific Gravity		lb/cy	0.00 cf
Water				32 gals	267 lb/cy	4.28 cf
Air Content Target				7.0 %		1.89 cf
Coarse Aggregate 3/8" 704.02A Source:	Absorption		Specific Gravity		lb/cy	0.00 cf
Coarse Aggregate 3/4" 704.02B Source: COLD RIVER MATERIALS PIT - N WALPOLE, NH	Absorption	0.80	Specific Gravity	2.680	1688 lb/cy	9.39 cf
Coarse Aggregate 1 1/2" 704.02C Source:	Absorption		Specific Gravity		lb/cy	0.00 cf
Fine Aggregate: 704.01 Source: NEWPORT SAND & GRAVEL - NEWPORT, NH	Absorption	0.90	Specific Gravity / Fineness Modulus	2.670 / 2.83	1283 lb/cy	7.70 cf
Air Entrainment Admixture 725.02(b) Source: MASTER BUILDERS INC - MESQUITE, TX / Brand Name: MasterAir AE 200 / Micro Air			Specific Gravity		1.5 oz/cy	
Retarder Admixture: 725.02(c) Source: MASTER BUILDERS INC - MESQUITE, TX / Brand Name: MasterSet R100 / Pozzolith 100XR			Specific Gravity		1 oz/cwt	
High Range Water Reducer Admixture: 725.02(h) Source: MASTER BUILDERS INC - MESQUITE, TX / Brand Name: MasterGlenium 7500			Specific Gravity		3 oz/cwt	
Other Admixtures:			Specific Gravity		2 oz/cwt	0.00 cf
Source: / Brand Name: BASF, MasterSure Z60			Specific Gravity			0.00 cf
Source: / Brand Name:			Specific Gravity			0.00 cf
Source: / Brand Name:			TOTAL	47.570	3943 lb	27.00 cf

Maximum Water/Cementitious Ratio 0.44
Maximum Water (gal/cy) 37.2
Slump Min/Max (inch) 4.0 min 7.0 max
Air Content Min/Max (%) 5.0 min 9.0 max
Design Unit Wt. (lb/cf) 146.04

Approval by Jason Wild, Composite Materials Engineer 2/11/14 for use on Cavendish ER BRF 0146(13) contractor self performing precast. Supplied strength data is old, air content does not represent expected or project air content and not sure of ORMIX design, make up. Based on cementitious amount and favorable curing conditions, mix should obtain 5000psi in 28 day.

Notes:

2014 Construction season 2011 specification 5000-psi precast 2-10-14

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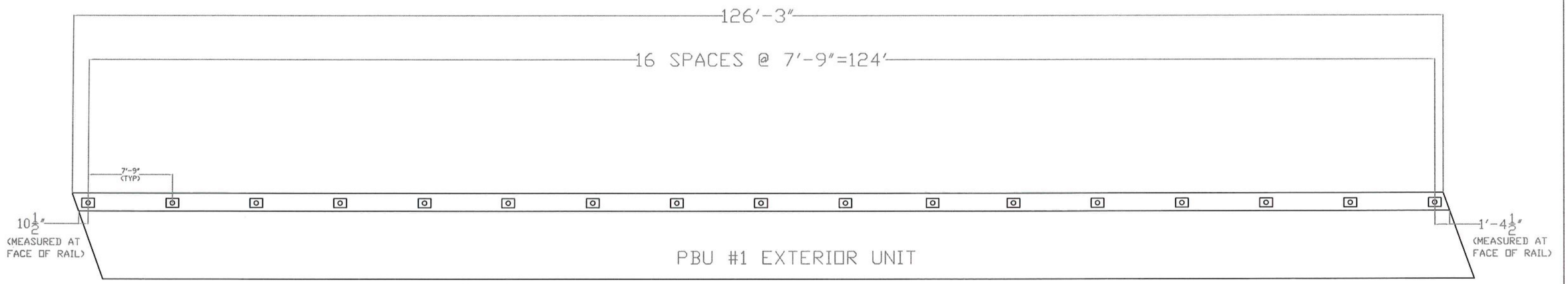
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CAVENDISH ER BRF 0146(13)

PBU CONCRETE MIX DESIGN

SHEET NUMBER 11

DATE: 2-17-14 SCALE:



PBU #1 EXTERIOR UNIT

WEST RAILING PLAN VIEW
(EAST RAIL SIMILAR)

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JOSH OLUND — REVIEWER
03/21/2014 — DATE

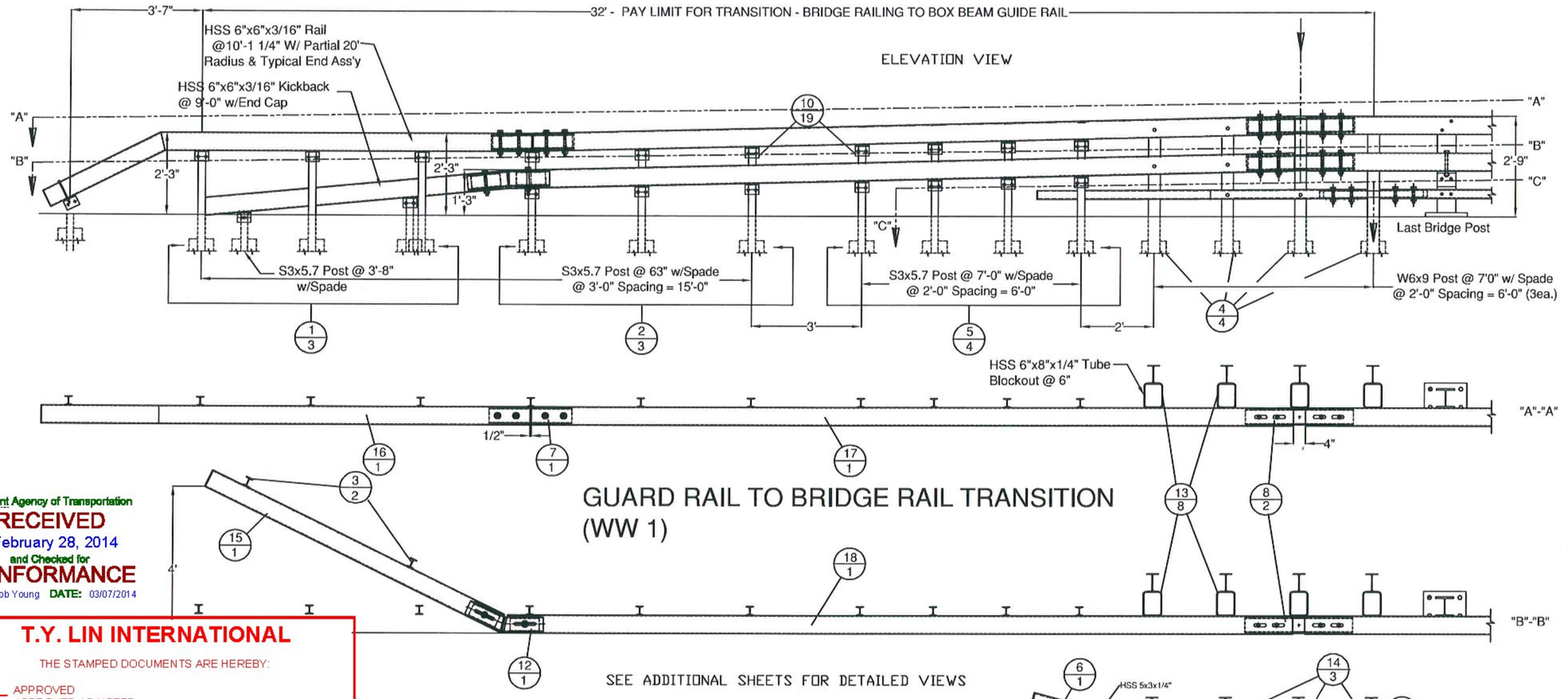
COLD RIVER BRIDGES, LLC
10 LANBRO LANE
TEL 603-756-9300 WALPOLE, NH FAX 603-756-9303

CAVENDISH ER BRF 0146(13)

ANCHORAGE LAY-OUT

SHEET NUMBER 12

DATE: 2-19-14 scale:



Vermont Agency of Transportation
RECEIVED
ON: February 28, 2014
and Checked for
CONFORMANCE
BY: Rob Young DATE: 03/07/2014

T.Y. LIN INTERNATIONAL

THE STAMPED DOCUMENTS ARE HEREBY:

__X__ APPROVED
____ APPROVED AS NOTED
____ REVISE AND RESUBMIT

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JOSH OLUND — REVIEWER
02/28/2014 — DATE

HARDWARE NOTES

ITEM #	FUNCTION
19	BOLT RAIL TO SHELF ANGLE (ITEM #10)
20	BOLT SHELF ANGLE (ITEM #'S 10 & 11) TO POST
21	BOLT BLOCK-OUTS (ITEM #'S 13 & 14) TO HEAVY POST
22	(4) PER SPLICE BAR (ITEM #9)
23	(4) PER SPLICE TUBING (ITEM #'S 7 & 8)
24	BOLT RAIL (ITEMS #'S 6,17, & 18 TO BLOCK-OUTS (ITEM #'S 13 & 14) (WHERE FASTENED)
25	BOLT DOUBLE BEND SPLICE TUBE (ITEM #12) TO RAIL (ITEM #18) & KICKBACK (ITEM #15)

BILL OF MATERIALS, WW 1

ITEM #	QTY.	COMPONENT #	DESCRIPTION	MATERIAL (ASTM)
1	3	0013.57021	3' I-POST, PUNCH 8" W/SPD @ 63" LG	ASTM A572 Gr. 50
2	3	0013.57025	3' I-POST, PUNCH 8", & 20" W/SPD @ 63" LG	ASTM A572 Gr. 50
3	2	0013.57060	3' I-END POST W/SPD @ 3'-8" LG	ASTM A572 Gr. 50
4	4	0013.09001	W6X9 POST @ 7' W/SPD & 5/8" HOLES	ASTM A572 Gr. 50
5	4	0013.57010	3' I-POST, PUNCH 8" & 20", W/BOSS" SPADE @7"	ASTM A572 Gr. 50
6	1	0033.80403	3X5" BTM TRANS RAIL W/5'-0" KB, EXP END	A500 Gr. B
7	1	0033.00640	HSS 5X3 TUBE SPLICE @27" LG W/ 1/4" SHIMS	A500 Gr. B / A572 Gr 50
8	2	0033.00730	HSS 5x3 EXP TUBE SPLICE @ 36" LG W/ 1/4" SHIMS	A500 Gr. B / A572 Gr 50
9	1	0033.00930	BR EXP BAR SPLICE 2-1/8" X 4-1/4" @ 36" LG	ASTM A36
10	19	0054.00050	REG BB SHELF ANGLES @ 4-1/2"	ASTM A36
12	1		HSS 5X5 DBL BEND TUBE SPL @ 27" LG & 40°ANGLE	A500 Gr. B / A572 Gr 50
13	8	0054.00563	6X8" TRANS. TUBE B/O @ 6" LG	A500 Gr. B
14	3	0054.00565	6X8" TRANS. TUBE B/O @ 3" LG	A500 Gr. B
15	1		6X6" BB @ 9'-0" KICKBACK, W/ CAP & 20° ANGLE	A500 Gr. B / A36
16	1		6X6" BB @ 17'-11 1/2", DRILL 3" CC, W/ 20' RADIUS & END ASS'Y	A500 Gr. B
17	1		6X6" BB TOP TRANS @ 20'-9 5/8" LG W/EXP END, & PARTIAL RAD.	A500 Gr. B
18	1		6X6" BB BTM TRANS @ 21'-4 5/8" LG W/EXP END & PARTIAL RAD.	A500 Gr. B
19	18	0080.03355	3/8" X 7 1/2" BOLT, NUT, & 2 FW	A307, A563, F436
20	19	0080.04100	1/2" x 1-1/2" BOLT, NUT, & FW	A307, A563, F436
21	22	0080.04120	1/2" x 1-1/2" BOLT, NUT, 2 FW & LW	A307, A563, F436
22	4	0080.06255	3/4" X 4-1/2" BOLT, NUT, 2 FW	A325, A563, F436
23	12	0080.06340	3/4" X 7-1/2" BOLT, NUT, 2 FW	A325, A563, F436
24	6	0080.06370	3/4" X 8" CARR BOLT, NUT, FW & LW	A307, A563, F436
25	2	0080.06400	3/4" X 8" BOLT, NUT, 2 FW, & LW	A325, A563, F436

ITEM #: 621.725

F.R. LAFAYETTE, CAVENDISH

SHEET 1 OF 10

APPROVED BY:

GUARD RAIL TO BRIDGE RAIL TRANSITION DETAILS SHEET

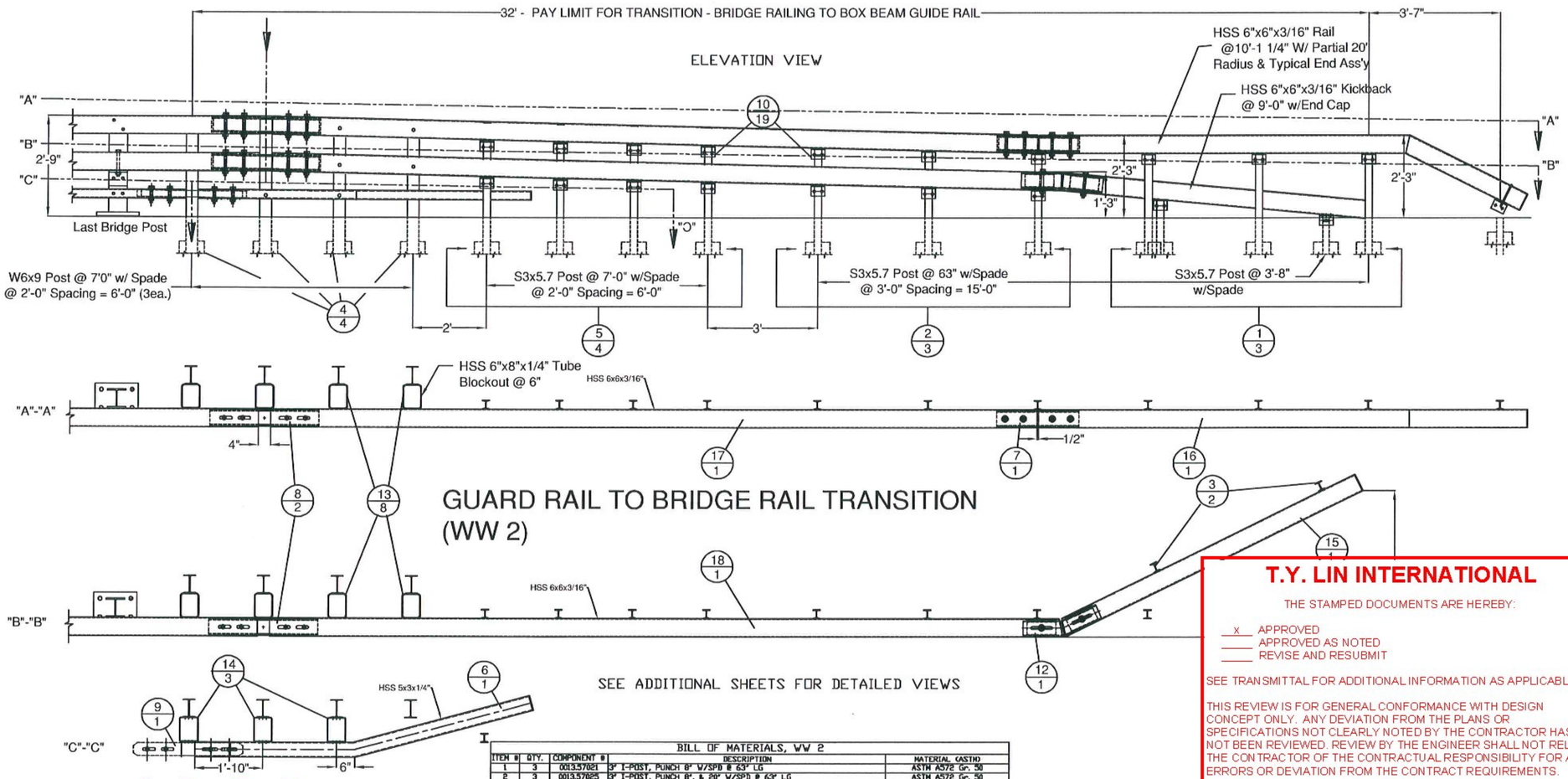
CAVENDISH, ER BRF 0416 (13), ROUTE VT 131, OVER TWENTY MILE STREAM
VERMONT

REV	NO.	DATE	DESCRIPTION	BY
E V	1	2/11/14	REVISED PER 12/20/13 MARK-UP	EP

ELDERLEE, INC.
OAKS CORNERS, NEW YORK 14518
E-Mail:dlong@elderlee.com
Tel:315-789-6670 Fax:315-789-6615

AISC CERTIFIED FABRICATOR

DRAWN	E.P.	11/13/13
CHECKED	D.L.	11/20/13
APPROVED	-	-
SCALE	SCHEMATIC	
DRAWING NO.	F.R. LAFAYETTE, CAVENDISH	



Vermont Agency of Transportation

RECEIVED

ON: February 28, 2014

and Checked for

CONFORMANCE

BY: Rob Young DATE: 03/07/2014

HARDWARE NOTES

ITEM #	FUNCTION
19	BOLT RAIL TO SHELF ANGLE (ITEM #10)
20	BOLT SHELF ANGLE (ITEM #'S 10 & 11) TO POST
21	BOLT BLOCK-OUTS (ITEM #'S 13 & 14) TO HEAVY POST
22	(4) PER SPLICE BAR (ITEM #9)
23	(4) PER SPLICE TUBING (ITEM #'S 7 & 8)
24	BOLT RAIL (ITEMS #'S 6,17, & 18 TO BLOCK-OUTS (ITEM #'S 13 & 14) (WHERE FASTENED)
25	BOLT DOUBLE BEND SPLICE TUBE (ITEM #12) TO RAIL (ITEM #18) & KICKBACK (ITEM #15)

BILL OF MATERIALS, WW 2

ITEM #	QTY.	COMPONENT #	DESCRIPTION	MATERIAL (ASTM)
1	3	0013.57021	3" I-POST, PUNCH 8" W/SPD @ 63" LG	ASTM A572 Gr. 50
2	3	0013.57025	3" I-POST, PUNCH 8", & 20" W/SPD @ 63" LG	ASTM A572 Gr. 50
3	2	0013.57060	3" I-END POST W/SPD @ 3'-8" LG	ASTM A572 Gr. 50
4	4	0013.09001	W6X9 POST @ 7' W/SPD & 5/8" HOLES	ASTM A572 Gr. 50
5	4	0013.57010	3" I-POST, PUNCH 8" & 20", W/8X32" SPADE @7'	ASTM A572 Gr. 50
6	1	0033.80403	3X5" BTH TRANS RAIL W/5'-0" KB, EXP END	A500 Gr. B
7	1	0033.00640	HSS 5X5 TUBE SPLICE @27" LG W/ 1/4" SHIMS	A500 Gr. B / A572 Gr 50
8	2	0033.00730	HSS 5x5 EXP TUBE SPLICE @ 36" LG W/ 1/4" SHIMS	A500 Gr. B / A572 Gr 50
9	1	0033.00930	BR EXP BAR SPLICE 2-1/8" X 4-1/4" @ 36" LG	ASTM A36
10	19	0054.00050	REG BB SHELF ANGLES @ 4-1/2"	ASTM A36
12	1		HSS 5X5 DBL BEND TUBE SPL @ 27" LG & 45°ANGLE	A500 Gr. B / A572 Gr 50
13	8	0054.00563	6X8" TRANS. TUBE B/O @ 6" LG	A500 Gr. B
14	3	0054.00565	6X8" TRANS. TUBE B/O @ 3" LG	A500 Gr. B
15	1		6X6" BB @ 9'-0" KICKBACK, W/ CAP & 22° ANGLE	A500 Gr. B / A36
16	1		6X6" BB @ 17'-11 1/2", DRILL 3" CC, W/ 15" RADIUS & END ASS'Y	A500 Gr. B
17	1		6X6" BB TOP TRANS @ 28'-9 5/8" LG W/EXP END, & PARTIAL RAIL	A500 Gr. B
18	1		6X6" BB BTM TRANS @ 21'-4 5/8" LG W/EXP END & PARTIAL RAIL	A500 Gr. B
19	18	0080.03355	3/8" X 7 1/2" BOLT, NUT, & 2 FW	A307, A563, F436
20	19	0080.04100	1/2" x 1-1/2" BOLT, NUT, & FW	A307, A563, F436
21	22	0080.04120	1/2" x 1-1/2" BOLT, NUT, 2 FW & LW	A307, A563, F436
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23	12	0080.06340	3/4" X 7-1/2" BOLT, NUT, 2 FW	A325, A563, F436
24	6	0080.06370	3/4" X 8" CARR BOLT, NUT, FW & LW	A307, A563, F436
25	2	0080.06400	3/4" X 8" BOLT, NUT, 2 FW, & LW	A325, A563, F436

T.Y. LIN INTERNATIONAL

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JOSH OLUND — REVIEWER — 02/28/2014 — DATE

ITEM #: 621.725

APPROVED BY:

GUARD RAIL TO BRIDGE RAIL TRANSITION DETAILS SHEET

CAVENDISH, ER BRF 0416 (13), ROUTE VT 131, OVER TWENTY MILE STREAM
VERMONT

F.R. LAFAYETTE, CAVENDISH — SHEET 2 OF 10

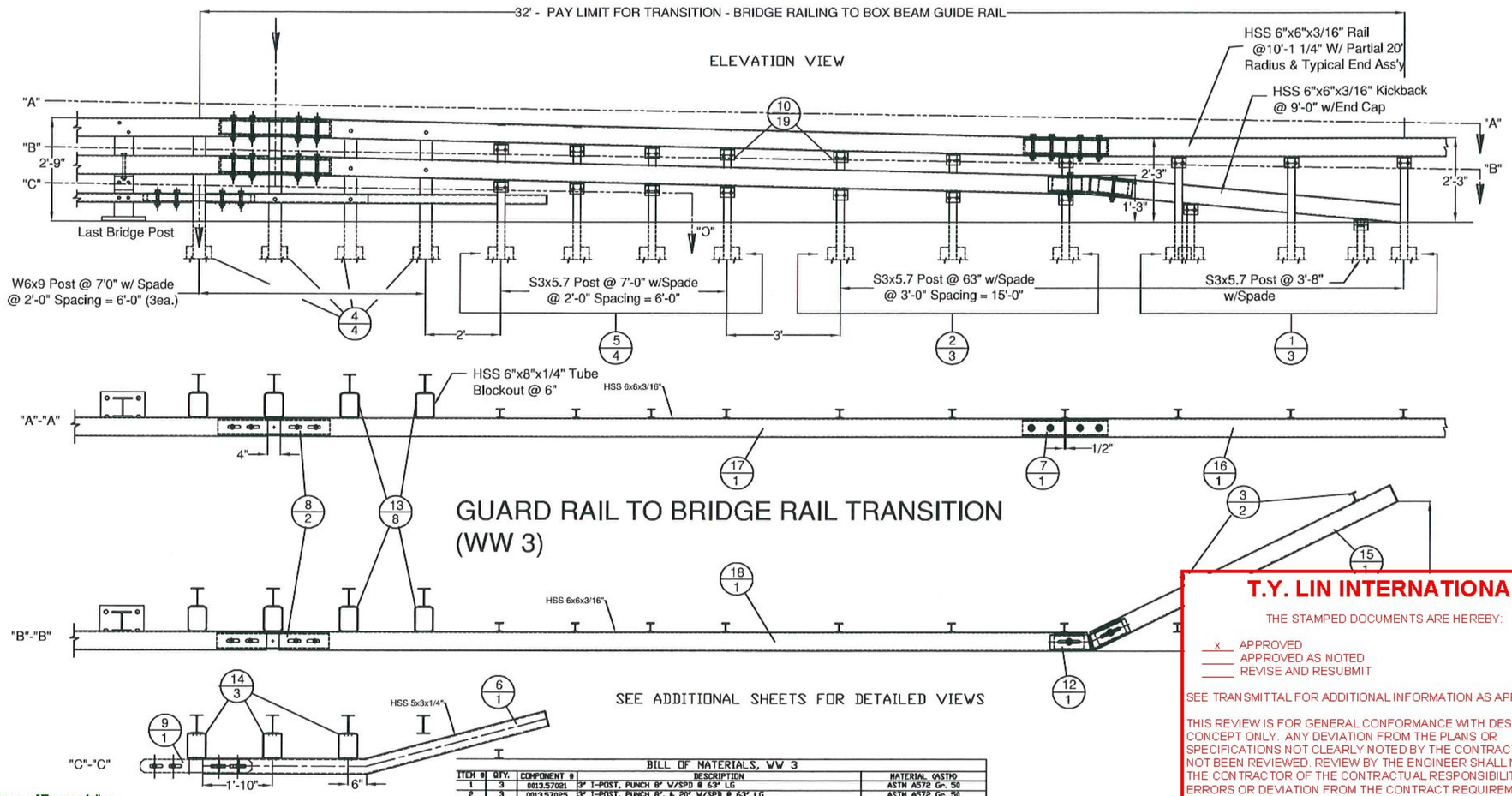
R E V	NO.	DATE	DESCRIPTION	BY
	1	2/17/14	REVISED PER 12/20/13 MARK-UP	EP

R E V	NO.	DATE	DESCRIPTION	BY

ELDERLEE, INC.
OAKS CORNERS, NEW YORK 14518
E-Mail: dlong@elderlee.com
Tel: 315-789-6670 Fax: 315-789-6615

AISC CERTIFIED FABRICATOR

DRAWN	E.P.	11/13/13
CHECKED	D.L.	11/20/13
APPROVED		
SCALE	SCHEMATIC	
DRAWING NO.	F.R. LAFAYETTE, CAVENDISH	



BILL OF MATERIALS, WW 3

ITEM #	QTY.	COMPONENT #	DESCRIPTION	MATERIAL (ASTM)
1	3	0013.57021	3" I-POST, PUNCH 8" W/SPD @ 63" LG	ASTM A572 Gr. 50
2	3	0013.57025	3" I-POST, PUNCH 8", & 20" W/SPD @ 63" LG	ASTM A572 Gr. 50
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4	4	0013.09001	W6X9 POST @ 7' W/SPD & 5/8" HOLES	ASTM A572 Gr. 50
5	4	0013.57010	3" I-POST, PUNCH 8" & 20", W/8X32" SPADE @7"	ASTM A572 Gr. 50
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13	8	0054.00563	6X8" TRANS. TUBE B/O @ 6" LG	A500 Gr. B
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16	0.5	0654.18000	6X6" BB @ 17'-11 1/2", DRILL 3" CC.	A500 Gr. B
17	1	0054.90092	6X6" BB TOP TRANS @ 20'-9 5/8" LG W/EXP END	A500 Gr. B
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HARDWARE NOTES

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Vermont Agency of Transportation
RECEIVED
ON: February 28, 2014
and Checked for
CONFORMANCE
BY: Rob Young DATE: 03/07/2014

T.Y. LIN INTERNATIONAL

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JOSH OLUND — REVIEWER — 02/28/2014 — DATE

ITEM #: 621.725

APPROVED BY:

F.A. LAFAYETTE, CAVENDISH | SHEET 3 OF 10

GUARD RAIL TO BRIDGE RAIL TRANSITION DETAILS SHEET

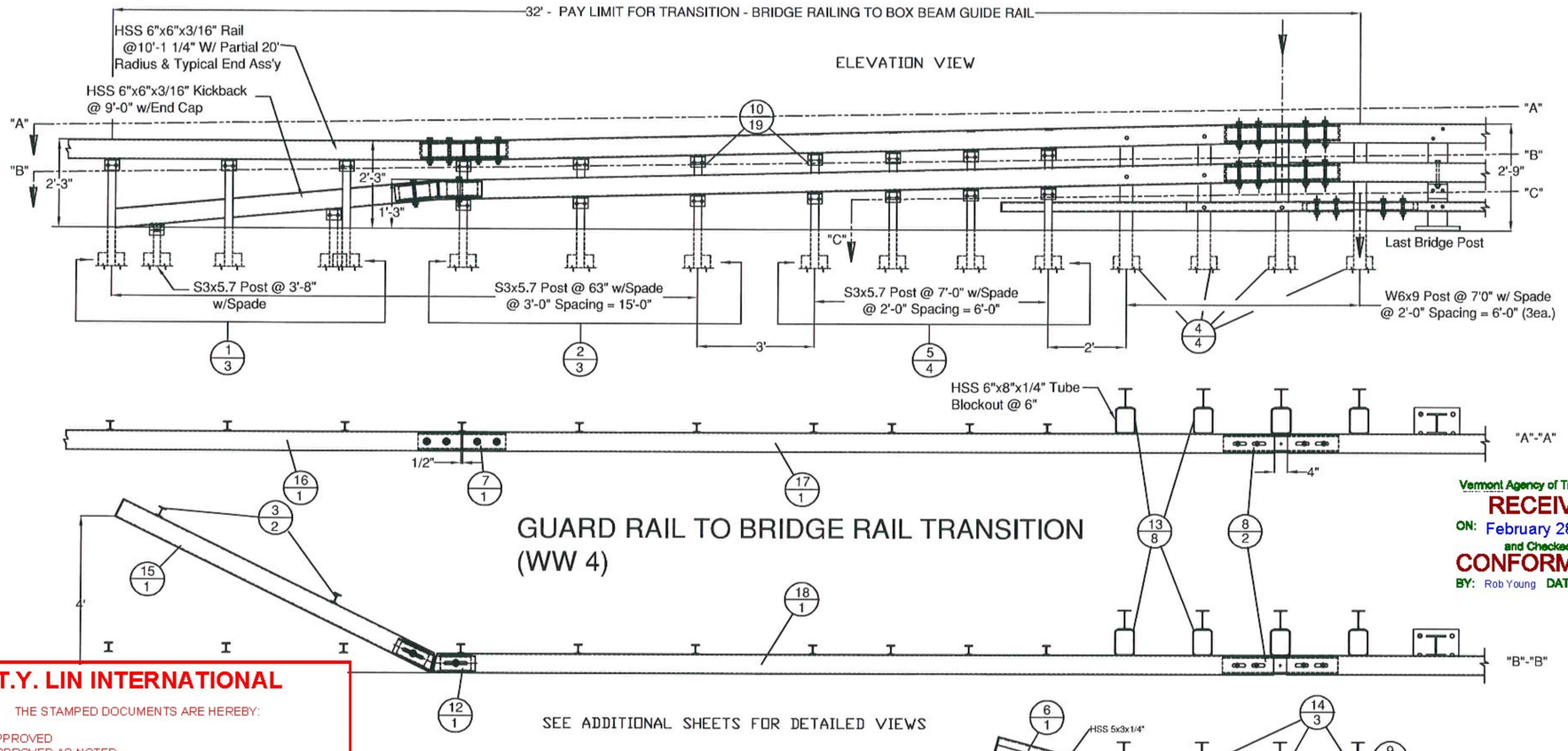
CAVENDISH, ER BRF 0416 (13), ROUTE VT 131, OVER TWENTY MILE STREAM
VERMONT

R E V	NO.	DATE	DESCRIPTION	BY
	1	2/17/14	REVISED PER 12/20/13 MARK-UP	EP

R E V	NO.	DATE	DESCRIPTION	BY

ELDERLEE, INC.
OAKS CORNERS, NEW YORK 14518
E-Mail: dlong@elderlee.com
Tel: 315-789-6670 Fax: 315-789-6615

DRAWN	E.P.	11/13/13
CHECKED	D.L.	11/20/13
APPROVED	-	-
SCALE	SCHEMATIC	
DRAWING NO.	F.A. LAFAYETTE, CAVENDISH	



Vermont Agency of Transportation
RECEIVED
ON: February 28, 2014
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BILL OF MATERIALS, WW 4

ITEM #	QTY.	COMPONENT #	DESCRIPTION	MATERIAL (ASTM)
1	3	0013.57021	3" I-POST, PUNCH 8" V/SPD @ 63" LG	ASTM A572 Gr. 50
2	3	0013.57025	3" I-POST, PUNCH 8", & 20" V/SPD @ 63" LG	ASTM A572 Gr. 50
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6	1	0033.80403	3X5" BTH TRANS RAIL W/25'-0" KB, EXP END	A500 Gr. B
7	1	0033.00640	HSS 5X5 TUBE SPLICE @27" LG W/ 1/4" SHIMS	A500 Gr. B / A572 Gr 50
8	2	0033.00730	HSS 5x5 EXP TUBE SPLICE @ 36" LG W/ 1/4" SHIMS	A500 Gr. B / A572 Gr 50
9	1	0033.00930	BR EXP BAR SPLICE 2-1/8" X 4-1/4" @ 36" LG	ASTM A36
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13	8	0054.00563	6X8" TRANS. TUBE B/O @ 6" LG	A500 Gr. B
14	3	0054.00565	6X8" TRANS. TUBE B/O @ 3" LG	A500 Gr. B
15	1	0054.09000	6X6" BB @ 9'-0" KICKBACK, W/ CAP	A500 Gr. B / A36
16	0.5	0054.18000	6X6" BB @ 17'-11 1/2", DRILL 3" CC	A500 Gr. B
17	1	0054.90092	6X6" BB TOP TRANS @ 20'-9 5/8" LG W/EXP END	A500 Gr. B
18	1	0054.90093	6X6" BB BTM TRANS @ 21'-4 5/8" LG W/EXP END	A500 Gr. B
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25	2	0080.06400	3/4" X 8" BOLT, NUT, 2 FW, & LW	A325, A563, F436

ITEM #: 621.725 — F.R. LAFAYETTE, CAVENDISH — SHEET 4 OF 10

APPROVED BY:

GUARD RAIL TO BRIDGE RAIL TRANSITION DETAILS SHEET

CAVENDISH, ER BRF 0416 (13), ROUTE VT 131, OVER TWENTY MILE STREAM
VERMONT

R E V	NO.	DATE	DESCRIPTION	BY	R E V	NO.	DATE	DESCRIPTION	BY
	1	2/17/14	REVISED PER 12/20/13 MARK-UP	EP					

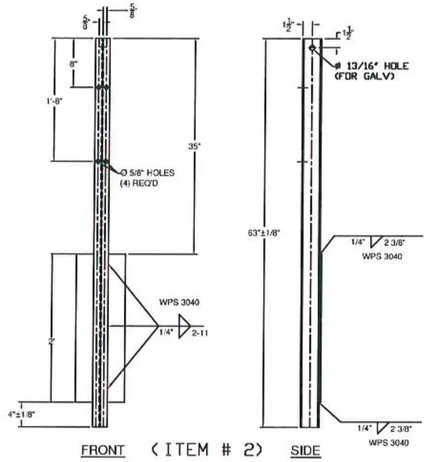
ELDERLEE, INC.
OAKS CORNERS, NEW YORK 14518
E-Mail: dlong@elderlee.com
Tel: 315-789-6670 Fax: 315-789-6615

DRAWN	E.P.	11/13/13
CHECKED	D.L.	11/20/13
APPROVED	.	.
SCALE	SCHEMATIC	
DRAWING NO.	F.R. LAFAYETTE, CAVENDISH	

PLAN VIEW

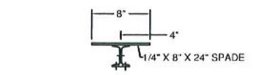


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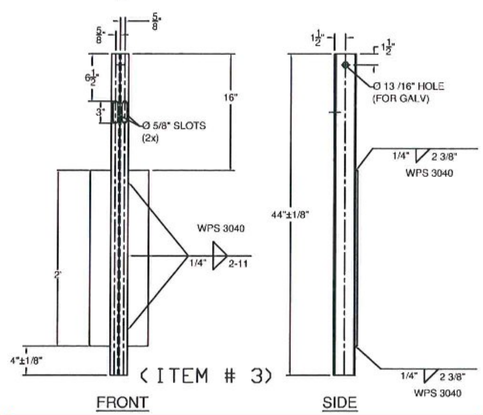


FRONT (ITEM # 2) SIDE

PLAN VIEW



P/N: 0013.57060

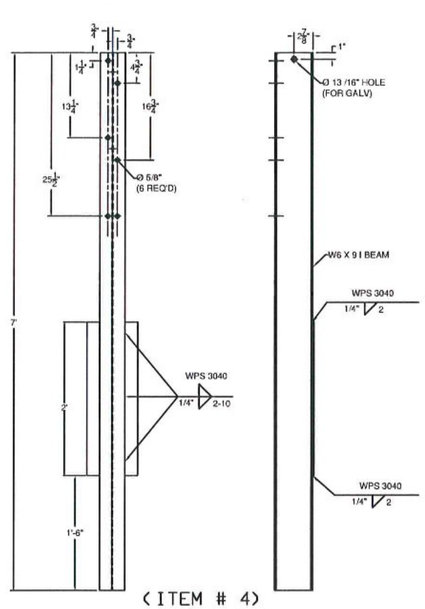


FRONT (ITEM # 3) SIDE

PLAN VIEW

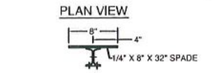


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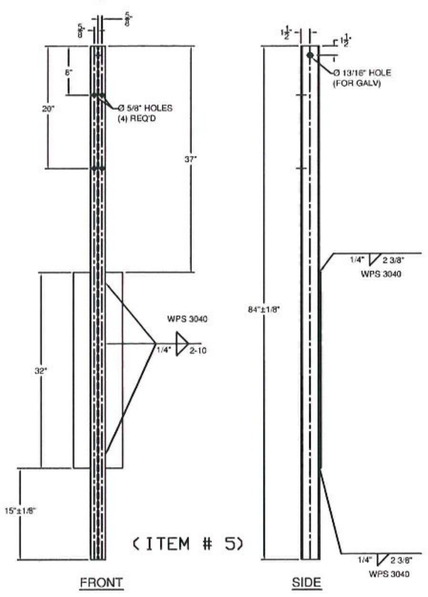


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PLAN VIEW

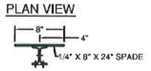


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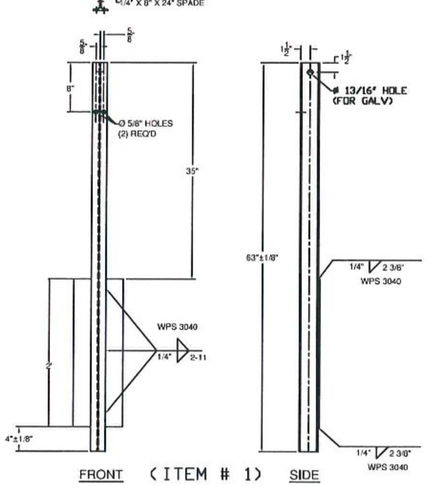


FRONT (ITEM # 5) SIDE

PLAN VIEW



P/N: 0013.57021



FRONT (ITEM # 1) SIDE

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JOSH OLUND — REVIEWER — 02/28/2014 — DATE

GENERAL NOTES:

1) ALL RAILING IS TO BE FABRICATED AND ERECTED ACCORDING TO SECTION 525 OF THE STANDARD SPECIFICATIONS.
2) BOLTS SHALL BE TORQUED SNUG TIGHT (APPROXIMATELY 100 FT-LB).
3) PROTRUSIONS CAUSED BY WELDING OR GALVANIZING ARE NOT PERMITTED ON THE ADJOINING SURFACES OF THE BOX BEAM RAILS, SPLICE TUBES AND FILL PLATES.
4) BOX BEAM TUBE AND STEEL POST MATERIALS, DIMENSION SIZES AND NOTES SHALL BE THE SAME AS THOSE OF THE BRIDGE RAIL, UNLESS OTHERWISE NOTED.
5) ANY BENDING OF RAIL SHALL BE DONE AT THE FABRICATION PLANT. RADII GREATER THAN 16' TO BE CURVED ON A TUBE BENDING MACHINE, RADII LESS THAN 16' TO BE "PIE CUT" AND WELDED. CURVED RAILING WILL HAVE AN 18" LENGTH ON EACH END STRAIGHT TO ACCOMADATE SPLICES.

Vermont Agency of Transportation
RECEIVED
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and Checked for
CONFORMANCE
BY: Rob Young DATE: 03/07/2014

ITEM #: 621.725 F.R. LAFAYETTE, CAVENDISH SHEET 5 OF 10

APPROVED BY:

GUARD RAIL TO BRIDGE RAIL TRANSITION DETAILS SHEET

CAVENDISH, ER BRF 0416 (13), ROUTE VT 131, OVER TWENTY MILE STREAM
VERMONT

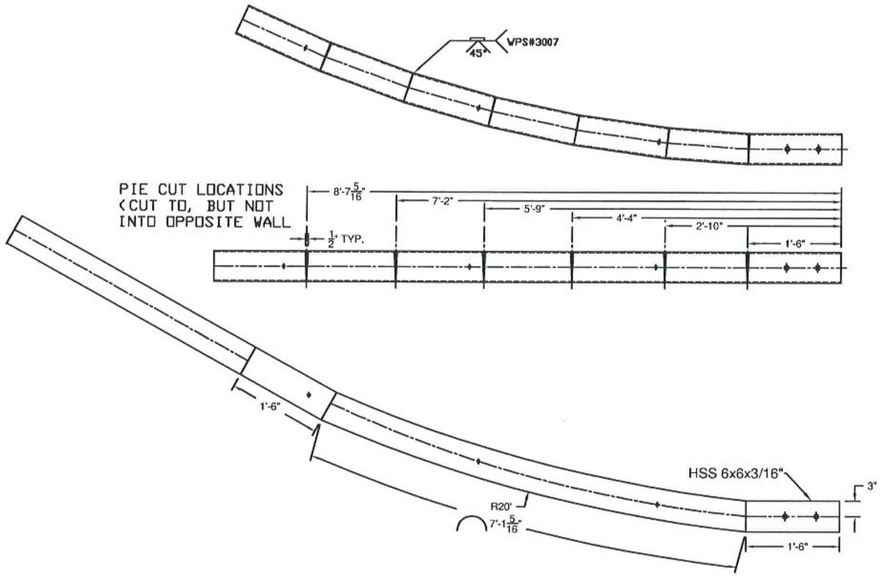
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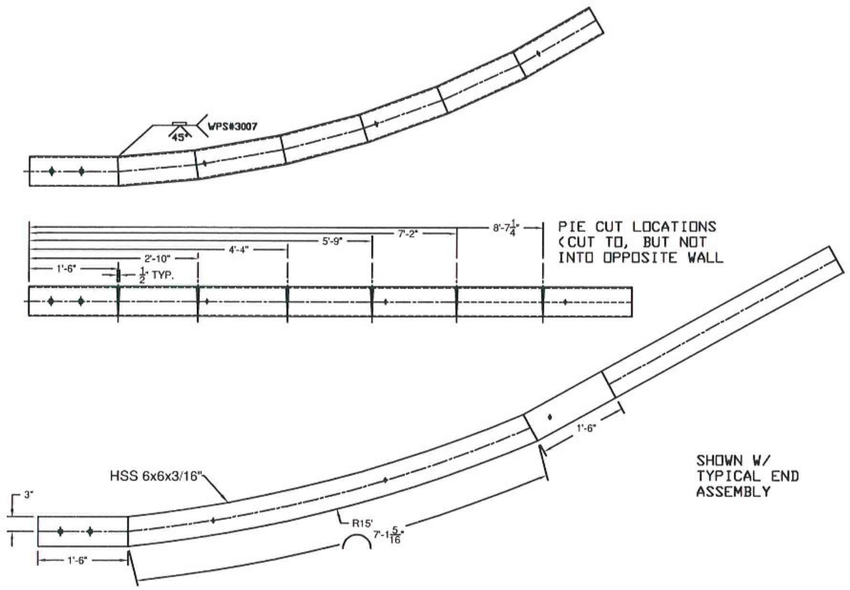
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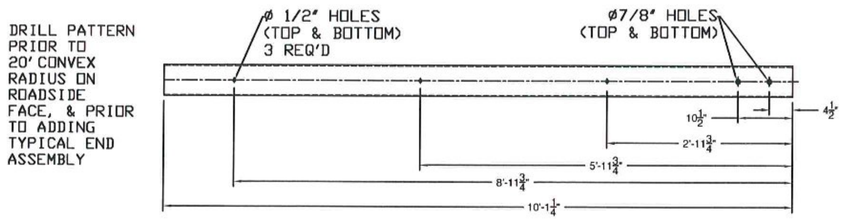
ELDERLEE, INC.
OAKS CORNERS, NEW YORK 14518
E-Mail: dlorg@elderlee.com
Tel: 315-789-6670 Fax: 315-789-6615

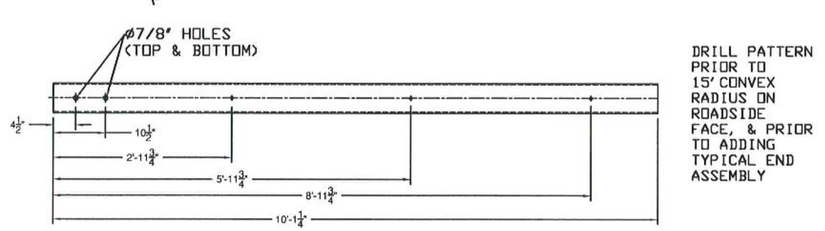
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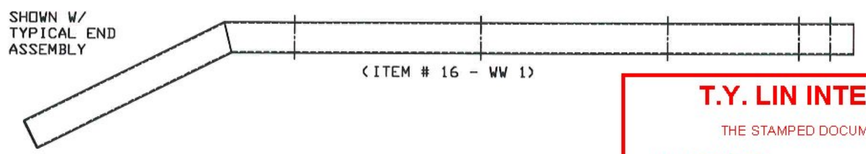
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APPROVED	.	.
SCALE	SCHEMATIC	
DRAWING NO.	F.R. LAFAYETTE, CAVENDISH	



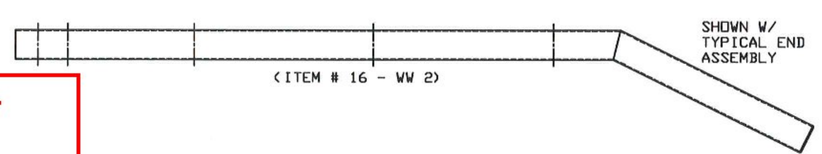








(ITEM # 16 - WW 1)



(ITEM # 16 - WW 2)

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JOSH OLUND — REVIEWER
02/28/2014 — DATE

ITEM #: 621.725 F.R. LAFAYETTE, CAVENDISH SHEET 6 OF 10

APPROVED BY:

GUARD RAIL TO BRIDGE RAIL TRANSITION DETAILS SHEET

CAVENDISH, ER BRF 0416 (13), ROUTE VT 131, OVER TWENTY MILE STREAM
VERMONT

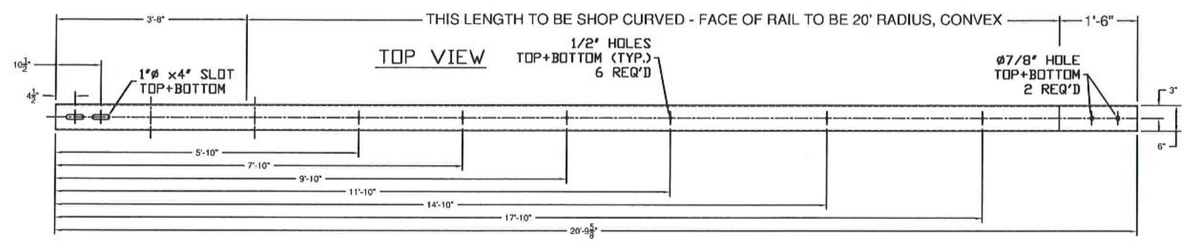
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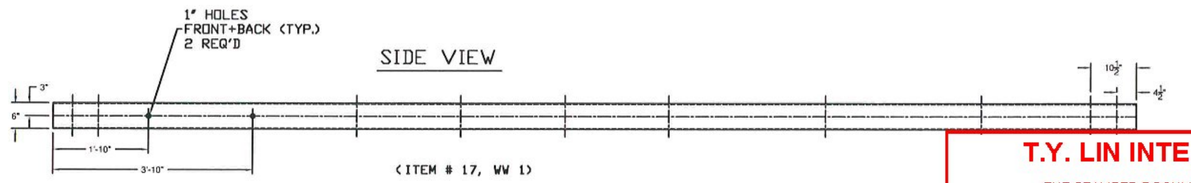
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V				

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OAKS CORNERS, NEW YORK 14518
E-Mail: dlong@elderlee.com
Tel: 315-789-6670 Fax: 315-789-6615

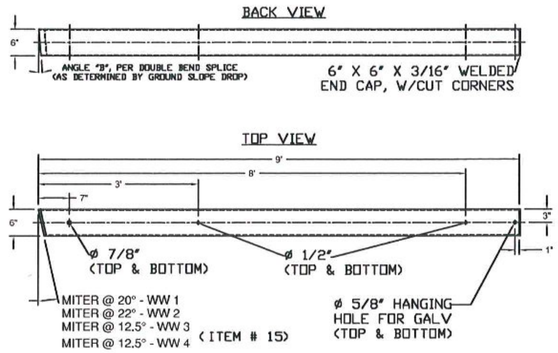
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(ITEM # 17, WW 1)



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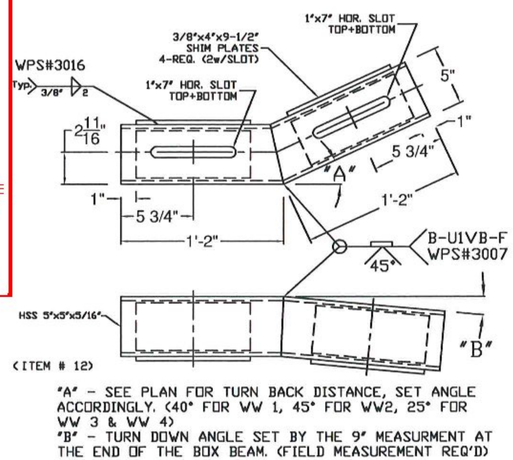
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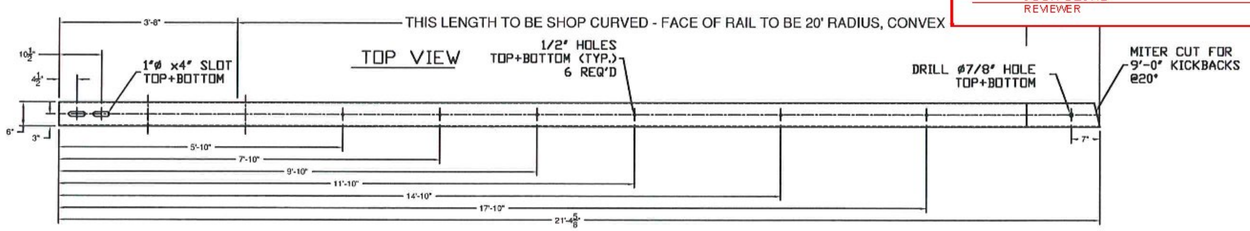
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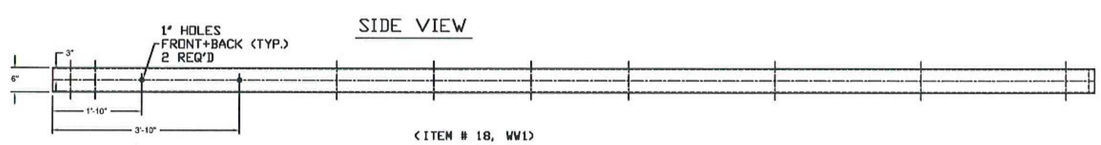
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JOSH OLUND — REVIEWER — 02/28/2014 — DATE



"A" – SEE PLAN FOR TURN BACK DISTANCE, SET ANGLE ACCORDINGLY. (40° FOR WW 1, 45° FOR WW2, 25° FOR WW 3 & WW 4)
"B" – TURN DOWN ANGLE SET BY THE 9" MEASURMENT AT THE END OF THE BOX BEAM. (FIELD MEASUREMENT REQ'D)





(ITEM # 18, WW1)

ITEM #: 621.725 — F.R. LAFAYETTE, CAVENDISH — SHEET 7 OF 10

APPROVED BY:

GUARD RAIL TO BRIDGE RAIL TRANSITION DETAILS SHEET

CAVENDISH, ER BRF 0416 (13), ROUTE VT 131, OVER TWENTY MILE STREAM
VERMONT

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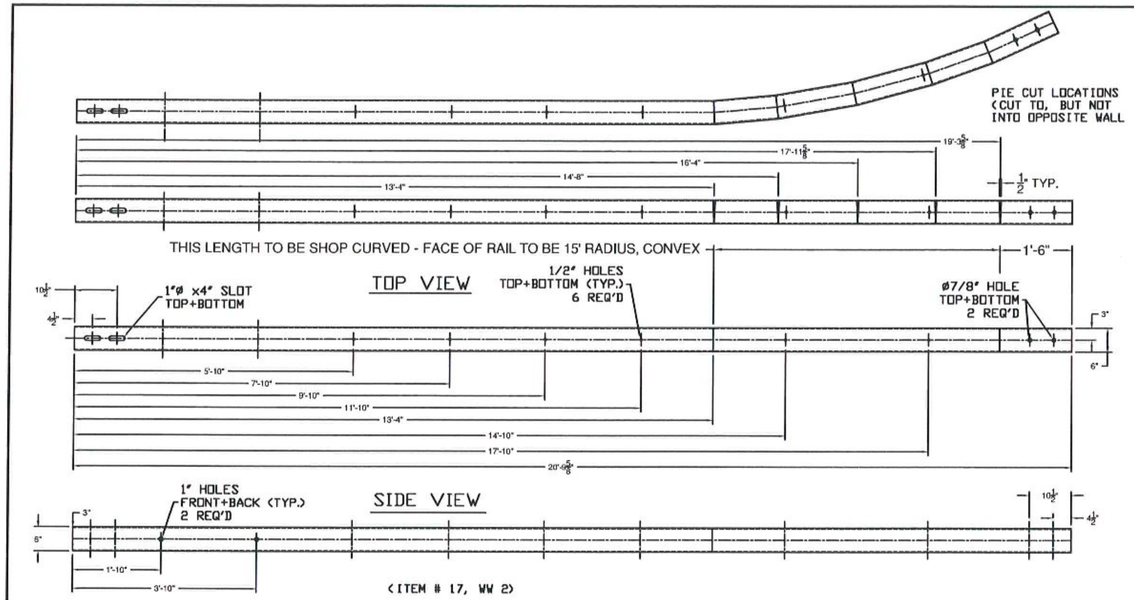
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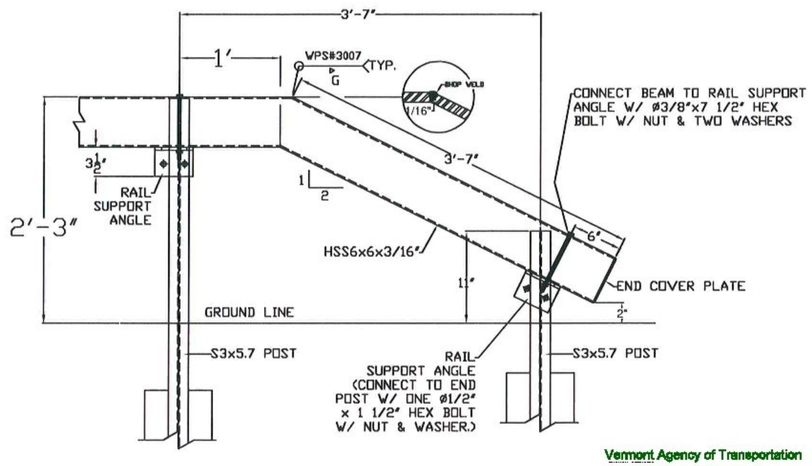
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E-Mail: dlong@elderlee.com
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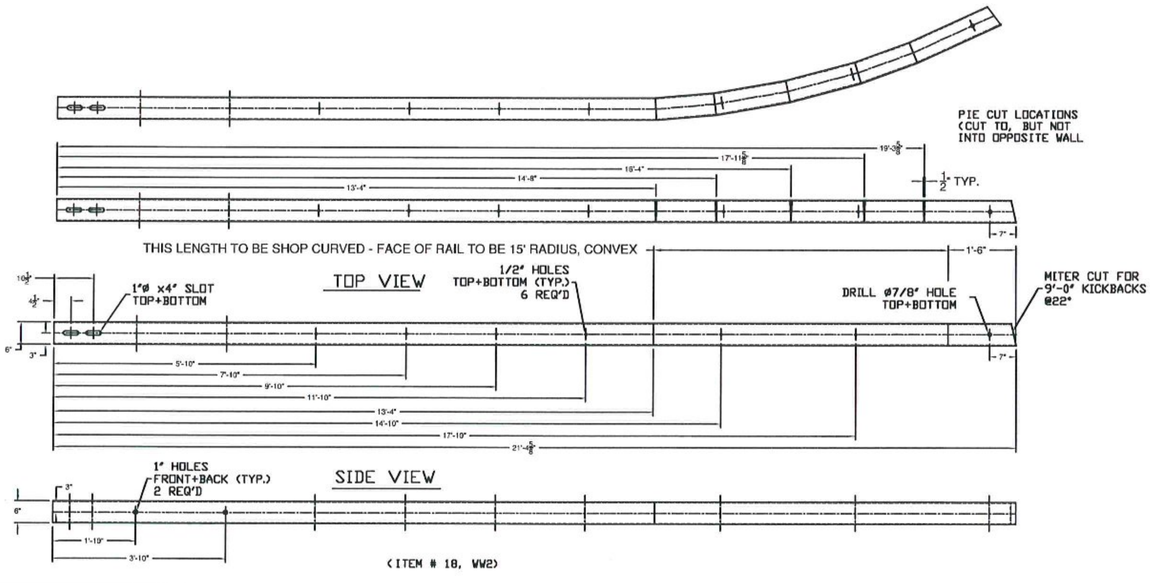
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SCALE	SCHEMATIC	

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TYPICAL END ASSEMBLY DETAIL



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02/28/2014 — DATE

ITEM #: 621.725 F.R. LAFAYETTE, CAVENDISH SHEET 8 OF 10

APPROVED BY:

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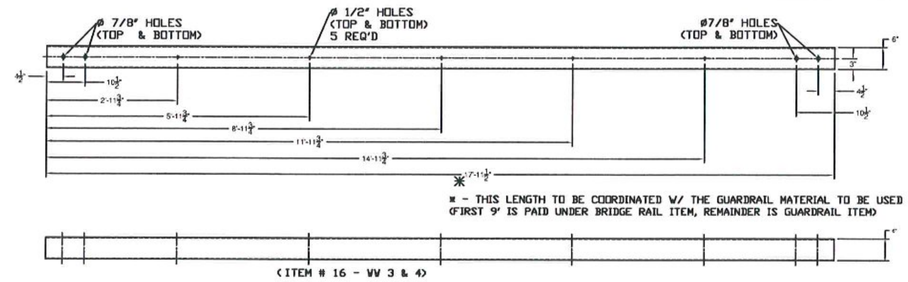
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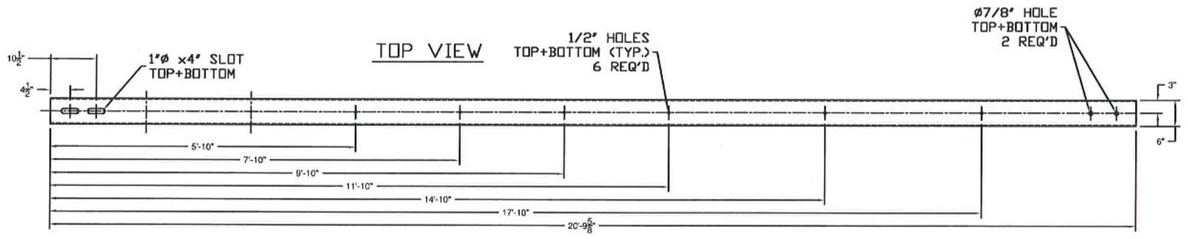
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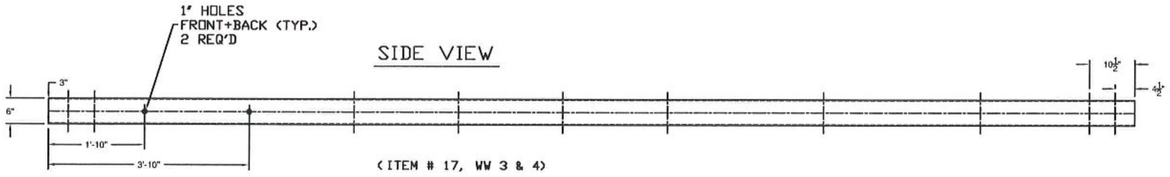
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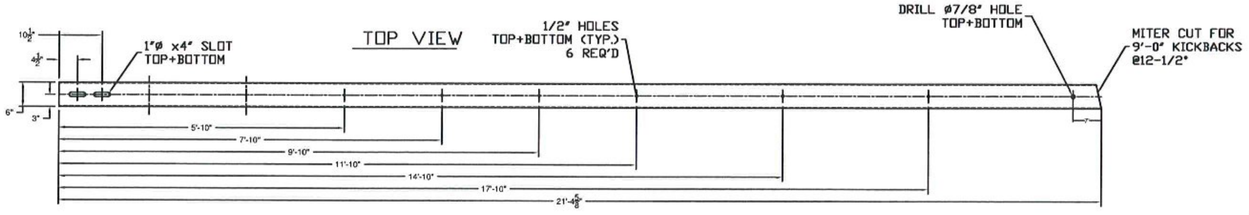
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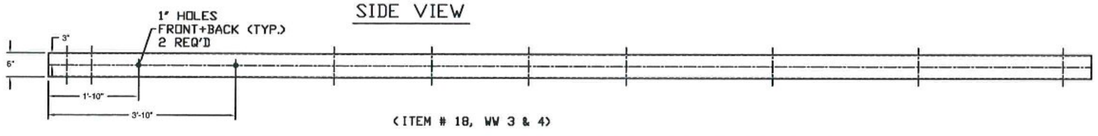
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ITEM #: 621.725 F.R. LAFAYETTE, CAVENDISH

SHEET 9 OF 10

APPROVED BY:

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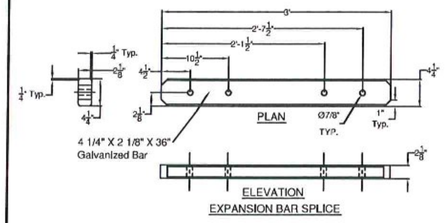
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ELDERLEE, INC.
OAKS CORNERS, NEW YORK 14518
E-Mail: dlong@elderlee.com
Tel: 315-789-6870 Fax: 315-789-6615

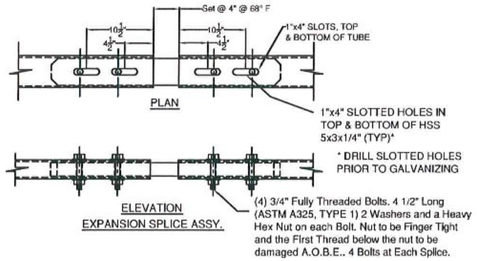
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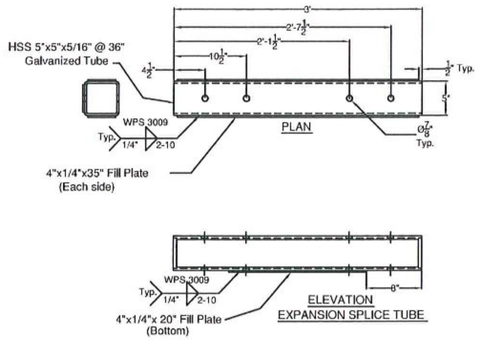
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SPLICE BAR - EXPANSION

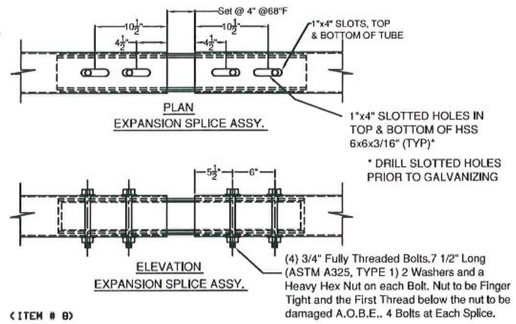


(ITEM # 9)

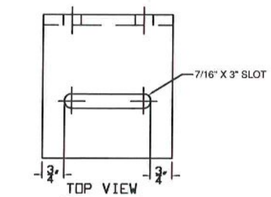


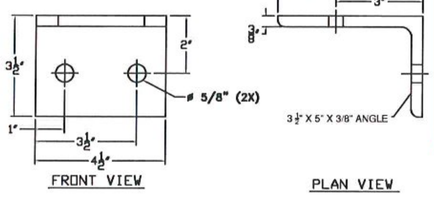


SPLICE TUBE - EXPANSION



(ITEM # 8)





(ITEM # 10)

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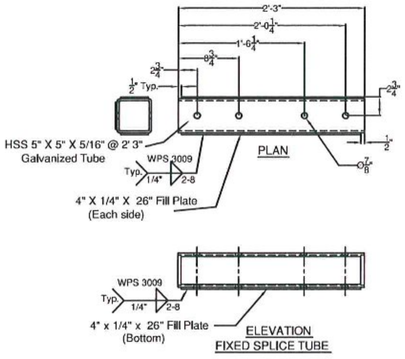
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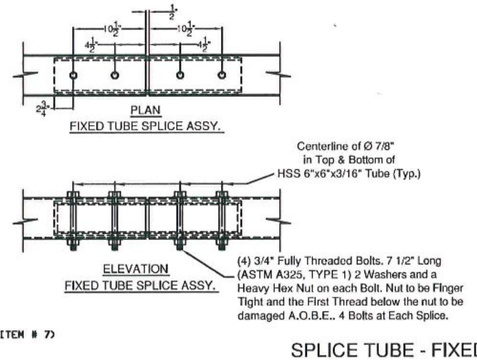
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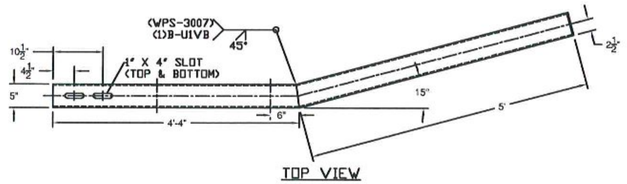
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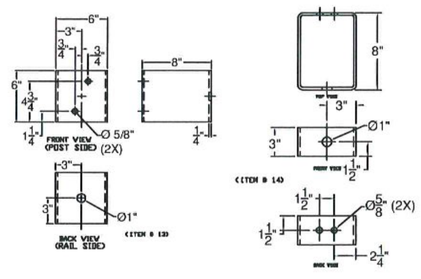


(ITEM # 7)

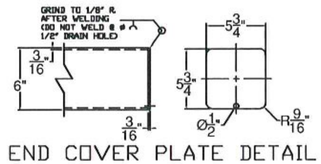
SPLICE TUBE - FIXED



(ITEM # 6, WW 1, 2, 3 & 4)



Vermont Agency of Transportation
RECEIVED
ON: February 28, 2014
and Checked for
CONFORMANCE
BY: Rob Young DATE: 03/07/2014



ITEM #: 621.725 — F.R. LAFAYETTE, CAVENDISH — SHEET 10 OF 10

APPROVED BY:

GUARD RAIL TO BRIDGE RAIL TRANSITION DETAILS SHEET

CAVENDISH, ER BRF 0416 (13), ROUTE VT 131, OVER TWENTY MILE STREAM
VERMONT

R	NO.	DATE	DESCRIPTION	BY
E	1	2/17/14	REVISED PER 12/20/13 MARK-UP	EP
V	2	2/21/14	REVISED PER 2/18/14 MARK-UP	EP

R	NO.	DATE	DESCRIPTION	BY
E				
V				

ELDERLEE, INC.
OAKS CORNERS, NEW YORK 14518
E-Mail: dlong@elderlee.com
Tel: 315-789-6670 Fax: 315-789-6615

AISC CERTIFIED FABRICATOR

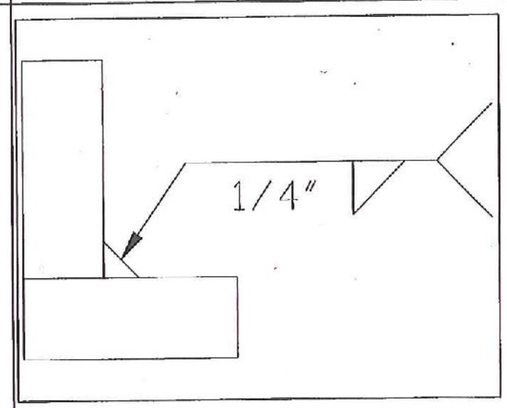
DRAWN	E.P.	11/13/13
CHECKED	D.L.	11/20/13
APPROVED	.	.
SCALE	SCHEMATIC	

DRAWING NO. F.R. LAFAYETTE, CAVENDISH

WELDING PROCEDURE SPECIFICATION

Material Specification	A709 TO A500 GR B
Welding Process	FCAW
Manual or Machine	SEMAUTOMATIC
Position of Welding	FLAT
Filler Metal Specification	A5.20 - 95
Filler Metal Classification	E71T-1H8 E71T-9H8 LINCOLN ULTRACORE
Flux	N/A
Shielding Gas	CO 2 Dew Point -40DEG F Flow Rate 50CFH
Single or Multiple Pass	SINGLE
Single or Multiple Arc	SINGLE
Welding Current	DC
Polarity	REVERSE ELECTRODE POSITIVE
Welding Progression	STRINGER
Root Treatment	D1.5
Preheat and Interpass Temperature	D1.5
Postheat Temperature	NONE
Heat Input	Min _____ Max _____

WELDING PROCEDURE

Pass no.	Electrode size	Welding Current Amperes	Welding Current Volts	Travel speed	Joint detail
1	1/16	300	26	14	
Variable	LIMITS	270 TO 330	24 TO 28	12.6 TO 15.4	

Trans Received JAN 07 2014
CK'D _____ OK'd BY JAC
Resubmit _____ APPROVED ✓
BY _____ DATE 1/8/14

This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in Section 5.

Procedure No. 3009
Revision No. _____

Contractor Elderlee, Inc.
Authorized By RANDY SCOTT
Date 5/22/2013

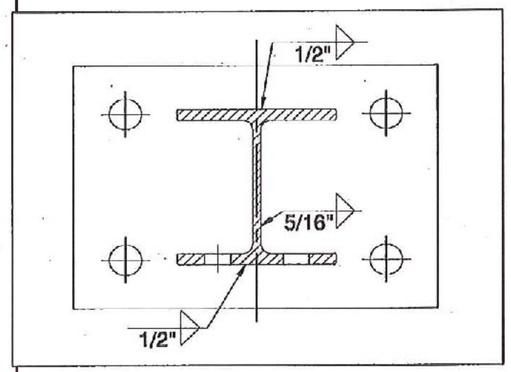
Form III-2

WELDING PROCEDURE SPECIFICATION

Material Specification	A572 GRD. 50 /A992-06a
Welding Process	FCAW
Manual or Machine	SEMAUTOMATIC
Position of Welding	FLAT
Filler Metal Specification	A5.20
Filler Metal Classification	E70 LINCOLN OUTERSHEILD
Flux	N/A
Shielding Gas	CO 2 Dew Point -40DEG F Flow Rate 50 CFM (45 TO 63 CFM)
Single or Multiple Pass	SINGLE
Single or Multiple Arc	N/A
Welding Current	DC
Polarity	DCEP
Welding Progression	STRINGER
Root Treatment	PER D1.5
Preheat and Interpass Temperature	PER D1.5
Postheat Temperature	NONE
Heat Input	Min _____ Max _____

WELDING PROCEDURE

Pass no.	Electrode size	Welding Current Amperes	Welding Current Volts	Travel speed	Joint detail
1	3/32	390	27	12	
Variable	LIMITS	351 TO 429	25 TO 29	11 TO 13	



V Trans Received JAN 07 2014
CK'D _____ DK'd BY Jw
Resubmit _____ APPROVED ✓
BY _____ DATE 1/8/14

This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in Section 5.

Procedure No. 3008
Revision No. _____

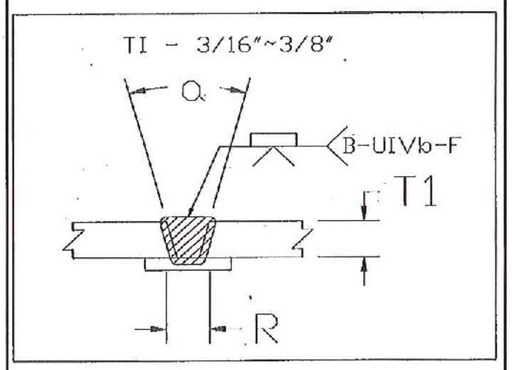
Contractor Elderlee, Inc.
Authorized By RANDY SCOTT
Date 5/29/2013

WELDING PROCEDURE SPECIFICATION

Material Specification	A500 GR B
Welding Process	FCAW
Manual or Machine	SEMAUTOMATIC
Position of Welding	FLAT
Filler Metal Specification	A5.20 - 95
Filler Metal Classification	E71T-1H8 E71T-9H8 LINCOLN ULTRACORE
Flux	N/A
Shielding Gas	CO 2 Dew Point -40DEG F Flow Rate 50CFH
Single or Multiple Pass	SINGLE
Single or Multiple Arc	SINGLE
Welding Current	DC
Polarity	REVERSE ELECTRODE POSITIVE
Welding Progression	STRINGER
Root Treatment	PER D1.5
Preheat and Interpass Temperature	PER D1.5
Postheat Temperature	NONE
Heat Input	Min _____ Max _____

WELDING PROCEDURE

Pass no.	Electrode size	Welding Current Amperes	Welding Current Volts	Travel speed	Joint detail
1	1/16	300	26	14	
Variable	LIMITS	270 TO 330	24 TO 28	12.6 TO 15.4	



Virans Received CK'D OK'd BY JWC
JAN 07 2014
Resubmit BY APPROVED DATE 1/8/14 ✓

This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in Section 5.

Procedure No. 3007
Revision No. _____

Contractor Elderlee, Inc.
Authorized By RANDY SCOTT
Date 5/29/2013

Form III-2

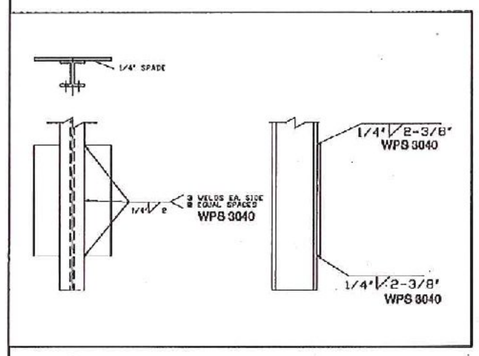
Form III-2-Sample Welding Procedure Specification

WELDING PROCEDURE SPECIFICATION

Material Specification	A36
Welding Process	GMAW
Manual or Machine	SEMAUTOMATIC
Position of Welding	FLAT
Filler Metal Specification	A5.18
Filler Metal Classification	L-50 .052 LINCOLN
Flux	N/A
Shielding Gas	90% ARGON /10% CO2 Dew Point -40DEG F Flow Rate 50 CFM
Single or Multiple Pass	SINGLE
Single or Multiple Arc	SINGLE
Welding Current	DC
Polarity	REVERSE
Welding Progression	STRINGER
Root Treatment	PER D1.5
Preheat and Interpass Temperature	PER D1.5
Postheat Temperature	NONE
Heat Input	Min _____ Max _____

WELDING PROCEDURE

Pass no.	Electrode size	Welding Current Amperes	Welding Current Volts	Travel speed	Joint detail
	.052	430	32	13	
Variable	LIMITS	387 TO 473	29 TO 34	12 TO 14	



Trans
Received
CK'D OK'd BY Jac

JAN 07 2014

Resubmit APPROVED √
BY DATE 1/8/14

This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in Section 5.

Procedure No. 3040
Revision No. _____

Contractor Elderlee, Inc.
Authorized By RANDY SCOTT
Date 12/20/2011

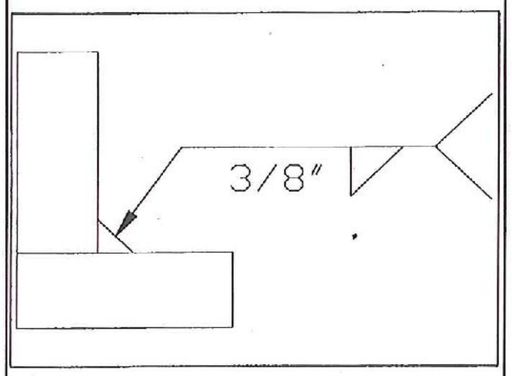
Form III-2

Form III-2-Sample Welding Procedure Specification

WELDING PROCEDURE SPECIFICATION

Material Specification	ASTM-A36 A709 GR 36 CVN
Welding Process	FCAW
Manual or Machine	SEMAUTOMATIC
Position of Welding	FLAT
Filler Metal Specification	A5.20- 95
Filler Metal Classification	E71T-1H8 E71T-9H8 LINCOLN ULTRACORE
Flux	N/A
Shielding Gas	CO 2 Dew Point -40DEG F Flow Rate 50CFH
Single or Multiple Pass	SINGLE
Single or Multiple Arc	SINGLE
Welding Current	DC
Polarity	REVERSE
Welding Progression	STRINGER
Root Treatment	PER D1.5
Preheat and Interpass Temperature	PER D1.5
Postheat Temperature	NONE
Heat Input	Min _____ Max _____

WELDING PROCEDURE

Pass no.	Electrode size	Welding Current		Travel speed	Joint detail
		Amperes	Volts		
1	1/16	300	26	14	
Variable	LIMITS	270 TO 330	24 TO 28	12.6 TO 15.4	

Trans Received JAN 07 2014
CK'D _____ OK'd BY JWC
Resubmit _____ APPROVED
BY _____ DATE 1/8/14

This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in Section 5.

Procedure No. 3016
Revision No. _____

Contractor Elderlee, Inc.
Authorized By RANDY SCOTT
Date 1/3/2013

Form III-2

Form III-2-Sample Welding Procedure Specification

CAVENDISH ER BRF 0146 (13)
CONTRACTOR FABRICATED PRE-CAST

SHEET1:ABUTMENT #1 PLAN
SHEET2:ABUTMENT #2 PLAN
SHEET3:ABUTMENT #1 ELEVATION
SHEET4:ABUTMENT #2 ELEVATION
SHEET5:APPROACH SLAB #1 PLAN
SHEET6:APPROACH SLAB #1 CASTING PLAN
SHEET7:APPROACH SLAB #2 PLAN
SHEET8:APPROACH SLAB #2 CASTING PLAN
SHEET9:POST TENSIONING DETAILS
SHEET10:FORMING PLAN
SHEET11:ENCLOSURE DETAILS
SHEET12:ENCLOSURE DETAILS
SHEET13:QUALITY CONTROL
SHEET14:GENERAL NOTES
SHEET15:REINFORCING STEEL
SHEET16:CONCRETE MIX DESIGN
SHEET17:TEMPORARY BEARING LAYOUT
SHEET18:BEARING DETAILS AND NOTES

REVISION # 1 11-19-13
REVISION # 2 12-6-13

T-Y-LIN INTERNATIONAL

____ No Exception Taken
__X__ Make Correction as Noted
____ Submit Specified Item
____ Revise and Resubmit as Noted
____ Rejected

Checking is for general compliance with the design concept of the project and general compliance with the information given in the contract documents only. Any action shown is not an approval and is subject to the requirements of the plans and specifications. Any action shown on a specific item shall not indicate the checking of an assembly of which the item is a component. Contractor is solely responsible for: dimensions which shall be confirmed and correlated at the job site, fabrication processes, techniques of construction, safety precautions; and coordination of its work with that of all other trades and the satisfactory performance of its work.

Reviewed By: RY Date: 12/10/2013

THERE IS NO NEED TO RESUBMIT THESE DRAWINGS. PLEASE NOTE MINOR CORRECTIONS/COMMENTS ON SHEETS 8 AND 15.

Vermont Agency of Transportation
RECEIVED
ON: December 10, 2013
and Checked for
CONFORMANCE
BY: Rob Young DATE: 12/11/2013

STATE OF VERMONT
PHILIP J. SAVOY
No. 5671
REGISTERED
PROFESSIONAL ENGINEER

12-10-13

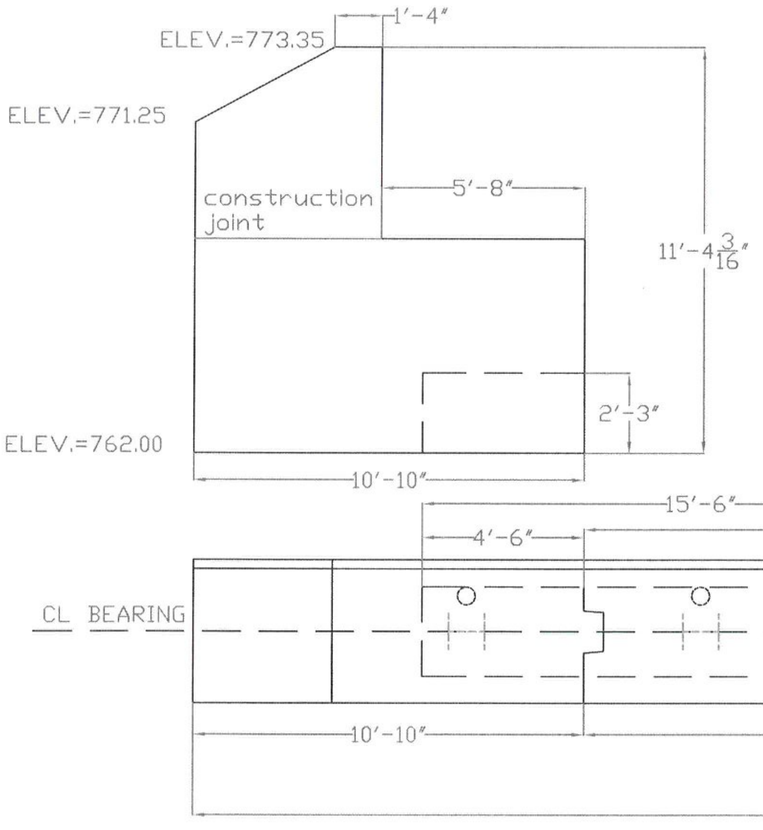
COLD RIVER BRIDGES, LLC
10 LANBRO LANE
TEL 603-756-9300 WALPOLE, NH FAX 603-756-9303

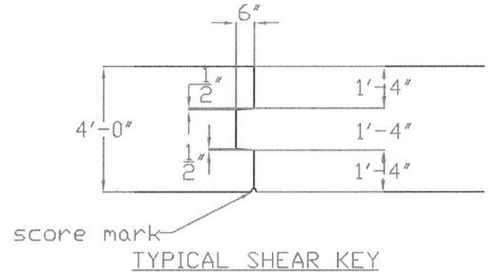
CAVENDISH ER BRF 0146(13)

COVER SHEET/INDEX

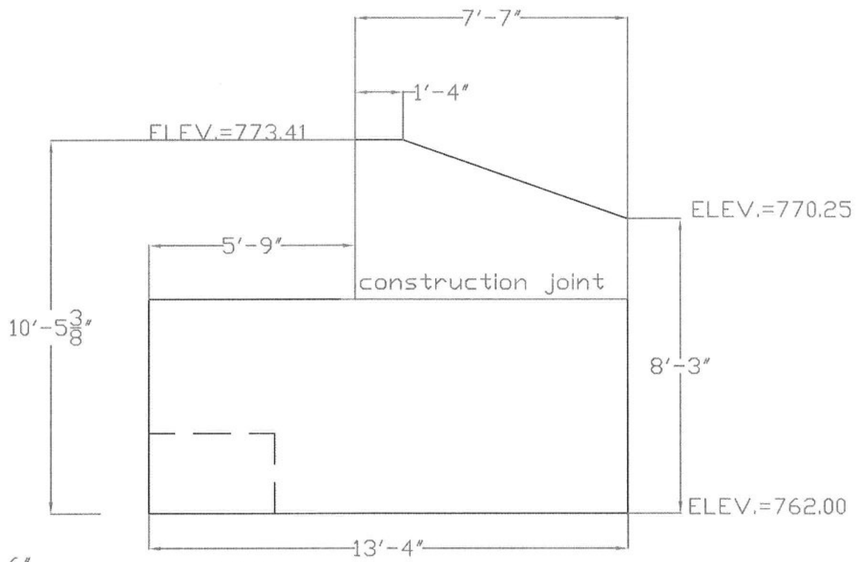
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COVER

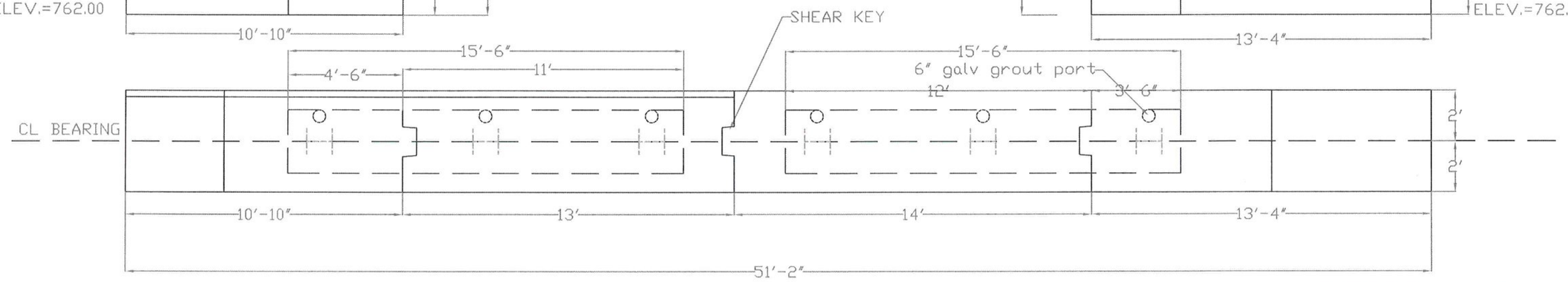
DATE: 10-31-13 Scale:





TYPICAL SHEAR KEY





ABUTMENT 1 PLAN&ELEV VIEW

REVISION # 1 11-19-13
REVISION # 2 12-6-13

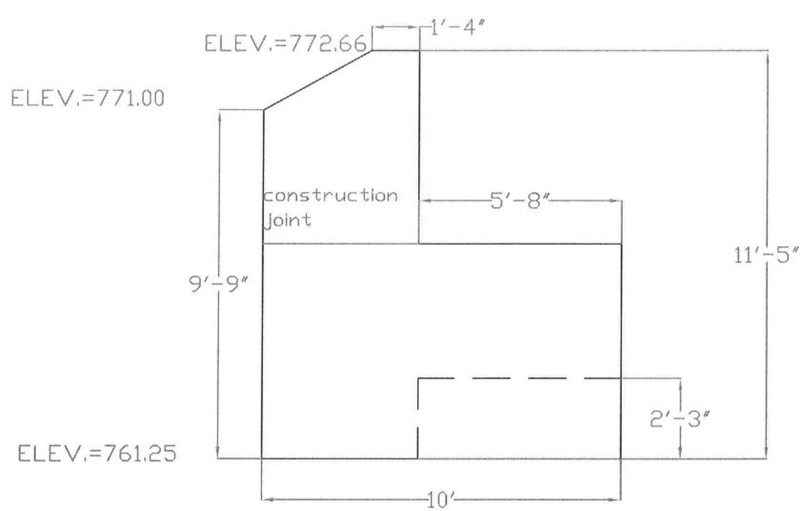
COLD RIVER BRIDGES, LLC
10 LANBRO LANE
TEL 603-756-9300 WALPOLE, NH FAX 603-756-9303

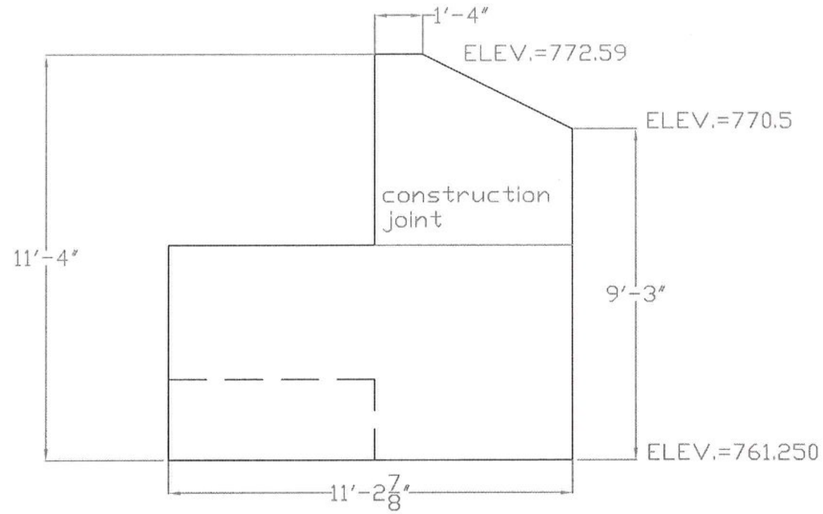
CAVENDISH ER BRF 0146(13)

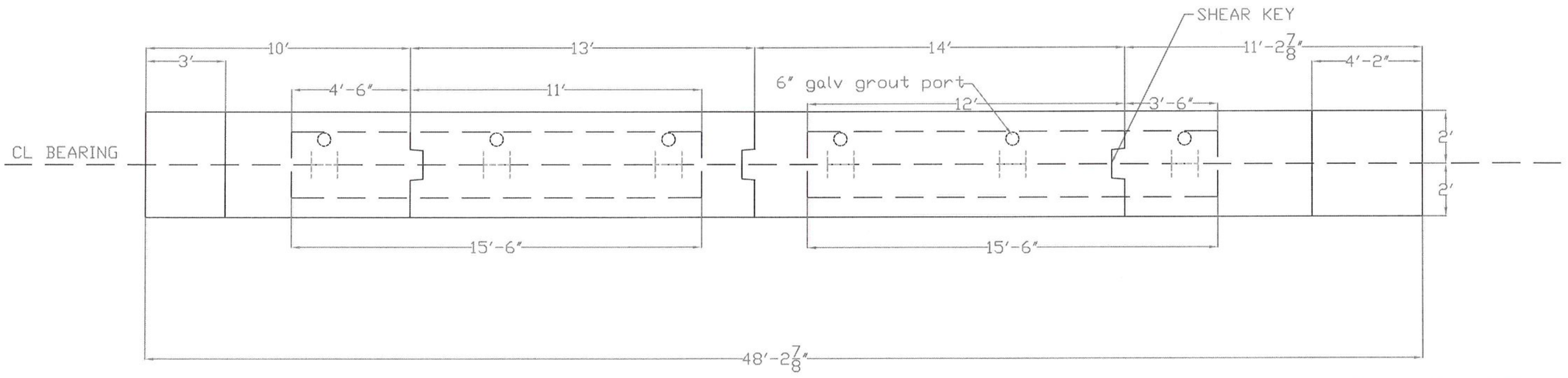
ABUTMENT 1 PLAN

SHEET NUMBER 1

DATE: 10-2-13 scale: 1/4"=1'







ABUTMENT 2 PLAN&ELEV VIEW

REVISION # 1 11-19-13
REVISION # 2 12-6-13

COLD RIVER BRIDGES, LLC
10 LANBRO LANE
TEL 603-756-9300 WALPOLE, NH FAX 603-756-9303

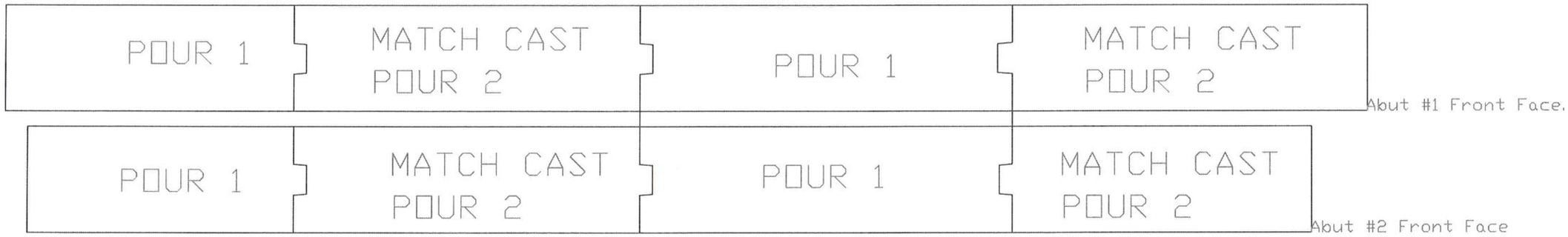
CAVENDISH ER BRF 0146(13)

ABUTMENT 2 PLAN

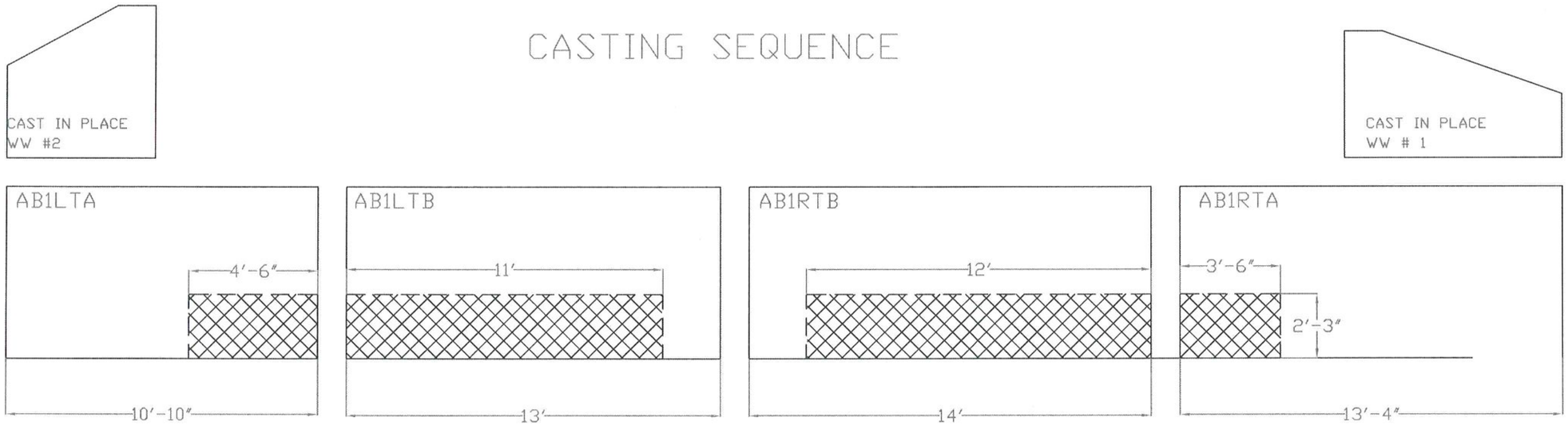
SHEET NUMBER 2

DATE: 10-2-13 scale: 1/4"=1'

NOTE:
USE MECHANICAL CONNECTOR #6 EPOXY COATED IN WINGWALLS AND ABUTMENTS EACH FACE AND SEAT LEVEL EPOXY COATED MECH CONNECTORS APPROVED BY PROJECT MANAGER 11-19-13-GALVANIZED NOT REQUIRED



CASTING SEQUENCE



ABUTMENT 1 ELEVATION VIEW

REVISION # 1 11-19-13
REVISION # 2 12-6-13

COLD RIVER BRIDGES, LLC
10 LANBRO LANE
TEL 603-756-9300 WALPOLE, NH FAX 603-756-9303

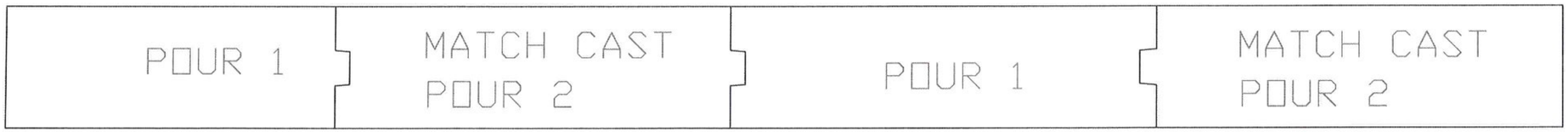
CAVENDISH ER BRF 0146(13)

ABUTMENT 1 PLAN

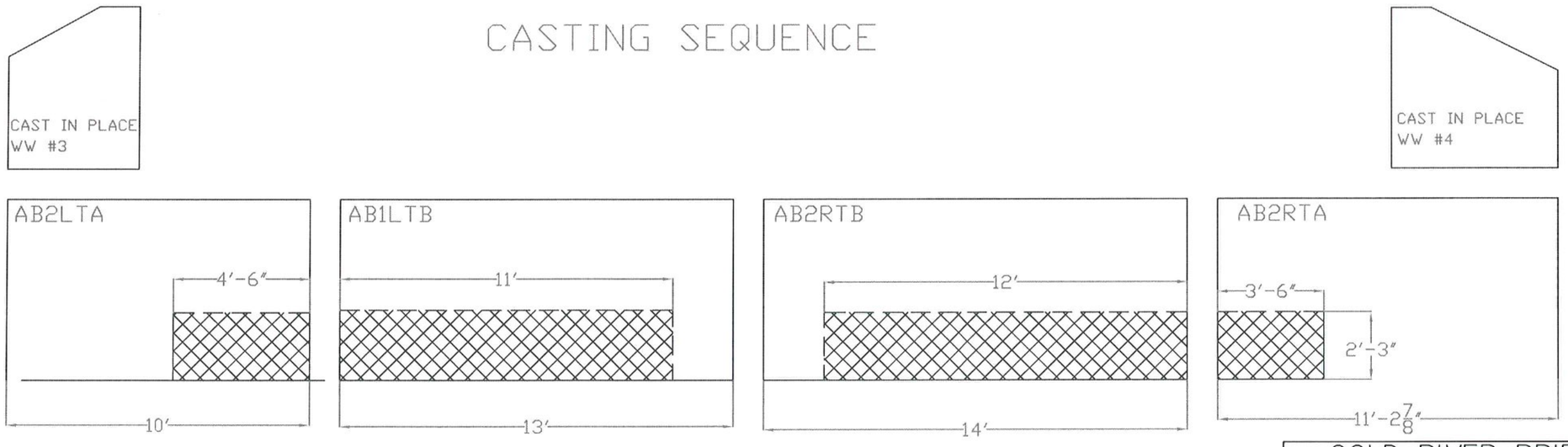
SHEET NUMBER 3

DATE: 10-2-13 scale:

NOTE:
USE MECHANICAL CONNECTOR #6 EPOXY COATED IN WINGWALLS AND ABUTMENTS EACH FACE AND SEAT LEVEL EPOXY COATED MECH CONNECTORS APPROVED BY PROJECT MANAGER 11-19-13-GALVANIZED NOT REQUIRED



CASTING SEQUENCE



ABUTMENT 2 ELEVATION VIEW

REVISION # 1 11-19-13
REVISION # 2 12-6-13

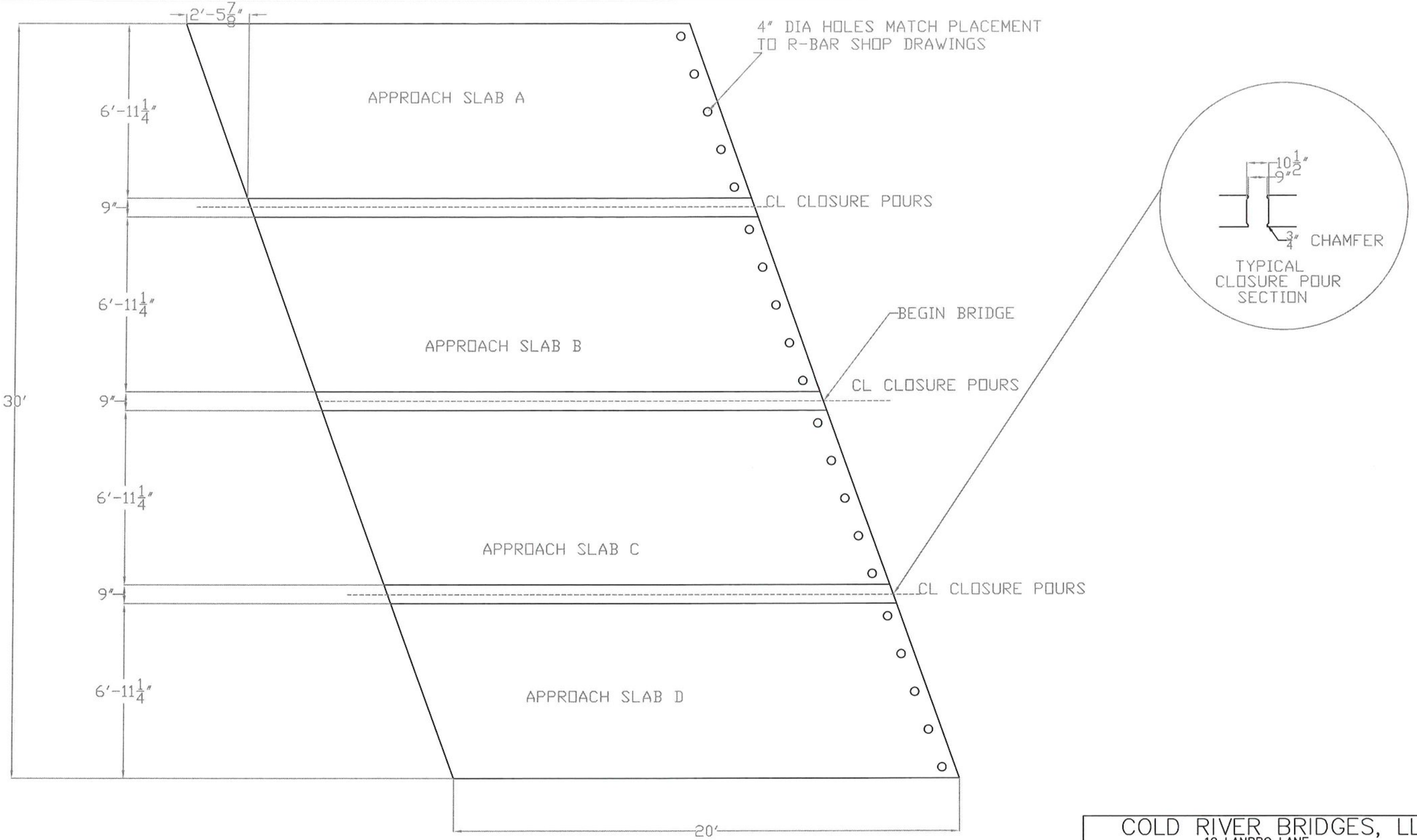
COLD RIVER BRIDGES, LLC
10 LANBRO LANE
TEL 603-756-9300 WALPOLE, NH FAX 603-756-9303

CAVENDISH ER BRF 0146(13)

ABUTMENT 2 PLAN

SHEET NUMBER 4

DATE: 10-2-13 scale:



APPROACH SLAB 1 PLAN VIEW

REVISION # 1 11-19-13

REVISION # 2 12-6-13

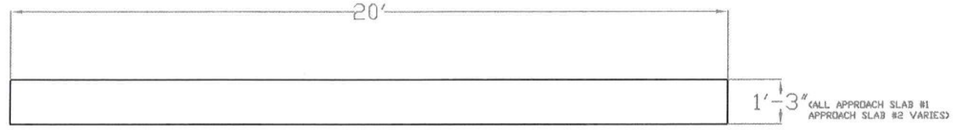
COLD RIVER BRIDGES, LLC
10 LANBRO LANE
TEL 603-756-9300 WALPOLE, NH FAX 603-756-9303

CAVENDISH ER BRF 0146(13)

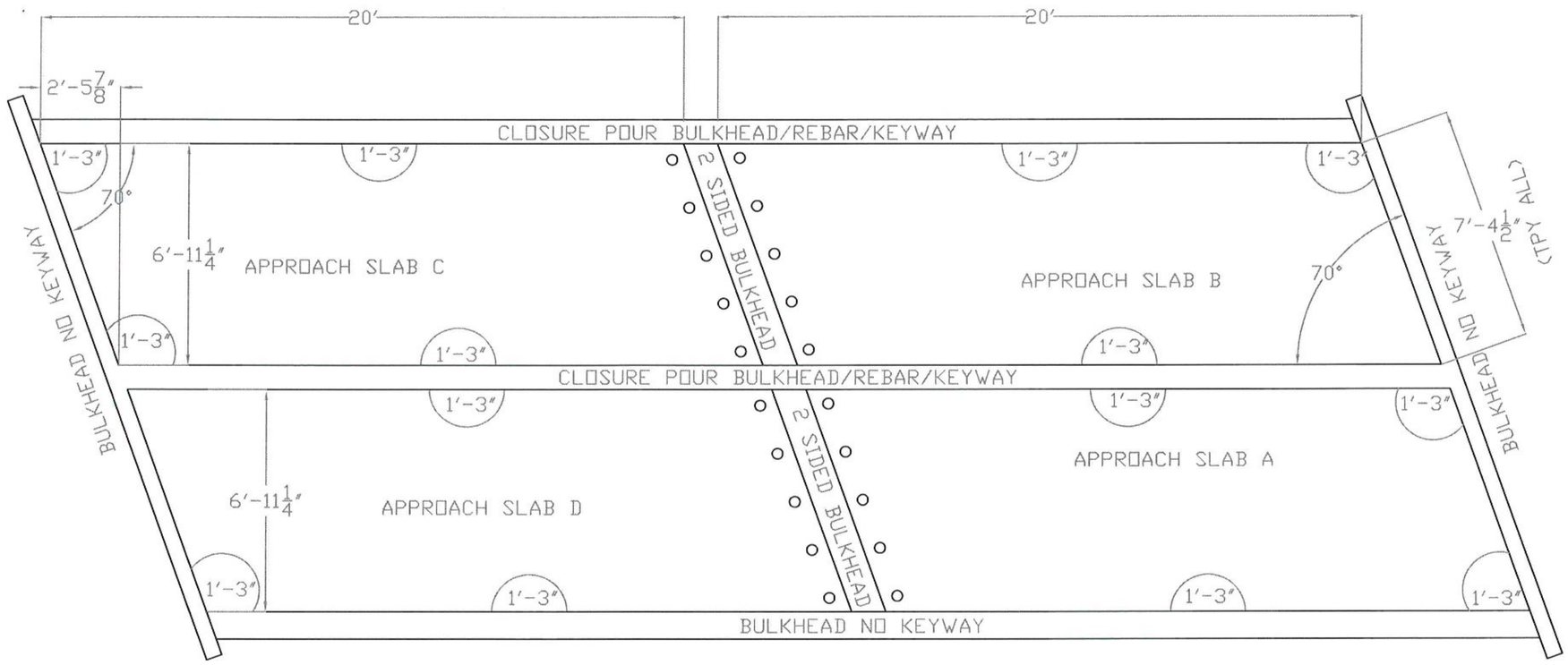
APPROACH SLAB 1

SHEET NUMBER 5

DATE: 10-2-13 scale:



APPROACH SLAB 1 ELEVATION VIEW



APPROACH SLABS A,B,C,D
CASTING LAY-OUT
REVISION # 1 11-19-13
REVISION # 2 12-6-13

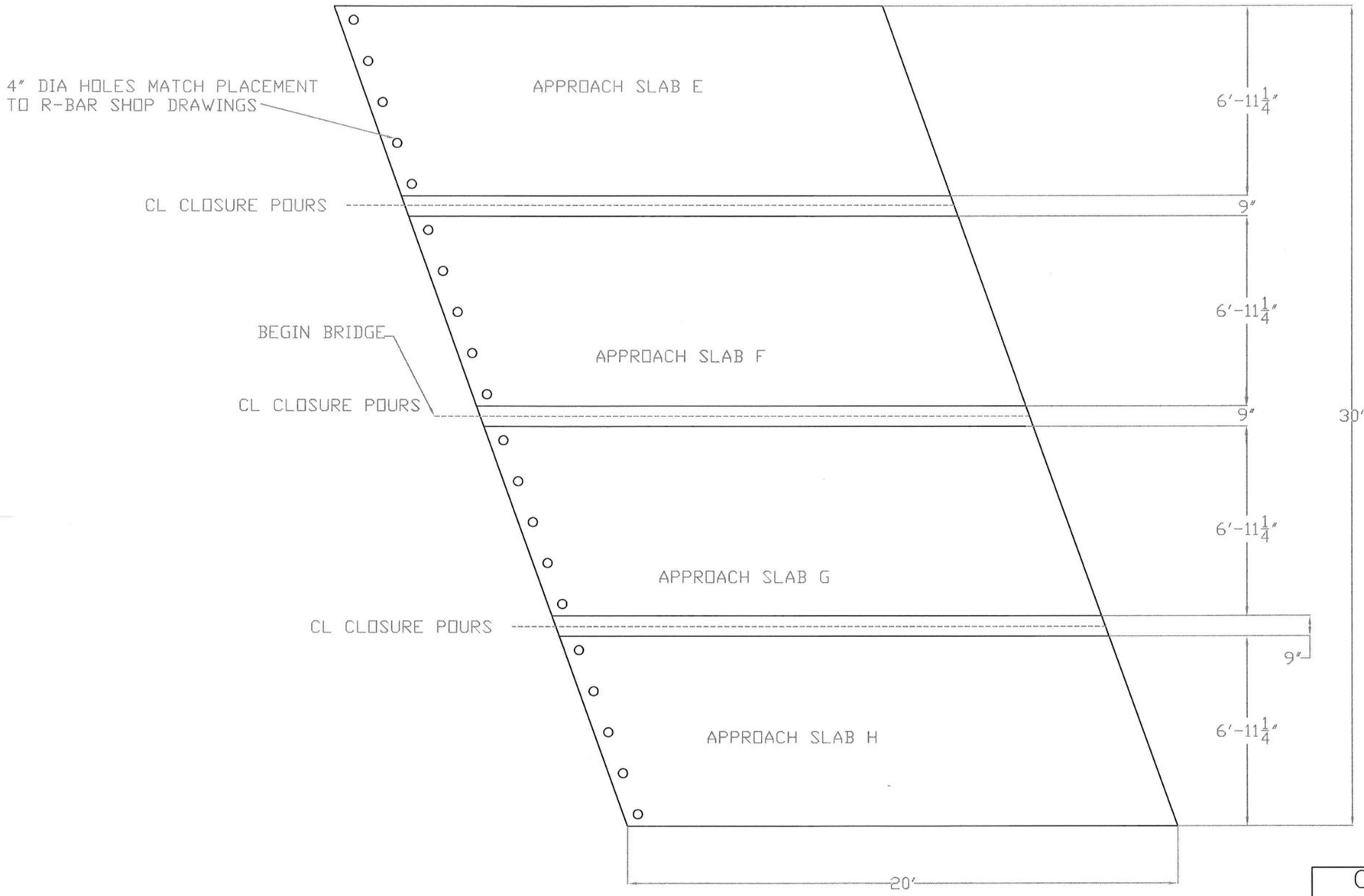
COLD RIVER BRIDGES, LLC
10 LANBRO LANE
TEL 603-756-9300 WALPOLE, NH FAX 603-756-9303

CAVENDISH ER BRF 0146(13)

APPROACH SLAB 1

SHEET NUMBER 6

DATE: 10-2-13 scale:



APPROACH SLAB 2 PLAN VIEW

REVISION # 1 11-19-13
REVISION # 2 12-6-13

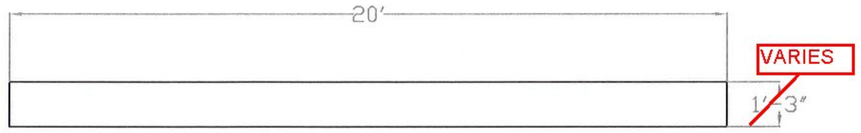
COLD RIVER BRIDGES, LLC
10 LANBRO LANE
TEL 603-756-9300 WALPOLE, NH FAX 603-756-9303

CAVENDISH ER BRF 0146(13)

APPROACH SLAB 2

SHEET NUMBER 7

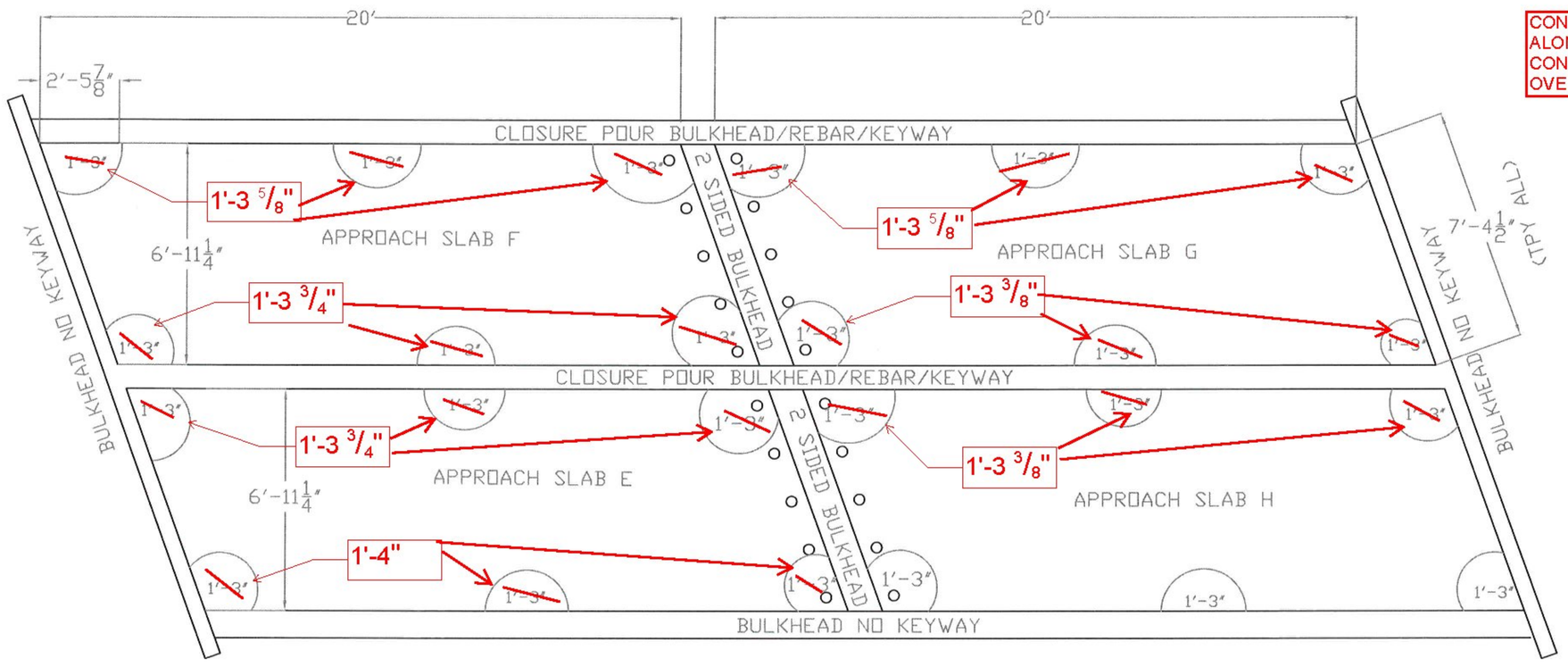
DATE: 10-2-13 SCALE:



APPROACH SLAB 2 ELEVATION VIEW

APPROACH SLAB # 2 THICKNESS HAS BEEN CHANGED BY THE PROJECT MANAGER TO A CONSISTENT 1'-3"

CONSTANT THICKNESSES ALONG EDGES, BUT NOT CONSTANT THICKNESS OVERALL



APPROACH SLABS E,F,G,H
CASTING LAY-OUT

REVISION # 1 11-19-13
REVISION # 2 12-6-13

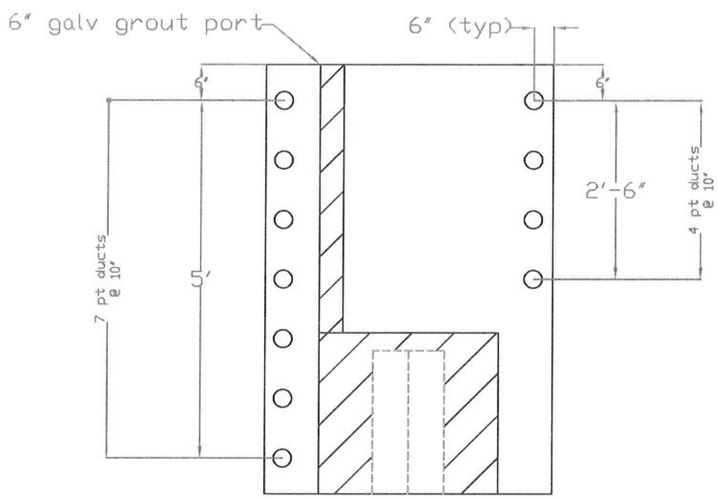
COLD RIVER BRIDGES, LLC
10 LANBRO LANE
TEL 603-756-9300 WALPOLE, NH FAX 603-756-9303

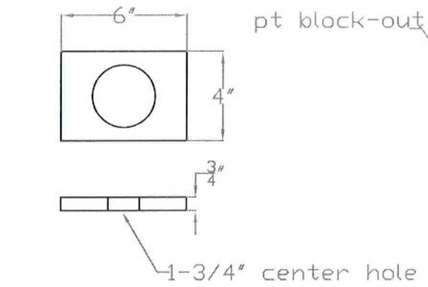
CAVENDISH ER BRF 0146(13)

APPROACH SLAB 2

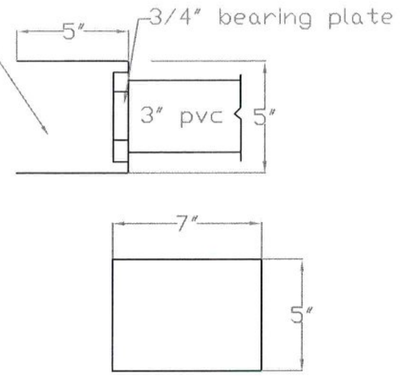
SHEET NUMBER 8

DATE: 10-2-13 scale:





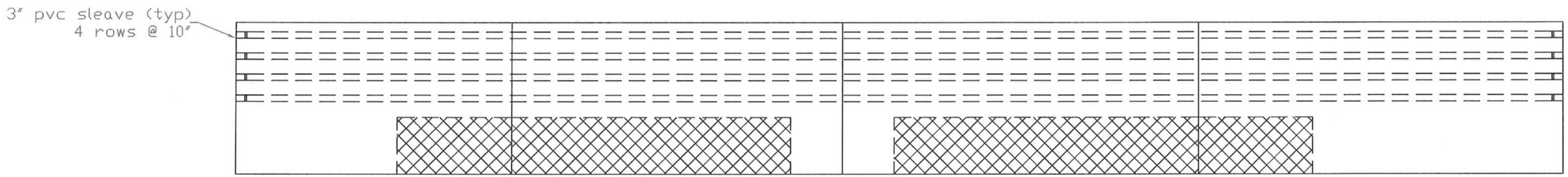
BEARING PLATE DETAIL
NTS



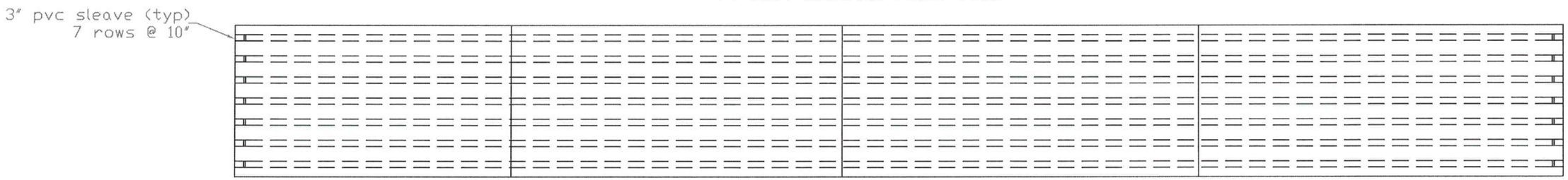
TYPICAL PT BLOCK OUT
NTS

BILL OF MATERIALS
1. 6 dia,270 ksi low relaxation 7 strand monostrand tendons (11)@54', 11@51'
2. 22each .6" encapsulated anchors with tubes,grease caps and weddges
3. 44 each 4x6 bearing plates

pt material and services supplied by Constructive Services of Dedham,Ma



PT DUCT LOCATION FRONT FACE



PT DUCT LOCATION REAR FACE

REVISION # 1 11-19-13
REVISION # 2 12-6-13

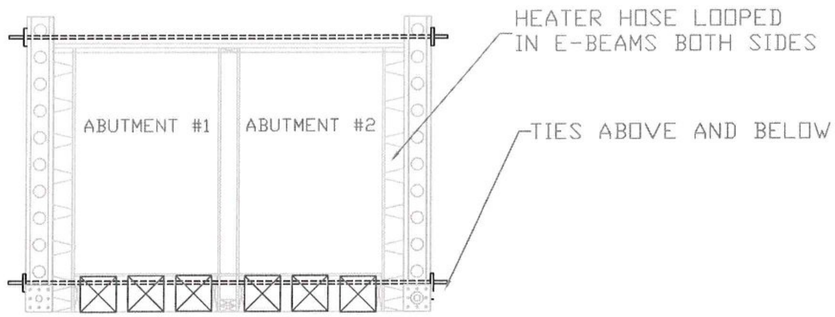
COLD RIVER BRIDGES, LLC
10 LANBRO LANE
TEL 603-756-9300 WALPOLE, NH FAX 603-756-9303

CAVENDISH ER BRF 0146(13)

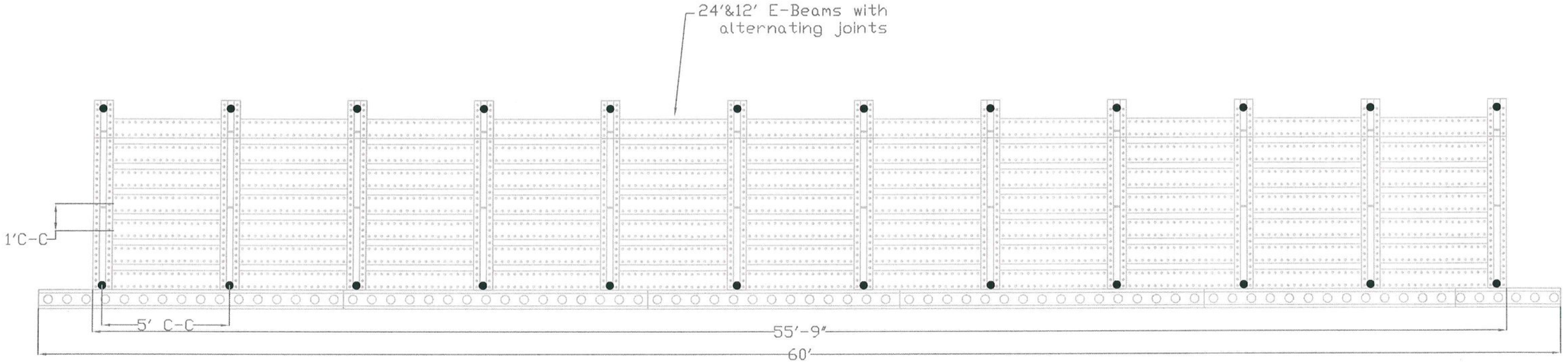
POST-TENSION DETAILS

SHEET NUMBER 9

DATE: 10-2-13 scale:



TYPICAL FORMING SECTION



TYPICAL FORMING ELEV VIEW
REVISION # 1 11-19-13
REVISION # 2 12-6-13

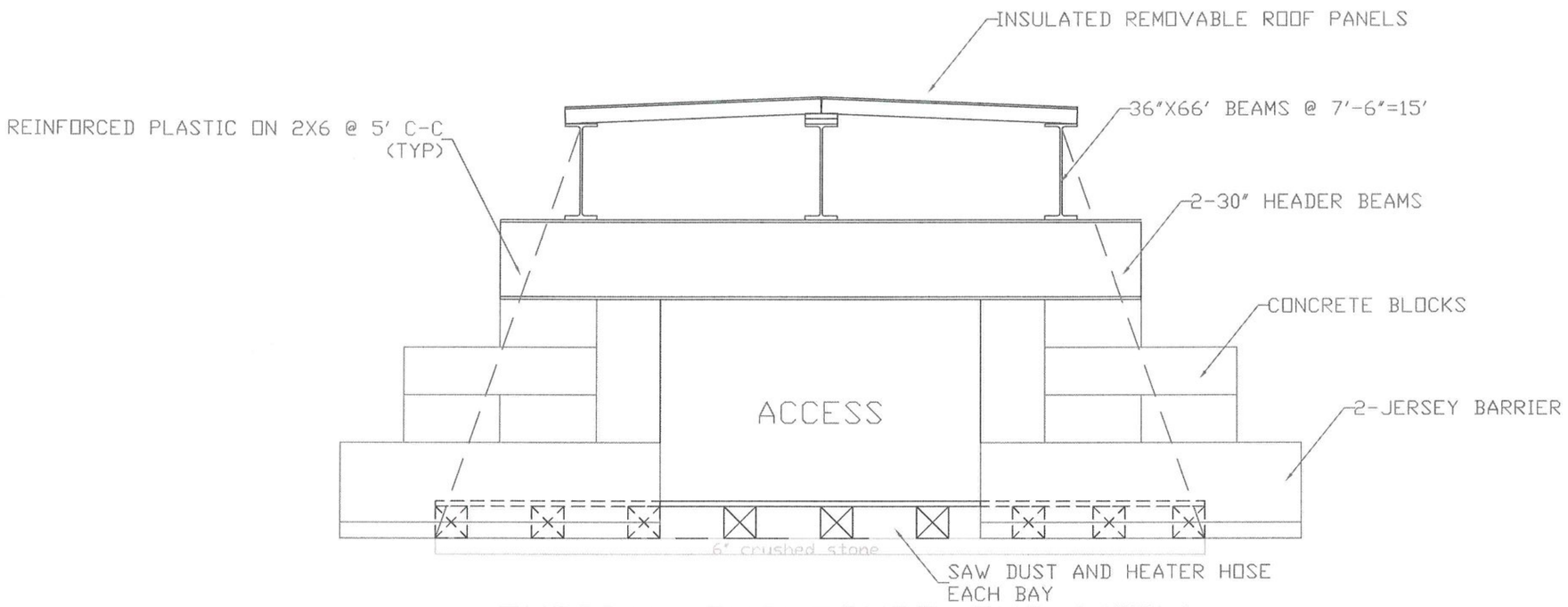
COLD RIVER BRIDGES, LLC
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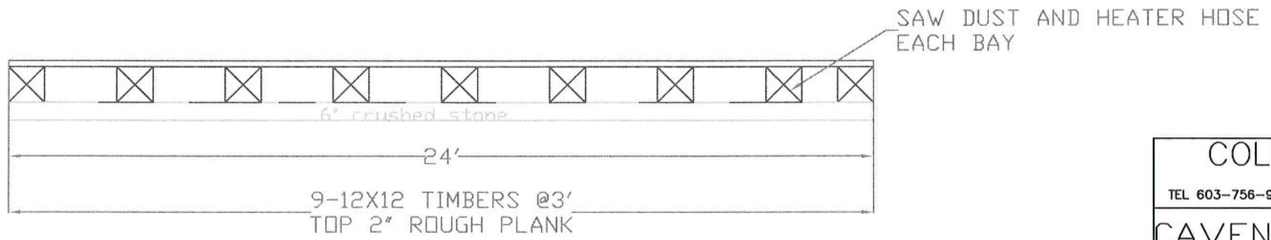
FORMING DETAILS

SHEET NUMBER 10

DATE: 10-2-13 scale:



TYPICAL ENCLOSURE END VIEW



TYPICAL WORK PLATFORM

REVISION # 1 11-19-13

REVISION # 2 12-6-13

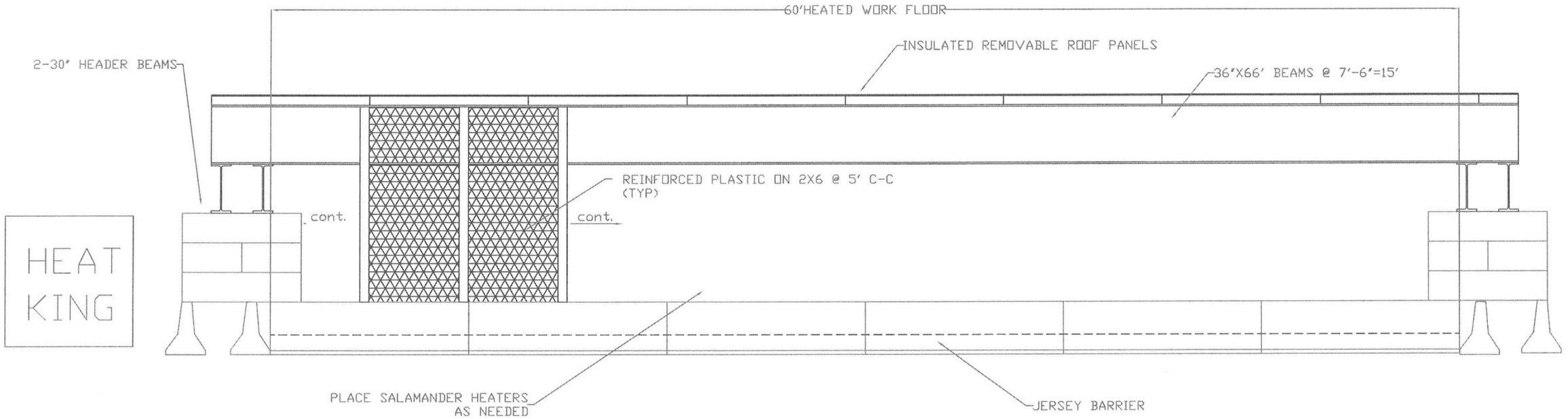
COLD RIVER BRIDGES, LLC
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ENCLOSURE DETAILS

SHEET NUMBER 11

DATE: 10-2-13 scale:



ENCLOSURE ELEVATION VIEW

REVISION # 1 11-19-13
REVISION # 2 12-6-13

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ENCLOSURE DETAILS

SHEET NUMBER 12

DATE: 10-2-13 scale:

QUALITY CONTROL PROCEDURES.

1.CARROLL CONCRETE WILL BE RESPONSIBLE FOR THE CONTRACTOR./SUPPLIOR QC TESTING DURING CONCRETE POURS.

2.A PRE-PRODUCTION MEETING SHALL BE HELD BETWEEN THE CONTRACTOR AND RESIDENT ENGINEER BEFORE CONCRETE PLACEMENT.

3. VTRANS WILL RETAIN THEIR RESPONSIBILITIES FOR QUALITY ACCEPTANCE TESTING.

4. FOUR EXTRA CYLINDER SETS PER CONCRETE PLACEMENT SHALL BE TAKEN FOR EARLY STRENGTH BREAKS.

5. ALL INSIDE FORM DIMENSION AND R-BAR SPACING AND CLEARANCES SHALL BE REVIEWED AND DOCUMENTED ON THE PRE-POUR INSPECTION SHEET BY THE CONTRACTOR AND THE RESIDENT ENGINEER BEFORE CASTING IS COMMENCED..

6. BEFORE FORMS ARE ERECTED THE CONTRACTOR WILL INSPECT ALL FORM-WORK FOR DAMAGE OR RESIDUAL CONCRETE. ANY DEFICIENCY IN THE FORM WORK SHALL BE CORRECTED BEFORE FORM WORK CONTINUES.

7. FORMS SHALL HAVE A GENEROUS COATING OF FORM OIL APPLIED. . CAUTION WILL BE TAKEN NOT TO HAVE PONDING OF FORM OIL IN THE BASE OF THE FORM OR ON ANY R-BAR.

8. ALL PRE-CAST WILL BE INSPECTED BY BOTH THE CONTRACTOR AND THE RESIDENT ENGINEER AND DOCUMENTED ON THE POST POUR INSPECTION SHEET. ANY MINOR REPAIRS AND HONEY COMBING OR RUBBING NECESSARY WILL BE COMPLETED USING A SAND AND PORTLAND SLURRY FROM THE SAME SOURCE AS THE CONCRETE. ANY MAJOR REPAIRS WILL BE REPAIRED WITH A VERTICAL ```OVERHEAD PATCH FROM THE APPROVED PRODUCTS LIST.

10.. CONCRETE TOLERANCES +- $\frac{1}{4}$"-REINFORCING PLACEMENT +-1/4" COVER AND CLEARANCE 1" BAR SPACING .

11. EACH PIECE OF PRE-CAST SHALL BE MARKED WITH ITS UNIT NUMBER AND DATE OF CASTING

12. CURE METHODS WILL MEET THE REQUIRMENTS OF SECTION 501.17A(5). IF THE CONCRETE TEMPERATURE DROPS BELOW 50 DEGREE OR A WET CONDITION IS NOT MAINTAINED THE CURE WILL BE EXTENDED PER SECTION 501.17 (a)

13. MATCH CAST SURFACES WILL BE COATED WITH DAYTON SUPERIOR J9A WHITE WAX CURE AT A MIN. RATE OF 200 SF PER GALLON. THIS COATING WILL ACT AS A BOND BREAKER DURING MATCH CASTING.
14. PRE-CAST KEYWAYS WILL BE SANDBLASTED TO REMOVE ANY RESIDULE BOND BREAKER.
15. KEYWAYS SHALL BE AIR BLASTED BEFORE ERECTION TO PREP SURFACE FOR THE APPLICATION OF THE EPOXY BONDING COMPOUND.
16. EPOXY BONDING COMPOUND SHALL BE SIKADUR HI-MOD 32 OR = FROM THE VTRANS APPROVED PRODUCTS LIST.

WINTER WORK PROVISIONS:

1.Cold River Bridges will be constructing the abutments and approach slabs inside of an enclosure. Construction of the enclosure is detailed on sheet #10

2.Concrete will meet the temperature requirements of section 501.07. Hot water will be mixed with the aggregate prior to the introduction of cement to produce a uniform temperature no lower than 50 degrees and not to exceed 80 degrees.

3.Form work and r-bar will be pre-heated inside of the casting enclosure to 50 degrees with the use of radiant heat and supplemental "salamander heaters".This will produce a redundant source of heat.

4.After the placement of concrete a combination of radiant heat and salamanders will be used for the full length of the cure. Maintaining cast concrete temperatures above 50 degrees for cure period.

5. Digital temperature data loggers will be used to monitor cure. 1 data logger will be supplied per unit.

REVISION # 1 11-19-13

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QC PROCEDURES/PLAN

SHEET NUMBER 13

DATE: 10-30-13 scale:

CONCRETE NOTES:
CONTRACTOR-FABRICATED PRECAST CONCRETE STRUCTURES.

1.APROACH SLABS- 5000 PSI

2.WINGWALLS-5000 PSI

3.ALL CONCRETE ABOVE WILL BE SUPPLIED BY CARROLL CONCRETE INC.

4.ALL CONCRETE MIX DESIGNS HAVE BEEN SUBMITTED BY CARROLL CONCRETE INC,COPIES ARE INCLUDED ON SHEET 16

7. APPROACH SLABS SHALL HAVE A TEXTURED BROOM FINISH.

8. WINGWALLS AND ABUTMENT POUR TOP WILL HAVE ROUGH FINISH.

8. ABUTMENTS AND APPROACH SLABS FORMS CAN BE REMOVED WHEN THE SPECIFIED CONCRETE HAS REACHED 85% OF ITS DESIGN STRENGTH. CURE WILL CONTINUE BASED ON TABLE 501.17A "CURING CONCRETE COMPONENTS" 7 DAYS OFCURING. PER SECTION 501.17(5)

9. ALL EXPOSED CONCRETE EDGES SHALL BE CHAMFERED 3./4"

10. ALL LIFTING DEVISES ARE GALVANIZED

11. USING REDUCED CONCRETE STRENGTH FOR THE LIFTING DESIGN PRODUCES A MORE CONSERVATIVE DESIGN.

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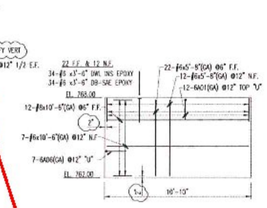
GENERAL NOTES

SHEET NUMBER 14

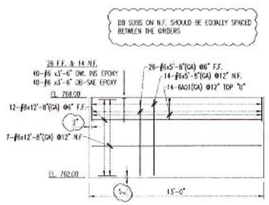
DATE: 10-30-13 scale:

PLEASE VERIFY COVER AND LAP OF DWL BARS

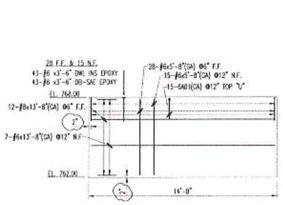
CAST IN PLACE WW #2



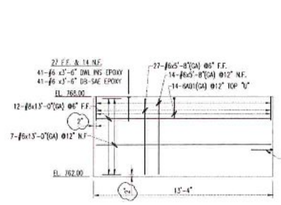
AB1LTA REINF



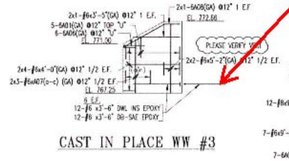
AB1LTB REINF



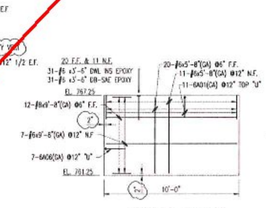
AB1RTB REINF



AB1RTA REINF

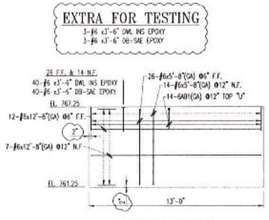


CAST IN PLACE WW #3

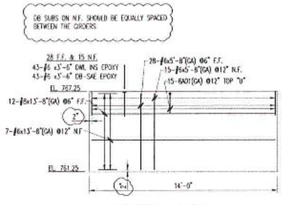


AB2LTA REINF

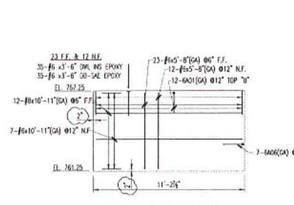
EXTRA FOR TESTING
3-#6 x3'-6" DWL INS EPOXY
3-#6 x3'-6" DB-SAE EPOXY



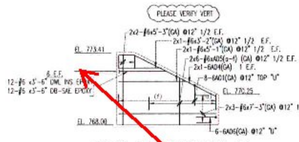
AB2LTB REINF



AB2RTB REINF



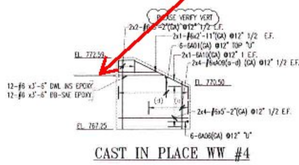
AB2RTA REINF



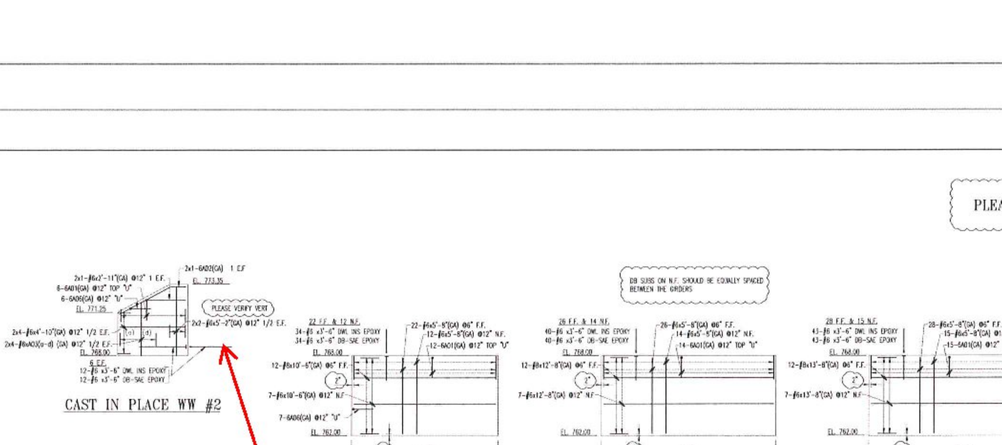
CAST IN PLACE WW #1

AND TO AVOID CONFLICT WITH ADJACENT GIRDERS

FIELD CUT DWL BAR SUBS AS NEED TO ACCOUNT FOR WINGWALL SLOPE

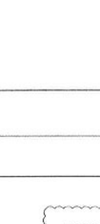


CAST IN PLACE WW #4



APPROACH SLAB #1

APPROACH SLAB #2



Bar List

Drawing Sheet																							
Bar Mark	Qty	Size	Total Length	Type	X	W	Y	Z	Y	Y	Y	W	Z	W	Y	W	W	W	W	W	W	W	W
5A12	84	#5	16'-5"	17		7'-10"	8"	7'-10"															
5A13	168	#5	12'-1"	17		5'-4"	8"	5'-4"															
6A1a	2	#6	5'-4"			5'-4"																	
6A1b	2	#6	5'-8"			5'-8"																	
6A1c	2	#6	6'-1"			6'-1"																	
6A1d	2	#6	6'-5"			6'-5"																	
6A1e	2	#6	7'-1"			7'-1"																	
6A1f	2	#6	7'-8"			7'-8"																	
6A2a	2	#6	5'-4"			5'-4"																	
6A2b	2	#6	5'-8"			5'-8"																	
6A2c	2	#6	6'-1"			6'-1"																	
6A2d	2	#6	6'-5"			6'-5"																	
6A2e	2	#6	7'-1"			7'-1"																	
6A2f	2	#6	7'-8"			7'-8"																	
6A3a	2	#6	5'-4"			5'-4"																	
6A3b	2	#6	5'-8"			5'-8"																	
6A3c	2	#6	6'-1"			6'-1"																	
6A3d	2	#6	6'-5"			6'-5"																	
6A01	122	#6	6'-6⅛"	17		1'-4"	5'-8"	1'-4⅛"															
6A02	2	#6	5'-4"	3		4'-3"	1'-1"							7"		11⅛"	5'-2⅛"						
6A04	2	#6	7'-10⅛"	3		6'-10⅛"	1'-1"							8⅛"		11⅛"	7'-10"						
6A05	10	#6	6'-6"	17		1'-4"	5'-4"	1'-8"															
6A06	2	#6	6'-6"	3		5'-4⅛"	1'-1⅛"							7⅛"		11⅛"	6'-4"						
6A10	2	#6	5'-6"	3		4'-6⅛"	1'-1⅛"							7"		11⅛"	5'-4"						
5A13	715	#5	30'-10⅛"	1	1'-5"	28'-3⅛"										11⅛"							

ALL (GA) IS FOR DUAL COATED
ASTM A1035 60 KSI

6-#5x20'-0"[GA] @12" EXTRA
6-#5x20'-0"[GA] @12" EXTRA
1-9A11[GA] @10" BOT

ENG. AND ARCH. PLEASE VERIFY ALL CLOUDED AREAS

LAP CHART-U.N.O.

#11	
#10	
#9	
#8	
#7	
#6	
#5	
#4	
#3	
SIZE	TOP BARS * | OTHER BARS

* Top bars are horiz. bars with more than 12" of concrete cast below the bars.

No.	Description	Date	By
1	ADDED NOTES/CORRECTIONS	12-6-13	TRH
0	APPROVAL	11-15-13	TRH

Revisions and Issue Record

The full intent and purpose of this drawing is the placing of reinforcing steel bars ONLY. It is NOT to be used as a means of communication between the Architect, Engineer, Contractor or any other Sub-trades.

THIS DRAWING IS NOT TO BE SCALED.

Harris Rebar Custom Shop — Rational Strength. Local Service.

DETAILED AT: CANAAN NEW HAMPSHIRE

Project: BRIDGE REPLACEMENT CAVENDISH, VT

Drawing: ABUTMENT AND APPROACH SLABS

Customer: COLD RIVER BRIDGES

Engineer:

Refer to Release:

Date	Drawn	Chkd.	JOB No.	Dwg. No.
11-14-13	TRH		10050769	R01

M:\Shell Projects\10050769\Fabrication Drawings\Abut\R01.dwg

REVISION # 1 11-19-13
REVISION # 2 12-6-13

COLD RIVER BRIDGES, LLC
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REINFORCING PLAN

SHEET NUMBER 15

DATE: 11-19-13 scale: 1/4"=1'

MIX DESIGNS HAVE BEEN SUBMITTED TO THE VERMONT AOT FOR APPROVAL. CLOSURE POUR CONCRETE MIX DESIGNS WILL BE SUBMITTED SEPARATELY

STATE OF VERMONT
AGENCY OF TRANSPORTATION
MATERIAL AND RESEARCH SECTION - STRUCTURAL CONCRETE UNIT

STRUCTURAL CONCRETE MIX DESIGN SUBMISSION

Agency Use Only	
Mix ID	HP00-A-0
Mix Design #	
Approved by	
Approved Date	
Spec Book Year	2013

Concrete class: HPC A
Additional Description:
Ready Mix Supplier: CARROLL CONCRETE - CHARLESTOWN, NH
Designed By: Scott Jordan
Design strength: 5000 PSI
Design by dry weight or saturated surface dry: SSD

Mix designs are valid for a 12 month period from date of approval or unless there is a change in material, material property or design parameter.

Cement: 701.02	Source: / Brand Name:			Specific Gravity		lb/cy	0.00 cf
Cement Type III: 701.04	Source: / Brand Name:			Specific Gravity		lb/cy	0.00 cf
Blended Cement: 701.06	Source: LAFARGE - TERCEM - MONTREAL, EAST PLANT / Brand Name:			Specific Gravity	3.020	611 lb/cy	3.24 cf
Cement with Slag: 701.07	Source: / Brand Name:			Specific Gravity		lb/cy	0.00 cf
Pozzolan: 725.03(a)	Source: / Brand Name:			Specific Gravity		lb/cy	0.00 cf
Fly Ash: 725.03(a)	Source: / Brand Name:			Specific Gravity		lb/cy	0.00 cf
Silica Fume: 725.03(b)	Source: / Brand Name:			Specific Gravity		lb/cy	0.00 cf
Slag: 725.03(c)	Source: / Brand Name:			Specific Gravity		lb/cy	0.00 cf
Water					31 gals	258.7 lb/cy	4.14 cf
Air Content Target					7.0 %		1.89 cf
Coarse Aggregate 3/8" 704.02A	Source:	Absorption		Specific Gravity		lb/cy	0.00 cf
Coarse Aggregate 3/4" 704.02B	Source: COLD RIVER MATERIALS PIT - N WALPOLE, NH	Absorption	0.80	Specific Gravity	2.830	1719 lb/cy	9.73 cf
Coarse Aggregate 1 1/2" 704.02C	Source:	Absorption		Specific Gravity		lb/cy	0.00 cf
Fine Aggregate: 704.01	Source: NEWPORT SAND & GRAVEL - NEWPORT, NH	Absorption	1.00	Specific Gravity / Fineness Modulus	2.660 / 2.69	1328 lb/cy	8.00 cf
Air Entrainment Admixture 725.02(b)	Source: MASTER BUILDERS INC - MESQUITE, TX / Brand Name: Micro Air			Specific Gravity		1.5 oz/cy	
Retarder Admixture: 725.02(c)	Source: MASTER BUILDERS INC - MESQUITE, TX / Brand Name: Pozzolith 100XR			Specific Gravity		1 oz/cwt	
High Range Water Reducer Admixture: 725.02(h)	Source: MASTER BUILDERS INC - MESQUITE, TX / Brand Name: Glenium 7500			Specific Gravity		3 oz/cwt	
Other Admixtures:				Specific Gravity		oz/cwt	0.00 cf
	Source: / Brand Name:			Specific Gravity			0.00 cf
	Source: / Brand Name:			Specific Gravity			0.00 cf
	Source: / Brand Name:			TOTAL	46.510	3917 lb	27.00 cf

Maximum Water/Cementitious Ratio: 0.44
Maximum Water (gal/cy): 32.2
Slump Min/Max (inch): 4.0 min — 7.0 max
Air Content Min/Max (%): 5.0 min — 9.0 max
Design Unit Wt. (lb/cf): 145.06

Notes:

2013 Construction season 2011 specification 5000-psi precast 11-19-13

REVISION # 1 11-19-13
REVISION # 2 12-6-13

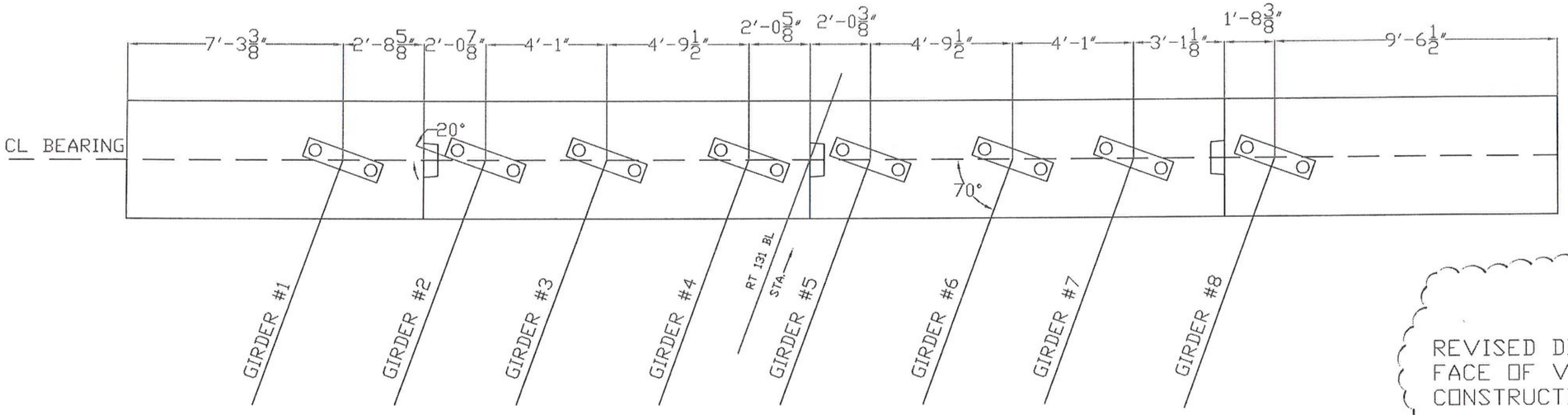
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CONCRETE MIX DESIGN

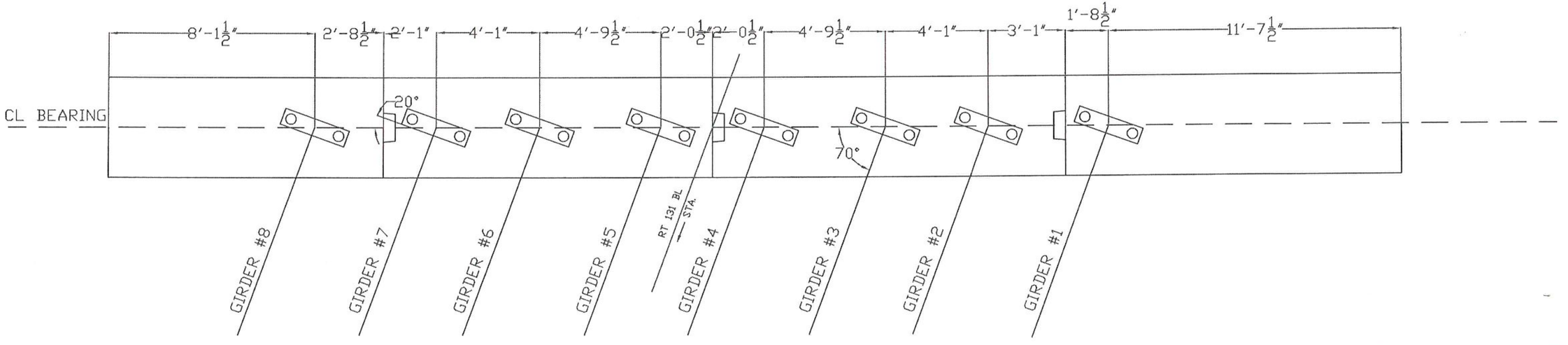
SHEET NUMBER 16

DATE: 11-19-13 SCALE: 1/4"=1'



REVISED DIMENSIONS FROM FACE OF VERTICAL CONSTRUCTION JOINT

ABUTMENT 2 BEARING LAY-OUT



ABUTMENT 1 BEARING LAY-OUT

REVISION # 1 11-19-13
REVISION # 2 12-6-13

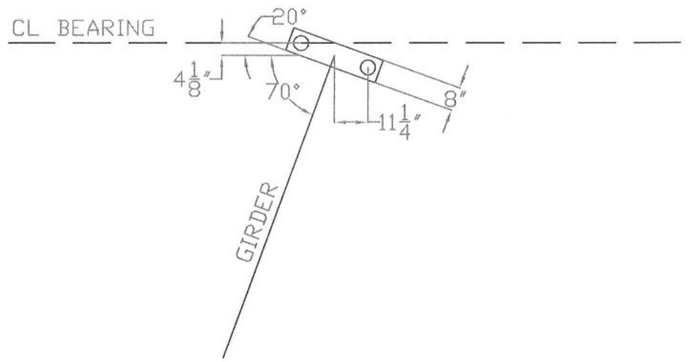
COLD RIVER BRIDGES, LLC
10 LANBRO LANE
TEL 603-756-9300 WALPOLE, NH FAX 603-756-9303

CAVENDISH ER BRF 0146(13)

BEARING LAY-OUT

SHEET NUMBER 17

DATE: 11-18-13 scale:



TYPICAL BEARING LAY-OUT DETAIL

TEMPORARY BEARING NOTES:

1. TEMPORARY BEARINGS WILL BE CAST IN PLACE.
2. GROUT OR EPOXY USED TO INSTALL ANCHOR BOLTS WILL BE APPROVED BY THE RESIDENT ENGINEER OR FROM THE APROOVED PRODUCTS LIST.
3. TEMPORARY BEARING ASSEMBLIES ARE BEING SUPPLIED BY CASCO BAY STEEL STRUCTURES. DETAILS AND SHOP DRAWINGS WILL BE PART OF THE STRUCTURAL STEEL SUBMITTALL.

REVISION # 1 11-19-13
REVISION # 2 12-6-13

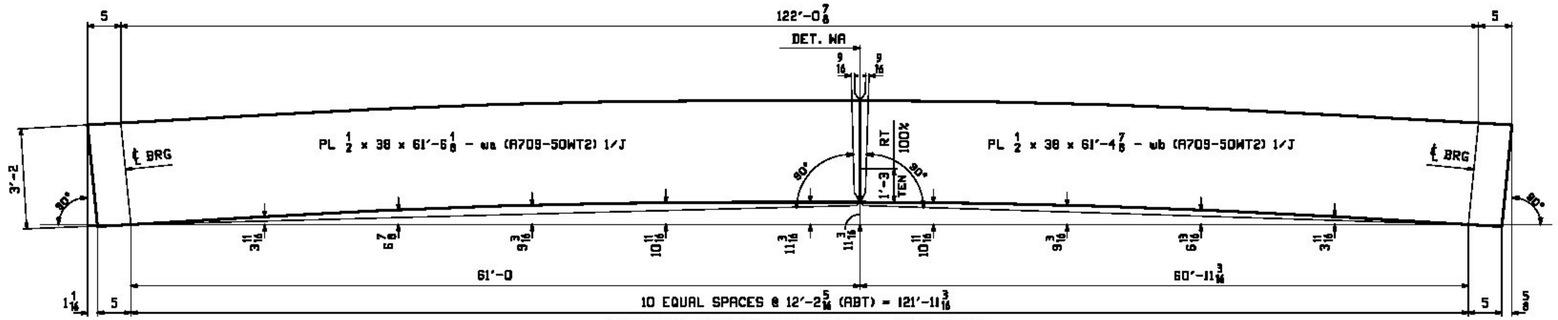
COLD RIVER BRIDGES, LLC
10 LANBRO LANE
TEL 603-756-9300 WALPOLE, NH FAX 603-756-9303

CAVENDISH ER BRF 0146(13)

BEARING DETAIL&NOTES

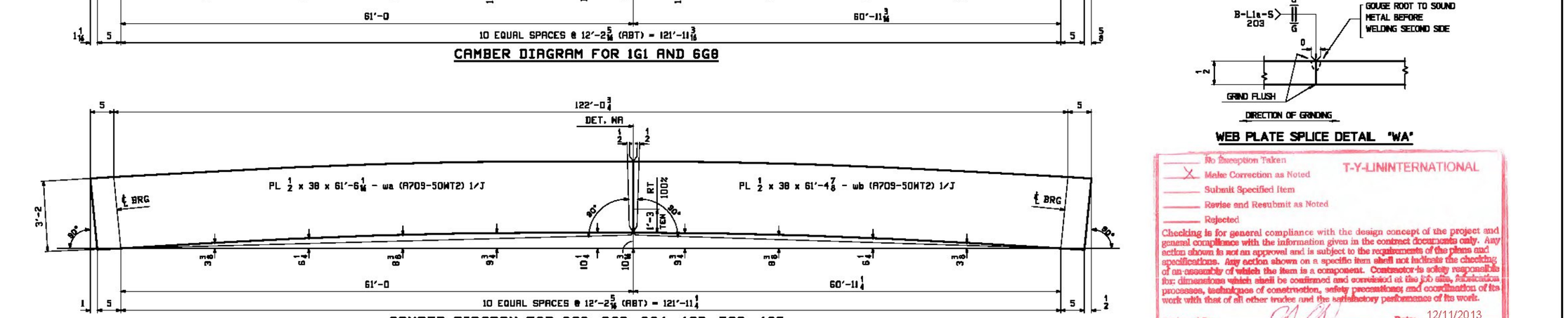
SHEET NUMBER 18

DATE: 11-18-13 scale:



CAMBER DIAGRAM FOR 1G1 AND 6G8

CAMBER DIAGRAM FOR 2G2, 3G3, 2G4, 4G5, 5G6, 4G7



FLANGE DIAGRAM FOR 1G1, 2G2, 3G3, 2G4, 4G5, 5G6, 4G7, 6G8

NOTES:

FOR GENERAL NOTES SEE DRAWING GN1.
T2 - DENOTES MATERIAL SUBJECT TO CHARPY V-NOTCH TEST FOR ZONE 2.

WEB PLATE SPLICE DETAIL "WA"

Vermont Agency of Transportation
RECEIVED
ON: December 2, 2013
and Checked for
CONFORMANCE
BY: Rob Young DATE: 12/18/2013

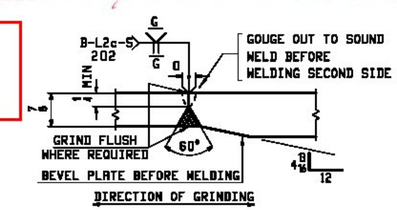
No Exception Taken
X Make Correction as Noted
Submit Specified Item
Revise and Resubmit as Noted
Rejected

T-Y-LIN INTERNATIONAL

Checking is for general compliance with the design concept of the project and general compliance with the information given in the contract documents only. Any action shown is not an approval and is subject to the requirements of the plans and specifications. Any action shown on a specific item shall not indicate the checking of an assembly of which the item is a component. Contractor is solely responsible for: dimensions which shall be confirmed and correlated at the job site, fabrication processes, techniques of construction, safety precautions; and coordination of its work with that of all other trades and the satisfactory performance of its work.

Reviewed By: _____ Date: 12/11/2013

THERE IS NO NEED TO RESUBMIT. PLEASE NOTE MINOR COMMENTS ON GN1.



FLANGE PLATE SPLICE DETAIL "FA"

REV.	DATE	REMARKS	DWN	CHK	APVL	SHOP
0						

MATERIAL:	SURFACE PREP. & PAINT:	HOLES:	SHOP BOLTS:
		AS NOTED	AS NOTED

DESCRIPTION: CAMBER AND FLANGE DIAGRAMS

CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. PHONE (207) 780-6722
SOUTH PORTLAND, ME 04106 FAX. (207) 780-6726

TEMSCR 3634

STRUCTURE: VT RTE 131 OVER TWENTYMILE STREAM WINDSOR COUNTY VERMONT AGENCY OF TRANSPORTATION	DRAWN: ELG	DATE: 09/20
	CHKD: RLA	DATE: 10/03
LOCATION: CAVENDISH, VERMONT	JOB NO. 541	DWG NO. C1
PROJ NO. ER BRF 0146(13)		REV.
CUSTOMER: COLD RIVER BRIDGES, LLC		

GENERAL NOTES

CONSTRUCTION SPECIFICATIONS

1. ALL MATERIAL AND WORKMANSHIP TO BE IN ACCORDANCE WITH THE 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.

AASHTO M 270 (ASTM A709)

MATERIAL SPECIFICATIONS

1. ALL STRUCTURAL STEEL TO BE UNPAINTED AASHTO A709 GRADE 50W, UNLESS NOTED.

2. MATERIAL NOTES "T2" ON DETAIL DRAWINGS SHALL BE CHARPY V-NOTCH TESTED IN ACCORDANCE WITH THE REQUIREMENTS OF VERMONT STANDARD SPECIFICATIONS SECTION 714.01.

3. HIGH STRENGTH BOLTS SHALL BE 7/8" DIAMETER, ASTM A325 (TYPE 3), IN 15/16" DIAMETER HOLES. NUTS SHALL BE A563 (TYPE 3) GRADE C3, AND WASHERS SHALL BE F436 (TYPE 3).

   BOLTS & NUTS SHALL BE ROTATIONAL CAPACITY TESTED. DO NOT MIX BOLTS & NUTS FROM DIFFERENT CONTAINERS UNLESS ALL BOLTS & NUTS HAVE THE SAME LOT NUMBER.

PUNCHED HOLES ARE ACCEPTABLE IN DIAPHRAGM AND CONNECTION PLATES

FABRICATION

1. ALL HOLES SHALL BE PUNCHED OR DRILLED FULL SIZE, UNLESS NOTED.

WELDING

1. THE CONFIGURATION OF THE WELD JOINTS AND ALL WELDING PROCEDURES SHALL BE IN ACCORDANCE WITH AASHTO/AWS D1.5-10 BRIDGE WELDING CODE; IN ADDITION TO THE PROVISIONS OF VERMONT STANDARD SPECIFICATIONS SECTION 506.10. ALL WELDING WILL BE DETAILED TO PRE-QUALIFIED JOINTS, UNLESS PROHIBITED BY THE DESIGNER.

2. WELDING OF MAIN LOAD CARRYING MEMBERS AND ATTACHMENTS SHALL BE PERFORMED USING THE AUTOMATIC SUBMERGED ARC & SHIELDED METAL ARC PROCESSES. ALL WELDS ARE CONTINUOUS, UNLESS NOTED.

ONLY SMAWS ARE PRE-QUALIFIED. SUBMERGED ARC WELDS A SUBJECT TO TESTING REQUIREMENTS OF AWS D1.5, SECTION 5

3. NON-DESTRUCTIVE TESTING OF WELDS SHALL BE IN ACCORDANCE WITH THE REFERENCED SPECIFICATION.

4. SEE DETAIL "WS1" FOR THE WELD TERMINATION DETAIL.

FIELD CONNECTIONS

1. ALL FIELD CONNECTIONS SHALL BE MADE WITH 7/8" DIAMETER HIGH STRENGTH A325 (TYPE 3) BOLTS, INSTALLED PER SECTION 506.19(c). SEE SHEET E2 FOR BOLT SIZES.

2. BOLTS SHALL HAVE A HEAVY HEX HEAD, HEAVY HEX NUT, AND AT LEAST ONE HARD FLAT WASHER EACH. WASHER TO BE PLACED UNDER THE TURNED ELEMENT.

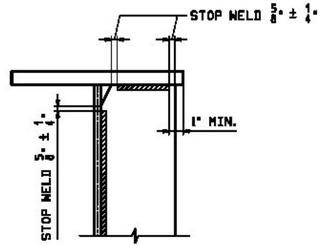
3. PIECE MARKS WILL BE LOCATED AS SHOWN ON SHEET E1.

CLEANING

1. ALL STEEL SHALL BE BLAST CLEANED IN ACCORDANCE WITH SSPC SP-~~6~~ 10.

PAINTING

1. ALL STEEL SHALL BE UNPAINTED.



DETAIL "WS1"
STIFF. WELD TERMINATION

NOTE TO ENGINEER:
THESE NOTES ARE NOT INTENDED TO BE ALL INCLUSIVE AND COMPLIANCE WITH RELEVANT SPECIFICATIONS REMAIN UNCHANGED.

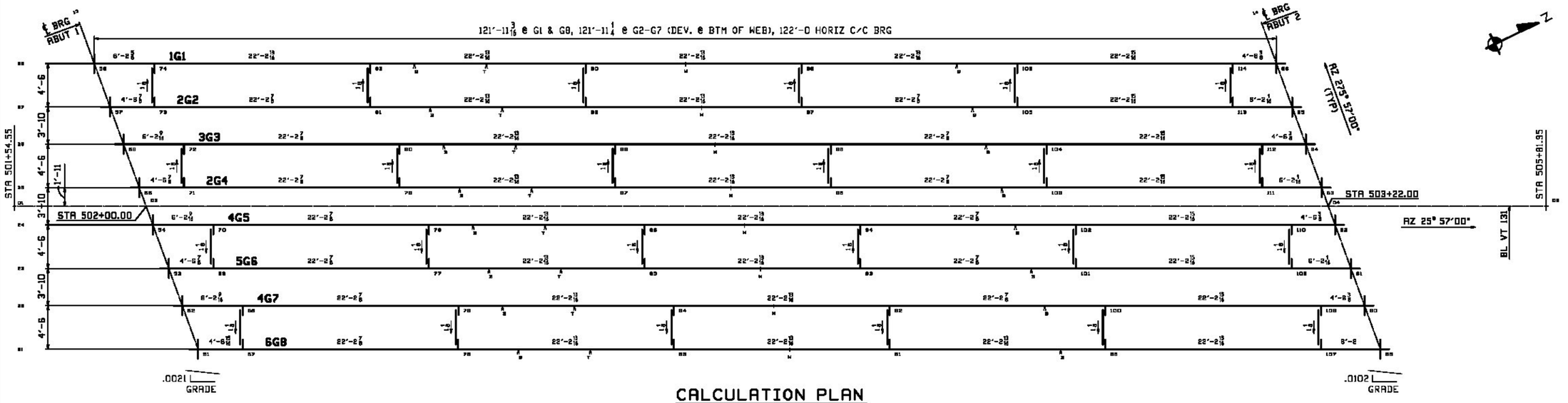
REV.	DATE	REMARKS	DWN	CHK	APVL	SHOP
0						

MATERIAL:	SURFACE PREP. & PAINT:	HOLES:	SHOP BOLTS:

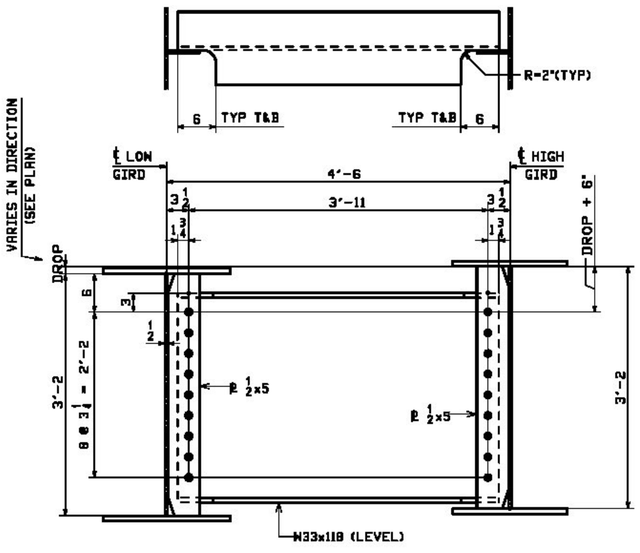
DESCRIPTION: GENERAL NOTES

CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. PHONE (207) 780-6722
SOUTH PORTLAND, ME 04106 FAX. (207) 780-6726
TEMSOR 36234

STRUCTURE: VT RTE 131 OVER TWENTYMILE STREAM WINDSOR COUNTY VERMONT AGENCY OF TRANSPORTATION	DRAWN: EEO	DATE: 11/22
	CHKD: EEO	DATE: 11/25
LOCATION: CAVENDISH, VERMONT	JOB NO. 541	DWG NO. GN1
PROJ NO. ER BRF 0146(13)		
CUSTOMER: COLD RIVER BRIDGES, LLC		REV. Δ



CALCULATION PLAN



DIAPHRAGM LAYOUT

(LOOKING DOWNSTATION)

DIAPHRAGM NOTES

- MAT'L IS A709 GR50W
- BOLTS ARE 7/8"ø ASTM A325 TYPE 3
- HOLES ARE 15/16"ø

**** NOTE ****
THE PURPOSE OF THIS DRAWING IS TO COORDINATE GEOMETRIC CONTROL INFORMATION. THIS DWG IS SUBMITTED FOR INFORMATION ONLY AND IS NOT INTENDED FOR SHOP FABRICATION.

NOTES
1. LONGITUDINAL DIMENSIONS ARE SLOPING ALONG BOTT OF WEB WITH CORRECTIONS MADE FOR VERTICAL CURVE, GRADE & DL CAMBER (UN).
2. TRANSVERSE DIMENSIONS ARE IN A HORIZ. PLANE (UN).
3. DROP ARROW POINTS TOWARDS LOW END OF MEMBER.
4. ENDS OF GIRDERS AND BRG. STIFF'S ARE VERTICAL AFTER DL ROTATION.
5. DIAPH STIFF ARE NORMAL TO GRADE.
6. BOTT PT NUMBERS =TOP PT NUMBERS + 500.
7. DIAPH DROPS ARE CALCULATED IN THEIR FINAL POSITION.

REV.	DATE	REMARKS	DWN	CHK	APVL	SHOP
0						

MATERIAL: | SURFACE PREP. & PAINT: | HOLES: AS NOTED | SHOP BOLTS: AS NOTED

DESCRIPTION: CALCULATION PLAN & LAYOUT

CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. PHONE (207) 780-6722
SOUTH PORTLAND, ME 04106 FAX. (207) 780-6726

TEMBOR 36234

STRUCTURE: VT RTE 131 OVER TWENTYMILE STREAM
WINDSOR COUNTY
VERMONT AGENCY OF TRANSPORTATION

DRAWN: SOB DATE: 09/13
CHKD: RLA DATE: 10/03

LOCATION: CAVENDISH, VERMONT
PROJ NO. ER BRF 0146(13)
CUSTOMER: COLD RIVER BRIDGES, LLC

JOB NO. 541
DWG NO. WS1
REV. 0

FIELD BOLT LIST — A325 Type 3 BOLTS

LINE	NO REQ'D.	BOLT DIAM.	BOLT LEN.	BOLTS PER CONN	# OF CONN.	GRIP	THICKNESS OF PCS. CONNECTED						WASH CODE	PIECES CONNECTED AND REMARKS
1														
2														INT. DIAPHRAGMS
3	432	7/8	2 1/2	8	48	1 1/16	1/2	9/16					1	Conn. Plate ~ Diaphragm Nub
4														

WASHER CODES

1: 1 Hard Flat Washer

FIELD BOLT SUMMARY — EXACT COUNT - NONE EXTRA

LINE	NO. OF BOLTS	BOLT DIAM.	TYPE	BOLT LEN	ACTUAL COUNT	REMARKS
1	432	7/8	A325 Type 3	2 1/2	432	
2						
3	432	Hard Flat Washers		for 7/8 ø	BOLT	F436-3
4						
5						
6						

NOTES:
1. FOR GENERAL NOTES SEE DRAWING GN1.

REV.	DATE	REMARKS	DWN	CHK	APVL	SHOP
0						

MATERIAL:	SURFACE PREP. & PAINT:	HOLES:	SHOP BOLTS:

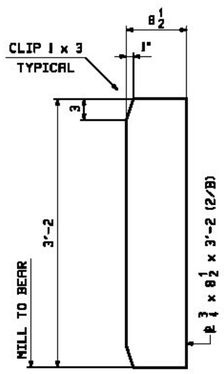
DESCRIPTION: FIELD BOLTS

CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. PHONE (207) 780-6722
SOUTH PORTLAND, ME 04106 FAX. (207) 780-6726

TEKLA BIM 30234

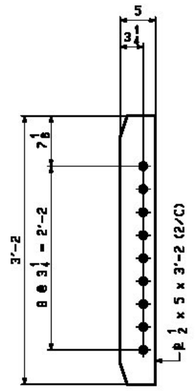
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	CHKD: DO	DATE: 11/25	
LOCATION: CAVENDISH, VERMONT	JOB NO.	DWG NO.	
PROJ NO. ER BRF 0146(13)	541	E2	
CUSTOMER: COLD RIVER BRIDGES, LLC		REV. △	

E2 Tue, Nov 25, 2025 Eric Olson PM J:\work\jobs\2024\541\E2.dwg



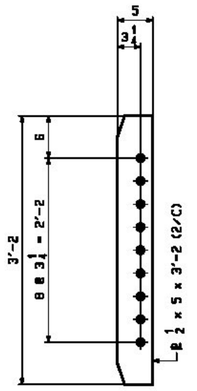
32 ~ BRG STIFF. ~ x1a

@ ABUT's



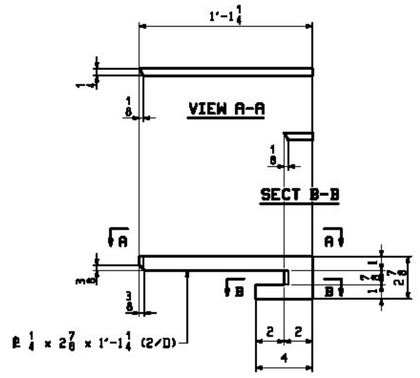
24 ~ CONN. PLATE ~ x1b

HIGH SIDE



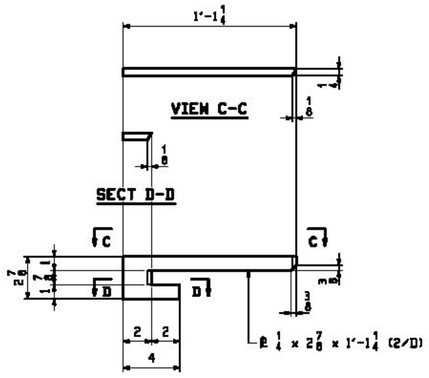
24 ~ CONN. PLATE ~ x1c

LOW SIDE



ONE ~ DRIP BAR ~ x1d

FAR SIDE OF G1 @ ABUT. 2



ONE ~ DRIP BAR ~ x1f

NEAR SIDE OF G8 @ ABUT. 2

NOTES:

1. FOR GENERAL NOTES SEE DRAWING GN1.

REV.	DATE	REMARKS	DWN	CHK	APVL	SHOP
0						

MATERIAL:	SURFACE PREP. & PAINT:	HOLES:	SHOP BOLTS:
A709-50W	SEE GN1	15/16" ø	NONE

DESCRIPTION: GIRDER STANDARDS

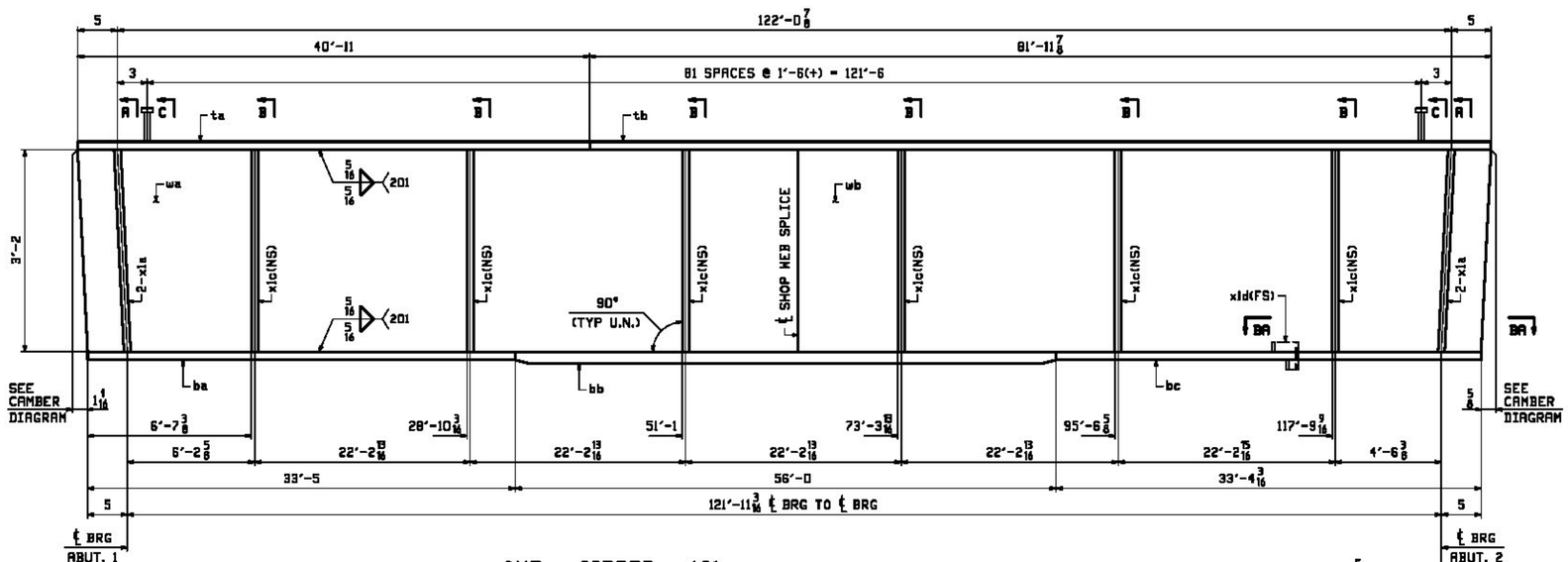
CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. PHONE (207) 780-6722
SOUTH PORTLAND, ME 04106 FAX. (207) 780-6726

TEKLA 30234

STRUCTURE: VT RTE 131 OVER TWENTYMILE STREAM WINDSOR COUNTY VERMONT AGENCY OF TRANSPORTATION	DRAWN: EEO	DATE: 11/20
	CHKD: DO	DATE: 11/22
LOCATION: CAVENDISH, VERMONT	JOB NO.	DWG NO.
PROJ NO. ER BRF 0146(13)	541	X1
CUSTOMER: COLD RIVER BRIDGES, LLC		REV. △

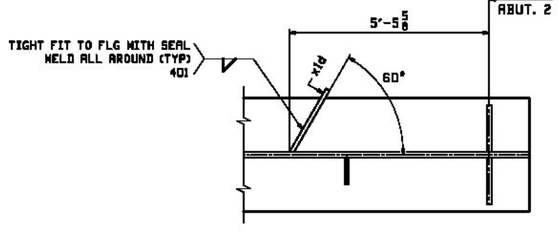
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1	J		1	wb	PL $\frac{1}{2}$x38	61	$4\frac{7}{8}$	A709-50W T2	3970	
1	N		1	ta	PL $\frac{7}{8}$x20	40	11		2437	
1	L		1	tb	PL $\frac{7}{8}$x20	61	$11\frac{7}{8}$		4862	
1	E		1	ba	PL $\frac{7}{8}$x20	33	5	A709-50W T2	1990	
1	A		1	bb	PL $1\frac{1}{4}$x20	56	0	A709-50W T2	4764	
1	E		1	bc	PL $\frac{7}{8}$x20	33	$4\frac{3}{16}$	A709-50W T2	1986	
2	B		4	x1a	PL $\frac{3}{4}$x$8\frac{1}{2}$	3	2	MIF	69	
2	C		8	x1c	PL $\frac{1}{2}$x5	3	2		27	
2	D		1	x1d	PL $\frac{1}{4}$x$2\frac{7}{8}$	1	$1\frac{1}{4}$		3	
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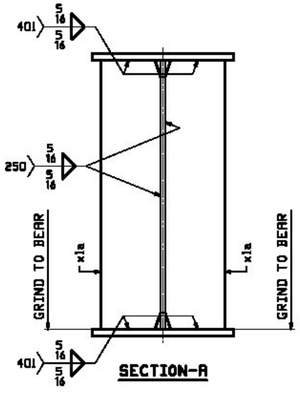


ONE ~ GIRDER ~ 1G1

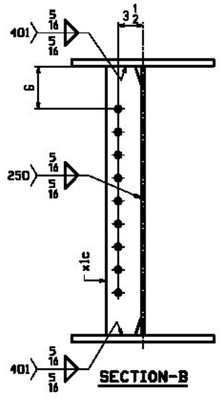
NOTES:
1. FOR GENERAL NOTES SEE SHEET GN1.
2. FOR GIRDER STANDARD DETAILS SEE SHEET X1.
3. FOR CAMBER & FLANGE DIAGRAM SEE SHEET C1.
4. T2 - DENOTES CHARPY V-NOTCH TESTING REQUIRED.



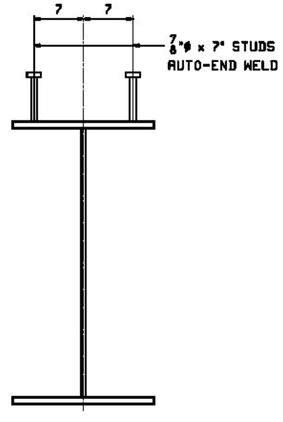
SECTION BA-BA



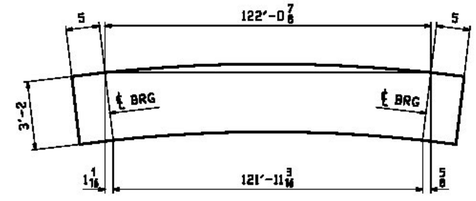
SECTION-A



SECTION-B



SECTION-C



ORIENTATION DIAGRAM

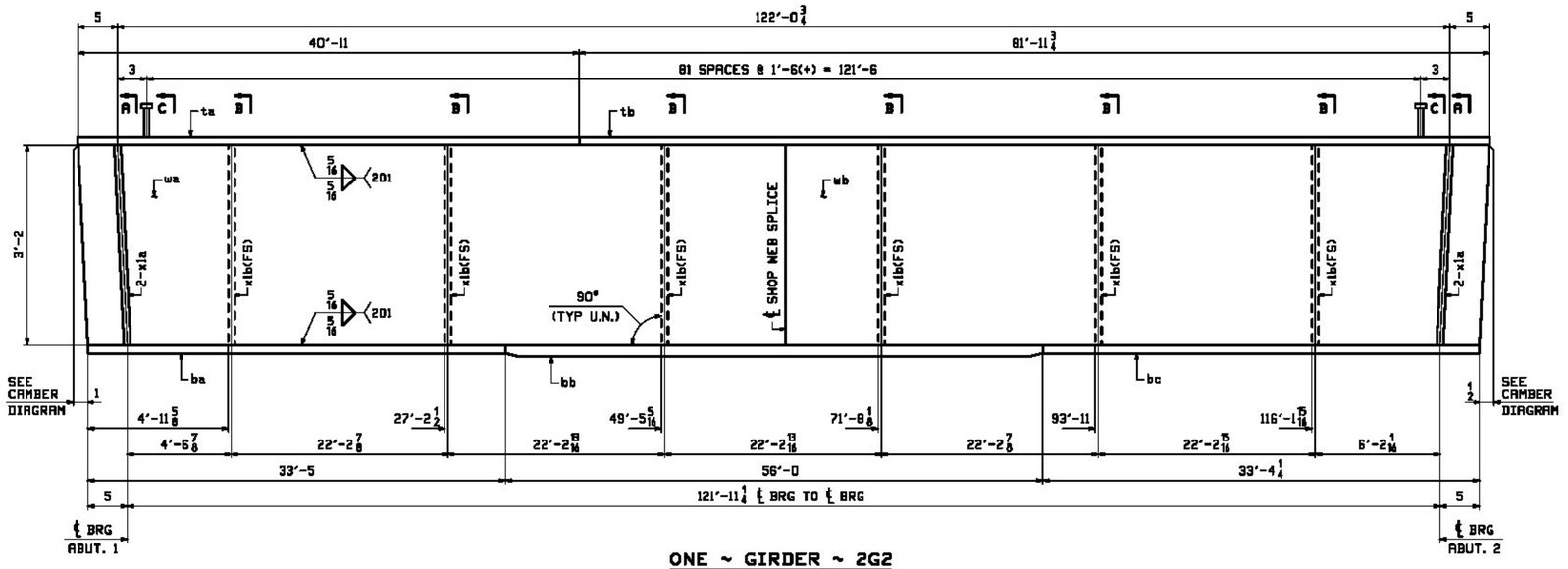
REV.	DATE	REMARKS	DWN	CHK	APVL	SHOP
0						

MATERIAL:	SURFACE PREP. & PAINT:	HOLES:	SHOP BOLTS:
A709-50W	SEE GN1	15/16"ø U.N.	NONE

DESCRIPTION: GIRDER ~ 1G1

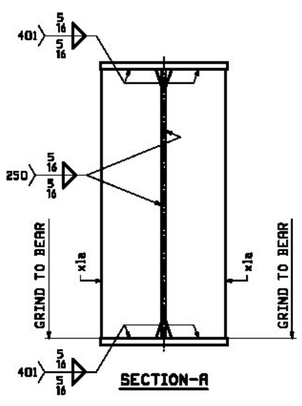
CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. PHONE (207) 780-6722
SOUTH PORTLAND, ME 04106 FAX. (207) 780-6726
TEMSOR 38234

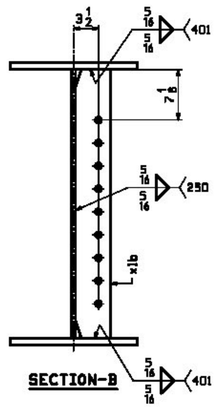
STRUCTURE: VT RTE 131 OVER TWENTYMILE STREAM WINDSOR COUNTY VERMONT AGENCY OF TRANSPORTATION	DRAWN: EEO	DATE: 11/21	
	CHKD: DO	DATE: 11/25	
LOCATION: CAVENDISH, VERMONT	JOB NO.	DWG NO.	
PROJ NO. ER BRF 0146(13)	541	1	
CUSTOMER: COLD RIVER BRIDGES, LLC		REV. △	

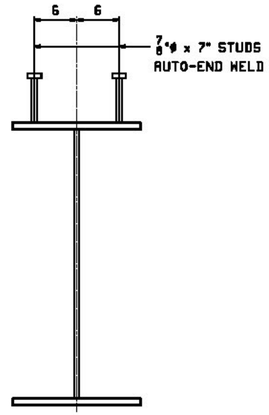


ONE ~ GIRDER ~ 2G2
ONE ~ GIRDER ~ 2G4

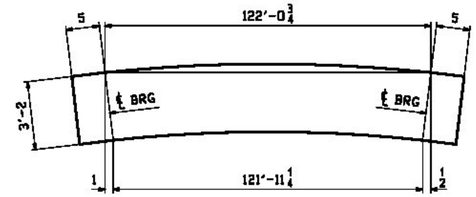
NOTES:
1. FOR GENERAL NOTES SEE SHEET GN1.
2. FOR GIRDER STANDARD DETAILS SEE SHEET X1.
3. FOR CAMBER & FLANGE DIAGRAM SEE SHEET C1.
4. T2 - DENOTES CHARPY V-NOTCH TESTING REQUIRED.







RUN INFO		SHIP	BILL OF MATERIAL					JOB NO.	DRAWING NO.	REV.
								541	2	
PAGE	LINE	MARK	QTY	MARK	MATERIAL	LENGTH FT	LENGTH INCHES	REMARKS	WT	PROCUREMENT NOTES
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		2G4	1		GIRDER				23052	
1	J		2	wa	PL 1/2x38	61	8 1/16	A709-50W T2	3976	
1	J		2	wb	PL 1/2x38	61	4 7/8	A709-50W T2	3970	
1	S		2	ta	PL 7/8x18	40	11		2193	
1	Q		2	tb	PL 7/8x18	81	11 3/4		4354	
1	G		2	ba	PL 7/8x18	33	5	A709-50W T2	1791	
1	C		2	bb	PL 1 1/4x18	56	0	A709-50W T2	4288	
1	G		2	bc	PL 7/8x18	33	4 1/4	A709-50W T2	1788	
2	B		8	x1a	PL 3/8x8 1/2	3	2	MIS	69	
2	C		12	x1b	PL 1/2x3	3	2		27	
4	B		328		STUD 7/8 ø	0	7	AWS	1	



ORIENTATION DIAGRAM

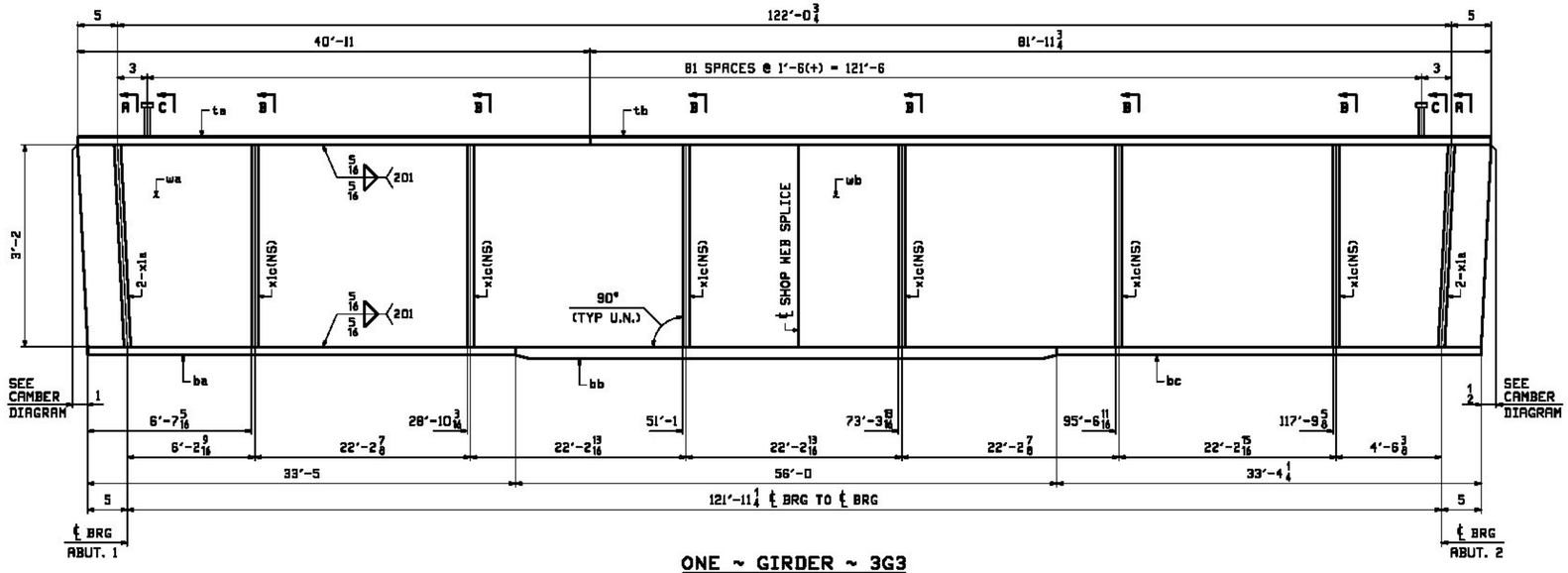
REV.	DATE	REMARKS	DWN	CHK	APVL	SHOP
0						

MATERIAL:	SURFACE PREP. & PAINT:	HOLES:	SHOP BOLTS:
A709-50W	SEE GN1	15/16"ø U.N.	NONE

DESCRIPTION: GIRDERS ~ 2G2 & 2G4

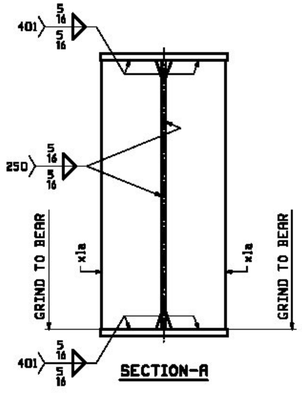
CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. PHONE (207) 780-6722
SOUTH PORTLAND, ME 04106 FAX. (207) 780-6726
TEMBOR 32594

STRUCTURE:	DRAWN:	DATE:
VT RTE 131 OVER TWENTYMILE STREAM WINDSOR COUNTY VERMONT AGENCY OF TRANSPORTATION	EEO	11/21
	CHKD: DO	DATE: 11/25
LOCATION: CAVENDISH, VERMONT	JOB NO.	DWG NO.
PROJ NO. ER BRF 0146(13)	541	2
CUSTOMER: COLD RIVER BRIDGES, LLC		REV. 0

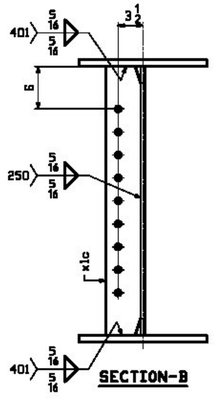


ONE ~ GIRDER ~ 3G3

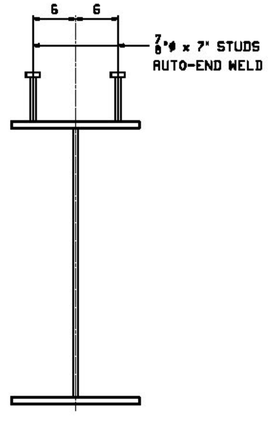
NOTES:
1. FOR GENERAL NOTES SEE SHEET GN1.
2. FOR GIRDER STANDARD DETAILS SEE SHEET X1.
3. FOR CAMBER & FLANGE DIAGRAM SEE SHEET C1.
4. T2 – DENOTES CHARPY V-NOTCH TESTING REQUIRED.



SECTION-A

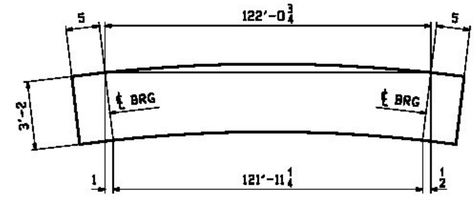


SECTION-B



SECTION-C

RUN INFO		SHIP	BILL OF MATERIAL					JOB NO.	DRAWING NO.	REV.
								541	3	
PAGE	LINE	MARK	QTY	MARK	MATERIAL	LENGTH FT	LENGTH INCHES	REMARKS	WT	PROCUREMENT NOTES
		3G3	1		GIRDER				23052	
1	J		1	wa	PL 1/2x38	61	5 1/16	A709-50WT2	3975	
1	J		1	wb	PL 1/2x38	61	4 7/8	A709-50WT2	3970	
1	S		1	ta	PL 7/8x18	40	11		2193	
1	Q		1	tb	PL 7/8x18	81	11 3/4		4394	
1	G		1	ba	PL 7/8x18	33	5	A709-50WT2	1791	
1	C		1	bb	PL 1 1/4x18	56	0	A709-50WT2	4269	
1	G		1	bc	PL 7/8x18	33	4 1/4	A709-50WT2	1788	
2	B		4	x1a	PL 3/8x8 1/2	3	2	MIF	69	
2	C		8	x1c	PL 1/2x5	3	2		27	
4	B		164		STUD 7/8 ø	0	7	AISC	1	



ORIENTATION DIAGRAM

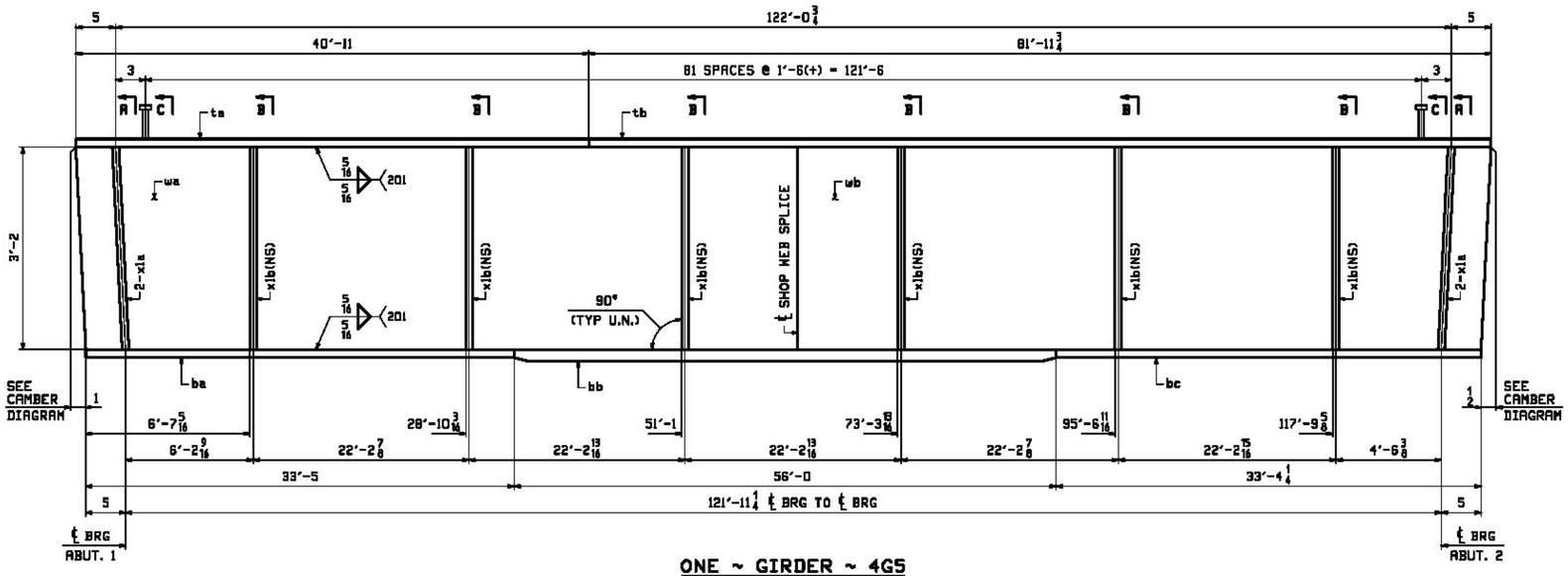
REV.	DATE	REMARKS	DWN	CHK	APVL	SHOP
0						

MATERIAL:	SURFACE PREP. & PAINT:	HOLES:	SHOP BOLTS:
A709-50W	SEE GN1	15/16"ø U.N.	NONE

DESCRIPTION: GIRDER ~ 3G3

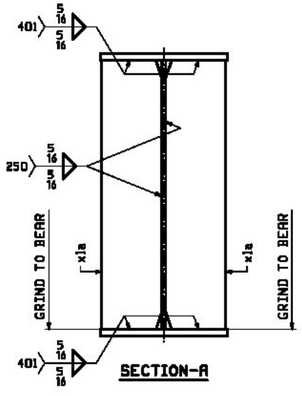
CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. PHONE (207) 780-6722
SOUTH PORTLAND, ME 04106 FAX. (207) 780-6726
TEMSOR 38234

STRUCTURE:	DRAWN:	DATE:
VT RTE 131 OVER TWENTYMILE STREAM WINDSOR COUNTY VERMONT AGENCY OF TRANSPORTATION	EEO	11/21
	CHKD: DO	DATE: 11/25
LOCATION: CAVENDISH, VERMONT	JOB NO.	DWG NO.
PROJ NO. ER BRF 0146(13)	541	3
CUSTOMER: COLD RIVER BRIDGES, LLC		REV. 0

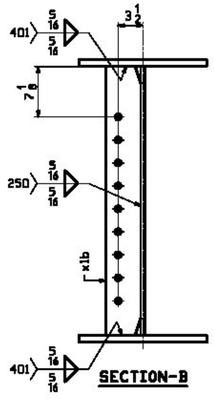


ONE ~ GIRDER ~ 4G5
ONE ~ GIRDER ~ 4G7

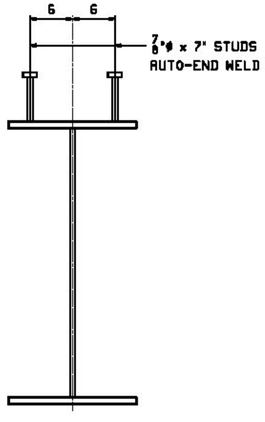
NOTES:
1. FOR GENERAL NOTES SEE SHEET GN1.
2. FOR GIRDER STANDARD DETAILS SEE SHEET X1.
3. FOR CAMBER & FLANGE DIAGRAM SEE SHEET C1.
4. T2 - DENOTES CHARPY V-NOTCH TESTING REQUIRED.



SECTION-A

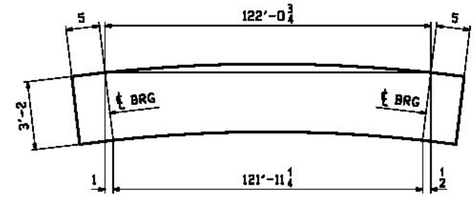


SECTION-B



SECTION-C

RUN INFO		SHIP	BILL OF MATERIAL					JOB NO.	DRAWING NO.	REV.
								541	4	
PAGE	LINE	MARK	QTY	MARK	MATERIAL	LENGTH FT	LENGTH INCHES	REMARKS	WT	PROCUREMENT NOTES
		4G5	1		GIRDER				23052	
		4G7	1		GIRDER				23052	
1	J		2	wa	PL 1/2x38	61	8 1/16	A709-50WT2	3976	
1	J		2	wb	PL 1/2x38	61	4 7/8	A709-50WT2	3970	
1	S		2	ta	PL 7/8x18	40	11		2193	
1	Q		2	tb	PL 7/8x18	81	11 3/4		4394	
1	G		2	ba	PL 7/8x18	33	5	A709-50WT2	1791	
1	C		2	bb	PL 1 1/4x18	56	0	A709-50WT2	4288	
1	G		2	bc	PL 7/8x18	33	4 1/4	A709-50WT2	1788	
2	B		8	x1a	PL 3/8x8 1/2	3	2	MIS	69	
2	C		12	x1b	PL 1/2x3	3	2		27	
4	B		328		STUD 7/8 ø	0	7	AWS	1	



ORIENTATION DIAGRAM

REV.	DATE	REMARKS	DWN	CHK	APVL	SHOP
0						

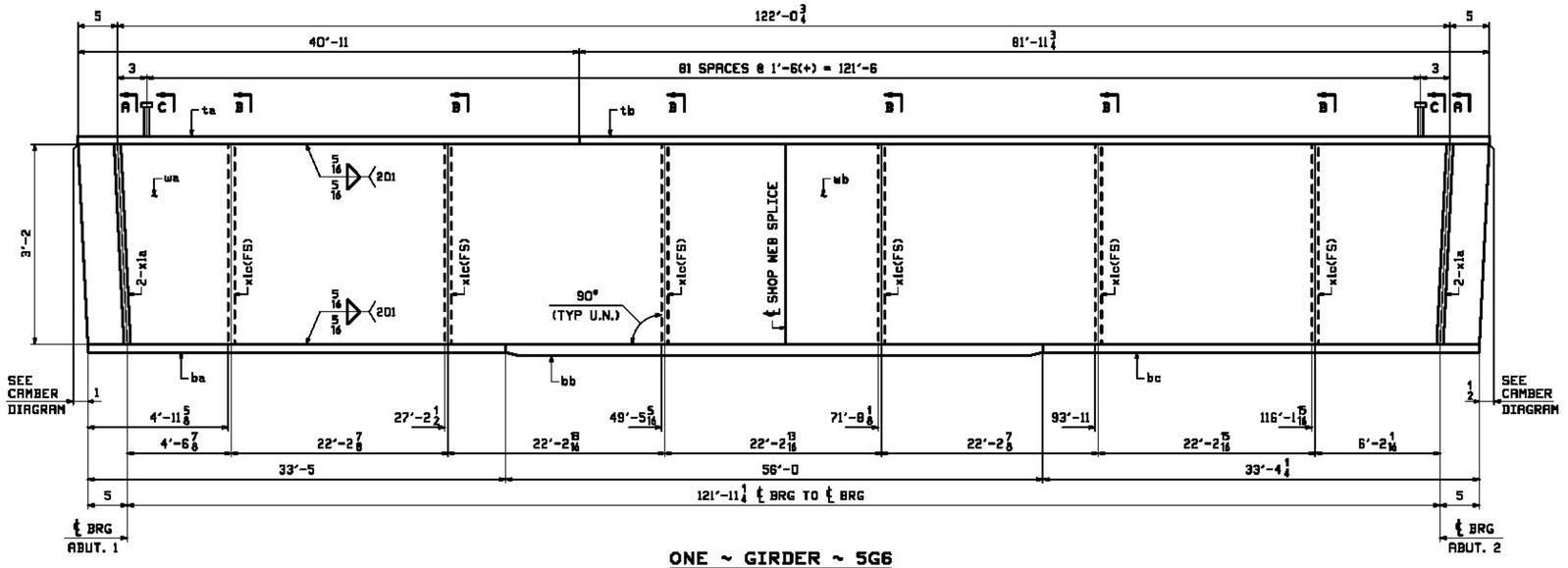
MATERIAL:	SURFACE PREP. & PAINT:	HOLES:	SHOP BOLTS:
A709-50W	SEE GN1	15/16"ø U.N.	NONE

DESCRIPTION: GIRDERS ~ 4G5 & 4G7

CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. PHONE (207) 780-6722
SOUTH PORTLAND, ME 04106 FAX. (207) 780-6726

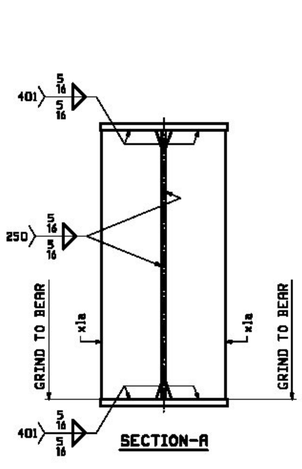
TEMSOR 36234

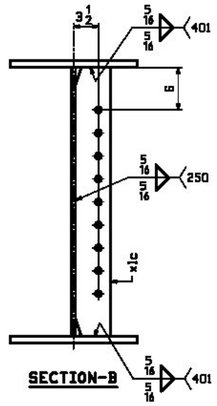
STRUCTURE: VT RTE 131 OVER TWENTYMILE STREAM WINDSOR COUNTY VERMONT AGENCY OF TRANSPORTATION	DRAWN: EEO	DATE: 11/21
	CHKD: DO	DATE: 11/25
LOCATION: CAVENDISH, VERMONT	JOB NO. 541	DWG NO. 4
PROJ NO. ER BRF 0146(13)		REV. 0
CUSTOMER: COLD RIVER BRIDGES, LLC		

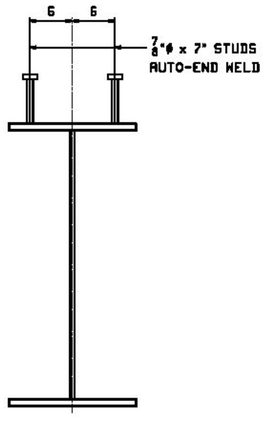


ONE ~ GIRDER ~ 5G6

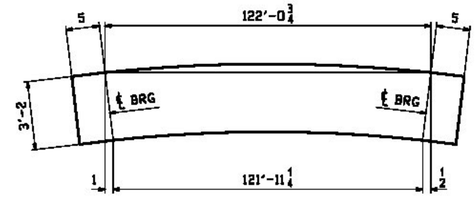
NOTES:
1. FOR GENERAL NOTES SEE SHEET GN1.
2. FOR GIRDER STANDARD DETAILS SEE SHEET X1.
3. FOR CAMBER & FLANGE DIAGRAM SEE SHEET C1.
4. T2 - DENOTES CHARPY V-NOTCH TESTING REQUIRED.







RUN INFO		SHIP	BILL OF MATERIAL					JOB NO.	DRAWING NO.	REV.
								541	5	
PAGE	LINE	MARK	QTY	MARK	MATERIAL	LENGTH FT	LENGTH INCHES	REMARKS	WT	PROCUREMENT NOTES
		SG6	1		GIRDER				23052	
1	J		1	wa	PL 1/2x38	61	5 1/16	A709-50W T2	3976	
1	J		1	wb	PL 1/2x38	61	4 7/8	A709-50W T2	3970	
1	S		1	ta	PL 7/8x18	40	11		2193	
1	Q		1	tb	PL 7/8x18	61	11 3/4		4394	
1	G		1	ba	PL 7/8x18	33	5	A709-50W T2	1791	
1	C		1	bb	PL 1 1/4x18	56	0	A709-50W T2	4269	
1	G		1	bc	PL 7/8x18	33	4 1/4	A709-50W T2	1788	
2	B		4	x1a	PL 3/8x8 1/2	3	2	MIF	69	
2	C		8	x1c	PL 1/2x5	3	2		27	
4	B		164		STUD 7/8 ø	0	7	EACH	1	



ORIENTATION DIAGRAM

REV.	DATE	REMARKS	DWN	CHK	APVL	SHOP
0						

MATERIAL:	SURFACE PREP. & PAINT:	HOLES:	SHOP BOLTS:
A709-50W	SEE GN1	15/16"ø U.N.	NONE

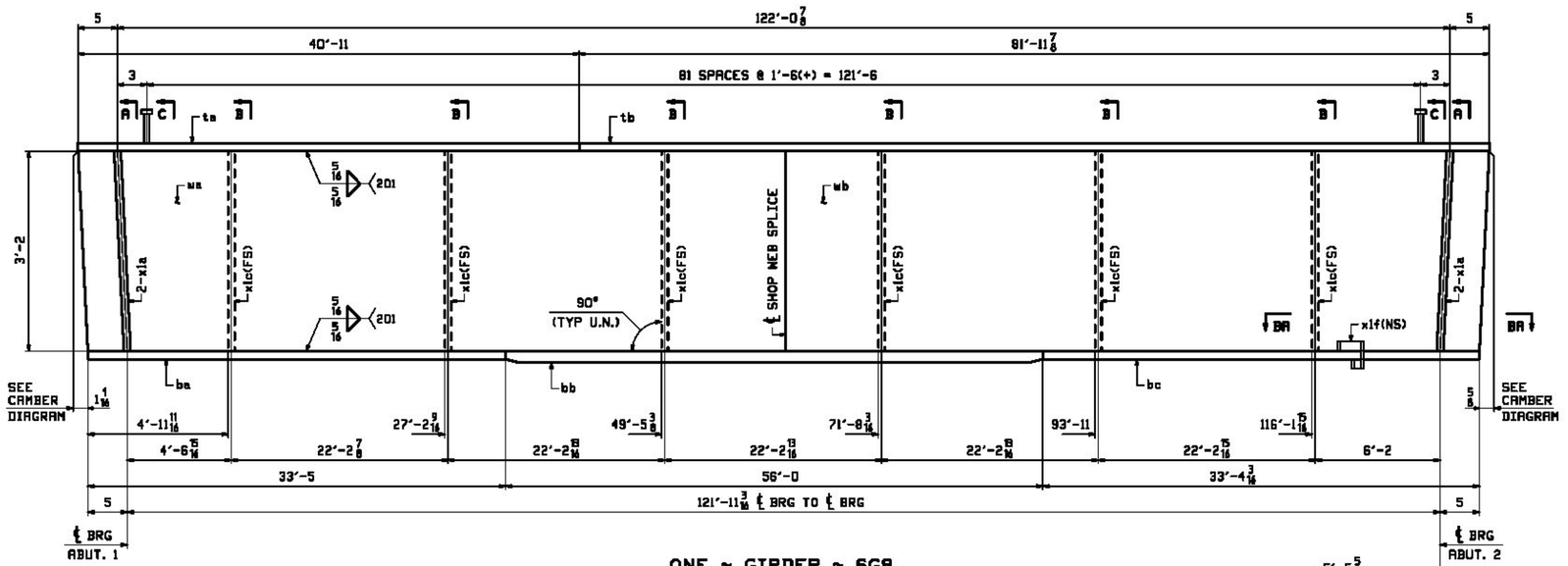
DESCRIPTION: GIRDER ~ 5G6

CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. PHONE (207) 780-6722
SOUTH PORTLAND, ME 04106 FAX. (207) 780-6726

TEMSOR 32594

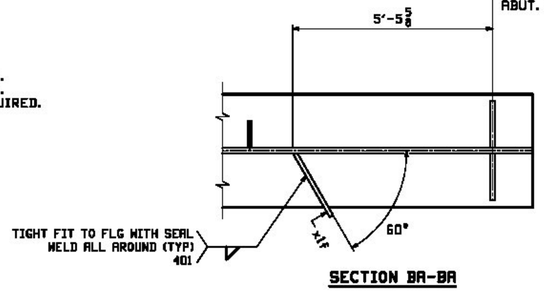
STRUCTURE: VT RTE 131 OVER TWENTYMILE STREAM WINDSOR COUNTY VERMONT AGENCY OF TRANSPORTATION	DRAWN: EEO	DATE: 11/21	
	CHKD: DO	DATE: 11/25	
LOCATION: CAVENDISH, VERMONT	JOB NO. 541	DWG NO. 5	
PROJ NO. ER BRF 0146(13)			
CUSTOMER: COLD RIVER BRIDGES, LLC		REV. 0	

PIECE INFO		SHIP	BILL OF MATERIAL					JOB NO.	DRAWING NO.	REV.
								541	6	
PIECE	LINE	MARK	QTY	MARK	MATERIAL	LENGTH FT	LENGTH INCHES	REMARKS	WT	PROCUREMENT NOTES
		SG8	1		GIRDER				24651	
1	J		1	wa	PL $\frac{1}{2}$x38	61	$5\frac{1}{8}$	M709-50W T2	3977	
1	J		1	wb	PL $\frac{1}{2}$x38	61	$4\frac{7}{8}$	M709-50W T2	3970	
1	N		1	ta	PL $\frac{7}{8}$x20	40	11		2437	
1	L		1	tb	PL $\frac{7}{8}$x20	61	$11\frac{7}{8}$		4862	
1	E		1	ba	PL $\frac{7}{8}$x20	33	5	M709-50W T2	1990	
1	A		1	bb	PL $1\frac{1}{4}$x20	56	0	M709-50W T2	4764	
1	E		1	bc	PL $\frac{7}{8}$x20	33	$4\frac{3}{16}$	M709-50W T2	1986	
2	B		4	x1a	PL $\frac{3}{8}$x$8\frac{1}{2}$	3	2	MIF	69	
2	C		8	x1c	PL $\frac{1}{2}$x5	3	2		27	
2	D		1	x1f	PL $\frac{1}{4}$x$2\frac{7}{8}$	1	$1\frac{1}{4}$		3	
4	B		154		STUD $\frac{7}{8}$ ø	0	7	AWS	1	

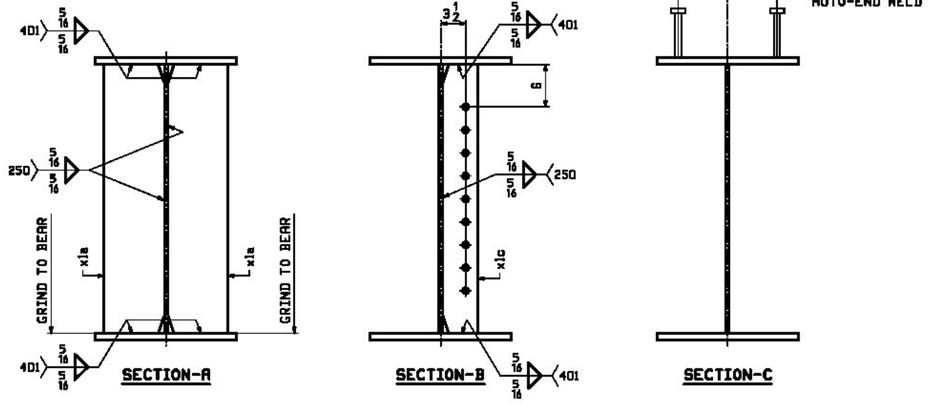


ONE ~ GIRDER ~ 6G8

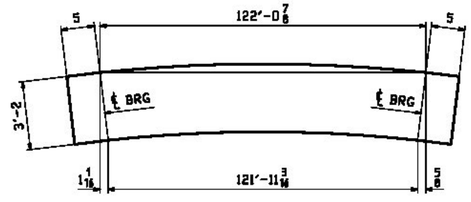
NOTES:
1. FOR GENERAL NOTES SEE SHEET GN1.
2. FOR GIRDER STANDARD DETAILS SEE SHEET X1.
3. FOR CAMBER & FLANGE DIAGRAM SEE SHEET C1.
4. T2 – DENOTES CHARPY V-NOTCH TESTING REQUIRED.



SECTION BA-BA



SECTION-A SECTION-B SECTION-C



ORIENTATION DIAGRAM

REV.	DATE	REMARKS	DWN	CHK	APVL	SHOP
0						

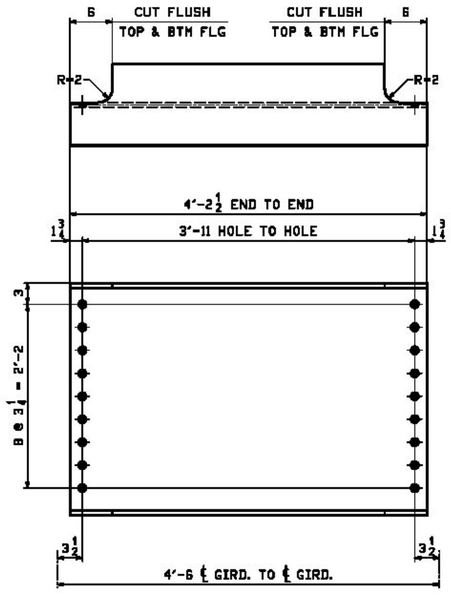
MATERIAL:	SURFACE PREP. & PAINT:	HOLES:	SHOP BOLTS:
A709-50W	SEE GN1	15/16ø U.N.	NONE

DESCRIPTION: GIRDER ~ 6G8

CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. PHONE (207) 780-6722
SOUTH PORTLAND, ME 04106 FAX. (207) 780-6726

TEMBOR 32594

STRUCTURE: VT RTE 131 OVER TWENTYMILE STREAM WINDSOR COUNTY VERMONT AGENCY OF TRANSPORTATION	DRAWN: EEO	DATE: 11/21	
	CHKD: DO	DATE: 11/25	
LOCATION: CAVENDISH, VERMONT	JOB NO. 541	DWG NO. 6	
PROJ NO. ER BRF 0146(13)			
CUSTOMER: COLD RIVER BRIDGES, LLC		REV. △	



24 ~ DIAPHRAGM ~ 8D1

RUN INFO		SHIP	BILL OF MATERIAL					JOB NO.	DRAWING NO.	REV.
								541	8	
PAGE	LINE	MARK	QTY	MARK	MATERIAL	LENGTH FT	LENGTH INCHES	REMARKS	WT	PROCUREMENT NOTES
					DIAPHRAGM					
2	G	8D1	24		W 33x118	4	2½	A709-50W	497	

NOTES:
1. FOR GENERAL NOTES SEE DRAWING GN1.

REV.	DATE	REMARKS	DWN	CHK	APVL	SHOP
0						

MATERIAL:	SURFACE PREP. & PAINT:	HOLES:	SHOP BOLTS:
A709-50W	SEE GN1	15/16" ϕ U.N.	NONE

DESCRIPTION: DIAPHRAGMS

CASCO BAY STEEL STRUCTURES, INC.
1 WALLACE AVE. PHONE (207) 780-6722
SOUTH PORTLAND, ME 04106 FAX. (207) 780-6726
TEMSCR 36254

STRUCTURE:	VT RTE 131 OVER TWENTYMILE STREAM WINDSOR COUNTY VERMONT AGENCY OF TRANSPORTATION	DRAWN: EEO	DATE: 11/21
		CHKD: DO	DATE: 11/25
LOCATION:	CAVENDISH, VERMONT	JOB NO.	DWG NO.
PROJ NO.	ER BRF 0146(13)	541	8
CUSTOMER:	COLD RIVER BRIDGES, LLC		REV. △

Casco Bay Steel Structures, Inc.

WELDING PROCEDURE SPECIFICATION

Material specification AST M - Gr 50 - 50W NOTE-1
Welding process Submerged ARC Welding
Manual or machine Machine
Position of welding Flat - Horizontal
Filler metal specification AWS A5-23
Filler metal classification F8A2-EN1K-Ni1-H8
Flux Lincoln 960-, Elec-LA 75
Shielding gas NA Flow rate NA
Single or multiple pass Single & Multiple
Single or multiple arc Single
Welding current DC
Polarity DCEN
Welding progression See Detail
Root treatment Grind - Wire Brush - Area Free of Slag - RUST Moisture
Preheat and interpass temperature See Table
Postheat temperature NA
Heat Input Min 40.9 KJ/in Max 64.2 KJ/in P.Q.R # 2 - 58.1 KJ/in

Vtrans Received JWC CRD ORD BY

DEC 1 2 2013

Resubmit APPROVED BY DATE 12/17/13

Minimum Preheat and Interpass Temperature, °C [°F]

Welding Process (Base Metal)	Thickness of Thickest Part at Point of Welding, mm [in]			
	To 20 mm [3/4 in] Incl.	Over 20 mm [3/4 in] to 40 mm [1-1/2 in] Incl.	Over 40 mm [1-1/2 in] to 65 mm [2-1/2 in] Incl.	Over 65 mm [2-1/2 in]
SAW; GMAW; FCAW; SMAW (M270M [M270] [A 709M (A 709)] Gr. 250 [36], 345 [50], 345W [50W], HPS 345W [HPS 50W])	10 [50]	20 [70]	65 [150]	110 [225]
SAW; GMAW; FCAW; SMAW (M270M [M270] [A 709M (A 709)] Gr. HPS 485W [HPS 70W], 690 [100], 690W [100W])[a]	10 [50]	50 [125]	80 [175]	110 [225]

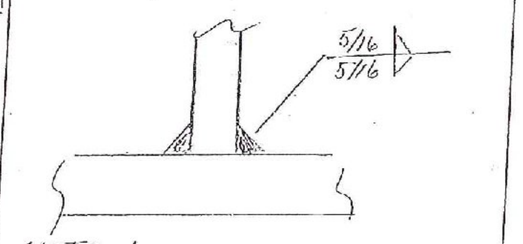
VERMONT AOT
CAVENDISH VT RTE 131
OVER TWENTYMILE STREAM
PROJ # ER BRF 0146 (13)
CBSS Job. No. 541

WELDING PROCEDURE

Max. Inter pass - 450°

Pass no.	Electrode size	Welding current: Amperes	Welding current: Volts	Travel speed
		365	32	12IPM
	3/32	320 TO 350	30 TO 33	11 TO 14

Sec 5-13
AWS D1-5 Joint detail Fillet



Note-1
use For welding Gr 5-50W To G.rHPS)

This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in applicable A.W.S. codes or contract specifications

Procedure no. 250 ST of VT
Revision no.

Contractor Casco Bay Steel
Authorized By Paul T. Gotsch
Date April 13, 2012

Casco Bay Steel Structures Inc.

75 Spring Hill Road
Saco, Maine 04072

Phone: (207) 282-7360 Fax: (207) 282-1179

WELDING PROCEDURE SPECIFICATION

Material specification ASTM 709 Gr 36-50-50W (250-345-345W)
Welding process Submerged Arc welding - AUTO (SAW)
Manual or machine Machine
Position of welding Flat (1 sa. P)
Filler metal specification AWS A5-17, AWS A5-23
Filler metal classification F8A2-EN1LK-N1 Lincoln
Flux 960 FLUX - Lincolnweld - LA-75 Electrode
Shielding gas N A Flow rate N A
Single or multiple pass both
Single or multiple arc Single
Welding current Direct
Polarity Reverse Electrode Positive
Welding progression
Root treatment Meet AWS Specification
Preheat and interpass temperature To 3/4 (19) 50°F (10°), 3/4 (19) 1 1/2 (38) - 70° (20°)
Postheat temperature N A
Heat Input Min 41.65 Max 65.45 PQR# 1-59.5

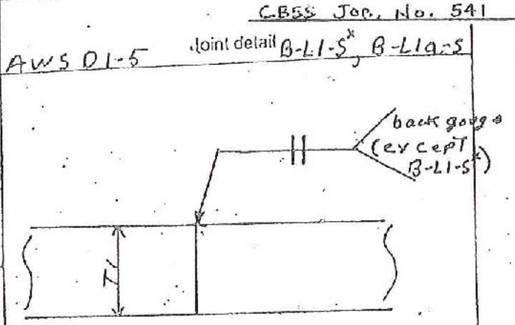
VTrans Received DEC 12 2013 JWC
CKD ORIGIN
RESUBMIT BY APPROVED DATE 12/17/13

VERMONT AOT
CAVENDISH VT RTE 131
OVER TWENTYMILE STREAM
Proc # ER BRF 0146 (13)
CBSS Job. No. 541

WELDING PROCEDURE (metric)

AWS D1-5 Joint detail B-L1-S*, B-L1a-S

Pass no.	Electrode size	Welding current: Amperes	Welding current: Volts	Travel speed
	5/32	605 544.5 To 665.5	29.5 27.4 To 31.56	18 15.3 To 20.7
	3.9	605 544.5 To 665.5	29.5 27.4 To 31.56	457.2 388.6 To 525.8



T1: 3/8 (9.5) B-L1-S
T1: 5/8 (15.895) B-L1a-S

*Evidence of CVP is req.

This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in applicable A.W.S. codes or contract specifications

Procedure no. 203
Revision no.
Form III-2

Contractor Casco Bay Steel
Authorized By Paul E. Woodard
Date 3/12/12

WELDING PROCEDURE SPECIFICATION

Material specification ASTM - Gr 50 - 50W
Welding process Submerged Arc welding
Manual or machine Machine
Position of welding Flat + Horizontal
Filler metal specification A5-23
Filler metal classification F8A2-ENi1-Ni1-H8
Flux Lincoln 960 - Elec. LA 75
Shielding gas N/A Flow rate N/A
Single or multiple pass Single - multiple
Single or multiple arc Single
Welding current Alternating
Polarity AC
Welding progression See Details
Root treatment Grind - wire brush - Area Free of Slag - Rust - Moisture
Preheat and interpass temperature See Table
Postheat temperature N/A
Heat Input Min 47.1 KJ/in Max 94.0 KJ/in PQR - PW1 - 67.3 KJ/in

Power-Wave
Vtrans
Received DEC 12 2013
CKD ORIG BY JWC
Resubmit APPROVED
BY DATE 12/11/13

Minimum Preheat and Interpass Temperature, °C [°F]

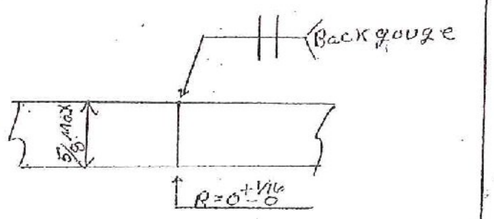
Welding Process (Base Metal)	Thickness of Thickest Part at Point of Welding, mm [in] To 20 mm [3/4 in] incl.	Over 20 mm [3/4 in] to 40 mm [1-1/2 in] incl.	Over 40 mm [1-1/2 in] to 65 mm [2-1/2 in] incl.	Over 65 mm [2-1/2 in]
SAW; GMAW; FCAW; SMAW (M270M [M270] [A 709M (A 709)] Gr. 250 [36], 345 [50], 345W [50W], HPS 345W [HPS 50W])	10 [50]	20 [70]	65 [150]	110 [225]
SAW; GMAW; FCAW; SMAW (M270M [M270] [A 709M (A 709)] Gr. HPS 485W [HPS 70W], 690 [100], 690W [100W])*	10 [50]	50 [125]	80 [175]	110 [225]

VERMONT AOT
CAVENDISH VT RTE 131
OVER TWENTYMILE STREAM
FLAT # ER BRF 0146 (13)
CBSS JOB. No. 541

WELDING PROCEDURE Max InTerpass 480°F

Pass no.	Electrode size	Welding current: Amperes	Welding current: Volts	Travel speed
		827	38	28IPM
AS	5/32	744 To 910	35 To 41	24 To 32
Req.				

See 5.13
AWS D1-5 Joint detail BL1a-5



This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in applicable A.W.S. codes or contract specifications

Procedure no. PW202C-ST of VT
Revision no. _____

Contractor Casco Bay Steel
Authorized By Paul E. Tordale
Date April-13-2012

Casco Bay Steel Structures, Inc.

WELDING PROCEDURE SPECIFICATION

Material specification ASTM - Gr 50 - 5cw
Welding process Submerged Arc welding — Powerwave
Manual or machine Machine — VTrans
Position of welding Flat + Horizontal — Received JWC
Filler metal specification A5-23 — CKD
Filler metal classification F8A2-EN1L-N1L-H8 — DKD BY
Flux Lincoln 960 - Elec. LA 75 — DEC 12 2013
Shielding gas NA Flow rate NA
Single or multiple pass Single or Multiple — ✓
Single or multiple arc Single — Resubmit BY — APPROVED Date 12/17/13
Welding current Alternating
Polarity AC
Welding progression See Detail
Root treatment Grind - wire brush - Area Free of Slag-RUST-MOISTURE
Preheat and interpass temperature See Table
Postheat temperature NA
Heat Input Min 47.1 KJ/in Max 94.0 KJ/in — PQR - PW1 - 67.3 KJ/in

Minimum Preheat and Interpass Temperature, °C [°F]

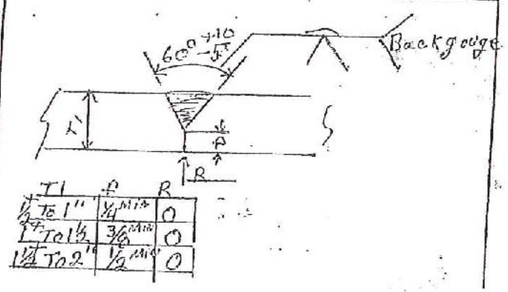
Welding Process (Base Metal)	Thickness of Thickest Part at Point of Welding, mm [in] To 20 mm [3/4 in] Incl.	Over 20 mm [3/4 in] to 40 mm [1-1/2 in] Incl.	Over 40 mm [1-1/2 in] to 65 mm [2-1/2 in] Incl.	Over 65 mm [2-1/2 in]
SAW; GMAW; FCAW; SMAW (M270M [M270] [A 709M (A 709)] Gr. 250 [36], 345 [50], 345W [50W], HPS 345W [HPS 50W])	10 [50]	20 [70]	65 [150]	110 [225]
SAW; GMAW; FCAW; SMAW (M270M [M270] [A 709M (A 709)] Gr. HPS 485W [HPS 70W], 690 [100], 690W [100W])*	10 [50]	50 [125]	80 [175]	110 [225]

VERMONT AOT
CAVENDISH VT RTE 131
OVER TWENTYMILE STREAM
PROJ # ER BRF 0146 (13)
CBSS JOB. NO. 541

WELDING PROCEDURE Max InterPass = 460°F

Pass no.	Electrode size	Welding current Amperes	Volts	Travel speed
		827	38	28IPM
AS	5/32	744	35	24
		TO	TO	TO
Reg.		910	41	32

See 5.13
AWS D1-5 Joint detail B-L2c-S



This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in applicable A.W.S. codes or contract specifications

Procedure no. PW202B ST of VT
Revision no.

Contractor Casco Bay Steel
Authorized By Paul E. Woodard
Date April-13-2012

Casco Bay Steel Structures, Inc.

WELDING PROCEDURE SPECIFICATION

Material specification ASTM Gr 50 + 50W
Welding process Submerged ARC Welding
Manual or machine Machine
Position of welding Flat + Horizontal
Filler metal specification AWS A5-23
Filler metal classification F8A2-EN1K-N1-H8
Flux Lincoln 960-Elec LA-75
Shielding gas N/A Flow rate N/A
Single or multiple pass Single & Multiple
Single or multiple arc Single
Welding current DC
Polarity DCEP
Welding progression See Detail
Root treatment Grind-wire Brush-Area Free of Slag-RUST & Moisture
Preheat and interpass temperature See Table
Postheat temperature N/A
Heat Input Min 51.3 KJ/in Max 73.4 KJ/in PQR-1-64.1 KJ/in

VTrans Received DEC 12 2013 CKD OK'd BY JWC
Resubmit BY APPROVED DATE 12/17/13

Minimum Preheat and Interpass Temperature, °C [°F]

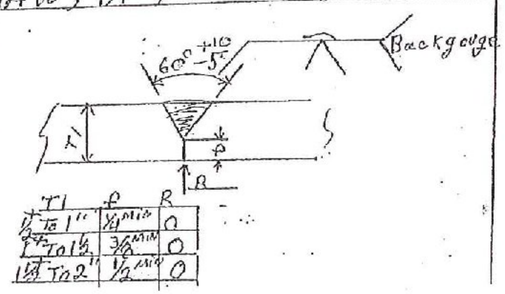
Welding Process (Base Metal)	Thickness of Thickest Part at Point of Welding, mm [in] To 20 mm [3/4 in] Incl.	Over 20 mm [3/4 in] to 40 mm [1-1/2 in] Incl.	Over 40 mm [1-1/2 in] to 65 mm [2-1/2 in] Incl.	Over 65 mm [2-1/2 in]
SAW; GMAW; FCAW; SMAW (M270M [M270] [A 709M (A 709)] Gr. 250 [36], 345 [50], 345W (50W), HPS 345W [HPS 50W])	10 [50]	20 [70]	65 [150]	110 [225]
SAW; GMAW; FCAW; SMAW (M270M [M270] [A 709M (A 709)] Gr. HPS 485W (HPS 70W), 690 [100], 690W [100W])*	10 [50]	50 [125]	80 [175]	110 [225]

VERMONT AOT
CAVENDISH VT RTE 131
OVER TWENTYMILE STREAM
Proj # ER BR-F 0146 (13)
CBSS Job No. 541

WELDING PROCEDURE Max InterPass - 430°F

Pass no.	Electrode size	Welding current: Amperes	Welding current: Volts	Travel speed
		620	31	18 IPM
		570	29	15
	5/32	TO	TO	TO
		650	33	20

See 5.13
AWS D1-5 Joint detail BL2c-S



This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in applicable A.W.S. codes or contract specifications

Procedure no 202B ST OF VT
Revision no

Contractor Casco Bay Steel
Authorized By Paul E. Gardner
Date April-13-2012

Casco Bay Steel Structures, Inc.

WELDING PROCEDURE SPECIFICATION

VTrans Received JWC
CKD OK'd BY

DEC 12 2013

Resubmit APPROVED
BY DATE 12/17/13

Material specification ASTM Gr 50 + 50W
Welding process Submerged ARC Welding
Manual or machine Machine
Position of welding Flat + Horizontal
Filler metal specification AWS A5.23
Filler metal classification F8A2-EN1K-Ni1-H8
Flux Lincoln 960-Elec LA-75
Shielding gas N.A. Flow rate N.A
Single or multiple pass Single / Multiple
Single or multiple arc Single
Welding current D.C.
Polarity DCEP
Welding progression See Detail
Root treatment Grind-Wire Brush-Area Free of Slag-Rust & Moisture
Preheat and interpass temperature See Table
Posfheat temperature N/A
Heat Input Min 51.3 KJ/in Max 79.4 KJ/in PQR-1 = 64.1 KJ/in

Minimum Preheat and Interpass Temperature, °C [°F]

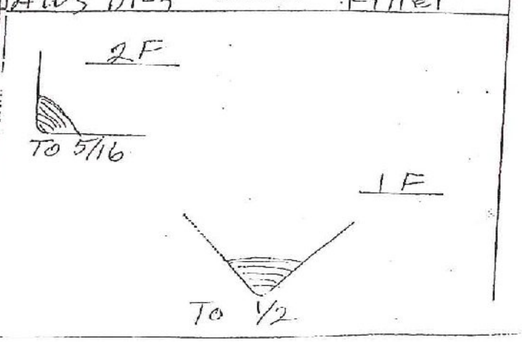
Welding Process (Base Metal)	Thickness of Thickest Part at Point of Welding, mm (in): To 20 mm [3/4 in] Incl.	Over 20 mm [3/4 in] to 40 mm [1-1/2 in] Incl.	Over 40 mm [1-1/2 in] to 65 mm [2-1/2 in] Incl.	Over 65 mm [2-1/2 in]
SAW; GMAW; FCAW; SMAW (M270M [M270] [A 709M (A 709)] Gr. 250 [36], 345 [50], 345W [50W], HPS 345W (HPS 50W))	10 [50]	20 [70]	65 [150]	110 [225]
SAW; GMAW; FCAW; SMAW (M270M [M270] [A 709M (A 709)] Gr. HPS 485W [HPS 70W], 690 [100], 690W [100W])*	10 [50]	50 [125]	80 [175]	110 [225]

VERMONT AOT
CAVENDISH VT RTE 131
OVER TWENTYMILE STREAM
PROJ # ER BRF 0146 (13)
CBSS JOB NO. 541

WELDING PROCEDURE

Pass no.	Electrode size	Welding current: Amperes	Welding current: Volts	Travel speed
		620	31	18IPM
		570	29	15
	5/32	To	To	To
		650	33	20

See 5.13
AWS D1-5 Joint detail Fillet



This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in applicable A.W.S. codes or contract specifications

Procedure no. 201 - ST OF VT. / Contractor Casco Bay Steel
Revision no. Authorized By Paul E. Gaudette
Date April-13-2012

Casco Bay Steel Structures, Inc.

WELDING PROCEDURE SPECIFICATION

Material specification A.S.T.M Gr 50 - 50W
Welding process Shielded Metal ARC
Manual or machine Manual
Position of welding Flat, Horizontal
Filler metal specification AWS/AWS A5.1 - A5-5
Filler metal classification E 7018 - E 8018 C1/C3
Flux NA
Shielding gas NA Flow rate NA
Single or multiple pass Single & Multiple
Single or multiple arc Single
Welding current AC / DC
Polarity Straight & Reverse
Welding progression See Detail
Root treatment Grind - Wire brush - Area Free of Slag - RUST - Moisture
Preheat and interpass temperature
Postheat temperature NA
Heat Input Min NA Max NA

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Received
CK'D OK'd By JGC
DEC 12 2013
Resubmit APPROVED
BY DATE 12/17/13

Minimum Preheat and Interpass Temperature, °C [°F]

Welding Process (Base Metal)	Thickness of Thicker Part at Point of Welding, mm [in]			
	To 20 mm [3/4 in] incl.	Over 20 mm [3/4 in] to 40 mm [1-1/2 in] incl.	Over 40 mm [1-1/2 in] to 65 mm [2-1/2 in] incl.	Over 65 mm [2-1/2 in]
SAW; GMAW; FCAW; SMAW (M270M [M270] [A 709M [A 709]] Gr. 250 [36], 345 [50], 345W [50W], HPS 345W (HPS 50W))	10 [50]	20 [70]	65 [150]	110 [225]

VERMONT AOT
CAVENDISH VT RTE 131
OVER TWENTYMILE STREAM
PROJ # ER BRF 0146 (13)
CBSS JOB. NO. 541

WELDING PROCEDURE

Pass no.	Electrode size	Welding current: Amperes	Welding current: Volts	Travel speed
	7018			
AS	1/8	70 TO 190	22-26	
	5/32	120 To 225	22-26	AS
REQ	3/16	170 TO 300	24-27	REQ
	8018			
	1/8	90 TO 160	22-26	
	5/32	120 To 225	22-26	
	3/16	180 TO 290	24-27	

AWS D1-5 Joint detail Fillet

3F



3/16 To 5/16

1F



3/16 To 3/8

This procedure may vary due to fabrication sequence, fit-up, pass size, etc., within the limitation of variables given in applicable A.W.S. codes or contract specifications

Procedure no. 401
Revision no.

Contractor Casco Bay Steel
Authorized By Joel E Beedle
Date April 13, 2012