RECORD PLANS	
CONTRACTOR:	RENAUD BROTHERS, INC. - VERNON, VT
RESIDENT ENGINEER:	DARYL BASSETT
CONSTRUCTION BEGAN:	JULY 9, 2015
CONSTRUCTION COMPLETE:	JULY 30, 2015
RECORD PLANS BY:	DARYL BASSETT & KEVIN KING

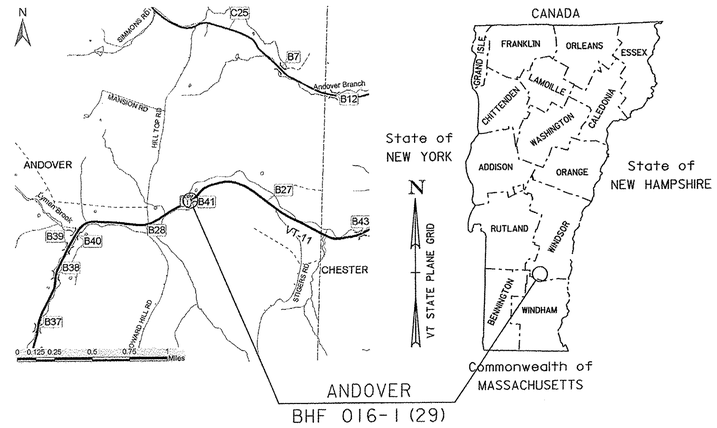
I HEREBY CERTIFY THAT ALL THE CONSTRUCTION REQUIRED BY THIS SET OF DRAWINGS HAS BEEN ACCOMPLISHED AS INDICATED HEREIN.

BY _____ RESIDENT ENGINEER

DATE 3/22/16

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.

STATE OF VERMONT
AGENCY OF TRANSPORTATION



PROPOSED IMPROVEMENT
BRIDGE PROJECT

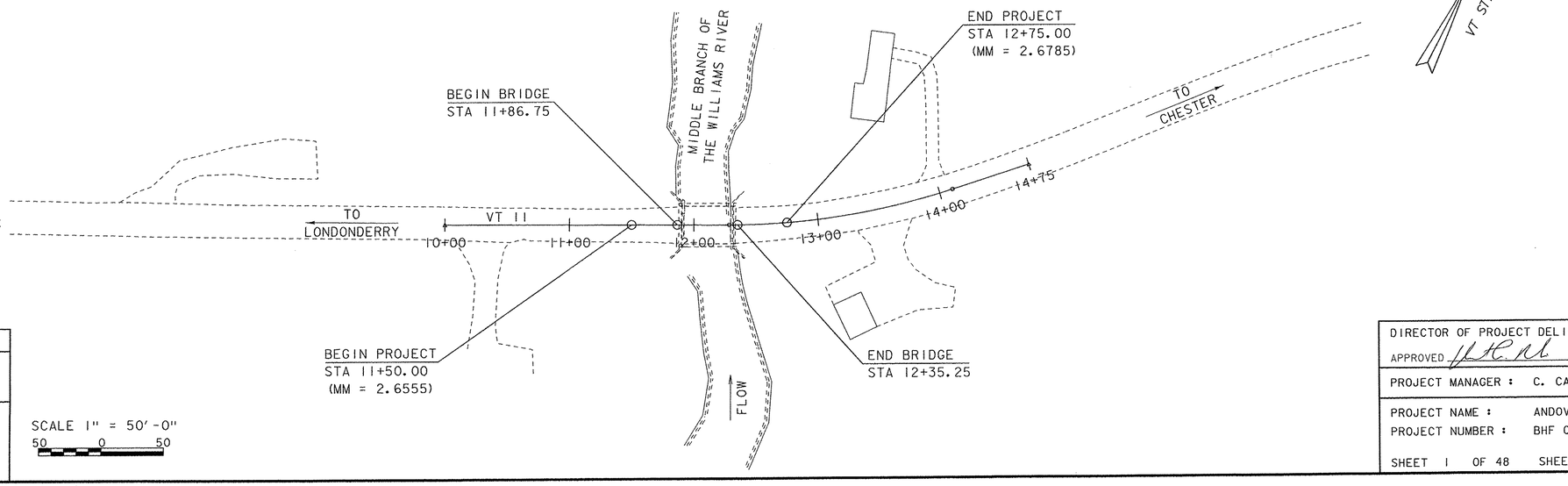
TOWN OF ANDOVER
COUNTY OF WINDSOR

ROUTE NO : VT RTE 11, RURAL MINOR ARTERIAL BRIDGE NO : 41

PROJECT LOCATION: BEGINNING ON VT 11 APPROXIMATELY 4.0 MILES EAST OF THE INTERSECTION OF VT 11 AND VT 121 AND EXTENDING WESTERLY ALONG VT 11 FOR 0.024 MILES.

PROJECT DESCRIPTION: REMOVAL AND REPLACEMENT OF DECK AND SUPERSTRUCTURE WITH MINOR SUBSTRUCTURE REPAIRS, RELATED ROADWAY APPROACH AND CHANNEL WORK.

LENGTH OF STRUCTURE:	48.50 FEET
LENGTH OF ROADWAY:	76.50 FEET
LENGTH OF PROJECT:	125.00 FEET



SCALE 1" = 50'-0"
50 0 50

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.

QUALITY ASSURANCE PROGRAM : LEVEL 2	
SURVEYED BY :	R. GILMAN
SURVEYED DATE :	5-28-2012
DATUM	
VERTICAL	NAVD88
HORIZONTAL	NAD83 (1996)

DIRECTOR OF PROJECT DELIVERY
APPROVED _____ DATE 1/9/2015

PROJECT MANAGER : C. CARLSON, P.E.

PROJECT NAME : ANDOVER
PROJECT NUMBER : BHF 016-1(29)

SHEET 1 OF 48 SHEETS

STATE OF VERMONT
AGENCY OF TRANSPORTATION

PRELIMINARY INFORMATION SHEET (BRIDGE)

Version
LRFD

INDEX OF SHEETS

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STANDARDS LIST

C-10	CURBING	02-11-2008
E-136B	STATE ROUTE MARKER SIGN DETAILS	08-08-1995
G-1	STEEL BEAM GUARDRAIL DETAILS (POST, DELINEATOR, TYPICALS)	02-10-2014
G-19	GENERIC GRADING PLANS FOR GUARDRAIL END TERMINALS	11-15-2002
S-360A	BRIDGE RAILING, GALVANIZED 2 RAIL BOX BEAM	04-23-2012
S-360B	GUARDRAIL APPROACH SECTION, GALVANIZED 2 RAIL BOX BEAM	04-23-2012
S-363	THRIE BEAM TO STANDARD STEEL BEAM TRANSITION SECTION	04-23-2012
T-1	TRAFFIC CONTROL GENERAL NOTES	08-06-2012
T-10	CONVENTIONAL ROADS CONSTRUCTION APPROACH SIGNING	08-06-2012
T-17	TRAFFIC CONTROL MISCELLANEOUS DETAILS	08-06-2012
T-28	CONSTRUCTION SIGN DETAILS	08-06-2012
T-29	CONSTRUCTION SIGN DETAILS	08-06-2012
T-30	CONSTRUCTION SIGN DETAILS	08-06-2012
T-35	CONSTRUCTION ZONE LONGITUDINAL DROP-OFFS	08-06-2012
T-36	CONSTRUCTION ZONE LONGITUDINAL DROP-OFFS FOR PAVING	08-06-2012

STRUCTURES DETAIL SHEETS

SD-501.00	CONCRETE DETAILS AND NOTES	2/9/2012
SD-502.00	CONCRETE DETAILS AND NOTES	10/10/2012
SD-516.10	BRIDGE JOINT ASHPALTIC PLUG	8/29/2011

FINAL HYDRAULIC REPORT

HYDROLOGIC DATA

Date: Dec. 2013

DRAINAGE AREA : 12.0 sq. mi.
CHARACTER OF TERRAIN : Hilly to mountainous
STREAM CHARACTERISTICS : Sinuous, incised and alluvial
NATURE OF STREAMBED : Gravel, cobbles and a some boulders

PEAK FLOW DATA

Q 2.33 =	800 cfs	Q 50 =	2700 cfs
Q 10 =	1670 cfs	Q 100 =	3170 cfs
Q 25 =	2240 cfs	Q 500 =	4300 cfs

DATE OF FLOOD OF RECORD: unknown
ESTIMATED DISCHARGE: unknown
WATER SURFACE ELEV.: unknown
NATURAL STREAM VELOCITY : @ Q50 = 12.0 fps
ICE CONDITIONS : Moderate
DEBRIS: Moderate
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:

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

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: Single span concrete T-beam bridge with steel beam widening
YEAR BUILT: Built 1927, widened 1963
CLEAR SPAN(NORMAL TO STREAM): 41'
VERTICAL CLEARANCE ABOVE STREAMBED: 10'
WATERWAY OF FULL OPENING: 380 sq. ft.
DISPOSITION OF STRUCTURE: Retain abutments and replace superstructrue
TYPE OF MATERIAL UNDER SUBSTRUCTURE: See borings

WATER SURFACE ELEVATIONS AT:

Q2.33 =	1059.8'	VELOCITY =	7.0 fps
Q10 =	1061.9'	"	10.0 fps
Q25 =	1062.5'	"	12.1 fps
Q50 =	1063.3'	"	12.9 fps
Q100 =	1064.0'	"	13.5 fps

LONG TERM STREAMBED CHANGES: Some scour through the bridge

IS THE ROADWAY OVERTOPPED BELOW Q100: No
FREQUENCY: Above Q100
RELIEF ELEVATION: 1068.5'
DISCHARGE OVER ROAD @Q100: None

UPSTREAM STRUCTURE

TOWN: N.A. - stream divides
DISTANCE:
HIGHWAY # :
STRUCTURE #:
CLEAR SPAN:
CLEAR HEIGHT:
YEAR BUILT:
FULL WATERWAY:
STRUCTURE TYPE:

DOWNSTREAM STRUCTURE

TOWN: Andover
DISTANCE: 4000'
HIGHWAY # : TH 29
STRUCTURE #: 27
CLEAR SPAN: 32'
CLEAR HEIGHT: 8'
YEAR BUILT: 1974
FULL WATERWAY: 250 sq. ft.
STRUCTURE TYPE: Steel beam bridge with concrete deck

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	2.84	1.38					
POSTING							
OPERATING	4.26	1.79	3.82	1.76	2.48	2.13	2.61
COMMENTS:							

PROPOSED STRUCTURE

STRUCTURE TYPE: Single span Next Beam bridge

CLEAR SPAN(NORMAL TO STREAM): 41'
VERTICAL CLEARANCE ABOVE STREAMBED: 11'
WATERWAY OF FULL OPENING: 440 sq. ft.

WATER SURFACE ELEVATIONS AT:

Q2.33 =	1059.8'	VELOCITY=	7.0 fps
Q10 =	1061.9'	"	10.1 fps
Q25 =	1062.5'	"	12.1 fps
Q50 =	1063.3'	"	12.9 fps
Q100 =	1064.0'	"	13.5 fps

IS THE ROADWAY OVERTOPPED BELOW Q100: No
FREQUENCY: Above Q100
RELIEF ELEVATION: 1068.5'
DISCHARGE OVER ROAD @Q100: None

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 1066.1'
VERTICAL CLEARANCE: @ Q50 = 2.8'

SCOUR: Contraction scour - Q100 = 1' and Q500 = 2'
Additional abutment scour and long term degradation can be expected.
REQUIRED CHANNEL PROTECTION: Stone Fill, Type IV

PERMIT INFORMATION

AVERAGE DAILY FLOW:	25 cfs	
ORDINARY LOW WATER:	10 cfs	DEPTH OR ELEVATION:
ORDINARY HIGH WATER:	340 cfs	Depth = 0.5'
		Depth = 3.0'

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: No temporary bridge required
CLEAR SPAN (NORMAL TO STREAM):
VERTICAL CLEARANCE ABOVE STREAMBED:
WATERWAY AREA OF FULL OPENING:

ADDITIONAL INFORMATION

TRAFFIC MAINTENANCE NOTES

DESIGN VALUES

1.	DESIGN LIVE LOAD		HL-93
2.	FUTURE PAVEMENT	d_P:	3.0 INCH
3.	DESIGN SPAN	L:	44'-0" FT
4.	MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)	Δ:	1.09 INCH
5.	PRESTRESSING STRAND (0.60 INCH DIAMETER - LOW RELAX)	f_y:	270 KSI
6.	PRESTRESSED CONCRETE STRENGTH	f'_c:	10.0 KSI
7.	PRESTRESSED CONCRETE RELEASE STRENGTH	f'_{ci}:	8.0 KSI
8.	CONCRETE, HIGH PERFORMANCE CLASS AA	f'_c:	---
9.	CONCRETE, HIGH PERFORMANCE CLASS A	f'_c:	4.0 KSI
10.	CONCRETE, HIGH PERFORMANCE CLASS B	f'_c:	3.5 KSI
11.	CONCRETE, CLASS C	f'_c:	---
12.	REINFORCING STEEL	f_y:	60 KSI
13.	STRUCTURAL STEEL AASHTO M270	f_y:	---
14.	NOMINAL BEARING RESISTANCE OF SOIL	q_n:	---
15.	SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	ϕ:	---
16.	NOMINAL BEARING RESISTANCE OF ROCK	q_n:	---
17.	ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	ϕ:	---
18.	PILE RESISTANCE FACTOR	ϕ:	---
19.	LATERAL PILE DEFLECTION	Δ:	---
20.	BASIC WIND SPEED	V_{3s}:	---
21.	MINIMUM GROUND SNOW LOAD	p_g:	---
22.	SEISMIC DATA PGA: 0	S_s:	---
		S_1:	---
23.			
24.			---
25.			---
26.			---

AS BUILT "REBAR" DETAIL

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

TRAFFIC DATA

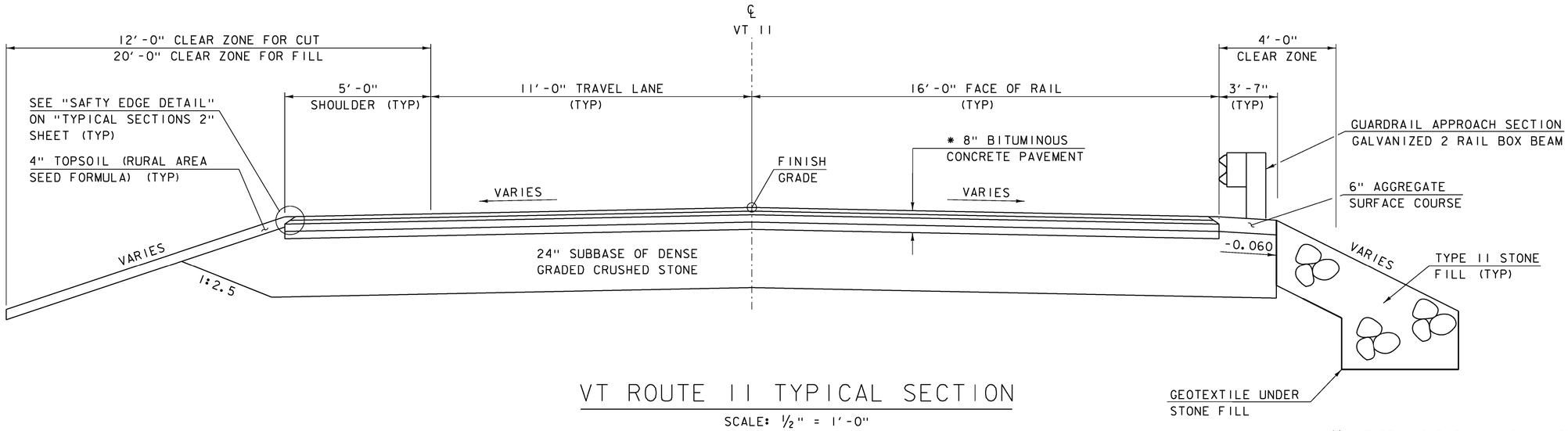
YEAR	ADT	DHV	% D	% T	ADTT
2015	2700	320	53	13.7	440
2035	2900	340	53	19.2	670

20 year ESAL for flexible pavement from 2015 to 2035 : 2770000
40 year ESAL for flexible pavement from 2015 to 2055 : 6188000
Design Speed : 50 mph

PROJECT NAME: **ANDOVER**
PROJECT NUMBER: **BHF 016-1(29)**

FILE NAME: **s12b140pi.dgn**
PROJECT LEADER: **C. CARLSON**
DESIGNED BY: **D. PETERSON**
PRELIMINARY INFORMATION SHEET

PLOT DATE: 2/10/2015
DRAWN BY: **S. PIRO**
CHECKED BY: **D. PETERSON**
SHEET 2 OF 48

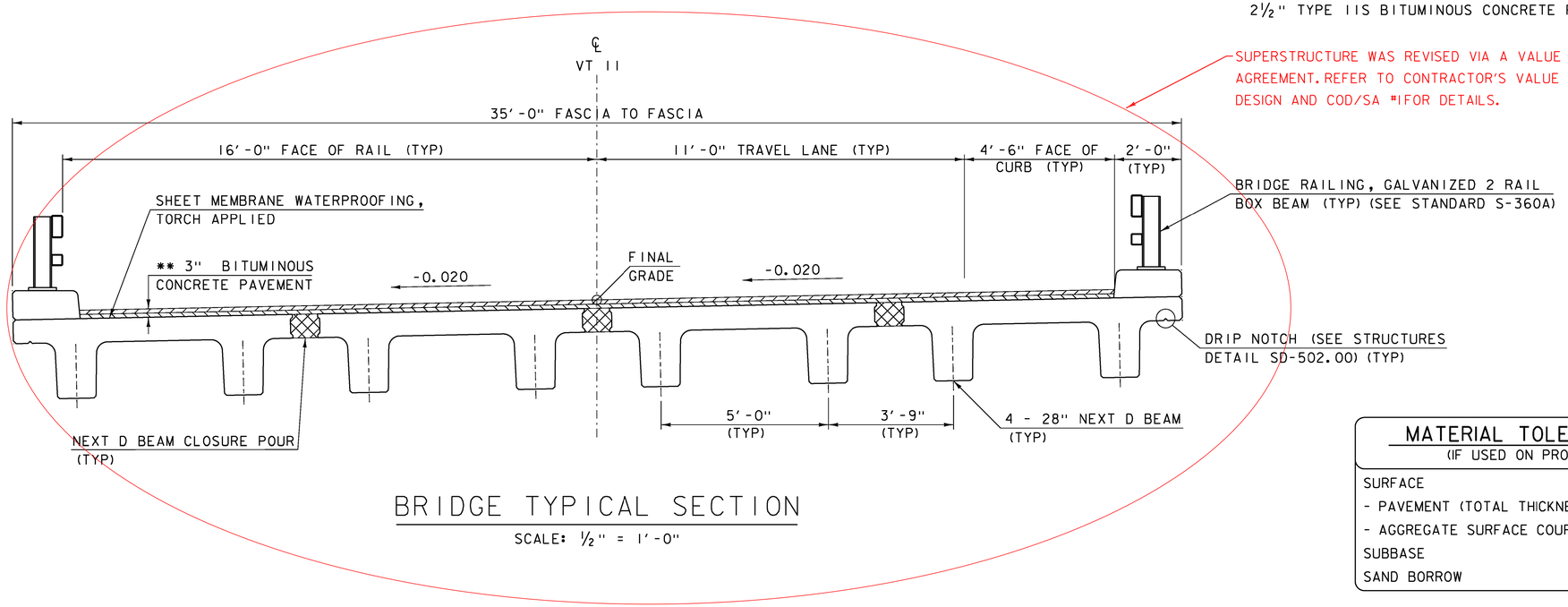


VT ROUTE 11 TYPICAL SECTION

SCALE: ½" = 1'-0"

* 1½" TYPE IVS BITUMINOUS CONCRETE PAVEMENT
1½" TYPE IVS BITUMINOUS CONCRETE PAVEMENT
2½" TYPE IIS BITUMINOUS CONCRETE PAVEMENT
2½" TYPE IIS BITUMINOUS CONCRETE PAVEMENT

SUPERSTRUCTURE WAS REVISED VIA A VALUE ENGINEERING AGREEMENT. REFER TO CONTRACTOR'S VALUE ENGINEERING DESIGN AND COD/SA #1FOR DETAILS.



BRIDGE TYPICAL SECTION

SCALE: ½" = 1'-0"

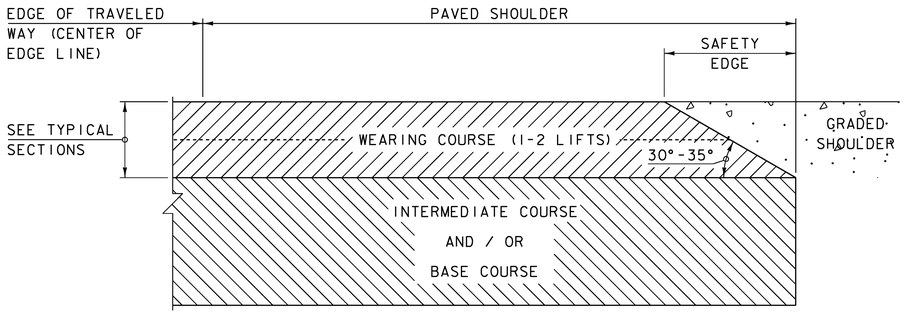
MATERIAL TOLERANCES (IF USED ON PROJECT)	
SURFACE	
- PAVEMENT (TOTAL THICKNESS)	+/- ¼"
- AGGREGATE SURFACE COURSE	+/- ½"
SUBBASE	+/- 1"
SAND BORROW	+/- 1"

** 1½" TYPE IVS BITUMINOUS CONCRETE PAVEMENT
1½" TYPE IVS BITUMINOUS CONCRETE PAVEMENT

PROJECT NAME: ANDOVER
PROJECT NUMBER: BHF 016-1(29)

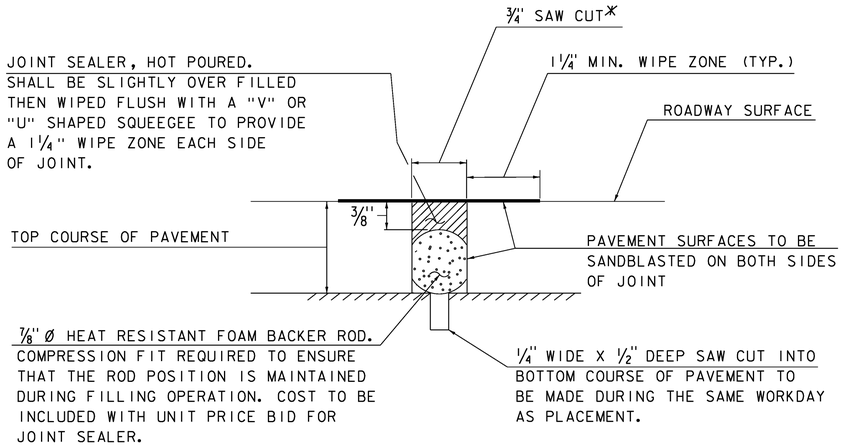
FILE NAME: sl2bl40typ.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: D. PETERSON
TYPICAL SECTIONS 1

PLOT DATE: 06-JAN-2015
DRAWN BY: S. PIRO
CHECKED BY: D. PETERSON
SHEET 3 OF 48



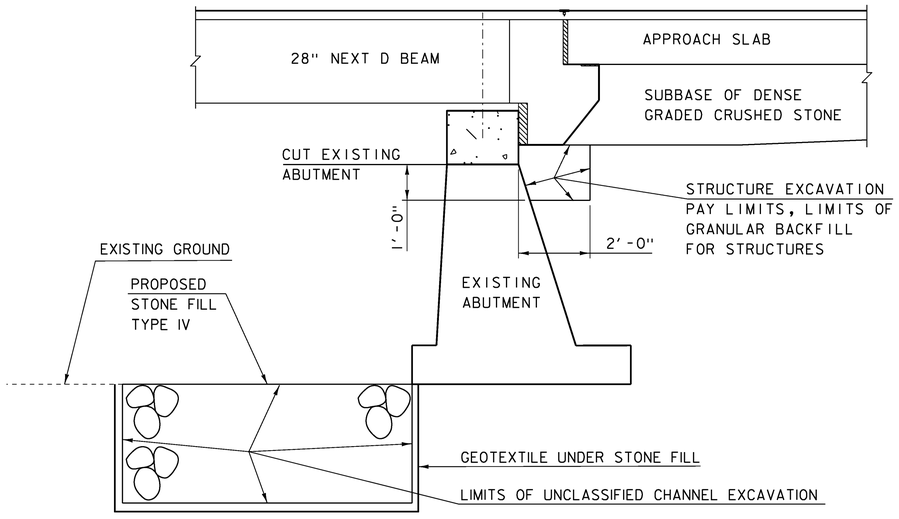
SAFETY EDGE DETAIL
(NOT TO SCALE)

1. LEVELING COURSE MAY INCLUDE THE "SAFETY EDGE" AT THE CONTRACTOR'S CHOICE.
2. THE EDGE OF PAVEMENT SHALL BE FORMED IN SUCH A WAY THAT THE BITUMINOUS CONCRETE PAVEMENT IS EXTRUDED OR COMPRESSED TO FORM THE 30 TO 35 DEGREE ANGLE. DEVICES THAT SIMPLY STRIKE-OFF THE MIX WITHOUT PROVIDING ANY COMPACTIVE EFFORT WILL NOT BE ALLOWED.
3. THE PAVED SHOULDER EXTENDS FROM THE EDGE OF TRAVELED WAY TO THE EDGE OF THE WEARING COURSE, INCLUDING THE "SAFETY EDGE".



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.



EARTH WORK TYPICAL SECTION
(NOT TO SCALE)

PROJECT NAME:	ANDOVER
PROJECT NUMBER:	BHF 016-1(29)
FILE NAME: sl2b140typ.dgn	PLOT DATE: 06-JAN-2015
PROJECT LEADER: C. CARLSON	DRAWN BY: S. PIRO
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
TYPICAL SECTIONS 2	SHEET 4 OF 48

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
	HWY	HIGHWAY EASEMENT
	I&M	INSTALL & MAINTAIN EASEMENT
	LAND	LANDSCAPE EASEMENT
	R&RES	REMOVE & RESET
	R&REP	REMOVE & REPLACE
	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	EXISTING ROW POINT
○	PROW	PROPOSED ROW POINT
[LENGTH]		LENGTH CARRIED ON NEXT SHEET

COMMON TOPOGRAPHIC POINT SYMBOLS

POINT	CODE	DESCRIPTION
	APL	BOUND APPARENT LOCATION
	BM	BENCHMARK
	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

- UTILITY (GENERIC-UNKNOWN)
- 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)

- UTILITY (GENERIC-UNKNOWN)
- 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
- PDF — PDF — PROJECT DEMARCATION FENCE
- BF — BF — 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 — 6F PROPERTY BOUNDARY
- 4f — 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

SEE EPSC DETAIL SHEETS FOR ADDITIONAL SYMBOLOGY

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

PROJECT NAME: ANDOVER
PROJECT NUMBER: BHF 016-1(29)

FILE NAME: sl2bl40legend.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: D. PETERSON
CONVENTIONAL SYMBOLOGY LEGEND

PLOT DATE: 06-JAN-2015
DRAWN BY: S. PIRO
CHECKED BY: D. PETERSON
SHEET 5 OF 48

GENERAL

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE STATE OF VERMONT AGENCY OF TRANSPORTATION STANDARD SPECIFICATIONS FOR CONSTRUCTION DATED 2011 AND ITS LATEST REVISIONS, THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FIFTH EDITION, DATED 2012 AND ITS LATEST REVISIONS AND THE AASHTO LRFD BRIDGE CONSTRUCTION SPECIFICATIONS THIRD EDITION, DATED 2010 AND ITS LATEST REVISIONS.

2. THE BRIDGE WAS DESIGNED FOR THE HL-93 LIVE LOADS.

3. ALL DIMENSIONS SHOWN IN THE PLANS ARE HORIZONTAL OR VERTICAL AND ARE GIVEN AT 68 DEGREES FAHRENHEIT, UNLESS OTHERWISE NOTED.

4. ADJUSTMENTS TO THE BITUMINOUS WEARING SURFACE ON THE BRIDGE SHALL BE MADE TO ACCOUNT FOR THE DIFFERENCE BETWEEN BEAM CAMBER AND THE THEORETICAL ROADWAY PROFILE. THE WEARING SURFACE SHALL BE SHIMMED TRANSVERSELY AS NECESSARY TO ACCOUNT FOR POTENTIAL DIFFERENTIAL CAMBER OF THE ADJACENT BEAMS.

EARTHWORK AND RELATED ITEMS

5. TEMPORARY CONSTRUCTION FILLS WITHIN THE WATERCOURSE FOR ANY PURPOSE SHALL CONSIST OF CLEAN STONE FILL ONLY. NO OTHER FILLING IN THE STREAM SHALL OCCUR WITHOUT THE APPROVAL OF THE RIVER MANAGEMENT ENGINEER.

6. THE BACKFILL BEHIND THE ABUTMENTS SHALL NOT BE PLACED HIGHER THAN THE BRIDGE SEATS UNTIL CONSTRUCTION ON THE ABUTMENTS AND DECK IS COMPLETED.

7. THE "STONE FILL, TYPE III" UNDER THE BRIDGE AS SHOWN IN THE PLANS SHALL BE PLACED BEFORE THE NEXT BEAMS ARE SET.

8. ITEM 529.20, "PARTIAL REMOVAL OF STRUCTURE" SHALL INCLUDE:

   - REMOVAL OF EXISTING SUPERSTRUCTURE INCLUDING: BRIDGE PAVEMENT, STEEL AND CONCRETE BEAMS, CONCRETE BRIDGE DECK AND BRIDGE CURB AND RAIL.
   - CUTTING AND PARTIAL REMOVAL OF THE EXISTING SUBSTRUCTURES TO THE ELEVATIONS SHOW IN THE PLANS, INCLUDING CUTTING OFF THE EXISTING REINFORCING STEEL.

CONCRETE AND REINFORCING

9. SUBSTRUCTURE CONCRETE SHALL BE HIGH PERFORMANCE CONCRETE, CLASS B. PAYMENT WILL BE MADE UNDER CONTRACT ITEMS 501.34.

10. WATER REPELLENT, SILANE SHALL BE APPLIED TO ALL EXPOSED CONCRETE SURFACES, EXCEPT THE UNDERSIDE OF THE DECK BETWEEN DRIP NOTCHES.

11. JOINTS AND SCORE MARKS IN CONCRETE SHALL BE CONSTRUCTED AS SHOWN IN THE PLANS OR AS DIRECTED BY THE RESIDENT ENGINEER.

12. THE CONTRACTOR MAY CHOOSE TO HAVE THE CURBS ON THE BRIDGE PRECAST WITH THE FASCIA NEXT BEAM OR TO CAST THE CURBS IN PLACE AFTER THE FASCIA NEXT BEAMS HAVE BEEN SET. CONCRETE FOR CAST-IN-PLACE CURBS SHALL MEET THE REQUIREMENTS OF SECTION 501 FOR CONCRETE, HIGH PERFORMANCE CLASS A AND WILL BE PAID FOR UNDER CONTRACT ITEM 501.33. CONCRETE FOR PRECAST CURBS SHALL MEET THE REQUIREMENTS OF SECTION 540 AND WILL BE PAID FOR UNDER CONTRACT ITEM 900.640 SPECIAL PROVISION (PRESTRESSED CONCRETE NEXT D BEAMS)(NEXT 28 D).

13. ALL REINFORCING STEEL BELOW THE BRIDGE SEAT AND IN THE WINGWALLS SHALL MEET THE REQUIREMENTS OF SECTION 507 FOR LEVEL I REINFORCING AND WILL BE PAID FOR UNDER CONTRACT ITEM 507.11. REINFORCING IN THE APPROACH SLABS AND APPROACH SLAB CLOSURE POURS SHALL MEET THE REQUIREMENTS OF SECTION 507 FOR LEVEL I REINFORCING. ALL COSTS ASSOCIATED WITH THE APPROACH SLAB CLOSURE POUR REINFORCING SHALL BE INCLUDED IN THE BID PRICE FOR EACH 540.10 AND 900.645, "SPECIAL PROVISION, (CONTRACTOR-FABRICATED PRECAST CONCRETE STRUCTURE)" CONTRACT ITEM AS APPROPRIATE. LONGITUDINAL REINFORCING STEEL IN THE BRIDGE CURBS SHALL MEET THE REQUIREMENTS OF SECTION 507 FOR LEVEL II REINFORCING AND WILL BE PAID FOR UNDER CONTRACT ITEM 507.12.

14. REINFORCING STEEL PLACEMENT TOLERANCES SHALL BE:
    SPACING: +/- 1 INCH
    CLEARANCE: +/- ¼ INCH

15. THE METHOD OF FORMING FOR SUBSEQUENT POURS AFTER PLACING PRECAST/PRESTRESSED SUPERSTRUCTURE UNITS SHALL BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR IS ENCOURAGED TO WORK WITH THE FABRICATOR IF ADDITIONAL SUPPORTS ARE REQUIRED. IN NO CASE SHALL THE CONTRACTOR ATTACH ADDITIONAL FORM OR SCREED SUPPORTS BY DRILLING OR SIMILAR MEANS INTO ANY PRECAST/PRESTRESSED SUPERSTRUCTURE UNIT.

16. BARS SHALL BE DRILLED AND GROUTED INTO THE EXISTING ABUTMENTS AND WINGWALLS AS SHOWN ON THE PLANS. THE DOWELS SHALL HAVE A 2'-0" MINIMUM EMBEDMENT IN THE SUBSTRUCTURE AND SHALL EXTEND A MINIMUM OF 1'-6" INTO THE NEW CONCRETE, UNLESS NOTED OTHERWISE.

NEXT D BEAMS

17. THE NEXT D BEAMS ARE A NON-PROPRIETARY SHAPE DEVELOPED BY PCI NORTHEAST (PCINE). STANDARDIZED SECTION PROPERTIES AND DETAILS MAY BE FOUND AT HTTP://WWW.PCINE.ORG.

18. DESIGN VALUES
    a. CONCRETE COMPRESSIVE STRENGTH: f'c = 10,000 PSI
    b. CONCRETE COMPRESSIVE STRENGTH AT RELEASE: f'ci = 8,000 PSI
    c. PRESTRESSING STRANDS: 0.6 INCH DIAMETER, 270 KSI, LOW-RELAXATION 7-WIRE STRANDS
    d. ASSUMED MODULUS OF ELASTICITY = 28,500 KSI
    e. JACKING FORCE PER STRAND = 47 KIPS
    f. SERVICE LOADS:

MEMBER MOMENT:	343.1 K-FT
SUPERIMPOSED DEAD LOAD MOMENT:	70.3 K-FT
LIVE LOAD AND IMPACT MOMENT:	677.0 K-FT
DEAD LOAD REACTION:	42.6 KIPS
LIVE LOAD AND IMPACT REACTION:	78.8 KIPS
TOTAL REACTION:	121.4 KIPS
CAMBER AT RELEASE:	1.09 INCHES
FINAL CAMBER:	2.36 INCHES

19. ADDITIONAL LONGITUDINAL STEEL IN THE NEXT BEAM AND CURTAIN WALL CLOSURE POURS SHALL MEET THE REQUIREMENTS OF SECTION 507 FOR LEVEL II REINFORCING AND WILL BE PAID FOR UNDER CONTRACT ITEM 900.640 SPECIAL PROVISION (PRESTRESSED CONCRETE NEXT D BEAMS)(NEXT 28 D).

20. FORMING FOR ENDS OF FLANGES ALONG LONGITUDINAL CLOSURE POURS SHALL BE TREATED WITH CONCRETE SURFACE RETARDER, OR SIMILAR, TO PROVIDE A ROUGHENED / EXPOSED AGGREGATE SURFACE; AND SHALL BE POWER WASHED WITH WATER PRIOR TO ERECTION OF THE BEAMS.

21. THE CONCRETE FOR FLANGE CLOSURE POURS SHALL BE PAID FOR UNDER ITEM 900.608 SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET) (FPQ).

22. METHOD OF FORMING FLANGE CONNECTION SHALL BE DETERMINED BY THE CONTRACTOR. THE FORMS SHALL BE REMOVABLE AND ABLE TO ACCOMMODATE DIFFERENTIAL CAMBER. FORM SUPPORTS SHALL NOT BE ATTACHED TO ANY PREFABRICATED SUPERSTRUCTURE ELEMENT BY DRILLING OR SIMILAR MEANS.

23. THE FABRICATOR MAY ALTER THE DESIGN AS DETAILED IN THESE PLANS TO ACCOMMODATE THEIR SPECIFIC OPERATION. ANY ALTERATION SHALL BE DESIGNED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF VERMONT TO MEET SPECIFIED CRITERIA AND SHALL BE APPROVED BY THE PROJECT MANAGER.

24. PAYMENT FOR CURTAIN WALL CONCRETE AND REINFORCING STEEL, WITH THE EXCEPTION OF THAT REQUIRED FOR CLOSURE POURS, WILL BE INCLUDED UNDER CONTRACT ITEM 900.640 SPECIAL PROVISION (PRESTRESSED CONCRETE NEXT D BEAMS)(NEXT 28 D).

TRAFFIC CONTROL

25. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND INSTALLATION OF A SITE SPECIFIC TRAFFIC CONTROL PLAN. THE CONTRACTOR SHALL SUBMIT FOR APPROVAL A DETAILED TRAFFIC CONTROL PLAN TO THE ENGINEER FOR ALL STAGES OF CONSTRUCTION. NO WORK SHALL BEGIN UNTIL THE TRAFFIC CONTROL PLAN HAS BEEN APPROVED. SEE SPECIAL PROVISIONS FOR MORE DETAILS. ALL COST SHALL BE INCLUDED IN ITEM 900.645 "SPECIAL PROVISION (TRAFFIC CONTROL, ALL-INCLUSIVE).

26. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DETOUR AND CONSTRUCTION SIGNING. THE EXACT LOCATION WILL BE COORDINATED BY THE RESIDENT ENGINEER AND THE CONTRACTOR AND SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, DATED 2009, AND ITS LATEST REVISIONS AND THE LATEST EDITION OF THE STANDARD HIGHWAY SIGNS (SHS) BOOK.

27. THE PROPOSED DETOUR WILL USE VT 103 AND VT 100 TO MAINTAIN TRAFFIC WHILE VT 11 IS CLOSED TO THROUGH TRAFFIC FOR THE REPLACEMENT OF BRIDGE 41.

28. BRIDGE 41 SHALL BE CLOSED FOR NO MORE THAN 10 CONSECUTIVE CALENDAR DAYS. SEE SPECIAL PROVISIONS FOR WORK REQUIREMENTS AND INCENTIVE/DISINCENTIVE PROVISIONS FOR THE BRIDGE CLOSURE PERIOD. THE TOWN OF ANDOVER AND DISTRICT 2 SHALL BE NOTIFIED TWO WEEKS PRIOR TO THE CLOSURE.

29. TRAFFIC CONTROL WARNING SIGNS SHALL BE PROVIDED PER STANDARDS T-10 AND T-17. ADDITIONAL PROJECT CONSTRUCTION SIGNS SHALL BE INSTALLED AS REQUIRED BY THE RESIDENT ENGINEER.

30. ALL ON AND OFF PROJECT SIGNS AND BARRICADES AS REQUIRED FOR THE DETOUR AND/OR ORDERED BY THE RESIDENT ENGINEER WILL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE PAID FOR UNDER ITEM 900.645, SPECIAL PROVISION, "TRAFFIC CONTROL, ALL INCLUSIVE". ALL SIGNS AND BARRICADES SHALL BE INSPECTED DAILY AND REPAIRED AS NECESSARY. ALL SIGNS AND BARRICADES SHALL BE CLEARED OF DUST AND DEBRIS WEEKLY.

31. THE STATE ROUTE MARKERS USED FOR THE DETOUR AS SHOWN ON THE PLANS SHALL FOLLOW STANDARD 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 900.645 SPECIAL PROVISION (TRAFFIC CONTROL, ALL-INCLUSIVE).

32. PORTABLE CHANGEABLE MESSAGE SIGNS (PCMS) SHALL BE PLACED AS SHOWN ON THE PLANS. THE PCMS'S SHALL BE PLACED AT THE PROJECT LOCATION 14 DAYS PRIOR TO THE BRIDGE CLOSURE TO WARN OF THE IMPENDING DETOUR. THE MESSAGES SHALL BE UPDATED AS CONSTRUCTION PROGESSES. PAYMENT FOR THESE SIGNS WILL BE MADE FOR UNDER ITEM 641.17 "PORTABLE CHANGEABLE MESSAGE SIGN RENTAL".

33. THE MESSAGES ON THE PCMS'S AND THEIR PLACEMENT SHALL BE DETERMINED BY THE RESIDENT ENGINEER AS DETAILED ON THE "PROJECT SITE TRAFFIC CONTROL" PLAN.

34. INSTALLATION OF DETOUR SIGNS SHALL NOT BLOCK ANY EXISITNG TRAFFIC CONTROL SIGN ASSEMBLIES. CONTRACTOR SHALL TRY TO MAINTAIN AT LEAST 200 FEET BETWEEN SIGN ASSEMBLIES.

35. IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO MAKE ADJUSTMENTS AS NEEDED TO THE TRAFFIC CONTROL PLAN DUE TO CONFLICTS WITH EXISTING SIGNS AND DRIVEWAYS. ALL EXISTING TRAFFIC CONTROL SIGNS THAT CONFLICT WITH THE DETOUR SHALL BE FULLY COVERED.

36. ALL SIGNS REMOVED OR COVERED BY THE CONTRACTOR SHALL BE REPLACED OR UNCOVERED WHEN THE TRAFFIC CONTROL SIGNS ARE REMOVED.

37. FULL ACCESS TO ALL SIDE ROADS AND DRIVES WITHIN THE PROJECT LIMITS SHALL BE MAINTAINED AT ALL TIMES. THIS WORK WILL BE CONSIDERED INCIDENTAL TO ITEM 900.645 SPECIAL PROVISION "TRAFFIC CONTROL, ALL INCLUSIVE".

38. FOR MORE INFORMATION REGARDING THE DETOUR SEE THE PROJECT SPECIAL PROVISIONS.

MISCELLANEOUS

39. ITEM 404.65 "EMULSIFIED ASPHALT" IS TO BE APPLIED AT A RATE OF 0.025 GAL/SY ON ALL COLD PLANED SURFACES AND BETWEEN SUCCESSIVE COURSES OF PAVEMENT OR AS DIRECTED BY THE ENGINEER.

40. THE CONTRACTOR SHALL BE AWARE THAT THE CHANNEL ON THE SOUTH EAST CORNER OF THE BRIDGE HAS CHANGED SIGNIFICANTLY SINCE THE PROJECT WAS SURVEYED IN 2012 DUE TO A STORM IN AUGUST 2014.

PROJECT NAME:	ANDOVER
PROJECT NUMBER:	BHF 016-1(29)
FILE NAME: 12B140/STR/s12b140gn.dgn	PLOT DATE: 22-JAN-2015
PROJECT LEADER: C. CARLSON	DRAWN BY: S. PIRO
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
GENERAL NOTES	SHEET 6 OF 48

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 1

SUMMARY OF ESTIMATED QUANTITIES / TOTALS / DESCRIPTIONS

ROADWAY	EROSION CONTROL	BRIDGE	FULL C. E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND
1				1		LS	CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS	201.10	
660				660		CY	COMMON EXCAVATION	203.15	
		80		80		CY	UNCLASSIFIED CHANNEL EXCAVATION	203.27	
1				1		CY	TRENCH EXCAVATION OF EARTH, EXPLORATORY (N.A.B.I.)	204.22	
		10		10		CY	STRUCTURE EXCAVATION	204.25	
		10		10		CY	GRANULAR BACKFILL FOR STRUCTURES	204.30	
446				446		SY	COLD PLANING, BITUMINOUS PAVEMENT	210.10	
440				440		CY	SUBBASE OF DENSE GRADED CRUSHED STONE	301.35	
30				30		CY	AGGREGATE SURFACE COURSE	401.10	
9				9		CWT	EMULSIFIED ASPHALT	404.65	
1				1		LU	PRICE ADJUSTMENT, ASPHALT CEMENT (N.A.B.I.)	406.50	
		6		6		CY	CONCRETE, HIGH PERFORMANCE CLASS A	501.33	
		14		14		CY	CONCRETE, HIGH PERFORMANCE CLASS B	501.34	
		2400		2400		LB	REINFORCING STEEL, LEVEL I	507.11	
		315		315		LB	REINFORCING STEEL, LEVEL II	507.12	
		488		488		LF	DRILLING AND GROUTING DOWELS	507.16	
		20		20		GAL	WATER REPELLENT, SILANE	514.10	
		64		64		LF	BRIDGE EXPANSION JOINT, ASPHALTIC PLUG	516.10	
		168		168		SY	SHEET MEMBRANE WATERPROOFING, TORCH APPLIED	519.20	
		64		64		LF	JOINT SEALER, HOT POURED	524.11	
		97		97		LF	BRIDGE RAILING, GALVANIZED 2 RAIL BOX BEAM	525.33	
		1		1		EACH	PARTIAL REMOVAL OF STRUCTURE	529.20	
		16		16		EACH	BEARING DEVICE ASSEMBLY, STEEL REINFORCED ELASTOMERIC PAD	531.17	
							BEGIN OPTION AA		
		1		1		LS	PRECAST CONCRETE STRUCTURE (APPROACH SLAB NO. 1)	540.10	
		1		1		LS	SPECIAL PROVISION (CONTRACTOR-FABRICATED PRECAST CONCRETE STRUCTURE)(APPROACH SLAB NO. 1)	900.645	
							END OPTION AA		
							BEGIN OPTION BB		
		1		1		LS	PRECAST CONCRETE STRUCTURE (APPROACH SLAB NO. 2)	540.10	
		1		1		LS	SPECIAL PROVISION (CONTRACTOR-FABRICATED PRECAST CONCRETE STRUCTURE)(APPROACH SLAB NO. 2)	900.645	
							END OPTION BB		
1				1		MGAL	DUST CONTROL WITH WATER	609.10	
280				280		CY	STONE FILL, TYPE II	613.11	
		90		90		CY	STONE FILL, TYPE IV	613.13	
160				160		LF	CAST-IN-PLACE CONCRETE CURB, TYPE B	616.28	
4				4		EACH	MANUFACTURED TERMINAL SECTION, TANGENT	621.51	
4				4		EACH	GUARDRAIL APPROACH SECTION, GALVANIZED 2 RAIL BOX BEAM	621.72	
257				257		LF	REMOVAL AND DISPOSAL OF GUARDRAIL	621.80	
250				250		HR	UNIFORMED TRAFFIC OFFICERS	630.10	

DETAILED SUMMARY OF QUANTITIES

QUANTITIES	UNIT	ITEMS
		EARTHWORKS SUMMARY
		FILL AVAILABLE
660	CY	COMMON EXCAVATION (660 X 1.0)
24	CY	UNCLASSIFIED CHANNEL EXCAVATION (80 X 0.3)
0	CY	TRENCH EXCAVATION OF EARTH (0 X 1)
3	CY	STRUCTURE EXCAVATION (10 X 0.3)
0	CY	COFFERDAM EXCAVATION, EARTH (0 X 0.3)
0	CY	COFFERDAM EXCAVATION, ROCK (0 X 1)
3	CY	ROUNDING
690	**CY**	**TOTAL FILL AVAILABLE**
		FILL REQUIRED
0	CY	FACTORED FILL (0 X 1.15)
0	CY	ROUNDING
0	**CY**	**TOTAL FILL REQUIRED**
690		**TOTAL WASTE**
		(N.A.B.I.) = NOT A BID ITEM
		(FPQ) FINAL PAY QUANTITY

PROJECT NAME: ANDOVER
PROJECT NUMBER: BHF 016-1(29)

FILE NAME: 12B140/STR/s12b140qs.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: D. PETERSON
QUANTITY SHEET 1
PLOT DATE: 22-JAN-2015
DRAWN BY: S. PIRO
CHECKED BY: D. PETERSON

STATE OF VERMONT
AGENCY OF TRANSPORTATION

QUANTITY SHEET 2

SUMMARY OF ESTIMATED QUANTITIES				TOTALS		DESCRIPTIONS			
ROADWAY	EROSION CONTROL	BRIDGE	FULL C. E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND
420				420		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	
1				1		LS	MOBILIZATION/DEMOBILIZATION	635.11	
28				28		DAY	PORTABLE CHANGEABLE MESSAGE SIGN RENTAL	641.17	
660				660		LF	4 INCH WHITE LINE	646.20	
650				650		LF	4 INCH YELLOW LINE	646.21	
150		190		340		SY	GEOTEXTILE UNDER STONE FILL	649.31	
	178			178		SY	GEOTEXTILE FOR SILT FENCE	649.51	
	64			64		SY	GEOTEXTILE FOR FILTER CURTAIN	649.61	
	10			10		LB	SEED	651.15	
	10			10		LB	SEED, WINTER RYE	651.17	
	100			100		LB	FERTILIZER	651.18	
	1			1		TON	AGRICULTURAL LIMESTONE	651.20	
	1			1		TON	HAY MULCH	651.25	
	20			20		CY	TOPSOIL	651.35	
	180			180		SY	GRUBBING MATERIAL	651.40	
	1			1		LS	EPSC PLAN	652.10	
	50			50		HR	MONITORING EPSC PLAN	652.20	
	1			1		LU	MAINTENANCE OF EPSC PLAN (N.A.B.I.)	652.30	
	100			100		SY	TEMPORARY EROSION MATTING	653.20	
	30			30		CY	VEHICLE TRACKING PAD	653.35	
	530			530		LF	PROJECT DEMARCATION FENCE	653.55	
		5		5		CY	SPECIAL PROVISION (GROUT BAGS)	900.608	
		8		8		CY	SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET) (FPQ)	900.608	
		176		176		LF	SPECIAL PROVISION (PRESTRESSED CONCRETE NEXT D BEAMS)(NEXT 28 D)	900.640	
1				1		LS	SPECIAL PROVISION (CPM SCHEDULE)	900.645	
1				1		LS	SPECIAL PROVISION (TRAFFIC CONTROL, ALL-INCLUSIVE)	900.645	
1				1		LU	SPECIAL PROVISION (INCENTIVE/DISINCENTIVE)(N.A.B.I.)	900.650	
1				1		LU	SPECIAL PROVISION (MAT DENSITY PAY ADJUSTMENT, SMALL QUANTITY)(N.A.B.I.)	900.650	
1				1		LU	SPECIAL PROVISION (MIXTURE PAY ADJUSTMENT)(N.A.B.I.)	900.650	
340		68		408		TON	SPECIAL PROVISION (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY)	900.680	

DETAILED SUMMARY OF QUANTITIES		
QUANTITIES	UNIT	ITEMS

PROJECT NAME: ANDOVER
PROJECT NUMBER: BHF 016-1(29)

FILE NAME: 12B140/STR/s12b140qs.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: D. PETERSON
QUANTITY SHEET 2
PLOT DATE: 22-JAN-2015
DRAWN BY: S. PIRO
CHECKED BY: D. PETERSON

STATE OF VERMONT
AGENCY OF TRANSPORTATION

BRIDGE QUANTITY SHEET 1

SUMMARY OF BRIDGE QUANTITIES				TOTALS	DESCRIPTIONS			DETAILED SUMMARY OF QUANTITIES		
SUPERSTRUCTURE	ABUTMENT NO.1	ABUTMENT NO. 2	CHANNEL	BRIDGE TOTAL	UNIT	ITEMS	ITEM NUMBER	QUANTITIES	UNIT	ITEMS
			80	80	CY	UNCLASSIFIED CHANNEL EXCAVATION	203.27			
	5	5		10	CY	STRUCTURE EXCAVATION	204.25			
	5	5		10	CY	GRANULAR BACKFILL FOR STRUCTURES	204.30			
	3	3		6	CY	CONCRETE, HIGH PERFORMANCE CLASS A	501.33			
	7	7		14	CY	CONCRETE, HIGH PERFORMANCE CLASS B	501.34			
	1200	1200		2400	LB	REINFORCING STEEL, LEVEL I	507.11			
315				315	LB	REINFORCING STEEL, LEVEL II	507.12			
	244	244		488	LF	DRILLING AND GROUTING DOWELS	507.16			
6	7	7		20	GAL	WATER REPELLENT, SILANE	514.10			
64				64	LF	BRIDGE EXPANSION JOINT, ASPHALTIC PLUG	516.10			
168				168	SY	SHEET MEMBRANE WATERPROOFING, TORCH APPLIED	519.20			
64				64	LF	JOINT SEALER, HOT POURED	524.11			
97				97	LF	BRIDGE RAILING, GALVANIZED 2 RAIL BOX BEAM	525.33			
1				1	EACH	PARTIAL REMOVAL OF STRUCTURE	529.20			
	8	8		16	EACH	BEARING DEVICE ASSEMBLY, STEEL REINFORCED ELASTOMERIC PAD	531.17			
						BEGIN OPTION AA				
1				1	LS	PRECAST CONCRETE STRUCTURE (APPROACH SLAB NO. 1)	540.10			
1				1	LS	SPECIAL PROVISION (CONTRACTOR-FABRICATED PRECAST CONCRETE STRUCTURE)(APPROACH SLAB NO. 1)	900.645			
						END OPTION AA				
						BEGIN OPTION BB				
1				1	LS	PRECAST CONCRETE STRUCTURE (APPROACH SLAB NO. 2)	540.10			
1				1	LS	SPECIAL PROVISION (CONTRACTOR-FABRICATED PRECAST CONCRETE STRUCTURE)(APPROACH SLAB NO. 2)	900.645			
						END OPTION BB				
			90	90	CY	STONE FILL, TYPE IV	613.13			
			190	190	SY	GEOTEXTILE UNDER STONE FILL	649.31			
	5			5	CY	SPECIAL PROVISION (GROUT BAGS)	900.608			
8				8	CY	SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET) (FPQ)	900.608			
176				176	LF	SPECIAL PROVISION (PRESTRESSED CONCRETE NEXT D BEAMS)(NEXT 28 D)	900.640			
68				68	TON	SPECIAL PROVISION (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY)	900.680			

PROJECT NAME: ANDOVER
PROJECT NUMBER: BHF 016-1(29)

FILE NAME: 12B140/STR/s12b140qs.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: D. PETERSON
BRIDGE QUANTITY SHEET

PLOT DATE: 22-JAN-2015
DRAWN BY: S. PIRO
CHECKED BY: D. PETERSON
SHEET 9 OF 48

GPS CONTROL POINTS

HVCTRL #1

SIMONSVILLE
NORTH = 276627.440
EAST = 1583690.570
ELEV. = 1137.542

GENERAL LOCATION ANDOVER, VT. IN THE VILLAGE OF SIMONSVILLE. TO REACH FROM THE INTERSECTION OF VT. ROUTES 121 AND 11 IN NORTH WINDHAM (LONDONDERRY) GO NORTHEAST ALONG VT. ROUTE 11 FOR 3.4 MI (5.5 KM) TO THE SITE OF THE MARK ON THE LEFT IN A ROCK OUTCROP IN A GRASSY AREA. IT IS 0.3 MI (0.5 KM) WEST OF THE INTERSECTION OF VT. ROUTE 11 AND HILL TOP ROAD (NORTH) AND HOWARD HILL ROAD (SOUTH). THE MARK IS SET IN THE TOP OF A 0.8 X 0.6 M (2.0 FT) ROCK OUTCROP. IT IS 5.5 M (18.0 FT) NORTH OF AND ABOUT 0.3 M (1.0 FT) LOWER THAN THE NORTH EDGE OF PAVEMENT OF VT. ROUTE 11, 33.3 M (109.3 FT) NORTHWEST OF POLE NO.237, 39.4 M (129.3 FT) NORTHEAST OF POLE NO. 242/227, AND 1.6 M (5.2 FT) SOUTH OF A FIBERGLASS WITNESS POST.

HVCTRL #2

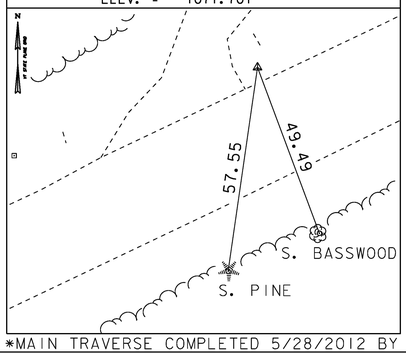
SIMONSVILLE AZ MK
NORTH = 276452.330
EAST = 1585221.640
ELEV. = 1104.463

GENERAL LOCATION ANDOVER, VT. IN THE VILLAGE OF SIMONSVILLE. TO REACH FROM THE INTERSECTION OF VT. ROUTES 121 AND 11 IN NORTH WINDHAM (LONDONDERRY) GO NORTHEAST ALONG VT. ROUTE 11 FOR 3.7 MI (6.0 KM) TO THE INTERSECTION OF HOWARD HILL ROAD RIGHT AND THE SITE OF THE MARK ON THE RIGHT. THE MARK IS SET 2 CM BELOW GROUND SURFACE IN THE TOP OF 30 CM DIAMETER CONCRETE MONUMENT SET 1.1 M (3.6 FT) DEEP. IT IS 16.3 M (53.5 FT) SOUTH OF AND ABOUT 0.3 M (1.0 FT) LOWER THAN THE CENTERLINE OF VT. ROUTE 11, 3.6 M (11.8 FT) EAST OF THE CENTERLINE OF HOWARD HILL ROAD, 11.3 M (37.1 FT) WEST OF THE NORTHWEST PORCH CORNER OF A 1 1/2 STORY WOOD FRAME HOUSE, 14.0 M (45.9 FT) EAST OF POLE NO. 1/230A/220-A, AND 1.8 M (5.9 FT) SOUTH OF A STOP SIGN AND A FIBERGLASS WITNESS POST.

TRAVERSE TIES

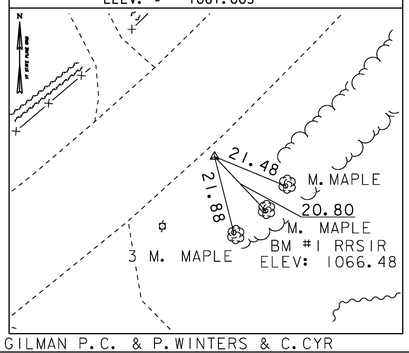
HVCTRL #3

NORTH = 277154.304
EAST = 1586402.825
ELEV. = 1077.701



HVCTRL #4

NORTH = 277421.339
EAST = 1586957.674
ELEV. = 1067.003



NORTH =
EAST =
ELEV. =

NORTH =
EAST =
ELEV. =

NORTH =
EAST =
ELEV. =

*MAIN TRAVERSE COMPLETED 5/28/2012 BY R. GILMAN P.C. & P. WINTERS & C. CYR

ALIGNMENT TIES

NORTH =
EAST =
ELEV. =

NORTH =
EAST =
ELEV. =

NORTH =
EAST =
ELEV. =

NORTH =
EAST =
ELEV. =

NORTH =
EAST =
ELEV. =

DATUM
VERTICAL NAVD 88
HORIZONTAL NAD 83 (96)
ADJUSTMENT NONE

PROJECT NAME: ANDOVER
PROJECT NUMBER: BHF 016-1(29)

FILE NAME: s12b140tie.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: D. PETERSON
TIE

PLOT DATE: 06-JAN-2015
DRAWN BY: S. PIRO
CHECKED BY: D. PETERSON
SHEET 10 OF 48

CONSTRUCT DRIVE (PAVED)
VT 11 STA 13+25.00 - 13+75.00 RT

COLD PLANING, BITUMINOUS PAVEMENT
VT11 STA 10+50.00 - 11+00.00
VT11 STA 13+25.00 - 13+75.00

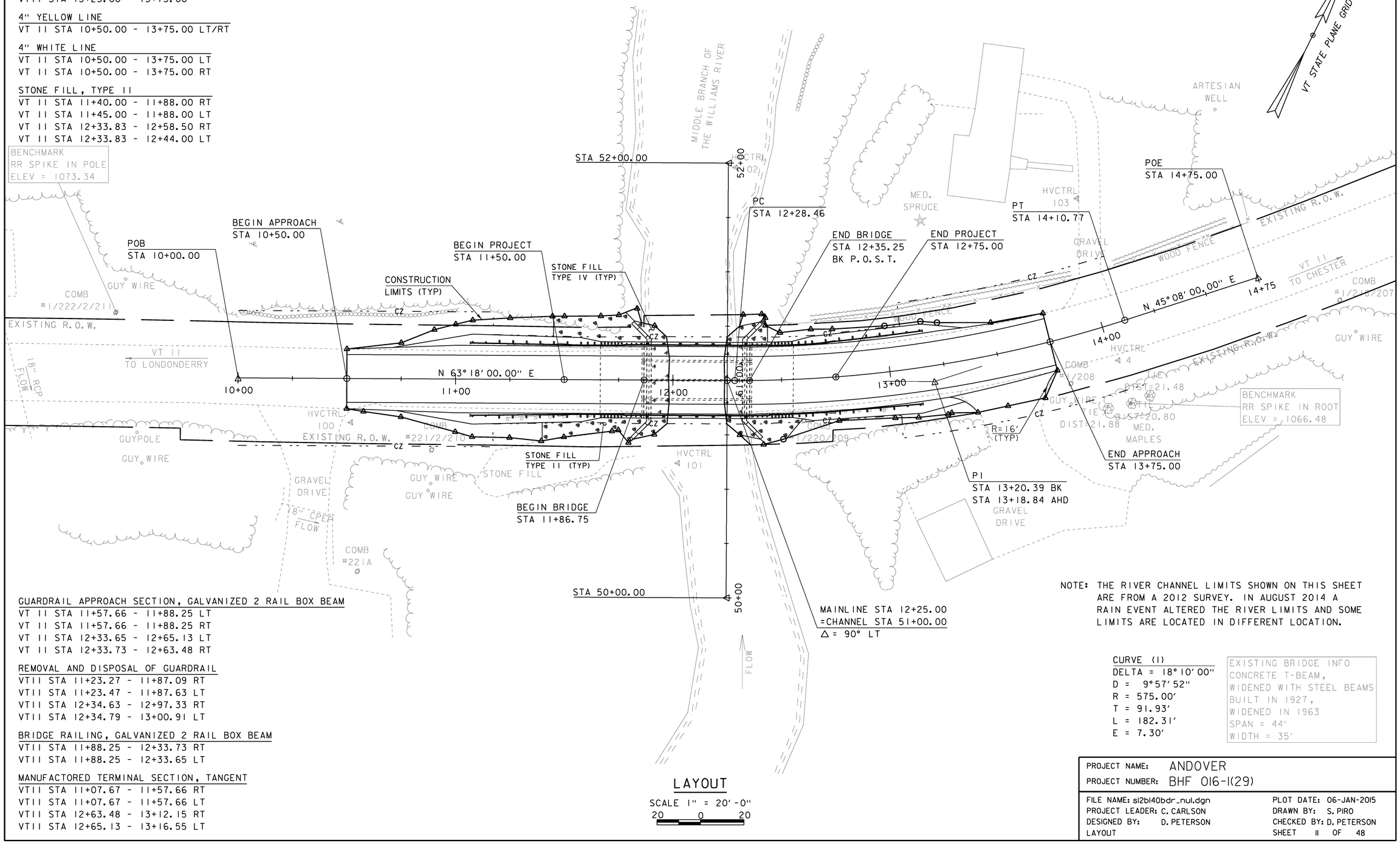
4" YELLOW LINE
VT 11 STA 10+50.00 - 13+75.00 LT/RT

4" WHITE LINE
VT 11 STA 10+50.00 - 13+75.00 LT
VT 11 STA 10+50.00 - 13+75.00 RT

STONE FILL, TYPE 11
VT 11 STA 11+40.00 - 11+88.00 RT
VT 11 STA 11+45.00 - 11+88.00 LT
VT 11 STA 12+33.83 - 12+58.50 RT
VT 11 STA 12+33.83 - 12+44.00 LT

CAST-IN-PLACE CONCRETE CURB, TYPE B
VT 11 STA 11+47.03 - 11+86.74 RT
VT 11 STA 11+47.03 - 11+86.74 LT
VT 11 STA 12+35.20 - 12+73.78 RT
VT 11 STA 12+35.20 - 12+76.03 LT

BENCHMARK
RR SPIKE IN POLE
ELEV = 1073.34



GUARDRAIL APPROACH SECTION, GALVANIZED 2 RAIL BOX BEAM
VT 11 STA 11+57.66 - 11+88.25 LT
VT 11 STA 11+57.66 - 11+88.25 RT
VT 11 STA 12+33.65 - 12+65.13 LT
VT 11 STA 12+33.73 - 12+63.48 RT

REMOVAL AND DISPOSAL OF GUARDRAIL
VT11 STA 11+23.27 - 11+87.09 RT
VT11 STA 11+23.47 - 11+87.63 LT
VT11 STA 12+34.63 - 12+97.33 RT
VT11 STA 12+34.79 - 13+00.91 LT

BRIDGE RAILING, GALVANIZED 2 RAIL BOX BEAM
VT11 STA 11+88.25 - 12+33.73 RT
VT11 STA 11+88.25 - 12+33.65 LT

MANUFACTORED TERMINAL SECTION, TANGENT
VT11 STA 11+07.67 - 11+57.66 RT
VT11 STA 11+07.67 - 11+57.66 LT
VT11 STA 12+63.48 - 13+12.15 RT
VT11 STA 12+65.13 - 13+16.55 LT

NOTE: THE RIVER CHANNEL LIMITS SHOWN ON THIS SHEET ARE FROM A 2012 SURVEY. IN AUGUST 2014 A RAIN EVENT ALTERED THE RIVER LIMITS AND SOME LIMITS ARE LOCATED IN DIFFERENT LOCATION.

CURVE (1)
DELTA = 18° 10' 00"
D = 9° 57' 52"
R = 575.00'
T = 91.93'
L = 182.31'
E = 7.30'

EXISTING BRIDGE INFO
CONCRETE T-BEAM,
WIDENED WITH STEEL BEAMS
BUILT IN 1927,
WIDENED IN 1963
SPAN = 44'
WIDTH = 35'

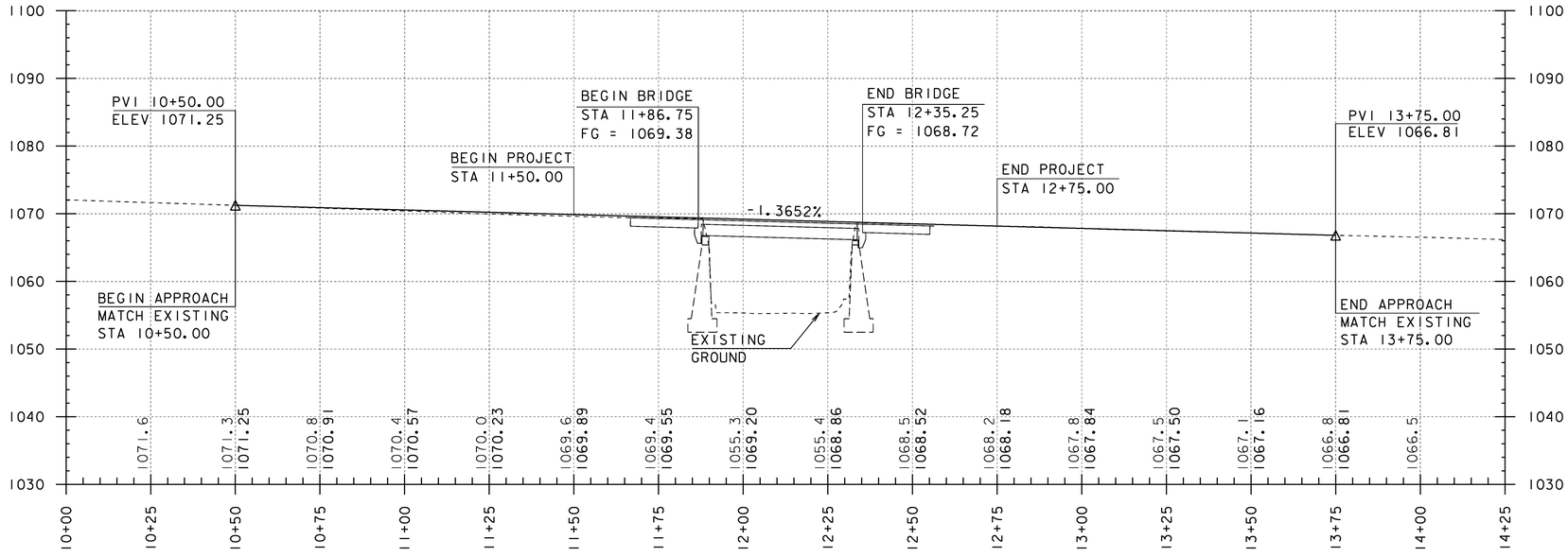
LAYOUT

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

PROJECT NAME: ANDOVER
PROJECT NUMBER: BHF 016-1(29)

FILE NAME: sl2bl40bdr_nul.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: D. PETERSON
LAYOUT

PLOT DATE: 06-JAN-2015
DRAWN BY: S. PIRO
CHECKED BY: D. PETERSON
SHEET 11 OF 48



PROFILE ALONG VT 11

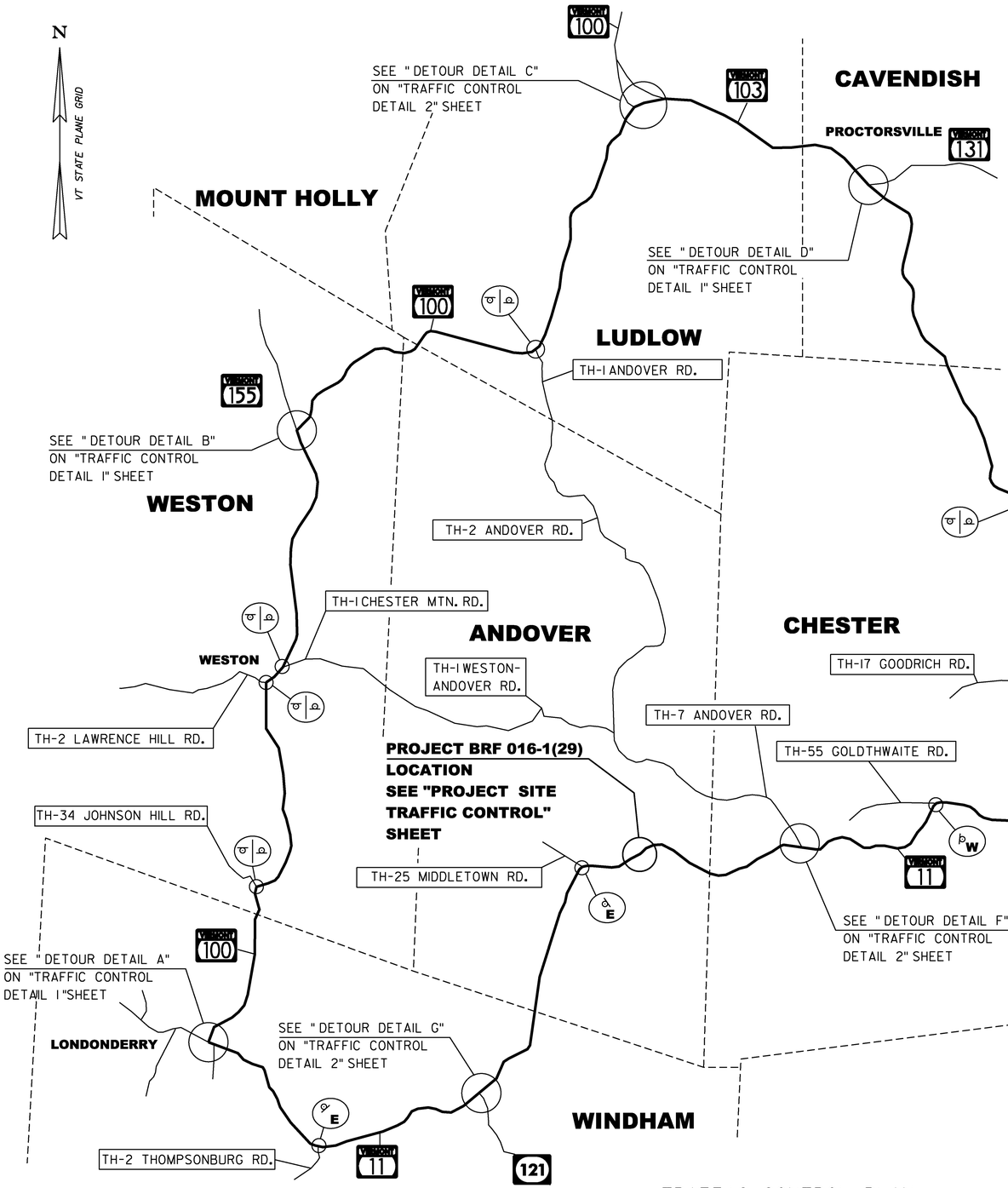
HORIZONTAL SCALE: 1" = 20'-0"
VERTICAL SCALE: 1" = 10'-0"

NOTE:

ELEVATIONS SHOWN TO THE NEAREST TENTH ARE EXISTING GROUND ALONG PROPOSED CENTERLINE.

ELEVATIONS SHOWN TO THE NEAREST HUNDREDTH ARE FINISH GRADES ALONG PROPOSED CENTERLINE.

PROJECT NAME:	ANDOVER
PROJECT NUMBER:	BHF 016-1(29)
FILE NAME: s12b140pro.dgn	PLOT DATE: 06-JAN-2015
PROJECT LEADER: C. CARLSON	DRAWN BY: S. PIRO
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
PROFILE	SHEET 12 OF 48



TRAFFIC CONTROL PLAN

SCALE 1" = 4000'

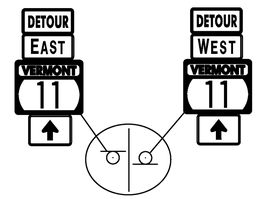
TRAFFIC CONTROL NOTES:

1. ALL SIGNS SHALL BE LOCATED SO THEY ARE VISIBLE AND ABLE TO BE READ BY THE TRAVELING PUBLIC. SIGNS SHALL BE INSTALLED SO AS NOT TO OBSTRUCT EXISTING SIGNS.
2. ALL SIGNS SHALL BE IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" (MUTCD) AND THE "STANDARD HIGHWAY SIGNS AND MARKING" BOOK (SHSM) PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION (FHWA).
3. SOLID SUBSTRATE CONSTRUCTION SIGNS SHALL HAVE RETROREFLECTIVE SHEETING EQUAL TO OR EXCEEDING "AMERICAN SOCIETY FOR TESTING AND MATERIALS" ASTM D4956 TYPE VII, VIII OR IX REQUIREMENTS, UNLESS OTHERWISE NOTED. SOLID SUBSTRATE REGULATORY SIGNS (WHITE BACKGROUND) SHALL HAVE RETROREFLECTIVE SHEETING EQUAL TO OR EXCEEDING ASTM D4956 TYPE III.
4. SIGNS SHALL BE ERECTED BEFORE THE START OF ANY WORK AND SHALL BE COVERED UNTIL WORK COMMENCES, AND UPON COMPLETION OF THE WORK. EACH SIGN SHALL BE ERECTED IN A NEAT AND WORKMANLIKE MANNER. SIGNS SHALL BE REMOVED UPON COMPLETION OF THE WORK AT THE DISCRETION OF THE ENGINEER.
5. FIXED SIGNS SHALL BE SET SECURELY IN THE GROUND. THE BOTTOM OF A SIGN SHALL BE AT LEAST SEVEN FEET ABOVE THE EDGE OF PAVEMENT. THE NEAREST EDGE OF A SIGN SHALL BE AT LEAST SIX FEET OUTSIDE THE SHOULDER POINT OR FOUR FEET OUTSIDE GUARDRAIL. ALL SIGNS SHALL BE INSTALLED WITHIN VTRANS OR TOWN RIGHTS-OF-WAY (ROW). IF THE SIGN CANNOT BE INSTALLED IN THE ROW, CONTRACTOR SHALL GET PERMISSION FROM THE LANDOWNER.
6. WHERE SIGN INSTALLATIONS ARE NOT PROTECTED BY GUARDRAIL OR OTHER APPROVED TRAFFIC BARRIERS, ALL SIGN STANDS AND POST INSTALLATIONS SHALL BE "NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM" (NCHRP) REPORT 350 COMPLIANT. NO SIGN POSTS SHALL EXTEND OVER THE TOP OF THE SIGN INSTALLED ON SAID POST(S). WHEN ANCHORS ARE INSTALLED THE STUB SHALL NOT BE GREATER THAN FOUR INCHES ABOVE EXISTING GROUND.
7. DETOUR ROUTE MARKER ASSEMBLIES SHALL BE INSTALLED ADJACENT TO THE EXISTING ROUTE MARKER ASSEMBLIES AT THE INTERSECTIONS.
8. ALL WORK REQUIRED FOR THE DETOUR WILL BE INCLUDED IN THE UNIT PRICE BID FOR CONTRACT ITEM 900.645 SPECIAL PROVISION (TRAFFIC CONTROL, ALL INCLUSIVE).

LEGEND

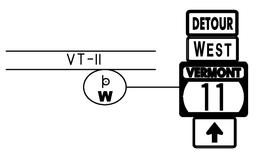
(SEE NOTE 8)

- CONFIRMATORY ROUTE MARKER ASSEMBLY.
- W — WEST CONFIRMATORY ROUTE MARKER ASSEMBLY.
- E — EAST CONFIRMATORY ROUTE MARKER ASSEMBLY.



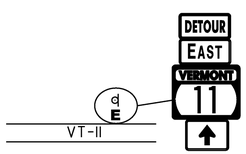
CONFIRMATORY ROUTE MARKER ASSEMBLY

NOT TO SCALE



WEST CONFIRMATORY ROUTE MARKER ASSEMBLY

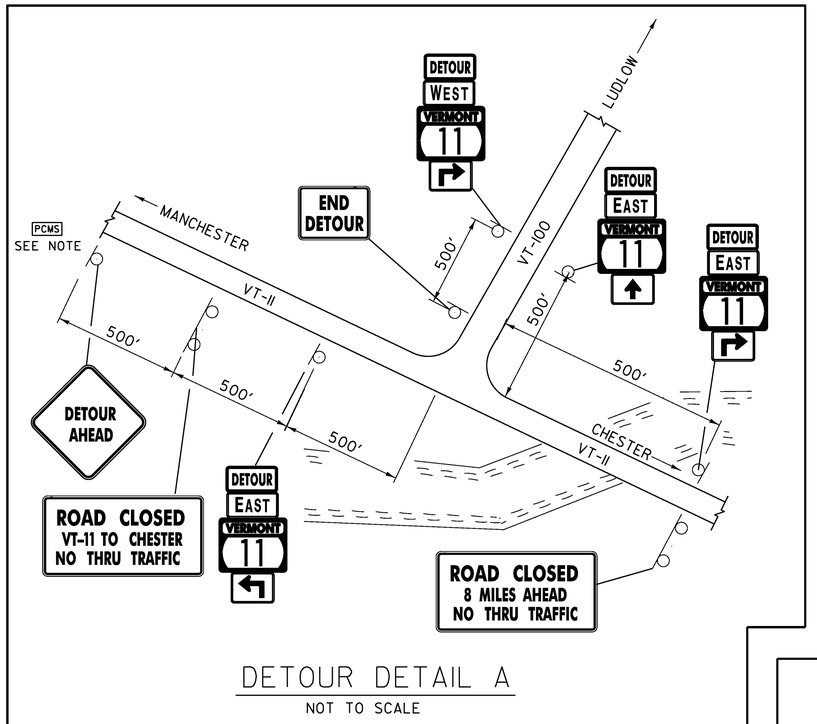
NOT TO SCALE



EAST CONFIRMATORY ROUTE MARKER ASSEMBLY

NOT TO SCALE

PROJECT NAME:	ANDOVER
PROJECT NUMBER:	BHF 016-1(29)
FILE NAME: 12b140/STR/12b140derour.dgn	PLOT DATE: 22-JAN-2015
PROJECT LEADER: C. CARLSON	DRAWN BY: G. ROKES
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
TRAFFIC CONTROL PLAN	SHEET 13 OF 48



DETOUR DETAIL A

NOT TO SCALE

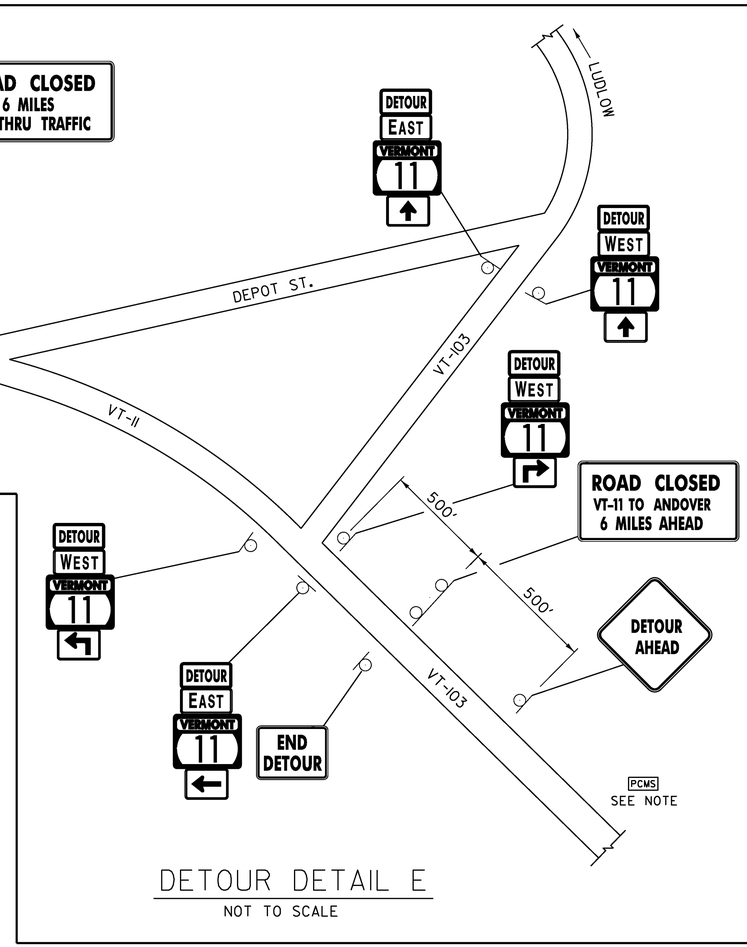
N

VT STATE PLANE GRID

NOTE: SEE "PROJECT SITE TRAFFIC CONTROL" SHEET FOR INFORMATION ON PORTABLE CHANGEABLE MESSAGE SIGNS.

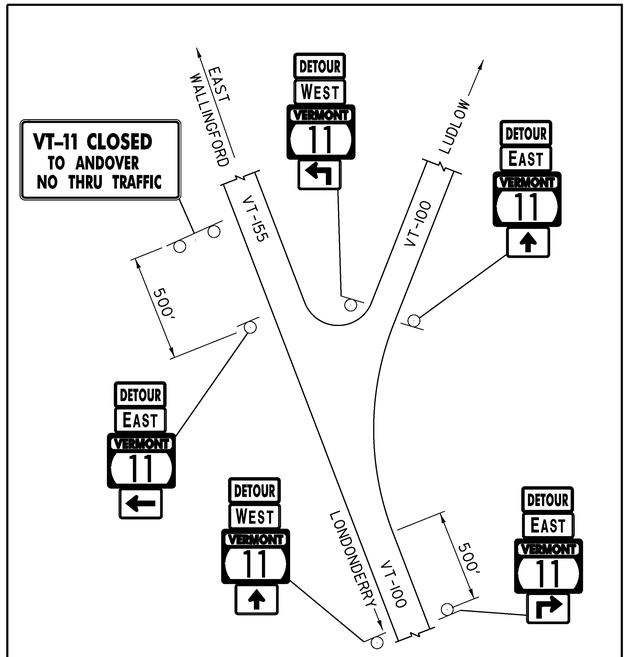
LEGEND

PCMS - PORTABLE CHANGEABLE MESSAGE SIGN



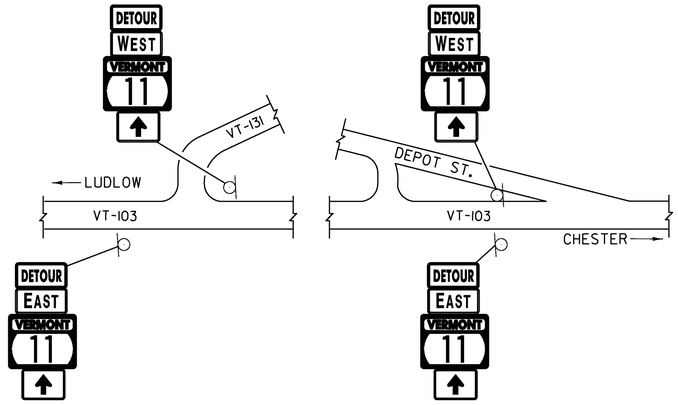
DETOUR DETAIL E

NOT TO SCALE



DETOUR DETAIL B

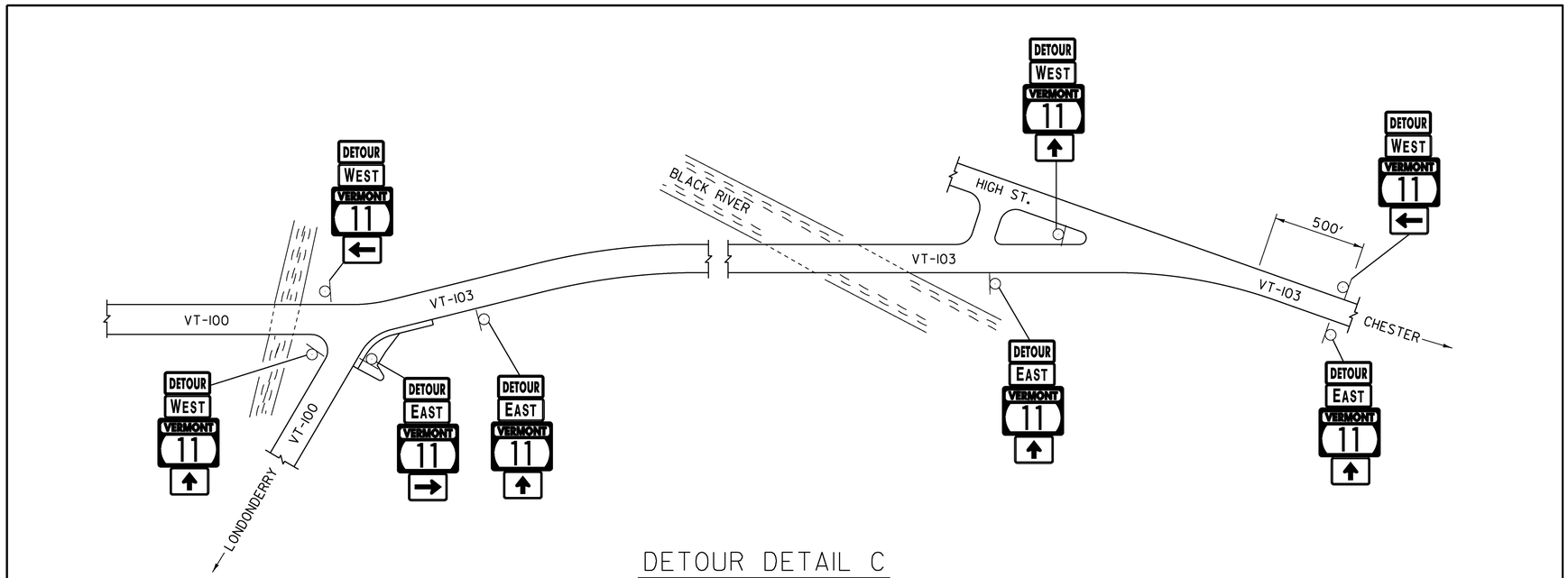
NOT TO SCALE



DETOUR DETAIL D

NOT TO SCALE

PROJECT NAME:	ANDOVER
PROJECT NUMBER:	BHF 016-1(29)
FILE NAME: 12b140/STR/12b140detour.dgn	PLOT DATE: 06-JAN-2015
PROJECT LEADER: C. CARLSON	DRAWN BY: G. ROKES
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
TRAFFIC CONTROL DETAIL 1	SHEET 14 OF 48

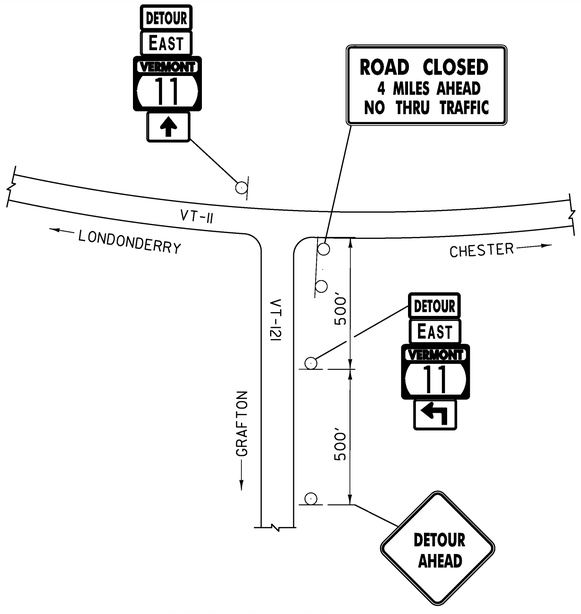


DETOUR DETAIL C

NOT TO SCALE

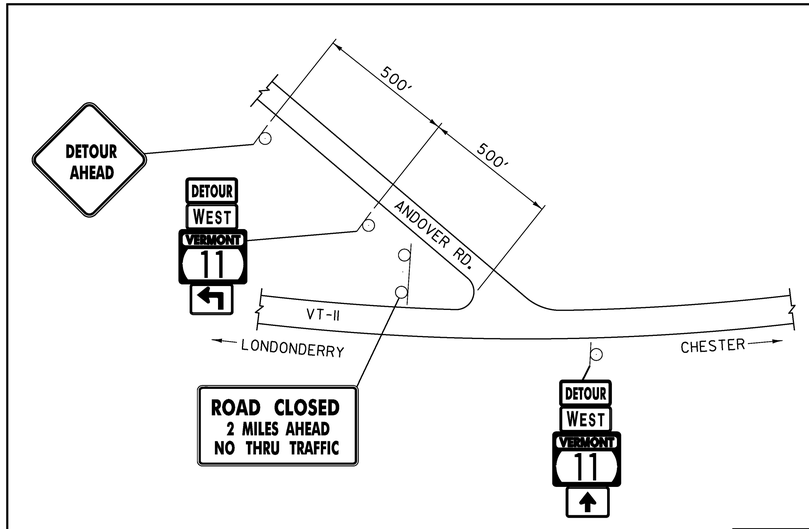
N

VT STATE PLANE GRID



DETOUR DETAIL G

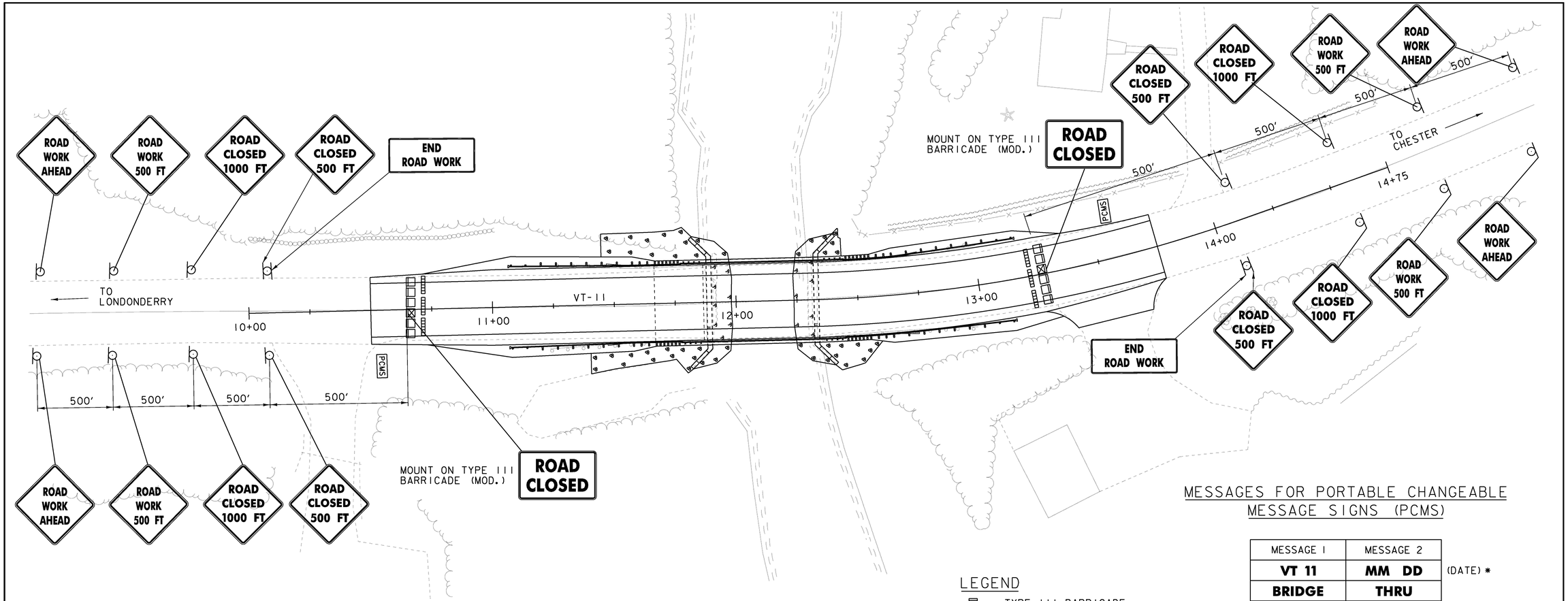
NOT TO SCALE



DETOUR DETAIL F

NOT TO SCALE

PROJECT NAME:	ANDOVER
PROJECT NUMBER:	BHF 016-1(29)
FILE NAME:	12b140/STR/12b140detour.dgn
PROJECT LEADER:	C. CARLSON
DESIGNED BY:	D. PETERSON
TRAFFIC CONTROL DETAIL 2	
PLOT DATE:	06-JAN-2015
DRAWN BY:	G. ROKES
CHECKED BY:	D. PETERSON
SHEET	15 OF 48



MESSAGES FOR PORTABLE CHANGEABLE MESSAGE SIGNS (PCMS)

MESSAGE 1	MESSAGE 2	
VT 11	**MM DD**	(DATE) *
BRIDGE	**THRU**	
CLOSED	**MM DD**	(DATE) *

* - MONTH SHALL BE SPELLED OUT - JUNE 10, NOT 6/10

LEGEND

- ☐ - TYPE III BARRICADE
- ☒ - TYPE III BARRICADE (MOD.)
- ▭ - TEMPORARY TRAFFIC BARRIER
- PCMS - PORTABLE CHANGEABLE MESSAGE SIGN

NOTES:

1. THE NUMBER OF TYPE III BARRICADES AND OTHER TRAFFIC CONTROL DEVICES SHOWN ARE FOR ILLUSTRATIVE PURPOSES ONLY. THE ACTUAL NUMBER REQUIRED ARE TO BE DETERMINED BASED ON INDIVIDUAL ROADWAY CLOSURE REQUIREMENTS.

2. PORTABLE CHANGEABLE MESSAGE SIGNS (PCMS) SHALL BE PLACED OFF THE EDGE OF THE ROADWAY, OUTSIDE THE CLEAR ZONE, BUT SHALL BE VISIBLE FROM THE ROADWAY. ANY VEGETATION THAT INTERFERES WITH VISIBILITY OF THE PCMS SHALL BE REMOVED. REMOVAL OF THE VEGETATION SHALL BE INCIDENTAL TO ITEM 641.17, "PORTABLE CHANGEABLE MESSAGE SIGN RENTAL".

3. THE PORTABLE CHANGEABLE MESSAGE SIGNS (PCMS) SHALL DISPLAY THE MESSAGE SHOWN TWO WEEKS (14 DAYS) PRIOR TO THE CLOSURE OF THE BRIDGE. THE PCMS SHALL NOT BE A PART OF THE DETOUR AND SHALL BE REMOVED ONCE THE DETOUR IS IMPLEMENTED AND THE BRIDGE IS CLOSED.

4. TEMPORARY TRAFFIC BARRIER SHALL MEET THE REQUIREMENTS OF SECTION 621 AND WILL BE INCLUDED FOR PAYMENT UNDER CONTRACT ITEM 900.645 SPECIAL PROVISION (TRAFFIC CONTROL, ALL -INCLUSIVE)

PROJECT NAME: ANDOVER
PROJECT NUMBER: BHF 016-1(29)

FILE NAME: 12b140/STR/12b140derour.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: D. PETERSON
PROJECT SITE TRAFFIC CONTROL

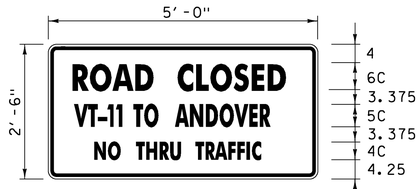
PLOT DATE: 06-JAN-2015
DRAWN BY: G. ROKES
CHECKED BY: D. PETERSON
SHEET 16 OF 48

IDENTIFICATION NUMBER	SIZE OF SIGN WIDTH (IN)	SIZE OF SIGN HEIGHT (IN)	TEXT	NUMBER OF SIGNS REQ'D	REMARKS
M1-5	30	24	VERMONT 11	45*	STD. E-136B
M3-2	24	12	EAST	24*	STD. E-136B
M3-4	24	12	WEST	21*	STD. E-136B
M4-8	24	12	DETOUR	45*	SHSM
M4-8A	24	18	END DETOUR	2	SHSM
M5-1L	21	15		5	STD. E-136B SIGNS SHALL BE BLACK ARROW AND BORDER ON RETRORELECTIVE ORANGE BACKGROUD
M5-1R	21	15		4	STD. E-136B SIGNS SHALL BE BLACK ARROW AND BORDER ON RETRORELECTIVE ORANGE BACKGROUD
M6-1L	21	15		4	STD. E-136B SIGNS SHALL BE BLACK ARROW AND BORDER ON RETRORELECTIVE ORANGE BACKGROUD
M6-1R	21	15		1	STD. E-136B SIGNS SHALL BE BLACK ARROW AND BORDER ON RETRORELECTIVE ORANGE BACKGROUD
M6-3	21	15		31*	STD. E-136B SIGNS SHALL BE BLACK ARROW AND BORDER ON RETRORELECTIVE ORANGE BACKGROUD
W20-2	48	48	DETOUR AHEAD	4	SHSM
W20-3	48	48	ROAD CLOSED 500 FT	4	SHSM
W20-3	48	48	ROAD CLOSED 1000 FT	4	SHSM
R11-2	48	30	ROAD CLOSED	2	SHSM
SP1 R11-3a	60	30	ROAD CLOSED VT-11 TO ANDOVER NO THRU TRAFFIC	1	SEE NOTES AND DETAILS THIS SHEET
SP2 R11-3a	60	30	ROAD CLOSED VT-11 TO CHESTER NO THRU TRAFFIC	1	SEE NOTES AND DETAILS THIS SHEET
SP3 R11-3a	60	30	ROAD CLOSED X MILES NO THRU TRAFFIC	5	SEE NOTES AND DETAILS THIS SHEET
SP4 R11-3a	60	30	VT-11 CLOSED TO ANDOVER NO THRU TRAFFIC	1	SEE NOTES AND DETAILS THIS SHEET
W20-1	48	48	ROAD WORK AHEAD	4	SHSM
W20-1	48	48	ROAD WORK 500 FT	4	SHSM
G20-2	36	18	END ROAD WORK	2	SHSM

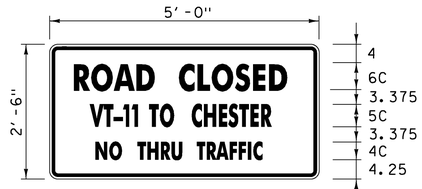
* = NUMBER OF SIGNS REQ'D ASSUMING APPROXIMATELY 15 LOCATIONS OF CONFIRMATORY ROUTE MARKER ASSEMBLY DETAIL.

NOTES:

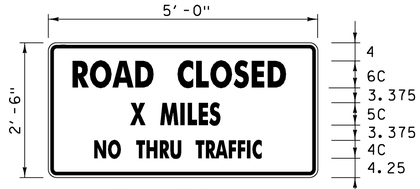
1. COLORS FOR THE SP1 R11-3a, SP2 R11-3a AND R11-3a SIGNS SHALL BE BLACK TEXT AND BORDER ON RETROREFLECTIVE WHITE BACKGROUND.
2. TWO ORANGE FLAGS (ONE EACH SIDE) SHALL BE PLACED AT THE TOP OF THE R11-3A, SP1 SP2 SP3 AND SP4 SIGNS.
3. THE M1-5, M3-2, AND THE M3-4 SIGNS SHALL BECOME THE PROPERTY OF THE STATE AFTER THEY ARE REMOVED FROM THE DETOUR. THE CONTRACTOR SHALL DELIVER THE SIGNS TO THE CHESTER DISTRICT GARAGE. ALL COSTS ASSOCIATED WITH PROVIDING THE SIGNS TO THE STATE SHALL BE INCIDENTAL TO ITEM 900.645 SPECIAL PROVISION (TRAFFIC CONTROL, ALL INCLUSIVE).



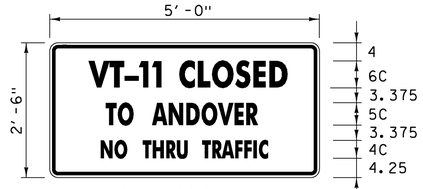
SP1 R11-3a
NOT TO SCALE



SP2 R11-3a
NOT TO SCALE



SP3 R11-3a
NOT TO SCALE



SP4 R11-3a
NOT TO SCALE

ALL DIMENSIONS ARE IN INCHES.

PROJECT NAME: ANDOVER
PROJECT NUMBER: BHF 016-1(29)

FILE NAME: 12b140/STR/12b140derour.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: D. PETERSON
TRAFFIC CONTROL SIGNS

PLOT DATE: 22-JAN-2015
DRAWN BY: G. ROKES
CHECKED BY: D. PETERSON
SHEET 17 OF 48

N

VT STATE PLANE GRID

MIDDLE BRANCH OF THE WILLIAMS RIVER

RETAIN EXISTING POLE

BEGIN APPROACH
STA 10+50.00

BEGIN PROJECT
STA 11+50.00

END BRIDGE
STA 12+35.25
BK P.O.S.T.

END PROJECT
STA 12+75.00

COMB #1/222/2/211

AER E&T

VT 11
TO LONDONDERRY

VT 11
TO CHESTER

10+00

11+00

12+00

13+00

14+00

14+75

COMB #221/2/210

COMB #1/220/209

COMB #1/208

COMB #1/207

COMB #221/A

NEW POLE W/ ANCHOR COMB 221
STA. 10+89.0 35'-0" RIGHT
CONNECT EXISTING SERVICE LINE
TO THE NEW POLE

REMOVE EXISTING POLE

BEGIN BRIDGE
STA 11+86.75

REMOVE EXISTING
POLE AND GUY WIRE

END APPROACH
STA 13+75.00

RETAIN EXISTING POLE
AND GUY WIRE

NEW POLE
STA. 13+79.50 23'-6" RIGHT
CONNECT EXISTING SERVICE LINE
AND ELECTRIC/TELEPHONE RISERS
TO NEW POLE

NEW POLE W/ ANCHOR COMB 220
STA. 12+82.0 39'-0" RIGHT

REMOVE EXISTING POLE
AND GUY WIRE

FLOW

NOTE:

1. THE SECTION BETWEEN COMB 220 & 221 CAN BE DE-ENERGIZED AT THE REQUEST OF THE CONTRACTOR.
2. NEW POLES AND LINES WILL BE MOVED BY OTHERS.
3. SEE THE UTILITY SPECIAL PROVISIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

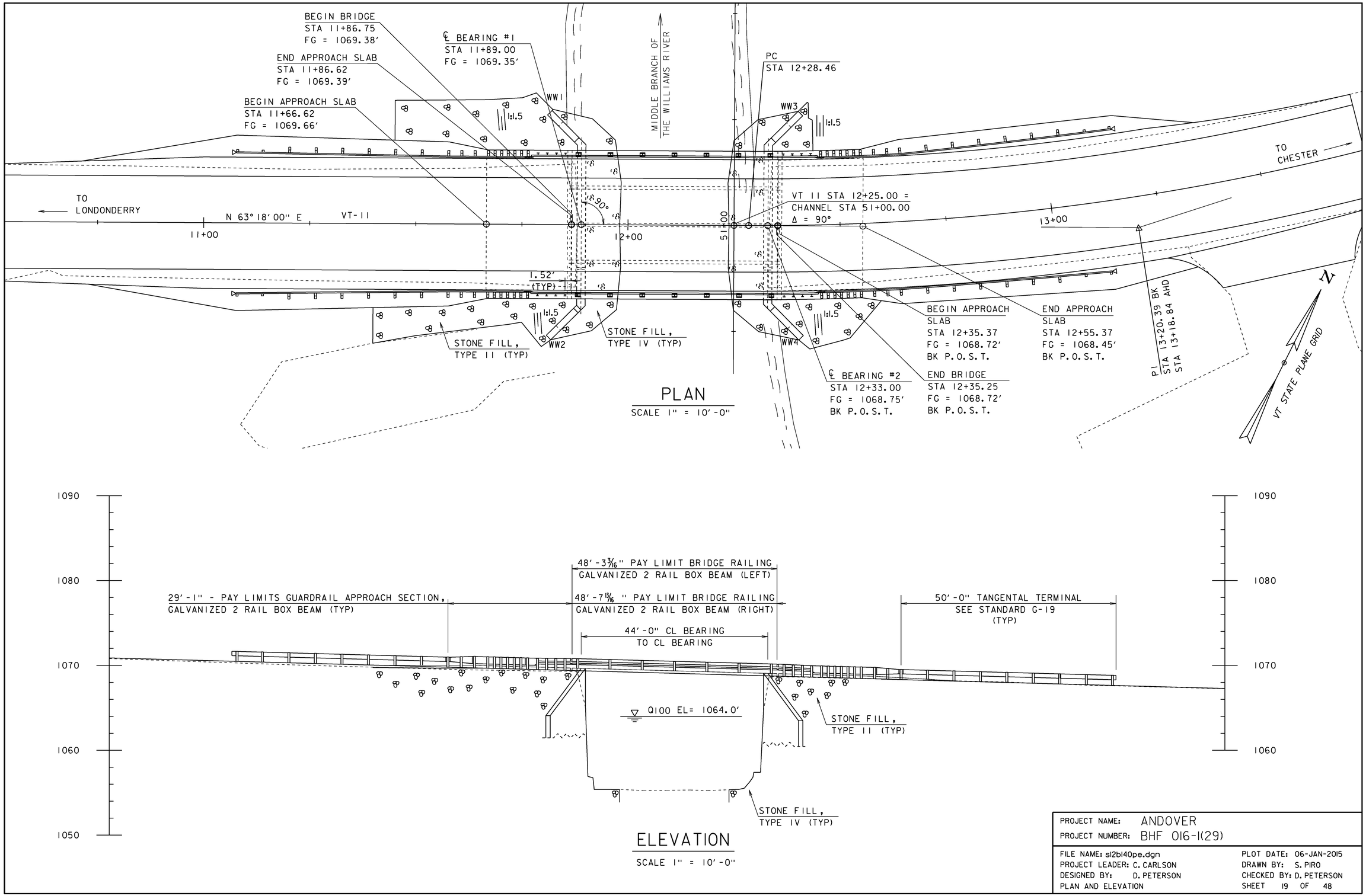
UTILITY LAYOUT

SCALE 1" = 20'-0"

PROJECT NAME: ANDOVER
PROJECT NUMBER: BHF 016-1(29)

FILE NAME: sl2b140bdr_util.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: D. PETERSON
UTILITY LAYOUT

PLOT DATE: 07-JAN-2015
DRAWN BY: S. PIRO
CHECKED BY: D. PETERSON
SHEET 18 OF 48



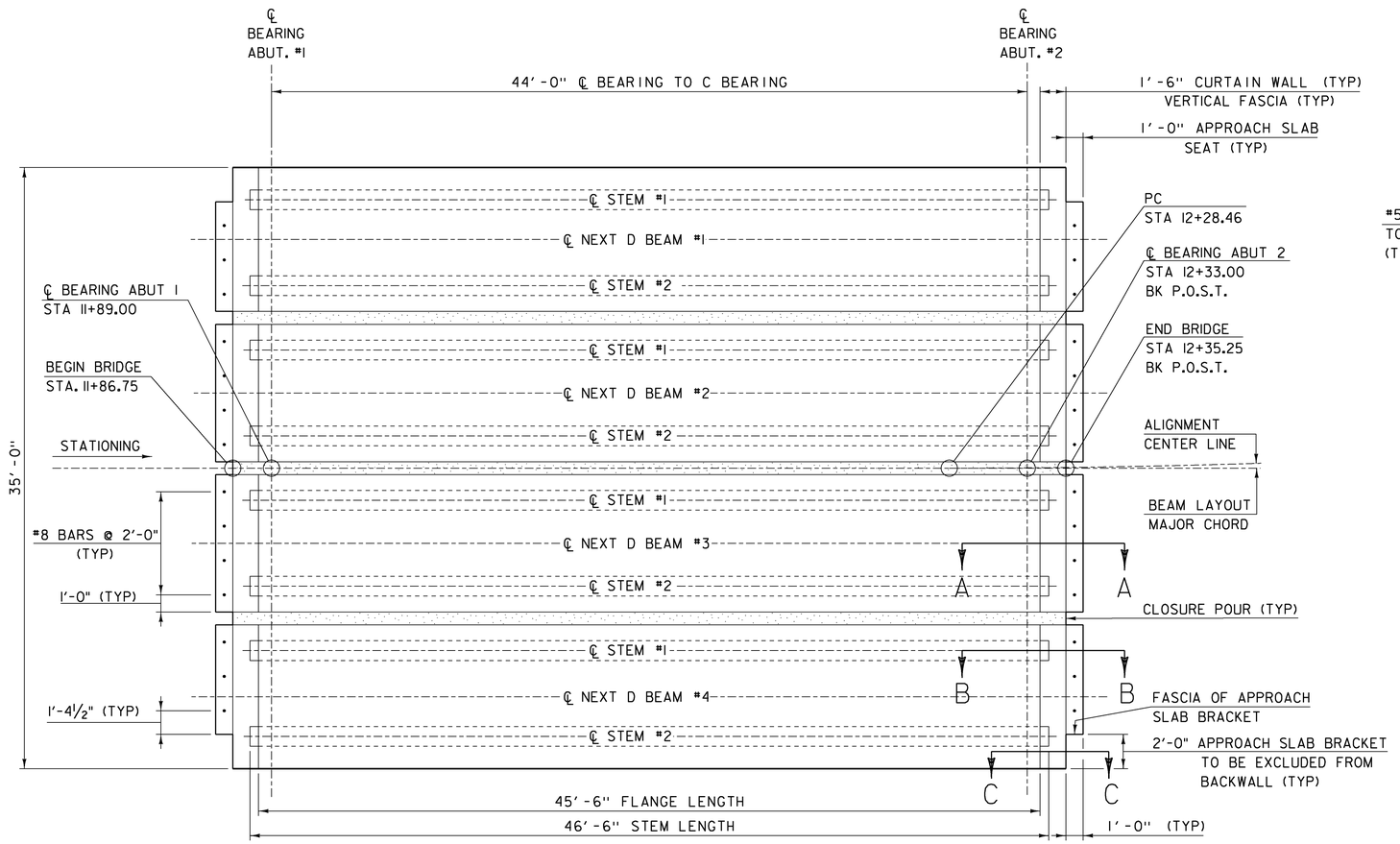
PLAN

SCALE 1" = 10'-0"

ELEVATION

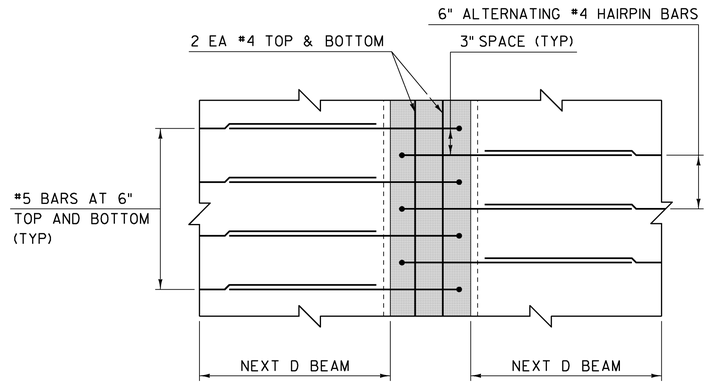
SCALE 1" = 10'-0"

PROJECT NAME:	ANDOVER
PROJECT NUMBER:	BHF 016-1(29)
FILE NAME: sl2bl40pe.dgn	PLOT DATE: 06-JAN-2015
PROJECT LEADER: C. CARLSON	DRAWN BY: S. PIRO
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
PLAN AND ELEVATION	SHEET 19 OF 48



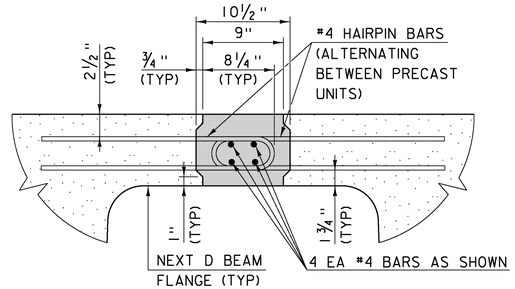
DECK PLAN

SCALE ¼" = 1'-0"



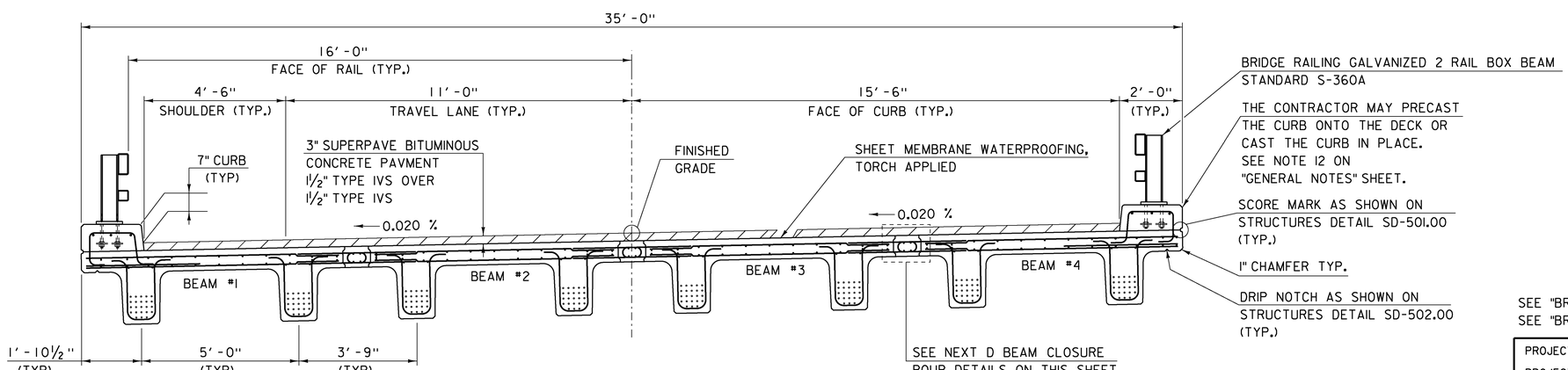
NEXT D BEAM CLOSURE POUR DETAIL PLAN

SCALE 1½" = 1'-0"



NEXT D BEAM CLOSURE POUR DETAIL ELEVATION

SCALE 1½" = 1'-0"



BRIDGE TYPICAL SECTION

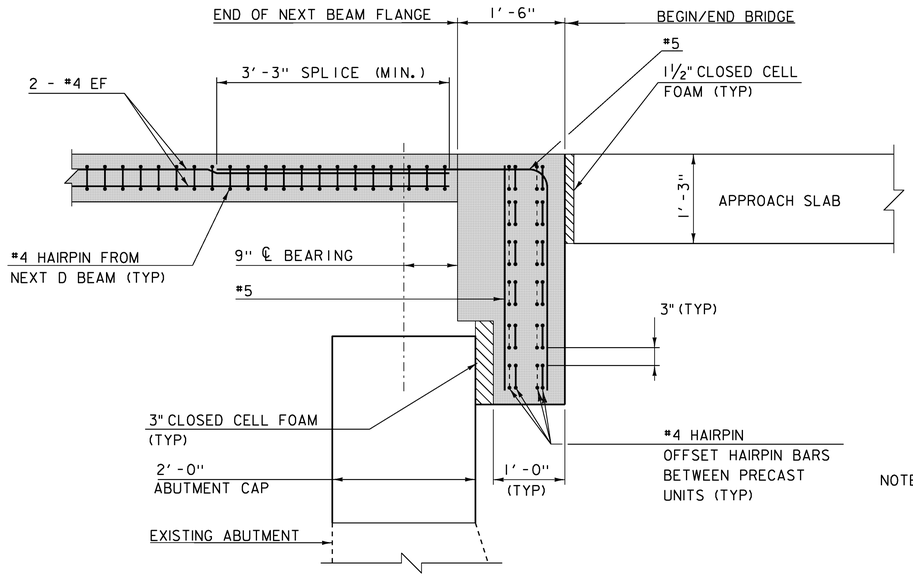
SCALE: ½" = 1'-0"

NOTE:

NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2'-7" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

SEE "BRIDGE END TYPICAL 1" SHEET FOR SECTIONS A-A AND B-B
SEE "BRIDGE END TYPICAL 2" SHEET FOR SECTION C-C

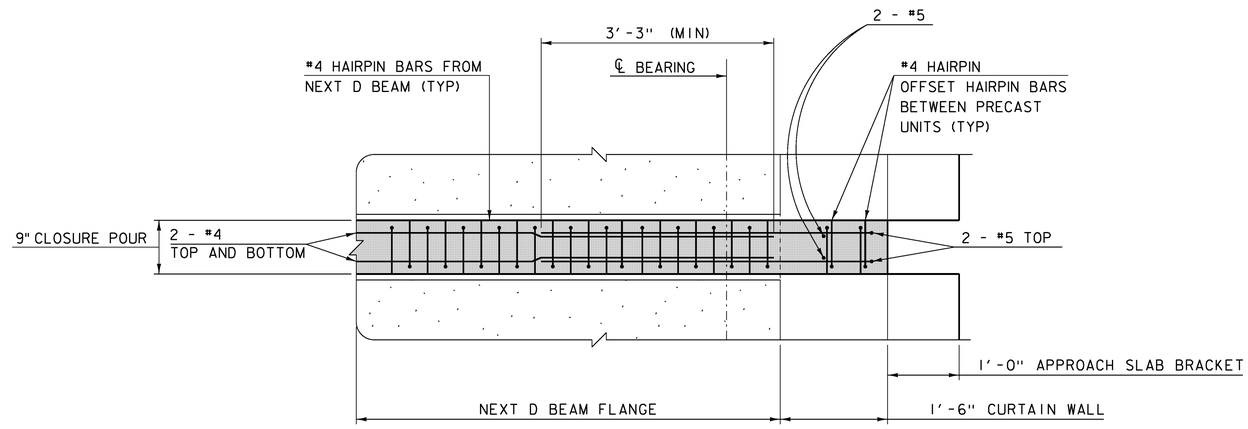
PROJECT NAME:	ANDOVER
PROJECT NUMBER:	BHF 016-1(29)
FILE NAME: sl2bl40sup.dgn	PLOT DATE: 22-JAN-2015
PROJECT LEADER: C. CARLSON	DRAWN BY: S. PIRO
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
FRAMING PLAN	SHEET 20 OF 48



BRIDGE END DETAIL CLOSURE POUR

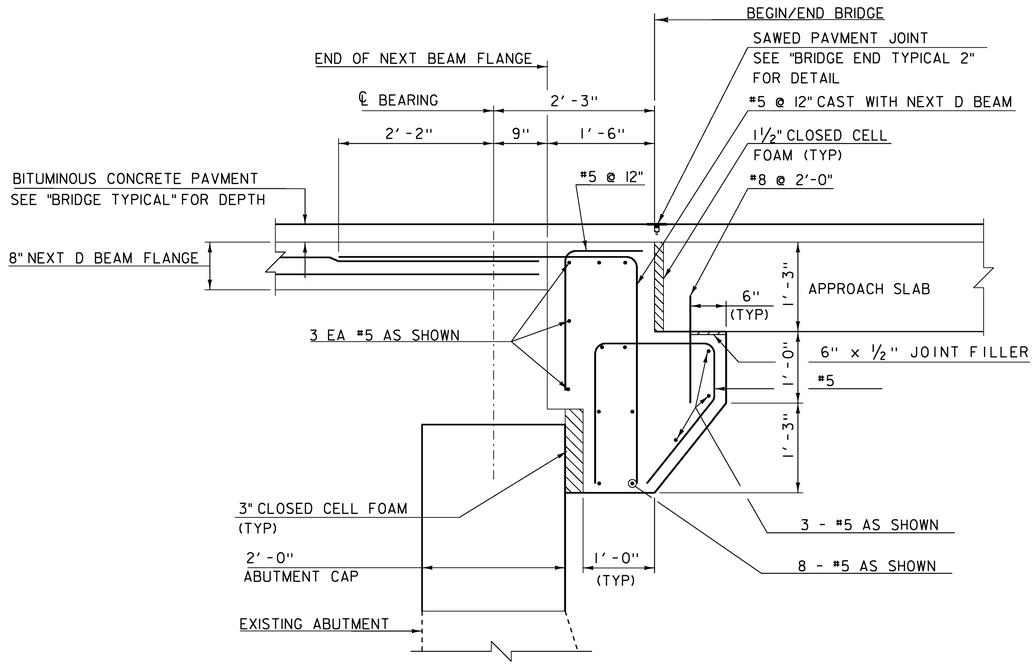
SCALE: 1" = 1'-0"

NOTE: SEE "BRIDGE END TYPICAL 2" FOR "BRIDGE END DETAIL CLOSURE POUR BACK".



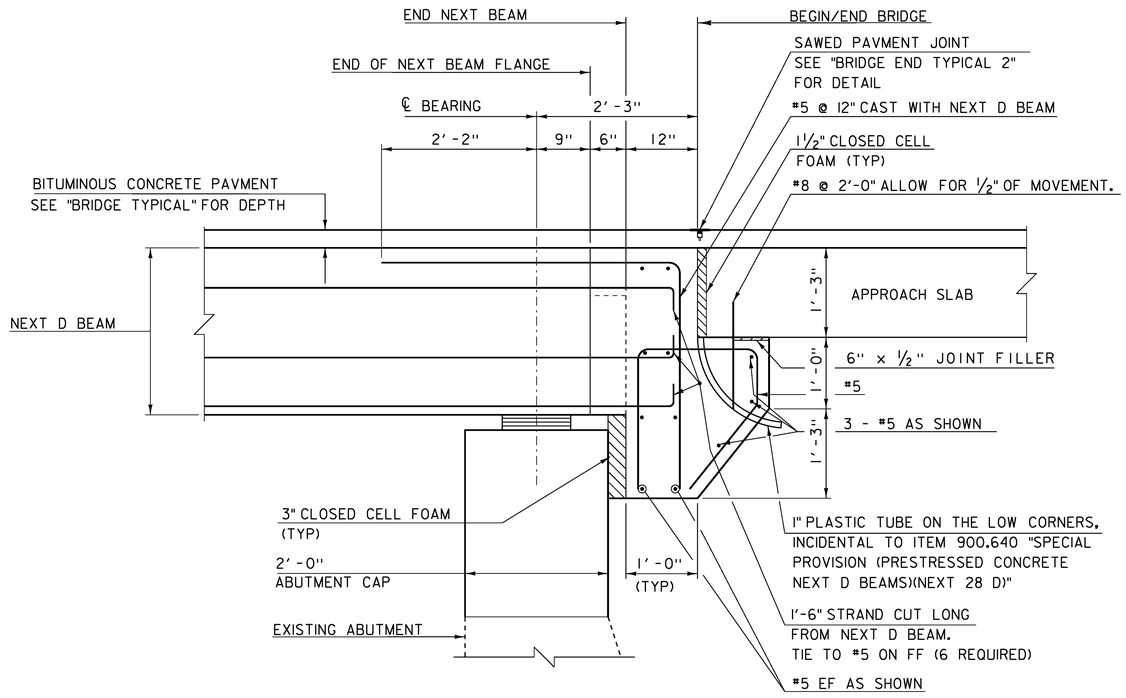
BRIDGE END DETAIL CLOSURE POUR LAYOUT

SCALE: 1" = 1'-0"



SECTION A - A

SCALE: 1" = 1'-0"



SECTION B - B

SCALE: 1" = 1'-0"

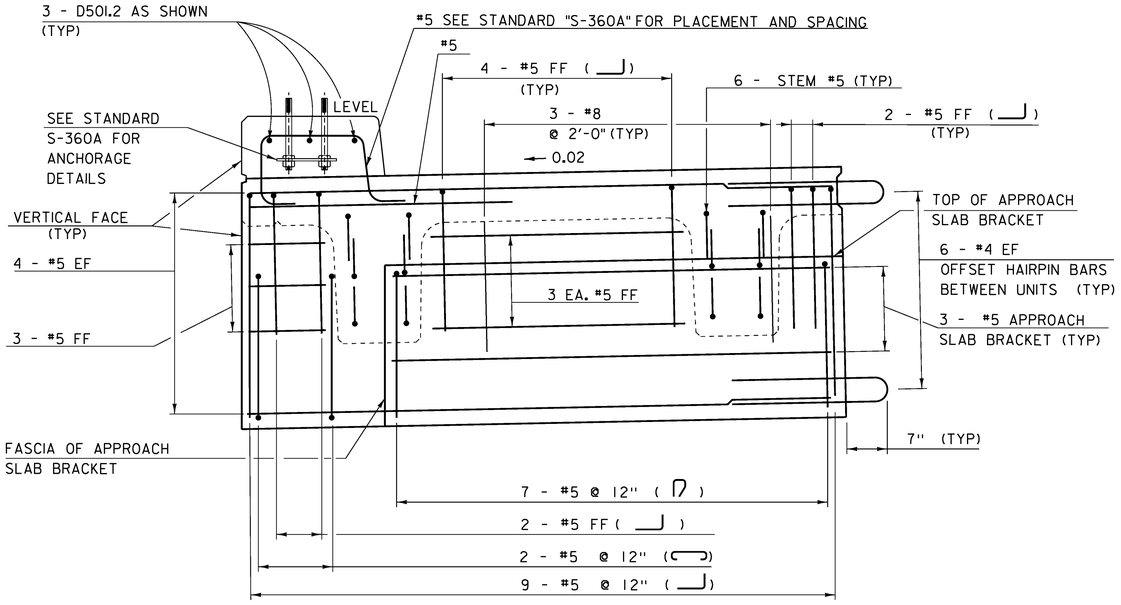
NOTE:

NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2'-7" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

PROJECT NAME: ANDOVER
PROJECT NUMBER: BHF 016-1(29)

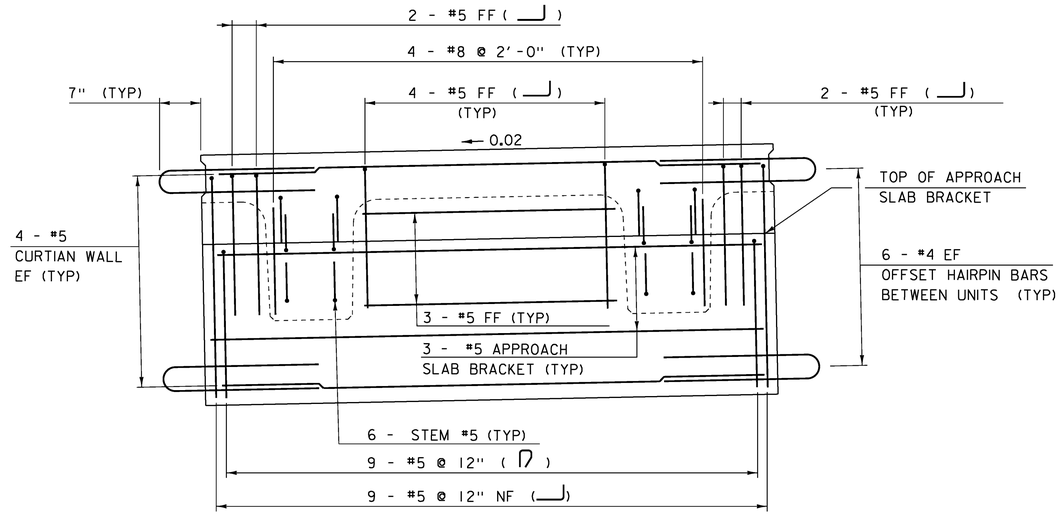
FILE NAME: sl2bl40sup.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: D. PETERSON
BRIDGE END TYPICAL 1

PLOT DATE: 06-JAN-2015
DRAWN BY: G.ROKES
CHECKED BY: D. PETERSON
SHEET 21 OF 48



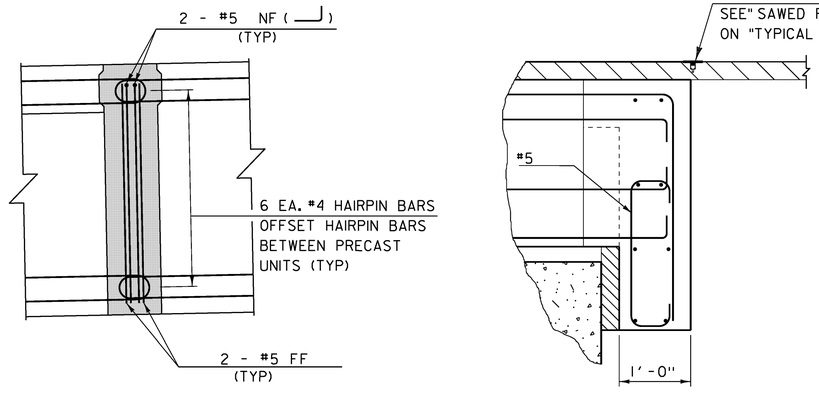
PRECAST CONCRETE CURTAIN WALL BEAM 1 (BEAM 4 SIMILAR) REINFORCING ELEVATION

SCALE: 1" = 1'-0"



PRECAST CONCRETE CURTAIN WALL BEAM 2 (BEAM 3 SIMILAR) REINFORCING ELEVATION

SCALE: 1" = 1'-0"

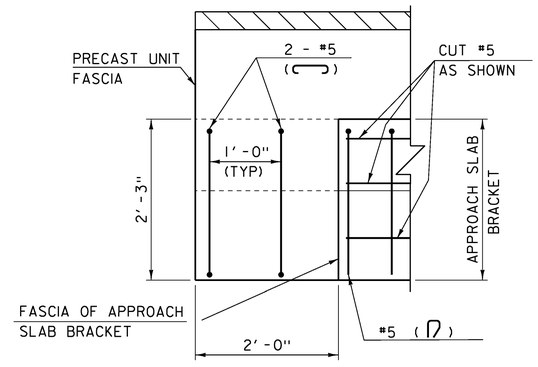


BRIDGE END DETAIL CLOSURE POUR BACK

SCALE: 1" = 1'-0"

SECTION C - C

SCALE: 1" = 1'-0"



SECTION C - C ELEVATION

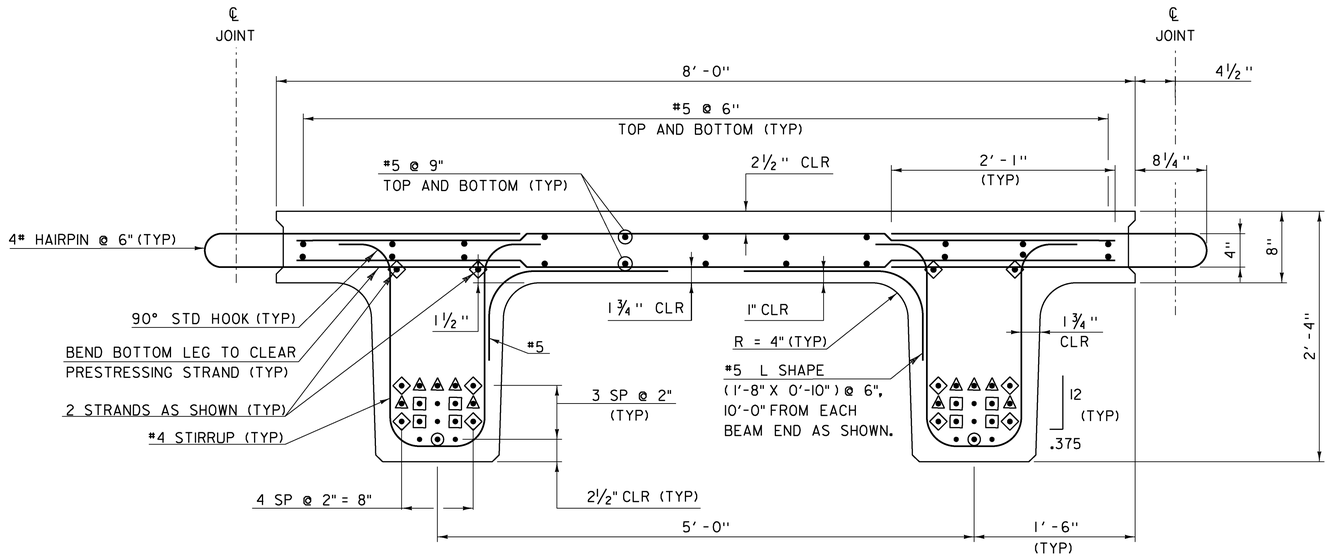
SCALE: 1" = 1'-0"

NOTE: BAR NOMENCLATURE THAT INCLUDES A (SHAPE) DESIGNATION INDICATES BARS SHAPE AND PLACEMENT.

NOTE:

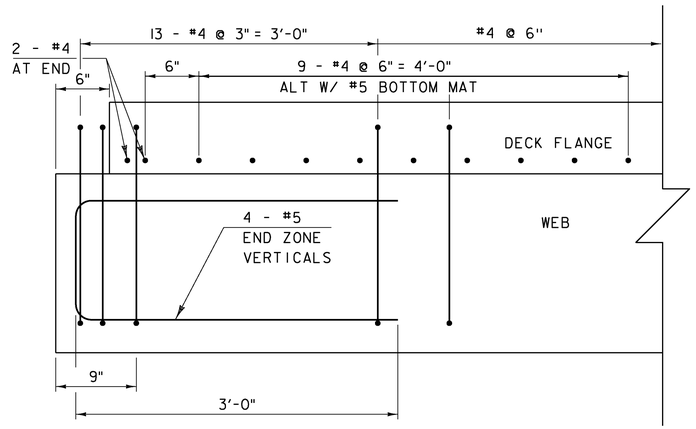
NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2'-7" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

PROJECT NAME:	ANDOVER
PROJECT NUMBER:	BHF 016-1(29)
FILE NAME: sl2bl40sup.dgn	PLOT DATE: 06-JAN-2015
PROJECT LEADER: C. CARLSON	DRAWN BY: G.ROKES
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
BRIDGE END TYPICAL 2	SHEET 22 OF 48



NEXT 28 D BEAM SECTION BEAM 2 (BEAM 3 SIMILAR)

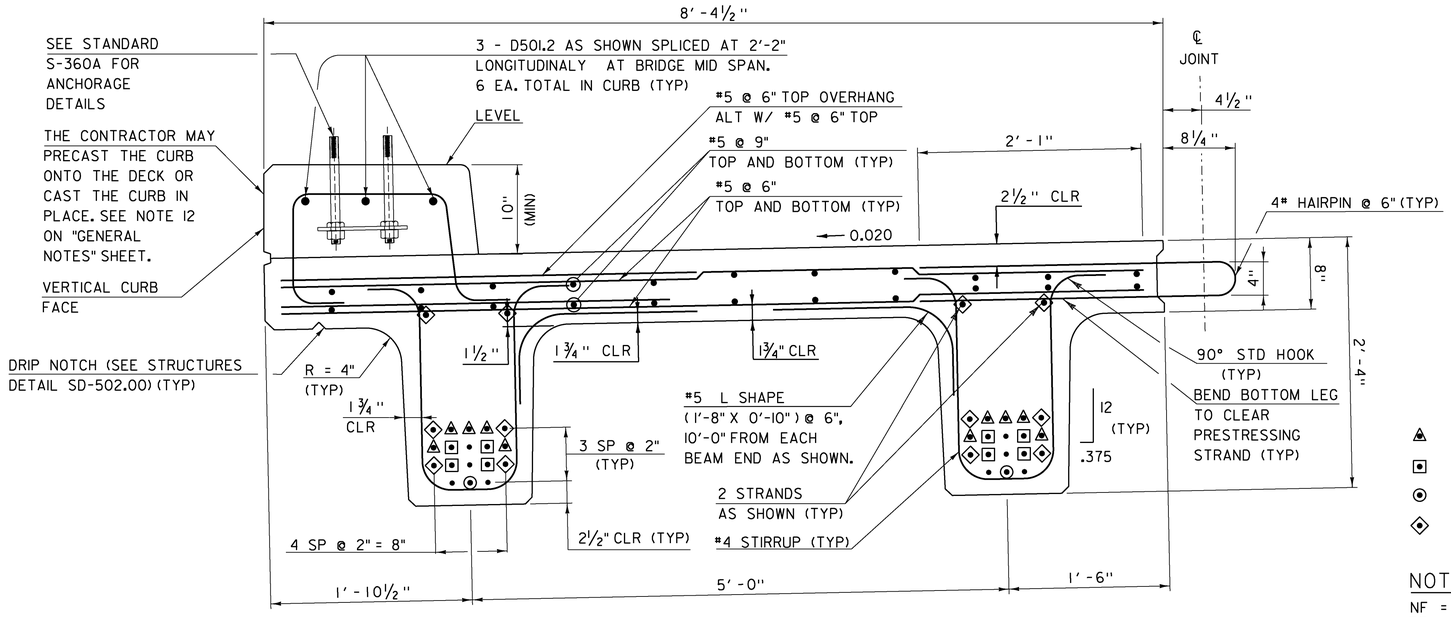
SCALE: 1½" = 1'-0"



ADDITIONAL END BEAM REINFORCING LONGITUDINAL SECTION

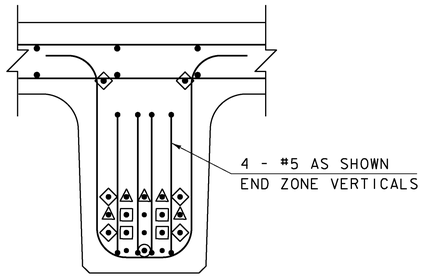
SCALE: 1½" = 1'-0"

•BARS IN DECK FLANGE OMITTED FOR CLARITY



NEXT 28 D BEAM SECTION BEAM 1 (BEAM 4 SIMILAR)

SCALE: 1½" = 1'-0"



BEAM END SECTION

SCALE: 1½" = 1'-0"

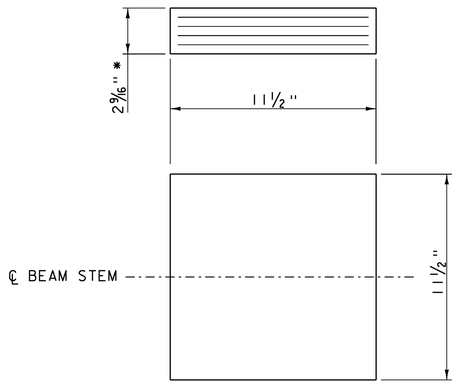
STRAND LEGEND

- DEBONDED 0'-6" EACH END
- DEBONDED 2'-0" EACH END
- DEBONDED 4'-0" EACH END
- 1'-6" STRAND CUT LONG EACH END

NOTE:

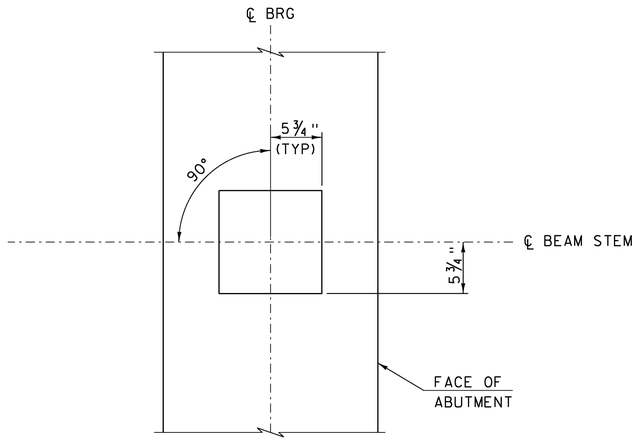
NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2'-7" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

PROJECT NAME:	ANDOVER
PROJECT NUMBER:	BHF 016-1(29)
FILE NAME: sl2bl40sup.dgn	PLOT DATE: 23-JAN-2015
PROJECT LEADER: C. CARLSON	DRAWN BY: G.ROKES
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
NEXT BEAM TYPICAL SECTIONS	SHEET 23 OF 48



* 2 - 1/8" EXTERIOR LAYERS OF ELASTOMER
4 - 1/2" INTERIOR LAYERS OF ELASTOMER
5 - 1/16" STEEL REINFORCING PLATES

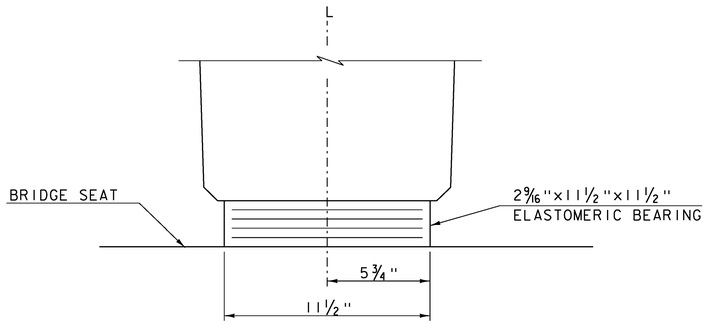
ELASTOMERIC BEARING DETAIL
SCALE 3" = 1'-0"



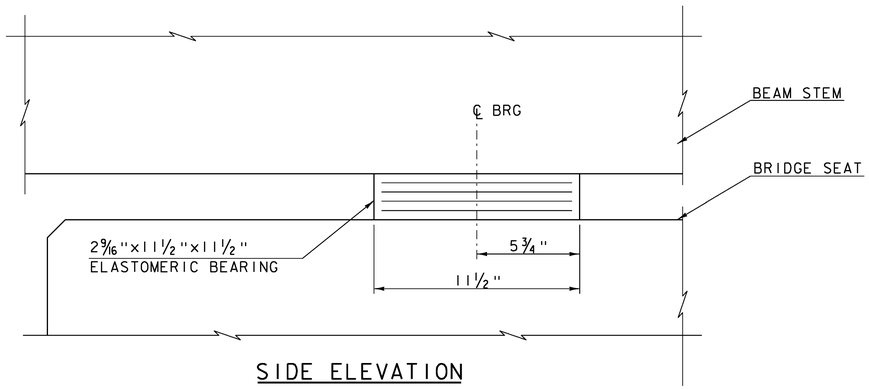
PLAN
SCALE 1 1/2" = 1'-0"

BEARING NOTES

1. BEARINGS SHALL CONFORM TO THE APPLICABLE SUBSECTIONS OF SECTIONS 531 AND 731.
2. ALL REINFORCEMENT BETWEEN LAYERS OF ELASTOMER SHALL BE STEEL MEETING THE REQUIREMENTS OF SUBSECTION 714.02. ALL INTERNAL STEEL PLATES SHALL BE SAND BLASTED AND FREE OF COATINGS, RUST, AND MILL SCALE. THE PLATES SHALL BE FREE OF SHARP EDGES AND BURRS.
3. STEEL REINFORCED ELASTOMERIC BEARINGS SHALL HAVE A MINIMUM 1/8" EDGE SEAL OF ELASTOMER INTEGRAL WITH BEARING OVER ALL INTERNAL PLATES.
4. THE ELASTOMER SHALL BE GRADE 60 SHORE A DUROMETER.
5. THE ELASTOMER SHALL MEET THE REQUIREMENTS OF LOW TEMPERATURE ZONE D, GRADE 4.
6. THE CONTRACTOR IS ADVISED TO HAVE A MINIMUM OF 16 - 1/4"x12 1/2"x12 1/2" GALVANIZED STEEL SHIMS AVAILABLE FOR USE FOR ELEVATION ADJUSTMENTS UPON THE SETTING OF THE SUPERSTRUCTURE UNITS. THE SHIMS SHALL BE FABRICATED ACCORDING TO SECTION 531 AND SHALL BE INCLUDED UNDER ITEM 531.17, "BEARING DEVICE ASSEMBLY, STEEL REINFORCED ELASTOMERIC PAD".



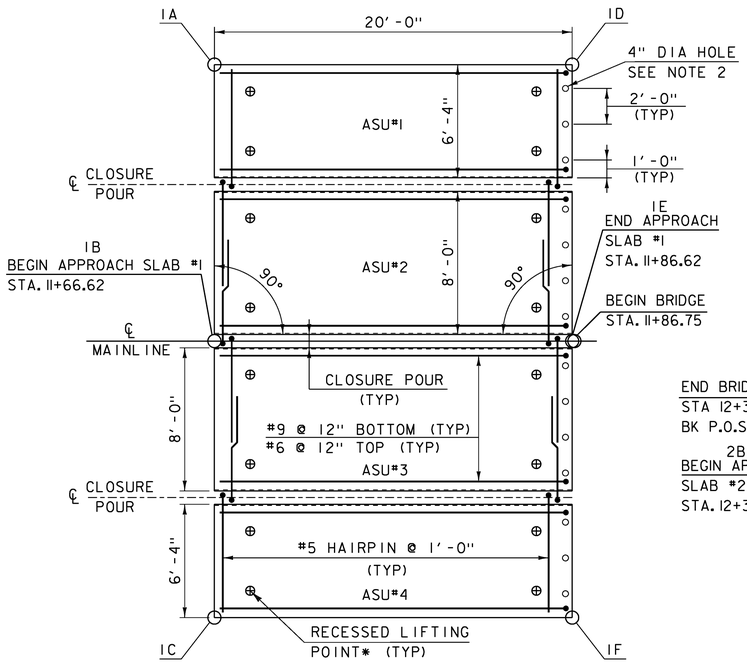
FRONT ELEVATION



SIDE ELEVATION

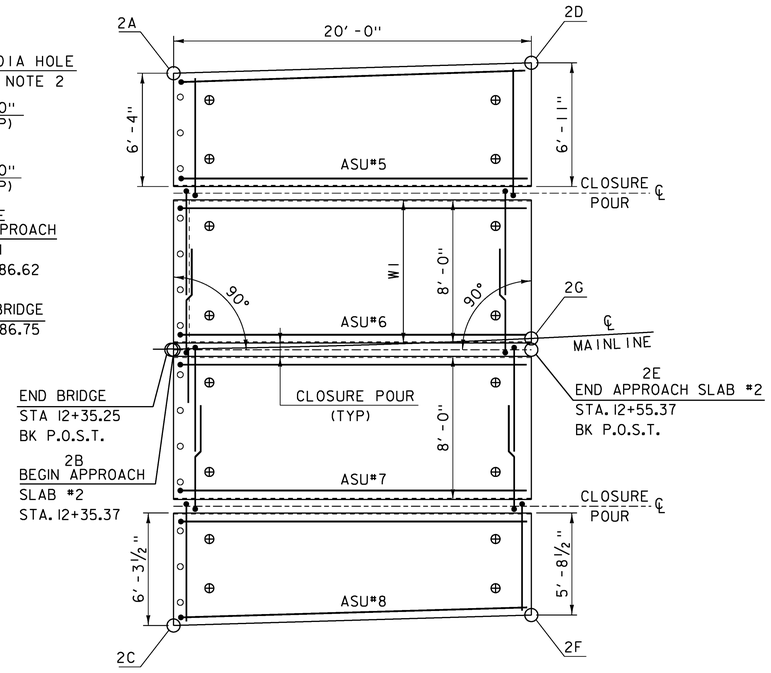
ELASTOMERIC BEARING DETAILS
SCALE 3" = 1'-0"

PROJECT NAME:	ANDOVER
PROJECT NUMBER:	BHF 016-1(29)
FILE NAME: sl2bl40sup.dgn	PLOT DATE: 06-JAN-2015
PROJECT LEADER: C. CARLSON	DRAWN BY: G.ROKES
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
BRIDGE BEARINGS	SHEET 24 OF 48



APPROACH SLAB #1 PLAN VIEW

SCALE 1/4" = 1'-0"



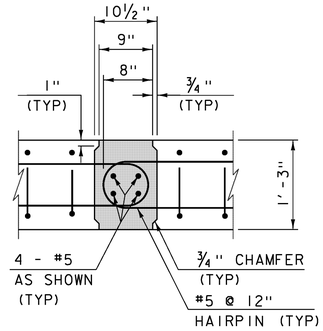
APPROACH SLAB #2 PLAN VIEW

SCALE 1/4" = 1'-0"

NOTE:

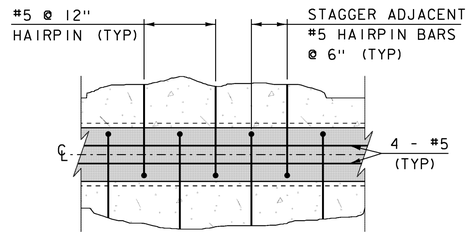
1. FABRICATOR TO DESIGN LIFTING POINTS AND INCLUDE CALCULATIONS WITH SUBMITTAL.
2. FABRICATOR TO ENSURE 4" DIA. HOLES IN APPROACH SLAB UNIT WILL MATCH UP WITH #8 BARS THAT ARE IN THE PRECAST END SECTION APPROACH SLAB BRACKET.

ASU = APPROACH SLAB UNIT



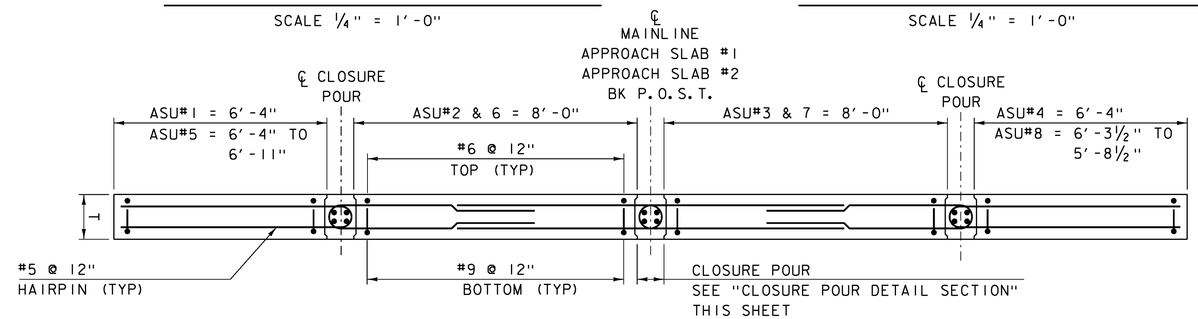
CLOSURE POUR DETAIL SECTION

SCALE 1" = 1'-0"



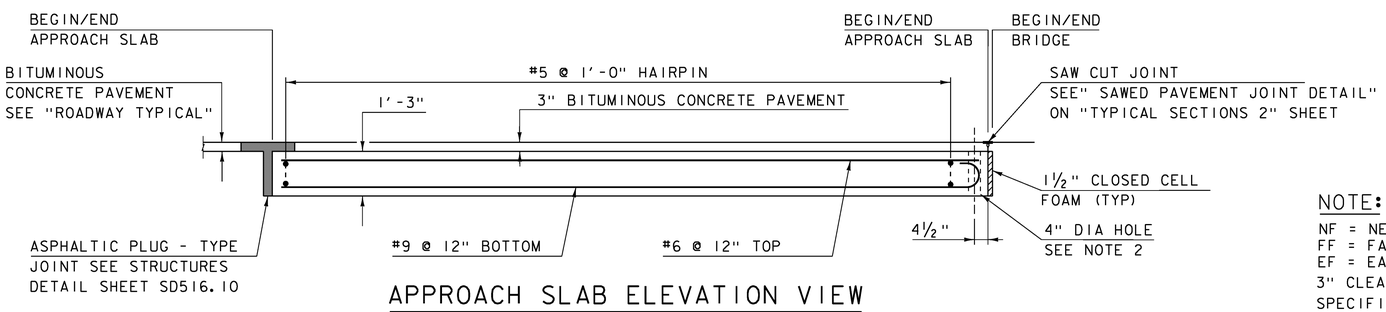
CLOSURE POUR PLAN

SCALE 1" = 1'-0"



TYPICAL SECTION

SCALE 1/2" = 1'-0"



APPROACH SLAB ELEVATION VIEW

SCALE 1/2" = 1'-0"

NOTE:

NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2'-7" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

	STATION	OFFSET	ELEVATION
1A	11+66.62	-15.46	1069.10
1B	11+66.62	℄	1069.41
1C	11+66.62	15.46	1069.72
1D	11+86.62	-15.46	1068.83
1E	11+86.62	℄	1069.14
1F	11+86.62	15.46	1069.45
2A	12+35.57	-15.42	1068.16
2B	12+35.37	℄	1068.47
2C	12+35.19	15.46	1068.78
2D	12+56.13	-15.39	1067.88
2E	12+55.39	℄	1068.20
2F	12+54.68	15.45	1068.52
2G	12+55.37	0.63	1068.51

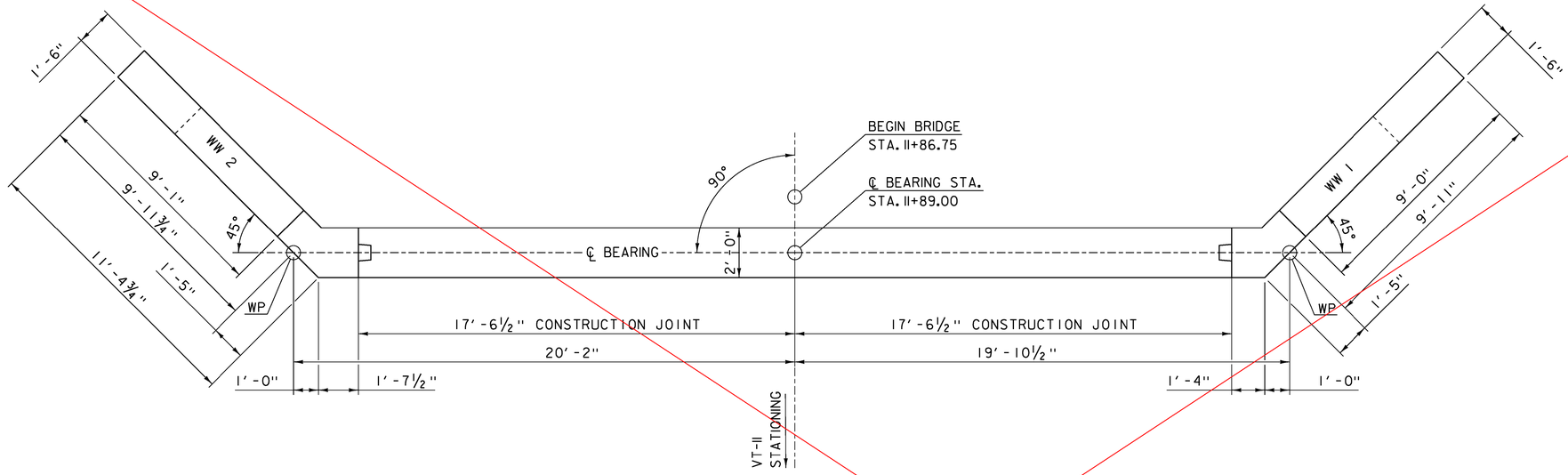
APPROACH SLAB ELEVATIONS

ALL ELEVATIONS ARE TOP OF SLAB

PROJECT NAME: ANDOVER
PROJECT NUMBER: BHF 016-1(29)

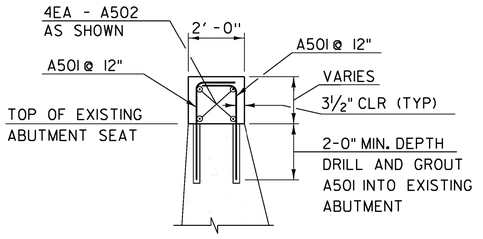
FILE NAME: sl2bl40sup.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: D. PETERSON
APPROACH SLAB DETAILS

PLOT DATE: 06-JAN-2015
DRAWN BY: G. ROKES
CHECKED BY: D. PETERSON
SHEET 25 OF 48



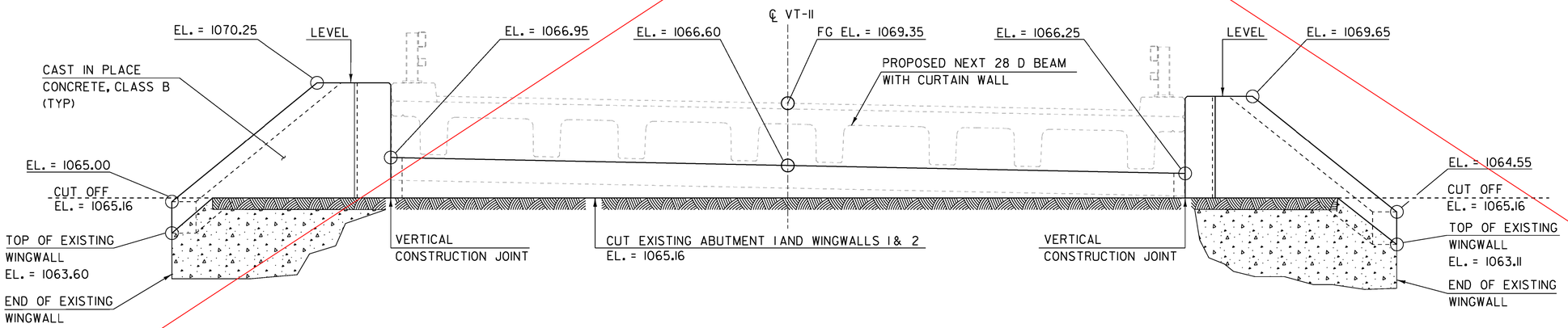
ABUTMENT NO. 1 PLAN

SCALE: ⅜" = 1'-0"



ABUTMENT TYPICAL

SCALE: ⅜" = 1'-0"



ABUTMENT NO. 1 ELEVATION

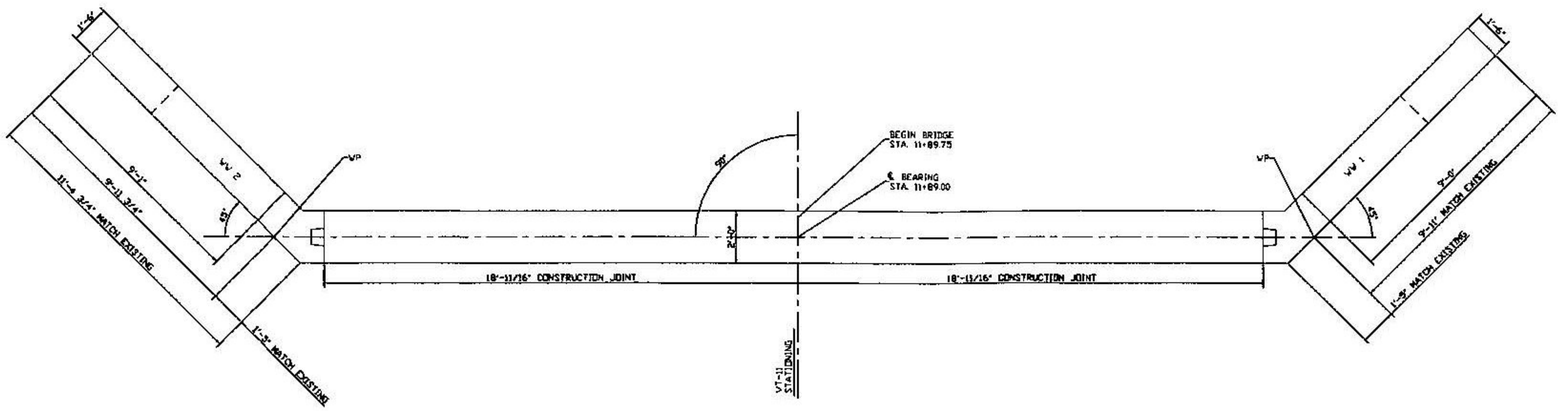
SCALE: ⅜" = 1'-0"

NOTE:

NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD
3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

SECTION OF EXISTING ABUTMENT AND WINGWALLS TO BE CUT.

PROJECT NAME:	ANDOVER
PROJECT NUMBER:	BHF 016-1(29)
FILE NAME: sl2bl40sub.dgn	PLOT DATE: 06-JAN-2015
PROJECT LEADER: C. CARLSON	DRAWN BY: G. ROKES
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
ABUTMENT 1 PLAN & ELEVATION	SHEET 26 OF 48



ABUTMENT NO. 1 PLAN

SCALE 3/8" = 1'-0"

Vermont Agency of Transportation

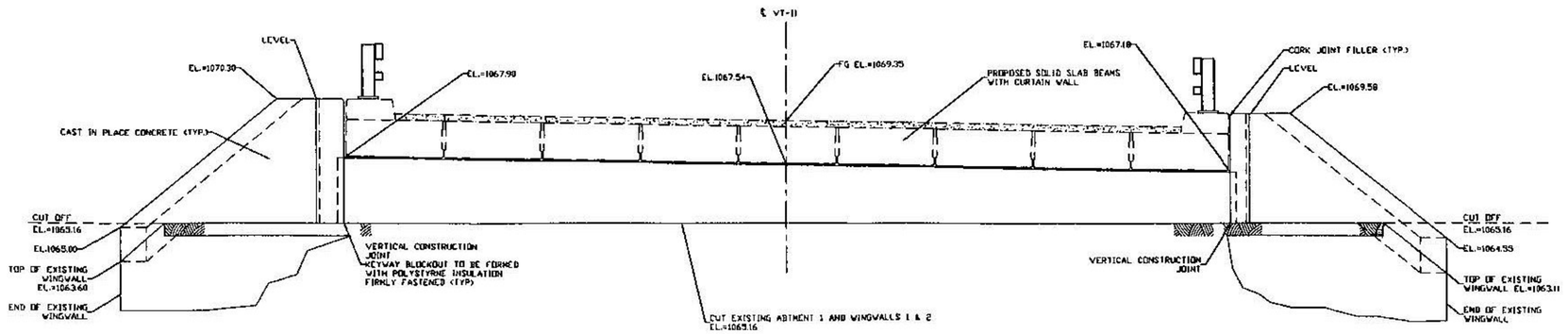
RECEIVED

ON: June 24, 2015

and Checked for

CONFORMANCE

BY: D. PETERSON DATE: 06/25/2015



ABUTMENT NO. 1 ELEVATION

SCALE 3/8" = 1'-0"

NOTE:

NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD
3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

▨ SECTION OF EXISTING ABUTMENT AND WINGWALLS TO BE CUT.

REV. NO.	DATE:
1	06/24/15

BRENAUD BROS. INC.
285 FT. BRIDGEMAN RD. VERNON VT., 05354
PH (802) 257-7585 FAX (802) 257-7308

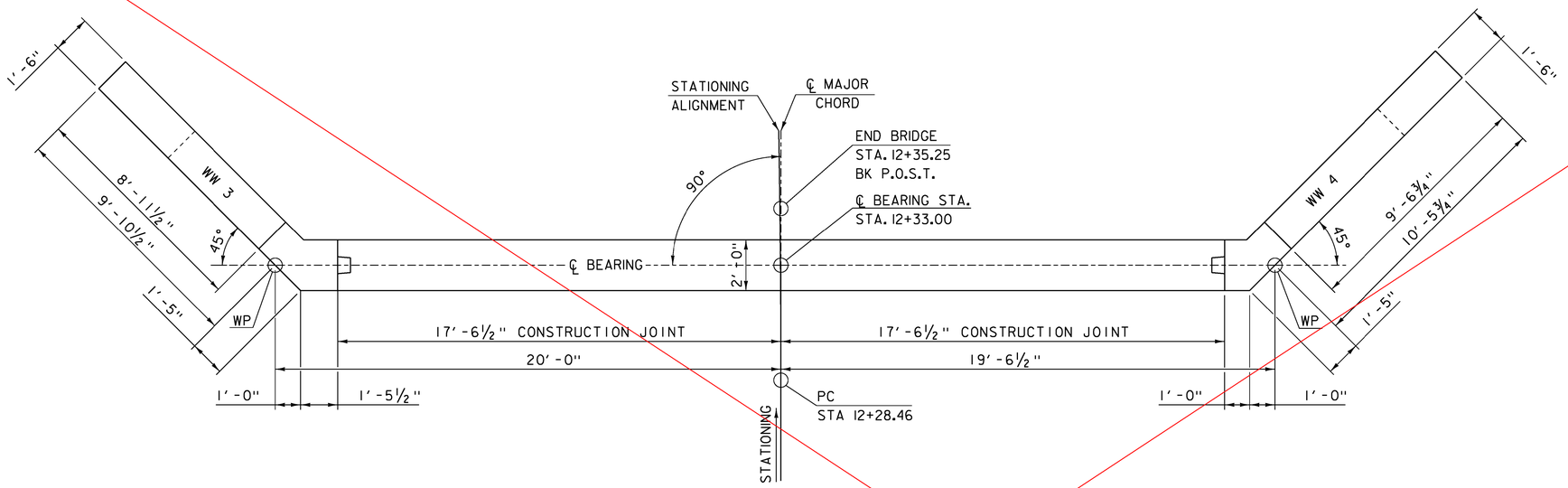
SHEET NAME: ABUTMENT 1 PLAN AND ELEVATION

PROJECT NAME: ANDOVER

PROJECT NO: BHF 016-1 (29)

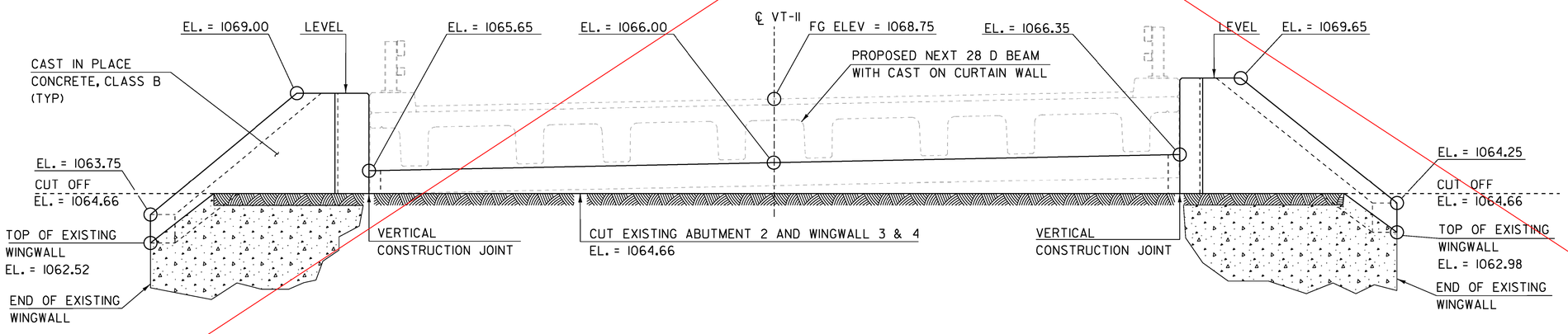
SHEET NO. 1 OF 7

DRAWN BY:	CHK'D BY:	DATE:
CE		06/03/2015



ABUTMENT NO. 2 PLAN

SCALE: ⅜" = 1'-0"



ABUTMENT NO. 2 ELEVATION

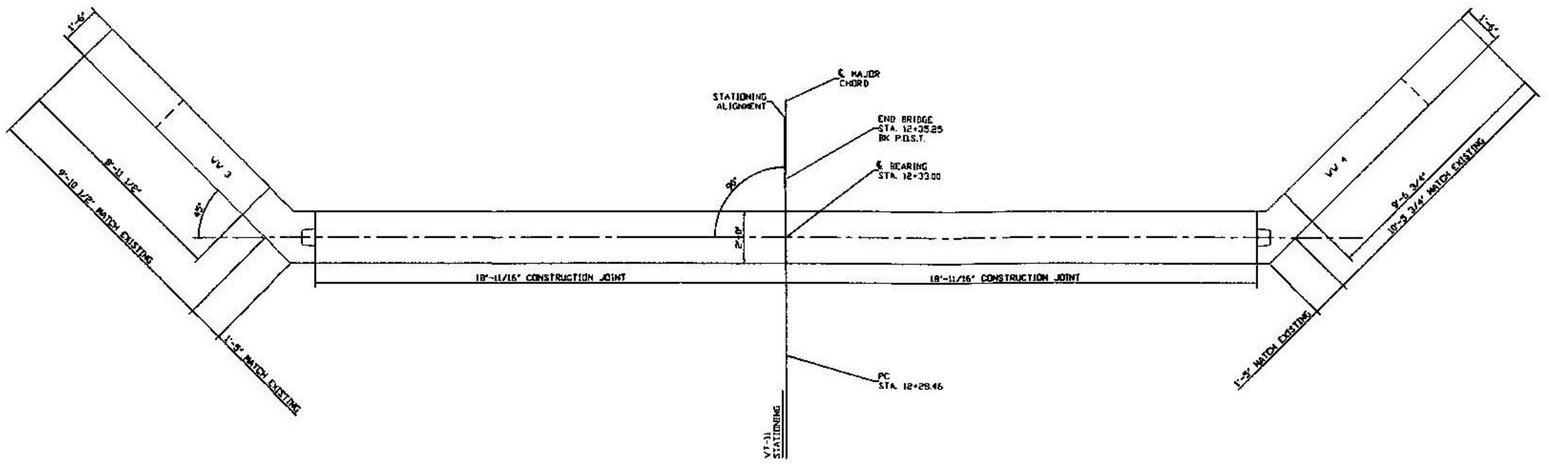
SCALE: ⅜" = 1'-0"

NOTE:

NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD
3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

SECTION OF EXISTING ABUTMENT AND WINGWALLS TO BE CUT.

PROJECT NAME:	ANDOVER
PROJECT NUMBER:	BHF 016-1(29)
FILE NAME: sl2bl40sub.dgn	PLOT DATE: 06-JAN-2015
PROJECT LEADER: C. CARLSON	DRAWN BY: G. ROKES
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
ABUTMENT 2 PLAN & ELEVATION	SHEET 27 OF 48



ABUTMENT NO. 2 PLAN

SCALE 3/8" = 1'-0"

Vermont Agency of Transportation

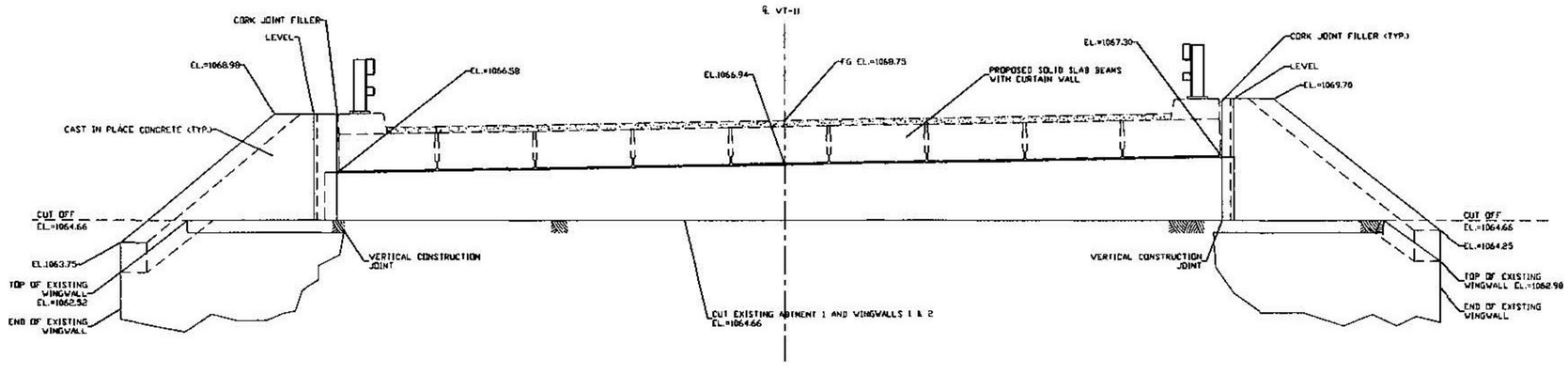
RECEIVED

ON: June 24, 2015

and Checked for

CONFORMANCE

BY: D. PETERSON DATE: 06/25/2015



ABUTMENT NO. 2 ELEVATION

SCALE 3/8" = 1'-0"

NOTE:

NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD
3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

SECTION OF EXISTING ABUTMENT AND WINGWALLS TO BE CUT.

REV. NO.	DATE:
1	08/24/15

BRENAUD BROS. INC.
239 Pt. Bridgeman Rd., Vernon VT., 05354
Ph. (802) 257-7589 FAX (802) 257-7508

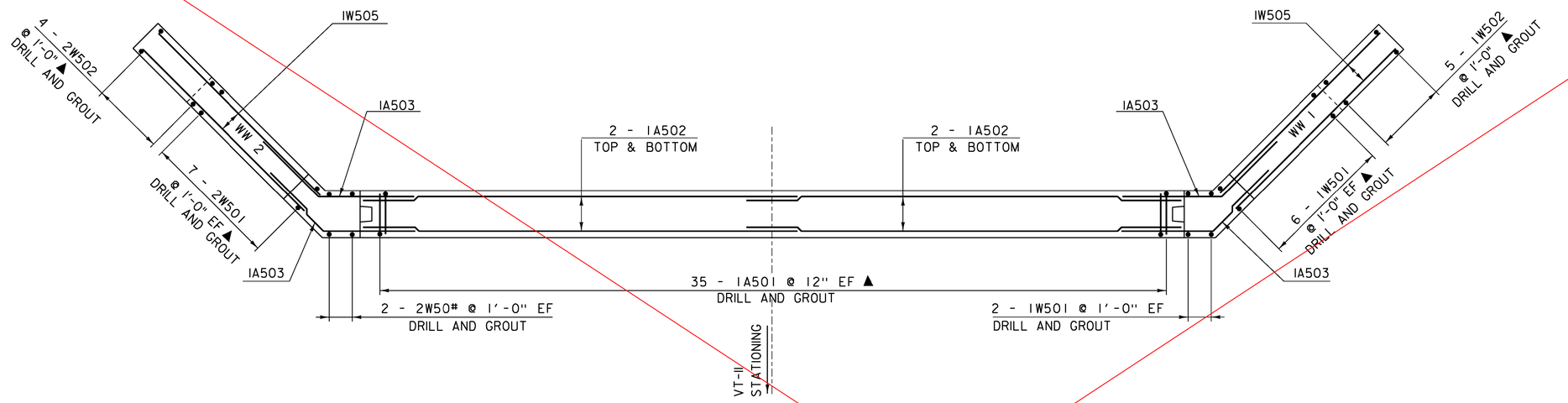
SHEET NAME: ABUTMENT 2 PLAN AND ELEVATION

PROJECT NAME: ANDOVER

PROJECT NO: BHF 016-1 (29)

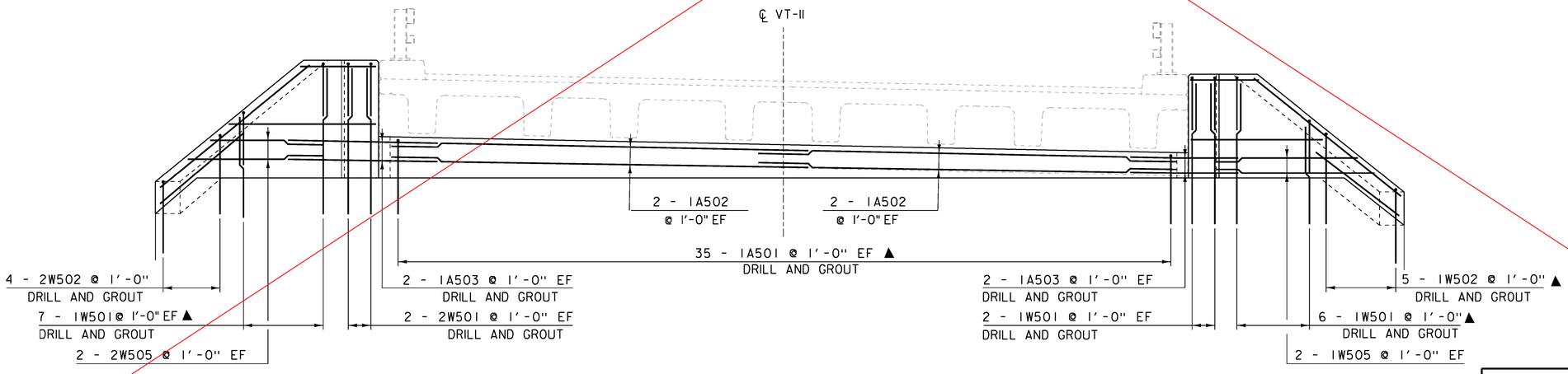
DRAWN BY: CE | CHK'D BY: | DATE: 06/03/2015

SHEET NO. 4 OF 7



ABUTMENT NO. 1 BELOW BRIDGE SEAT REINFORCING LAYOUT

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



ABUTMENT NO. 1 REINFORCING ELEVATION

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

NOTE:

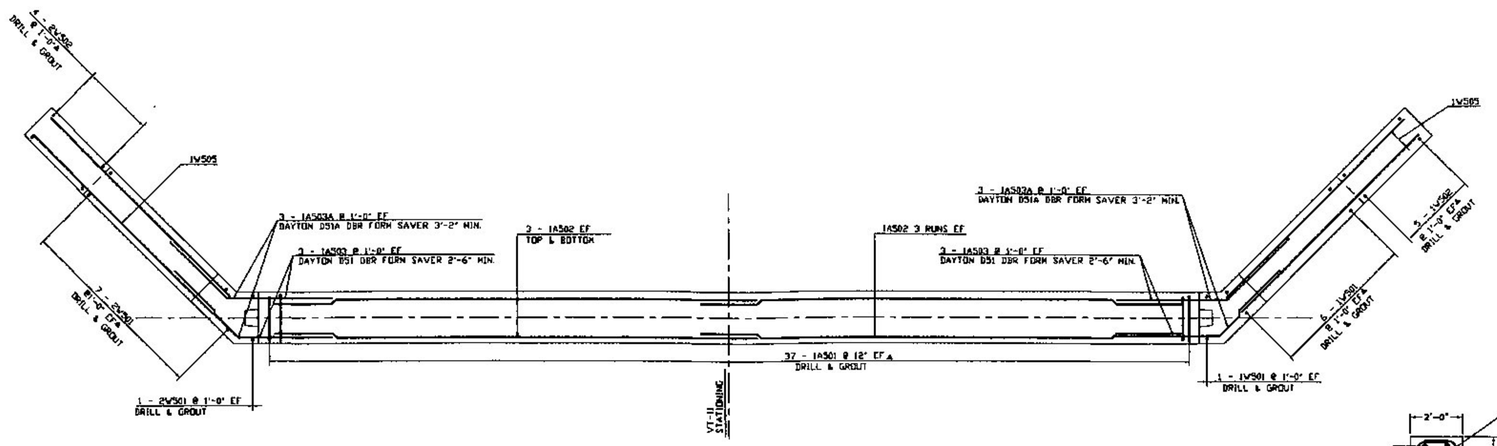
NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD
3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

DRILL AND GROUT ABUTMENT AS SHOWN IN THE "ABUTMENT TYPICAL" ON "ABUTMENT 1 PLAN & ELEVATION" SHEET

DRILL AND GROUT WINGWALLS AS SHOWN IN THE "WINGWALL TYPICAL" ON "WINGWALL 1& 2 REINFORCING" SHEET

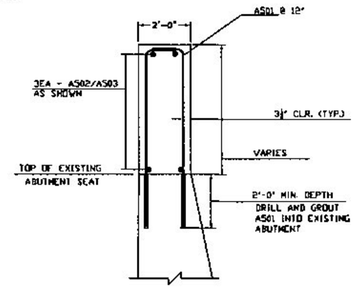
PROJECT NAME:	ANDOVER
PROJECT NUMBER:	BHF 016-1(29)

FILE NAME:	s12b140sub.dgn	PLOT DATE:	06-JAN-2015
PROJECT LEADER:	C. CARLSON	DRAWN BY:	G. ROKES
DESIGNED BY:	D. PETERSON	CHECKED BY:	D. PETERSON
ABUTMENT 1 REINFORCING		SHEET	28 OF 48



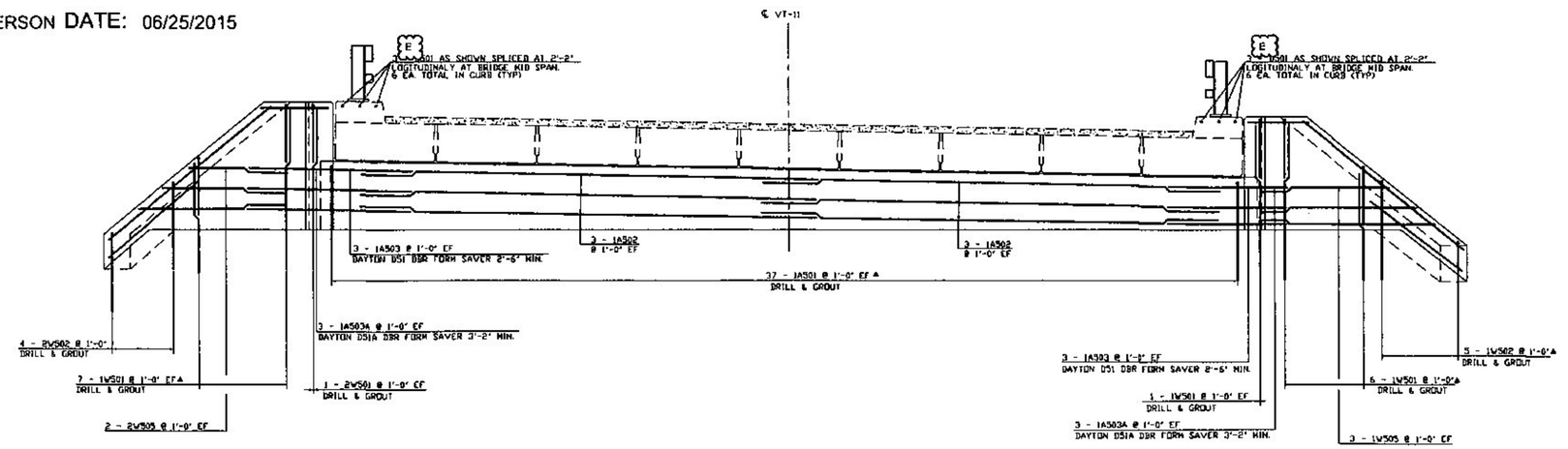
ABUTMENT NO. 1 BELOW BRIDGE SEAT REINFORCING LAYOUT

SCALE 3/8" = 1'-0"



ABUTMENT TYPICAL

SCALE 3/8" = 1'-0"



ABUTMENT NO. 1 REINFORCING ELEVATION

SCALE 3/8" = 1'-0"

NOTE:

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FF = FAR FACE
EF = EACH FACE
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3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

DRILL AND GROUT ABUTMENT AS SHOWN IN THE "ABUTMENT TYPICAL" ON THIS SHEET

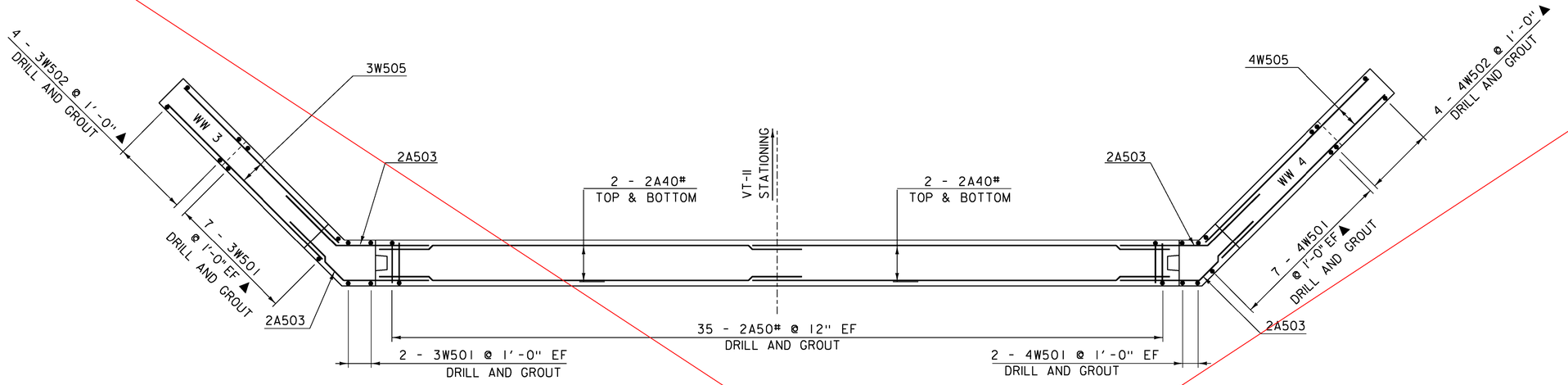
DRILL AND GROUT WINGWALLS AS SHOWN IN THE "WINGWALL TYPICAL" ON "WINGWALL 1 & 2 REINFORCING" SHEET

Vermont Agency of Transportation
RECEIVED
ON: June 24, 2015
and Checked for
CONFORMANCE
BY: D. PETERSON DATE: 06/25/2015

REV. NO.	DATE:
1	08/24/15

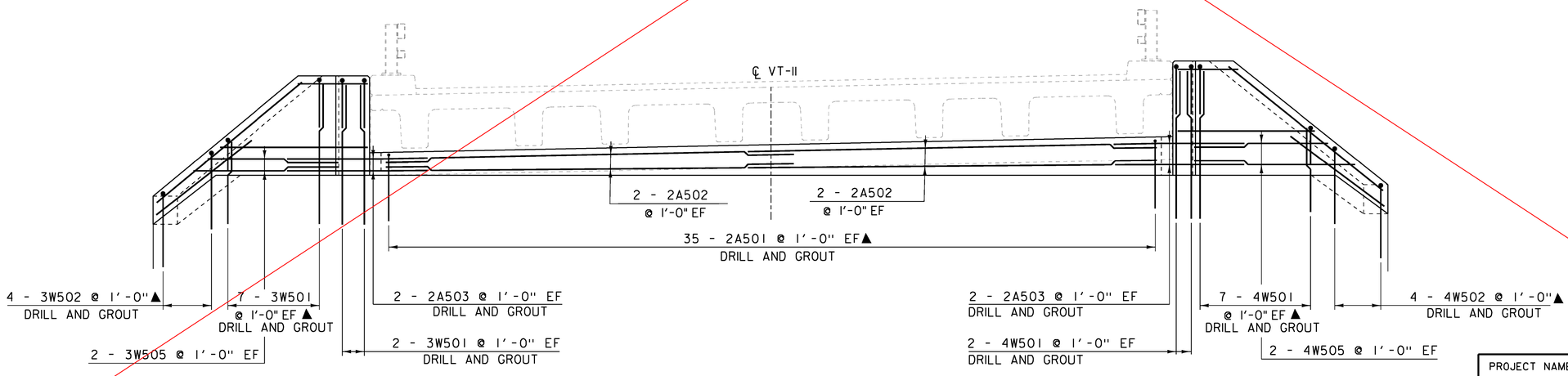
RENAUD BROS. INC.
285 FT. BRIDGEMAN RD. VERNON VT., 05354
PH (802) 257-7585 FAX (802) 257-7508

SHEET NAME: ABUTMENT 1 REINFORCING
PROJECT NAME: ANDOVER
PROJECT NO: BHF 016-1 (29)
DRAWN BY: CE
CHK'D BY:
DATE: 06/03/2015
SHEET NO. 2 OF 7



ABUTMENT NO. 2 BELOW BRIDGE SEAT REINFORCING LAYOUT

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



ABUTMENT NO. 2 REINFORCING ELEVATION

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

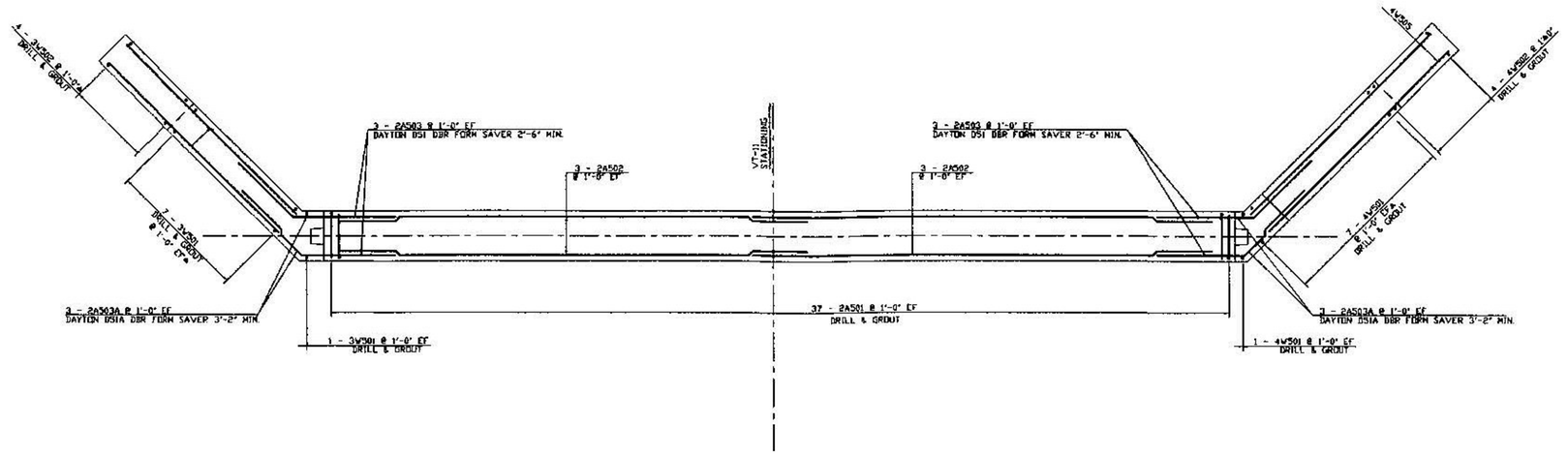
NOTE:

NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD
3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

DRILL AND GROUT ABUTMENT AS SHOWN IN THE "ABUTMENT TYPICAL" ON "ABUTMENT I PLAN & ELEVATION" SHEET

DRILL AND GROUT WINGWALLS AS SHOWN IN THE "WINGWALL TYPICAL" ON "WINGWALL I& 2 REINFORCING" SHEET

PROJECT NAME:	ANDOVER
PROJECT NUMBER:	BHF 016-1(29)
FILE NAME: sl2bl40sub.dgn	PLOT DATE: 06-JAN-2015
PROJECT LEADER: C. CARLSON	DRAWN BY: G. ROKES
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
ABUTMENT 2 REINFORCING	SHEET 29 OF 48



ABUTMENT NO. 2 BELOW BRIDGE SEAT REINFORCING LAYOUT

SCALE 3/8" = 1'-0"

Vermont Agency of Transportation

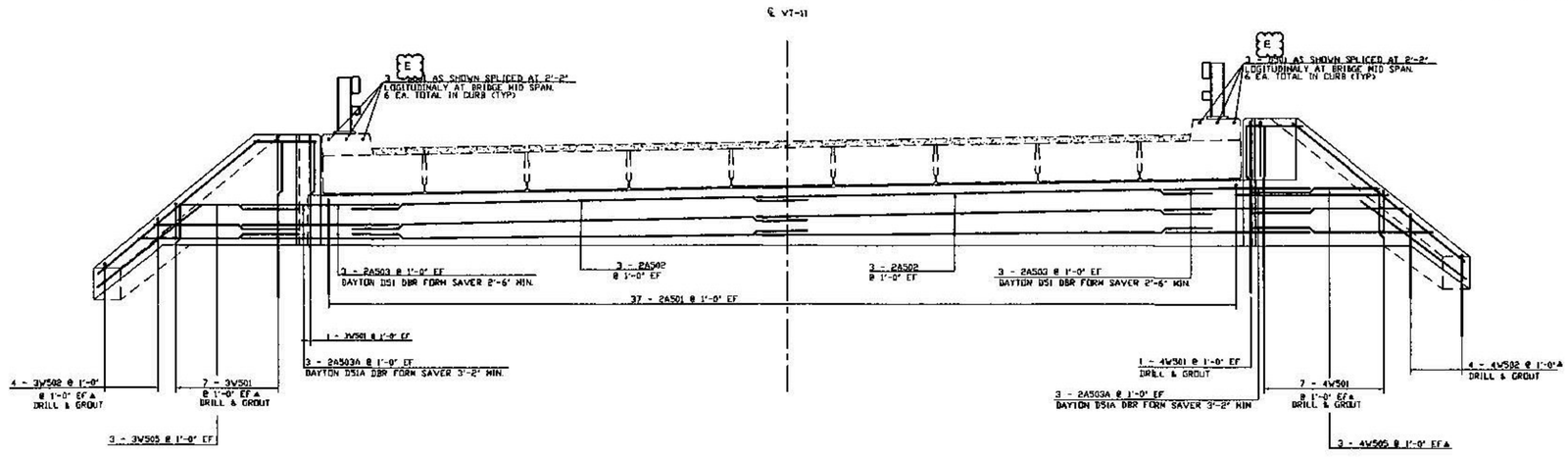
RECEIVED

ON: June 24, 2015

and Checked for

CONFORMANCE

BY: D. PETERSON DATE: 06/25/2015



ABUTMENT NO. 2 REINFORCING ELEVATION

SCALE 3/8" = 1'-0"

NOTE:

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DRILL AND GROUT ABUTMENT AS SHOWN IN THE "ABUTMENT TYPICAL" ON "ABUTMENT 1 REINFORCING" SHEET

DRILL AND GROUT WINGWALLS AS SHOWN IN THE "WINGWALL TYPICAL" ON "WINGWALL 1 & 2 REINFORCING" SHEET

REV. NO.	DATE:
1	06/24/15

RENAUD BROS. INC.
289 FT. DUMMERSTON RD. VERNON VT., 05354
PH.(802) 257-7585 FAX.(802) 257-7508

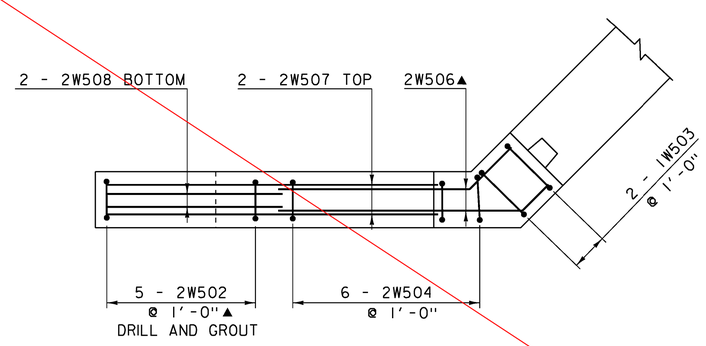
SHEET NAME: ABUTMENT 2 REINFORCING

PROJECT NAME: ANDOVER

PROJECT NO: BHF 016-1 (29)

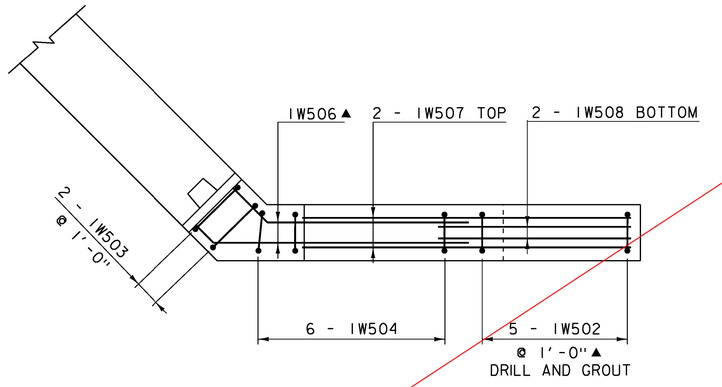
SHEET NO. 5 OF 7

DRAWN BY:	CHK'D BY:	DATE:
CE		06/03/2015



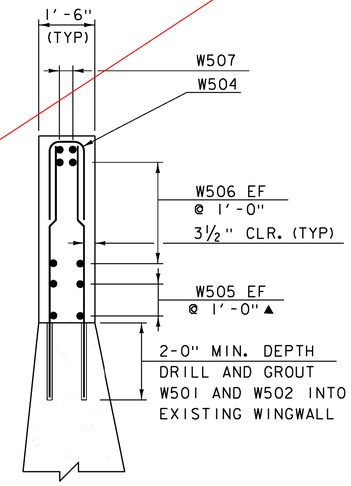
WINGWALL NO. 2 PLAN

SCALE: ½" = 1'-0"



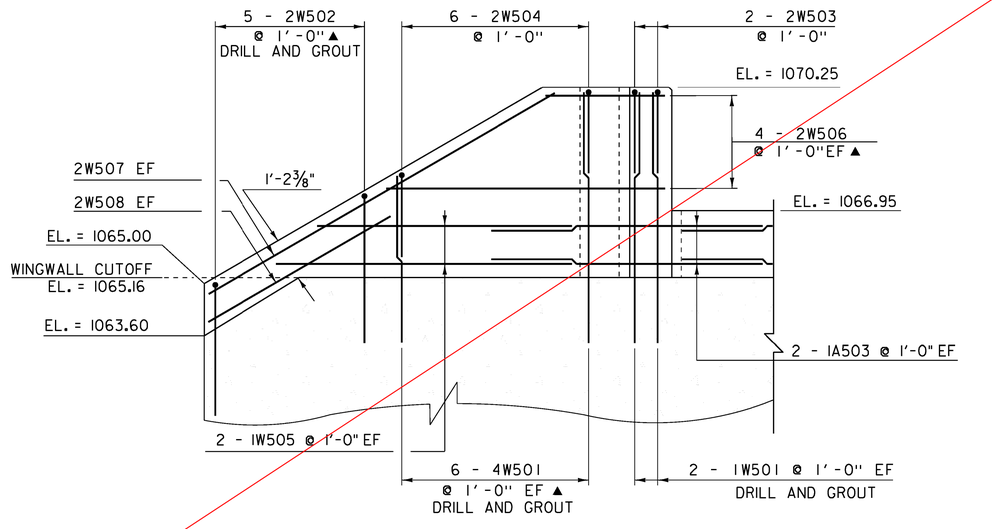
WINGWALL NO. 1 PLAN

SCALE: ½" = 1'-0"



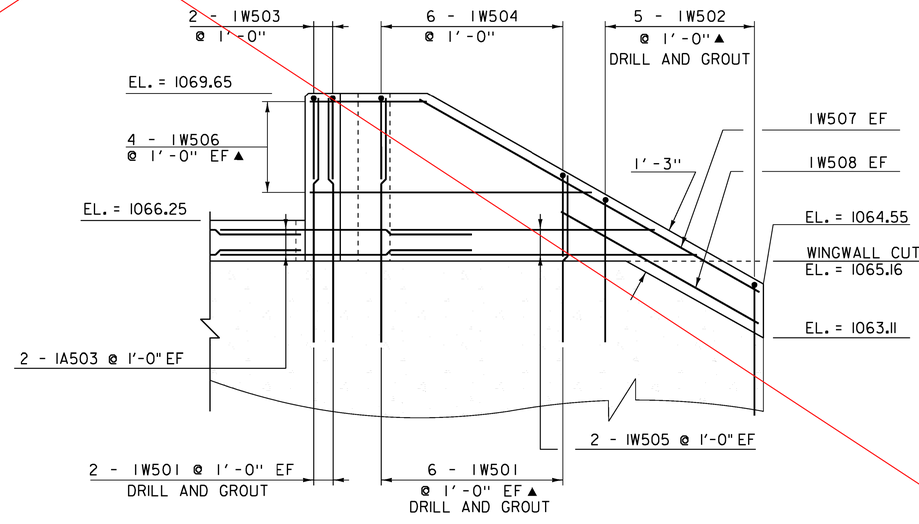
WINGWALL TYPICAL

SCALE: ½" = 1'-0"



WINGWALL NO. 2 ELEVATION

SCALE: ½" = 1'-0"



WINGWALL NO. 1 ELEVATION

SCALE: ½" = 1'-0"

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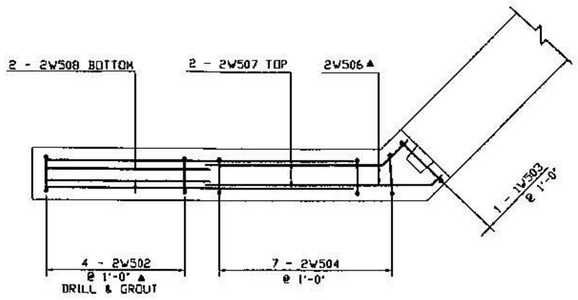
DRILL AND GROUT WINGWALLS AS SHOWN IN THE "WINGWALL TYPICAL" ON THIS SHEET

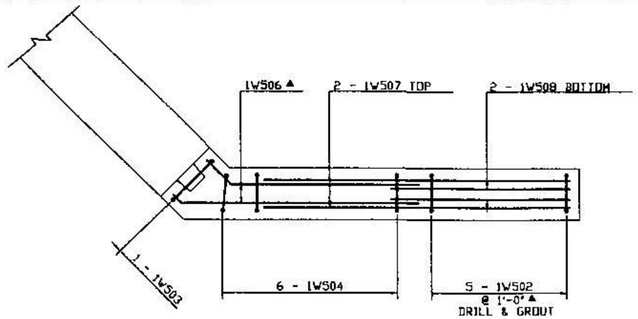
PROJECT NAME: ANDOVER
PROJECT NUMBER: BHF 016-1(29)

FILE NAME: sl2bl40sub.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: D. PETERSON
WINGWALL 1 & 2 REINFORCING

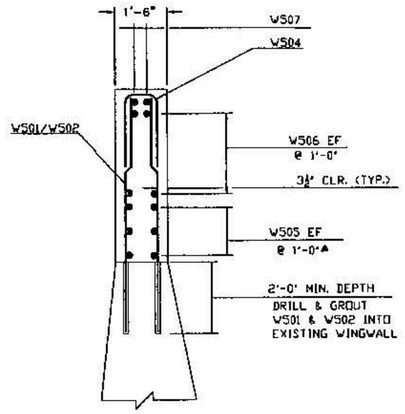
PLOT DATE: 06-JAN-2015
DRAWN BY: G. ROKES
CHECKED BY: D. PETERSON
SHEET 30 OF 48



WINGWALL NO. 2 PLAN
SCALE 1/2" = 1'-0"

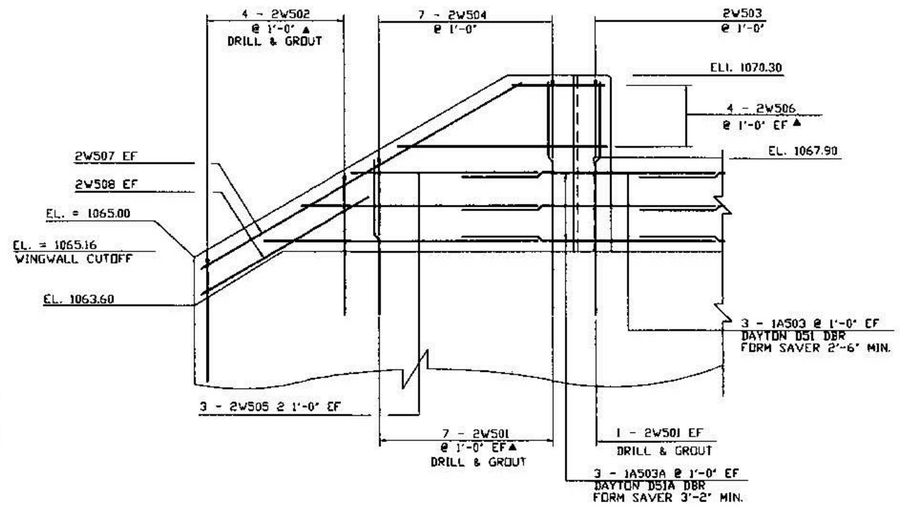


WINGWALL NO. 1 PLAN
SCALE 1/2" = 1'-0"

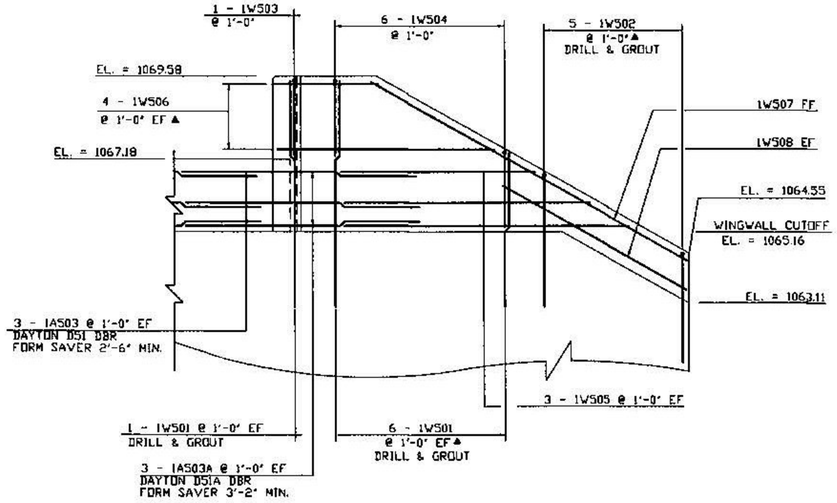


WINGWALL TYPICAL
SCALE 1/2" = 1'-0"

Vermont Agency of Transportation
RECEIVED
ON: June 24, 2015
and Checked for
CONFORMANCE
BY: D. PETERSON DATE: 06/25/2015



WINGWALL NO. 2 ELEVATION
SCALE 1/2" = 1'-0"



WINGWALL NO. 1 ELEVATION
SCALE 1/2" = 1'-0"

NOTE:
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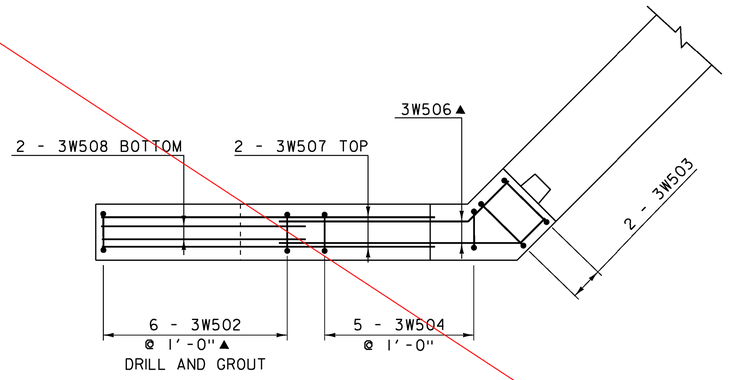
DRILL AND GROUT WINGWALLS AS SHOWN IN THE "WINGWALL TYPICAL" ON THIS SHEET

REV. NO.	DATE:
1	08/24/15

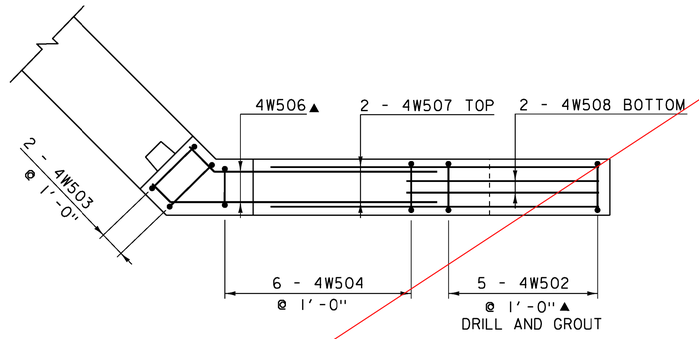
BRENAUD BROS. INC.
265 FT. BADGEMAN RD. VERNON VT., 05354
PH. (802) 257-7589 FAX (802) 257-7508

SHEET NAME: WINGWALL 1 & 2 REINFORCING
PROJECT NAME: ANDOVER
PROJECT NO: BHF 016-1 (29)
SHEET NO. 3 OF 7
DRAWN BY: CE
CHK'D BY:
DATE: 06/03/2015



WINGWALL NO. 3 PLAN

SCALE: ½" = 1'-0"



WINGWALL NO. 4 PLAN

SCALE: ½" = 1'-0"

NOTE:

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FF = FAR FACE
EF = EACH FACE
▲ = CUT TO FIT IN FIELD
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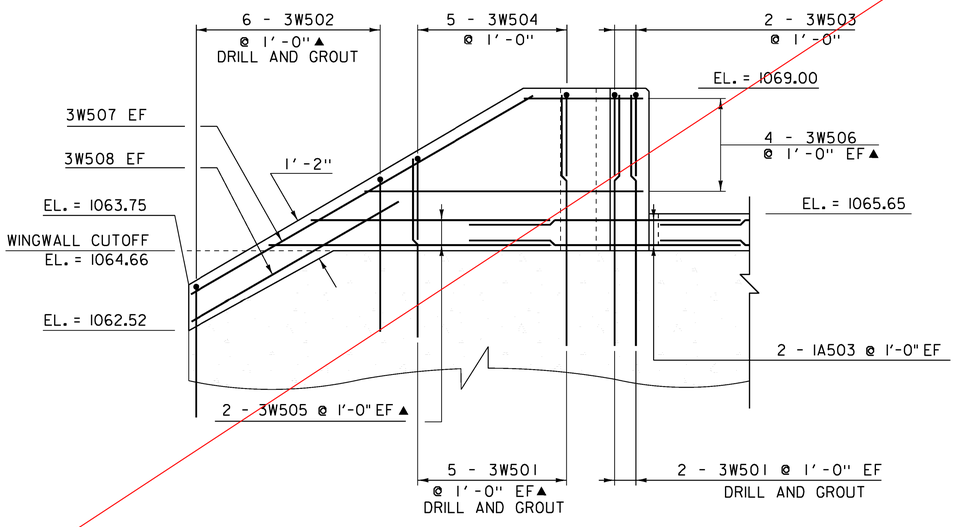
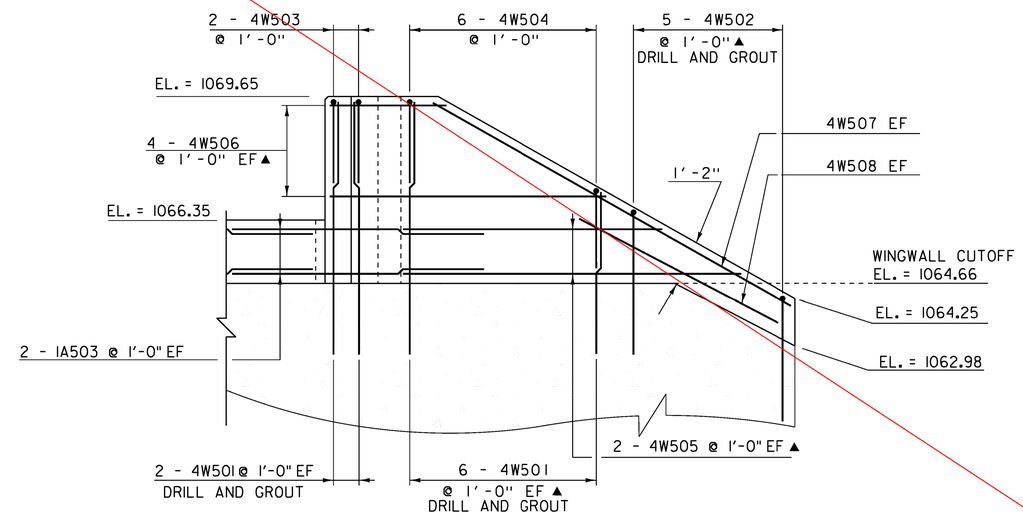
DRILL AND GROUT WINGWALLS AS SHOWN IN THE "WINGWALL TYPICAL" ON "WINGWALL 1 & 2 REINFORCING" SHEET



WINGWALL NO. 3 ELEVATION

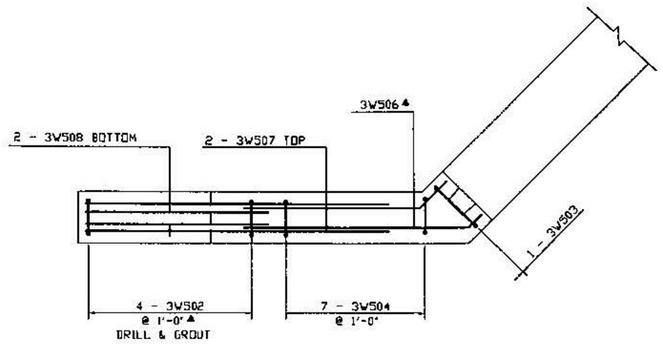
SCALE: ½" = 1'-0"



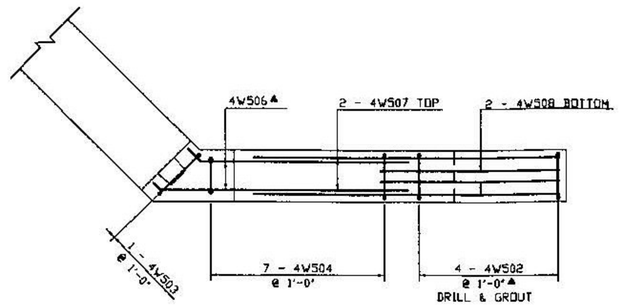
WINGWALL NO. 4 ELEVATION

SCALE: ½" = 1'-0"

PROJECT NAME:	ANDOVER
PROJECT NUMBER:	BHF 016-1(29)
FILE NAME: sl2bl40sub.dgn	PLOT DATE: 06-JAN-2015
PROJECT LEADER: C. CARLSON	DRAWN BY: G. ROKES
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
WINGWALL 3 & 4 REINFORCING	SHEET 31 OF 48

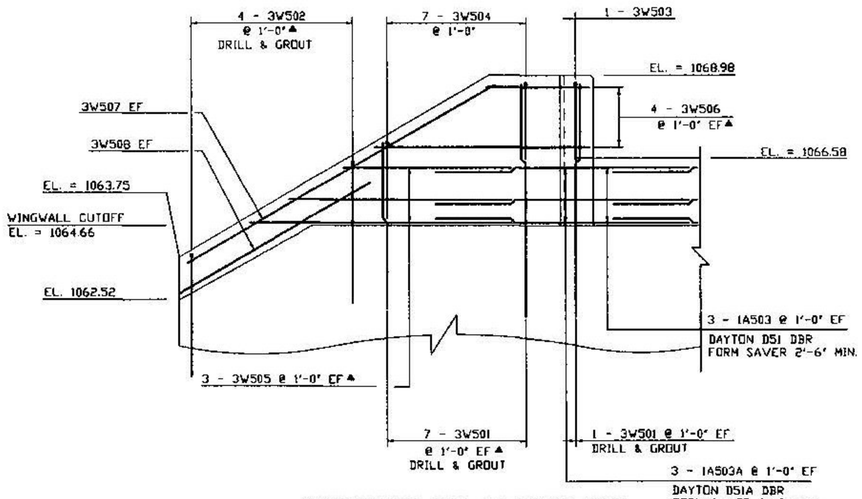


WINGWALL NO. 3 PLAN
SCALE 1/2" = 1'-0"

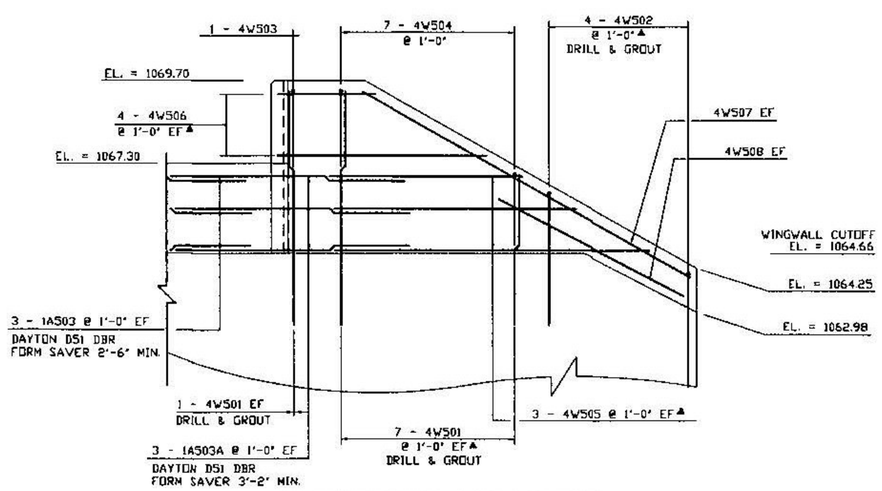


WINGWALL NO. 4 PLAN
SCALE 1/2" = 1'-0"

Vermont Agency of Transportation
RECEIVED
ON: June 24, 2015
and Checked for
CONFORMANCE
BY: D. PETERSON DATE: 06/25/2015



WINGWALL NO. 3 ELEVATION
SCALE 1/2" = 1'-0"



WINGWALL NO. 4 ELEVATION
SCALE 1/2" = 1'-0"

NOTE:
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EF = EACH FACE
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2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

DRILL AND GROUT WINGWALLS AS SHOWN IN THE "WINGWALL TYPICAL" ON "WINGWALL 1 & 2 REINFORCING" SHEET

REV. NO.	DATE:
1	08/24/15

RENAUD BROS. INC.
285 PT. BRIDGEMAN RD. VERNON VT., 05354
PH. (802) 257-7909 FAX: (802) 257-7908

SHEET NAME: WINGWALL 3 & 4 REINFORCING
PROJECT NAME: ANDOVER
PROJECT NO: BHF 016-1 (29)
SHEET NO. 6 OF 7
DRAWN BY: CE
CHK'D BY:
DATE: 06/03/2015

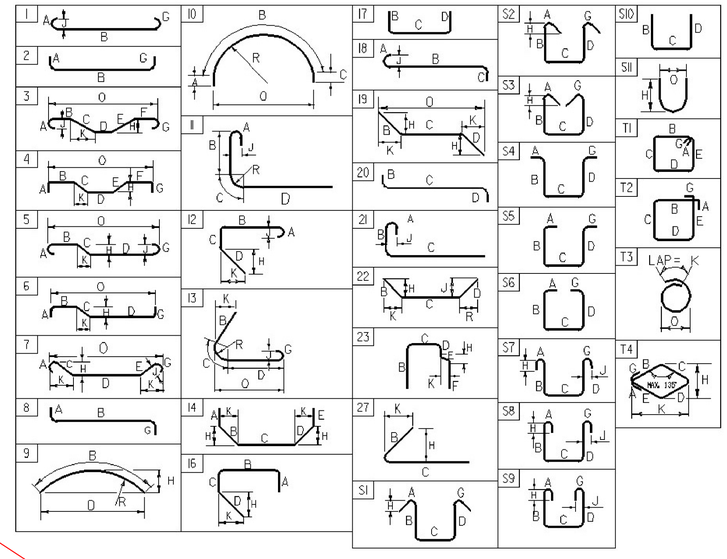
STATE OF VERMONT
AGENCY OF TRANSPORTATION

REINFORCING STEEL SCHEDULE

ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
	DECK																
✳	13	5	25'- 1"	D501.2	STR												
	ABUTMENT #1																
	8	5	18'- 6"	1A502	STR	18'- 6"											
▲	70	5	4'- 6"	1A501	S-10		1'- 5"	3'- 1"	---								
	8	5	7'- 3"	1A503	22		3'- 5"	3'- 10"	---				2'- 5"	---	2'- 5"	---	
	ABUTMENT #2																
	8	5	18'- 6"	2A502	STR	18'- 6"											
▲	70	5	4'- 10"	2A501	S-10		1'- 5"	3'- 5"	---								
	8	5	7'- 5"	2A503	22		3'- 7"	3'- 10"	---				2'- 6"	---	2'- 6"	---	
	WINGWALL #1																
	12	5	6'- 3"	1W501	STR	6'- 3"											
▲	4	5	9'- 8"	1W505	STR	9'- 8"											
	2	5	10'- 1"	1W507	STR	10'- 1"											
✳	2	5	5'- 1"	1W508	STR	5'- 1"											
▲	5	5	7'- 11"	1W502	S-10		3'- 6"	0'- 11"	3'- 6"								
	2	5	5'- 9"	1W503	S-10		2'- 2"	1'- 5"	2'- 2"								
	6	5	5'- 3"	1W504	S-10		2'- 2"	0'- 11"	2'- 2"								
▲	8	5	7'- 6"	1W506	22		1'- 0"	6'- 6"	---				0'- 9"	---	0'- 9"	---	
	WINGWALL #2																
▲	12	5	6'- 5"	2W501	STR	6'- 5"											
▲	4	5	9'- 9"	2W505	STR	9'- 9"											
	2	5	10'- 3"	2W507	STR	10'- 3"											
	2	5	5'- 1"	2W508	STR	5'- 1"											
▲	5	5	8'- 3"	2W502	S-10		3'- 8"	0'- 11"	3'- 8"								
	2	5	5'- 9"	2W503	S-10		2'- 2"	1'- 5"	2'- 2"								
	6	5	5'- 3"	2W504	S-10		2'- 2"	0'- 11"	2'- 2"								
▲	8	5	8'- 1"	2W506	22		1'- 4"	6'- 9"	---				0'- 11"	---	0'- 11"	---	
	WINGWALL # 3																
▲	10	5	6'- 1"	3W501	STR	6'- 1"											
▲	4	5	9'- 8"	3W505	STR	9'- 8"											
	2	5	10'- 5"	3W507	STR	10'- 5"											
	2	5	5'- 3"	3W508	STR	5'- 3"											
▲	6	5	8'- 11"	3W502	S-10		4'- 0"	0'- 11"	4'- 0"								
	2	5	5'- 9"	3W503	S-10		2'- 2"	1'- 5"	2'- 2"								
	5	5	5'- 3"	3W504	S-10		2'- 2"	0'- 11"	2'- 2"								
▲	8	5	6'- 8"	3W506	22		1'- 3"	5'- 5"	---				0'- 11"	---	0'- 11"	---	
	WINGWALL #4																
▲	12	5	6'- 6"	4W501	STR	6'- 6"											
▲	4	5	10'- 4"	4W505	STR	10'- 4"											
	2	5	10'- 11"	4W507	STR	10'- 11"											
	2	5	5'- 6"	4W508	STR	5'- 6"											
▲	5	5	7'- 9"	4W502	S-10		3'- 5"	0'- 11"	3'- 5"								
	2	5	5'- 9"	4W503	S-10		2'- 2"	1'- 5"	2'- 2"								
	6	5	5'- 3"	4W504	S-10		2'- 2"	0'- 11"	2'- 2"								
▲	8	5	7'- 10"	4W506	22		0'- 9"	7'- 1"	---				0'- 6"	---	0'- 6"	---	

~ 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. △ DENOTES TWO EXTRA BARS ADDED FOR TESTING PURPOSES.
11. E IN BAR MARK PREFIX DENOTES EPOXY COATED REINFORCING STEEL.



ASTM STANDARD REINFORCING BARS

BAR SIZE DESIGNATION	WEIGHT POUNDS PER FOOT	DIMENSIONS ROUND SECTION DIAMETER INCHES	NOMINAL WEIGHT	DIMENSIONS 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	2.04	0.875	0.60	2.749
#8	2.670	1.000	0.79	3.14
#9	3.400	1.13	1.00	3.54
#10	4.3	1.270	1.27	3.990
#11	5.31	1.410	1.56	4.430
#14	7.65	1.69	2.25	5.32
#18	13.60	2.26	4.00	7.09

~ REINFORCING STEEL CORROSION RESISTANCE LEVEL ~

THE REINFORCING STEEL MARKS IN THIS SCHEDULE INDICATE THE REQUIRED BAR CORROSION RESISTANCE LEVEL. CORROSION RESISTANCE LEVEL IS DENOTED WITH A .2 FOR LEVEL TWO SUFFIX OR .3 FOR LEVEL THREE SUFFIX , .1 FOR LEVEL ONE IS TO BE OMITTED. THE BAR MATERIAL TYPE AND BAR STEEL GRADE PROVIDED FOR EACH CORROSION LEVEL WILL BE RECORDED ON THE PLAN SET PI SHEET FOR AS-BUILT RECORD PLAN ARCHIVES.

PROJECT NAME: **ANDOVER**
PROJECT NUMBER: **BHF 016-1(29)**

FILE NAME: **s12b140rfs**
PROJECT MANAGER: **C. CARLSON**
DESIGNED BY: **D. PETERSON**
REINFORCING STEEL SCHEDULE

PLOT DATE: **11/20/2014**
DRAWN BY: **G. ROKES**
CHECKED BY: **D. PETERSON**
SHEET 32 OF 48

ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
	CURBING			ED501													
M	13	5	25'- 1"	ED501	STR	25'- 1"											
	ABUTMENT #1																
	12	5	18'- 6"	1A502	STR	18'- 6"											
▲	74	5	5'- 11"	1A501	B-10		1'- 5"	4'- 8"									
	15	5	2'- 6"	1A503	STR	2'- 6"											
	15	5	3'- 2"	1A503A	22		1'- 0"	2'- 2"					8 1/2"		8 1/2"		
	ABUTMENT #2																
	12	5	18'- 6"	2A502	STR	18'- 6"											
▲	74	5	5'- 9"	2A501	B-10		1'- 5"	4'- 4"									
	12	5	2'- 6"	2A503	STR	2'- 6"											
	12	5	3'- 2"	2A503A	22		1'- 0"	2'- 2"					8 1/2"		8 1/2"		
	WINGWALL #1																
	14	5	6'- 5"	1W501	STR	6'- 3"											
▲	6	5	9'- 8"	1W505	STR	9'- 8"											
	2	5	10'- 1"	1W507	STR	10'- 1"											
*	3	5	5'- 1"	1W508	STR	5'- 1"											
▲	5	5	7'- 11"	1W502	B-10		3'- 8"	0'- 11"	3'- 6"								
	1	5	5'- 0"	1W503	B-10		2'- 2"	1'- 5"	2'- 2"								
	6	5	5'- 3"	1W504	B-10		2'- 2"	0'- 11"	2'- 2"								
▲	8	5	7'- 6"	1W506	22		1'- 0"	6'- 8"					0'- 9"		0'- 9"		
	WINGWALL #2																
▲	16	5	6'- 5"	2W501	STR	6'- 3"											
▲	6	5	9'- 8"	2W505	STR	9'- 8"											
	2	5	10'- 3"	2W507	STR	10'- 3"											
	2	5	5'- 1"	2W508	STR	5'- 1"											
▲	4	5	8'- 3"	2W502	B-10		3'- 0"	0'- 3"	3'- 0"								
	1	5	5'- 0"	2W503	B-10		2'- 2"	1'- 5"	2'- 2"								
	7	5	5'- 3"	2W504	B-10		2'- 2"	0'- 11"	2'- 2"								
▲	8	5	8'- 1"	2W506	22		1'- 4"	6'- 0"					0'- 11"		0'- 11"		
	WINGWALL #3																
▲	16	5	6'- 1"	3W501	STR	6'- 1"											
▲	6	5	9'- 8"	3W505	STR	9'- 8"											
	2	5	10'- 5"	3W507	STR	10'- 5"											
	2	5	5'- 3"	3W508	STR	5'- 3"											
▲	4	5	8'- 11"	3W502	B-10		4'- 0"	0'- 11"	4'- 0"								
	1	5	5'- 0"	3W503	B-10		2'- 2"	1'- 5"	2'- 2"								
	7	5	5'- 3"	3W504	B-10		2'- 2"	0'- 11"	2'- 2"								
▲	6	5	8'- 8"	3W506	22		1'- 4"	6'- 8"					0'- 11"		0'- 11"		
▲	**WINGWALL #4**																
▲	14	5	6'- 6"	4W501	STR	6'- 6"											
	4	5	10'- 4"	4W502	STR	10'- 4"											
	2	5	10'- 11"	4W507	STR	10'- 11"											
	2	5	5'- 8"	4W508	STR	5'- 6"											
▲	4	5	7'- 8"	4W502	B-10		3'- 5"	0'- 11"	3'- 6"								
	1	5	5'- 0"	4W503	B-10		2'- 2"	1'- 5"	2'- 2"								
	7	5	5'- 3"	4W504	B-10		2'- 2"	0'- 11"	2'- 2"								
▲	8	5	7'- 10"	4W506	22		0'- 8"	7'- 1"					0'- 8"		0'- 8"		

TO DENOTE EPOXY COATED

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

~ NOTES ~

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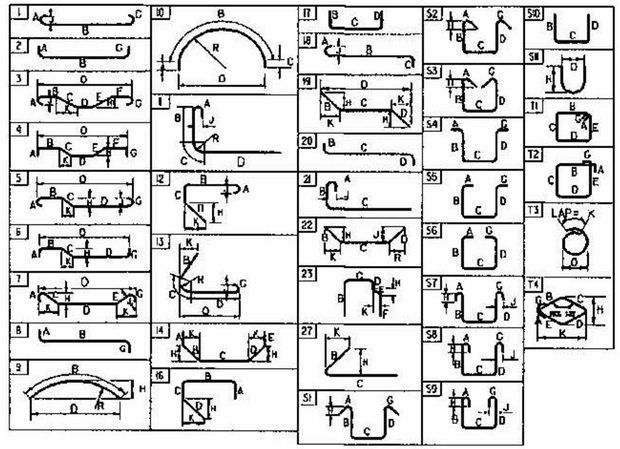
8. ▲ DENOTES BARS TO BE CUT IN FIELD.
9. * DENOTES ONE EXTRA BAR ADDED FOR TESTING PURPOSES.
10. △ DENOTES TWO EXTRA BARS ADDED FOR TESTING PURPOSES.
11. .3 IN BAR MARK SUFFIX DENOTES LEVEL III REINFORCING STEEL



ASTM STANDARD REINFORCING BARS

BAR SIZE DESIGNATION	WEIGHT POUNDS PER FOOT	NOMINAL DIMENSIONS ROUND SECTION DIAMETER INCHES	AREA INCHES²	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

Vermont Agency of Transportation

RECEIVED

ON: June 24, 2015

and Checked for

CONFORMANCE

BY: D. PETERSON DATE: 06/25/2015

REV. NO.	DATE:
1	06/18/15

RENAUD BROS. INC.
283 FT. DUMMERSTON RD. VERNON VT., 05354
PH. (802) 257-7589 FAX (802) 257-7508

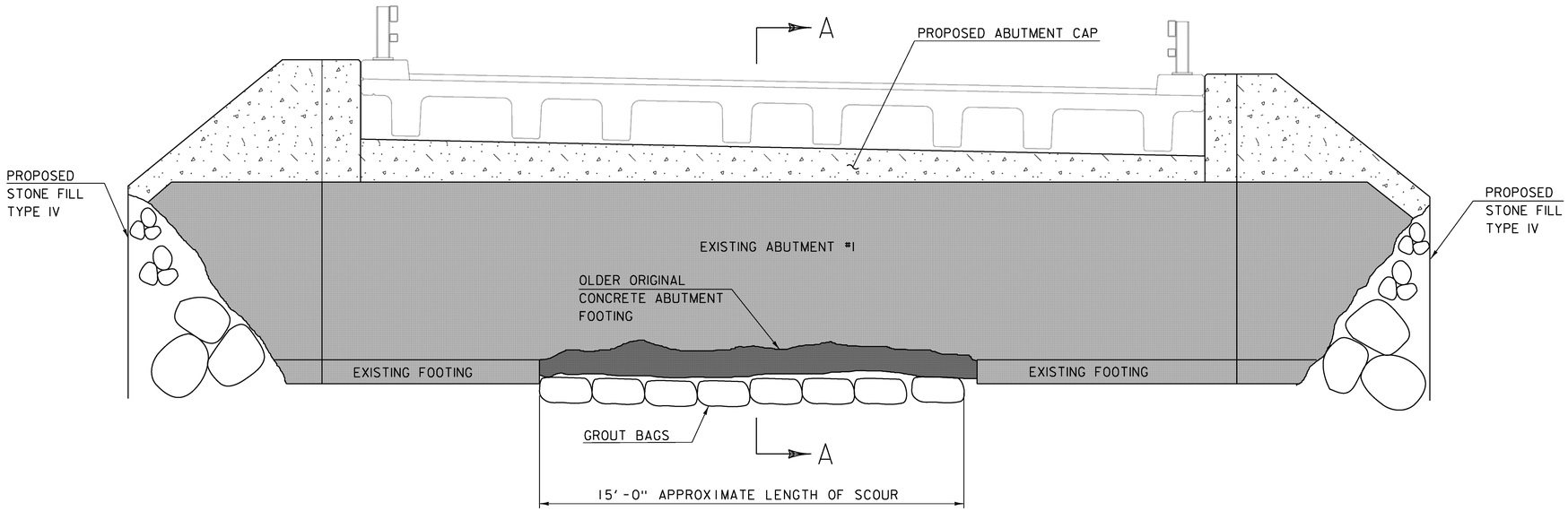
SHEET NAME: REINFORCING SCHEDULE

PROJECT NAME: ANDOVER

PROJECT NO: BHF 016-1 (29)

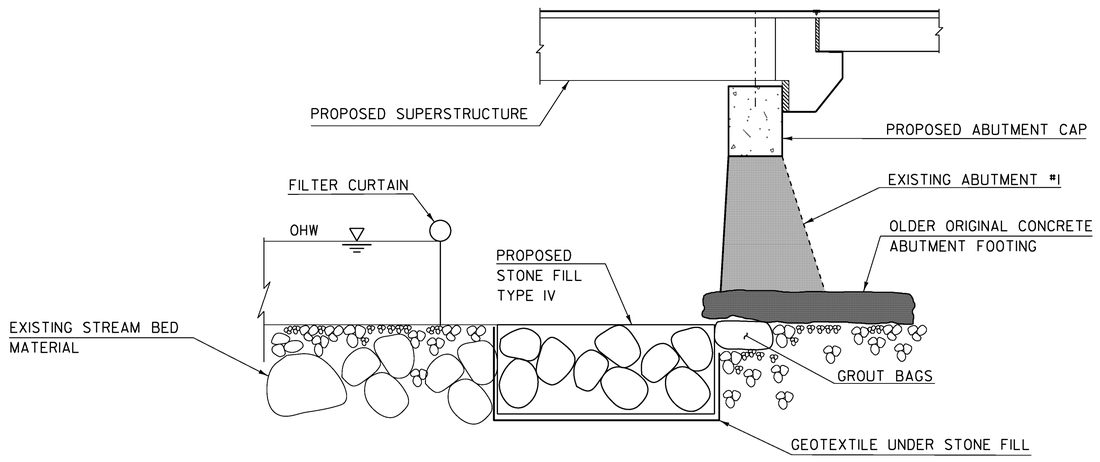
SHEET NO. 7 OF 7

DRAWN BY: CE | CHK'D BY: | DATE: 06/03/2015



GROUT BAG PLACEMENT ABUTMENT #1 ELEVATION

SCALE 1/4" = 1'-0"



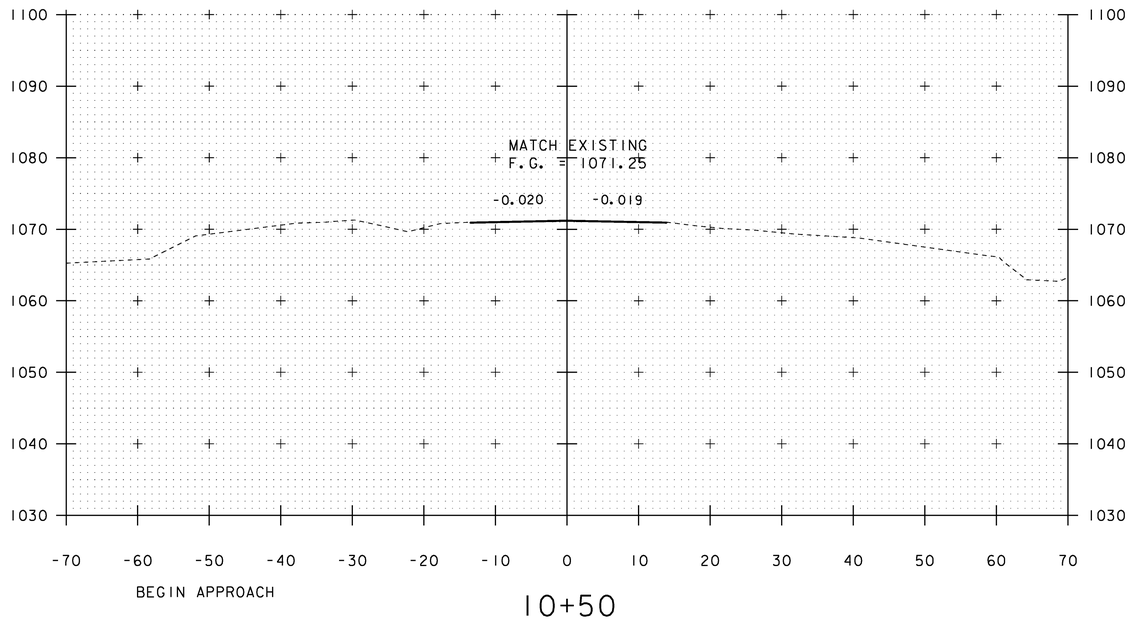
SECTION A-A

SCALE 1/4" = 1'-0"

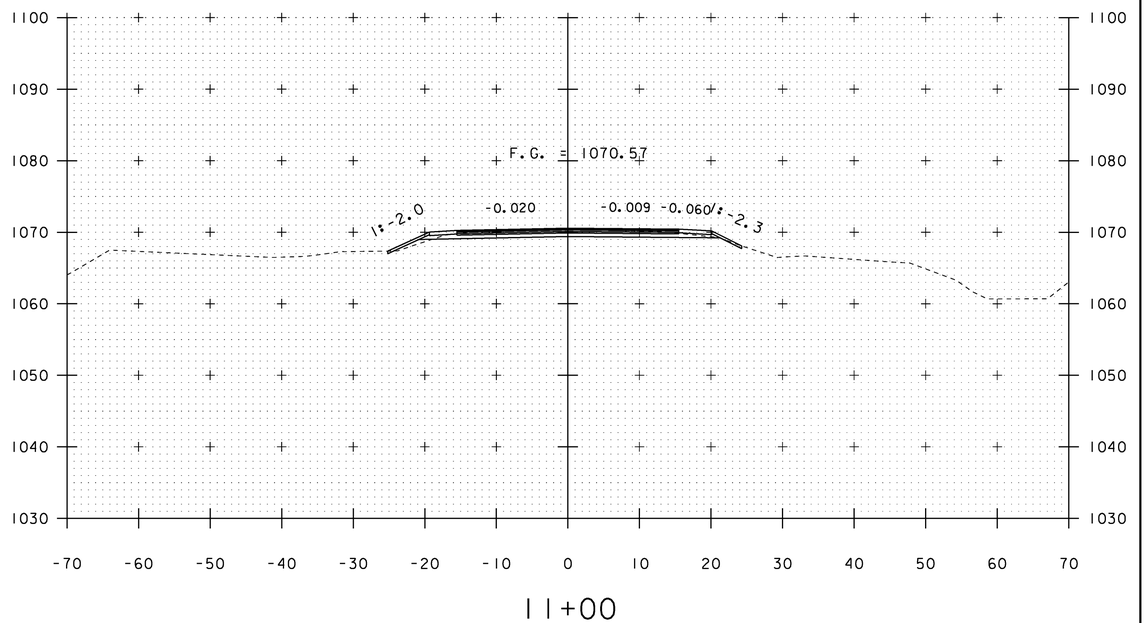
NOTE: PAYMENT FOR FURNISHING AND PLACING GROUT BAGS WILL BE UNDER CONTRACT ITEM 900.640 SPECIAL PROVISION (GROUT BAGS).

PROJECT NAME:	ANDOVER
PROJECT NUMBER:	BHF 016-1(29)

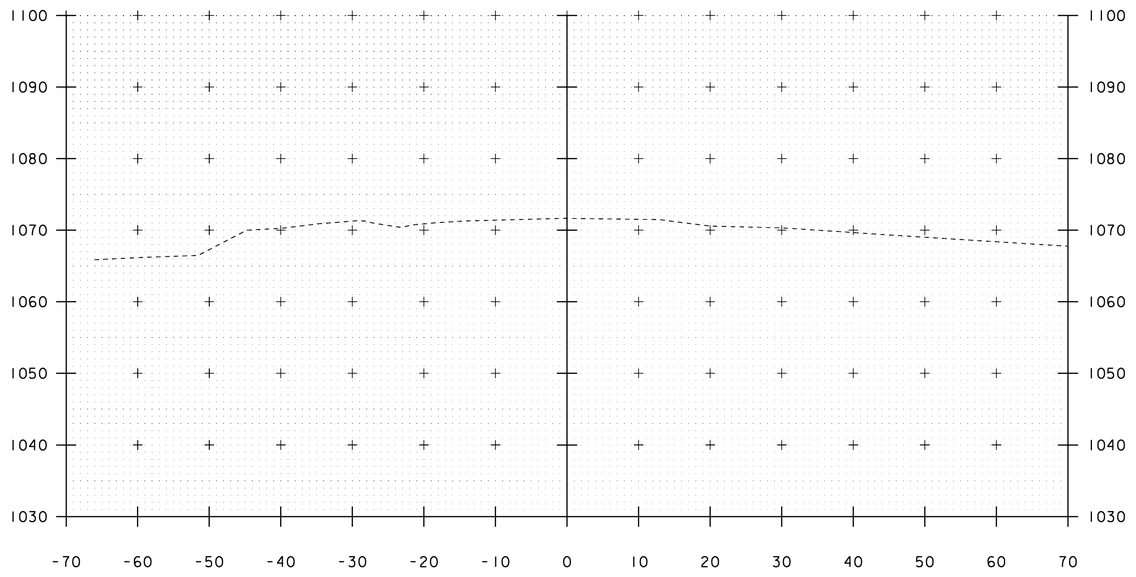
FILE NAME: s12b140xs.dgn	PLOT DATE: 06-JAN-2015
PROJECT LEADER: C. CARLSON	DRAWN BY: G. ROKES
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
GROUT BAG PLACEMENT	SHEET 33 OF 48



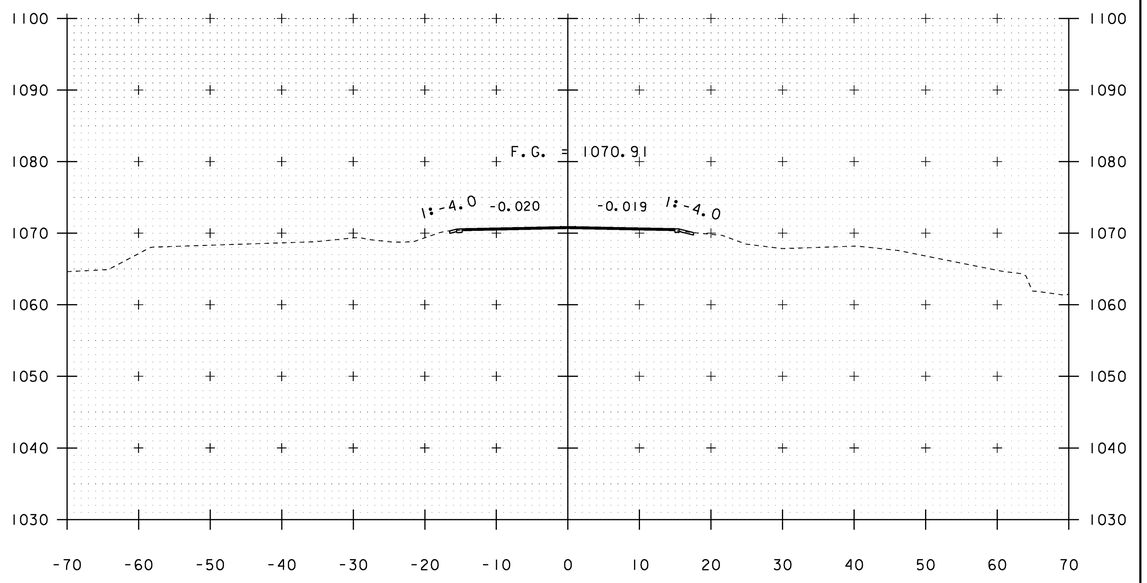
10+50



11+00



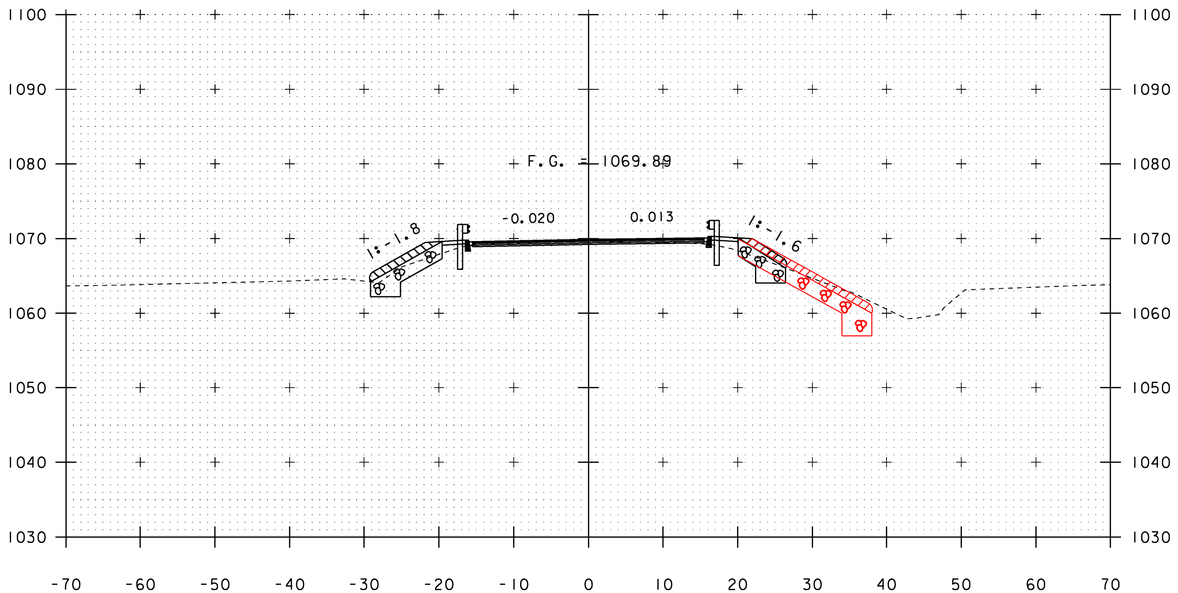
10+25



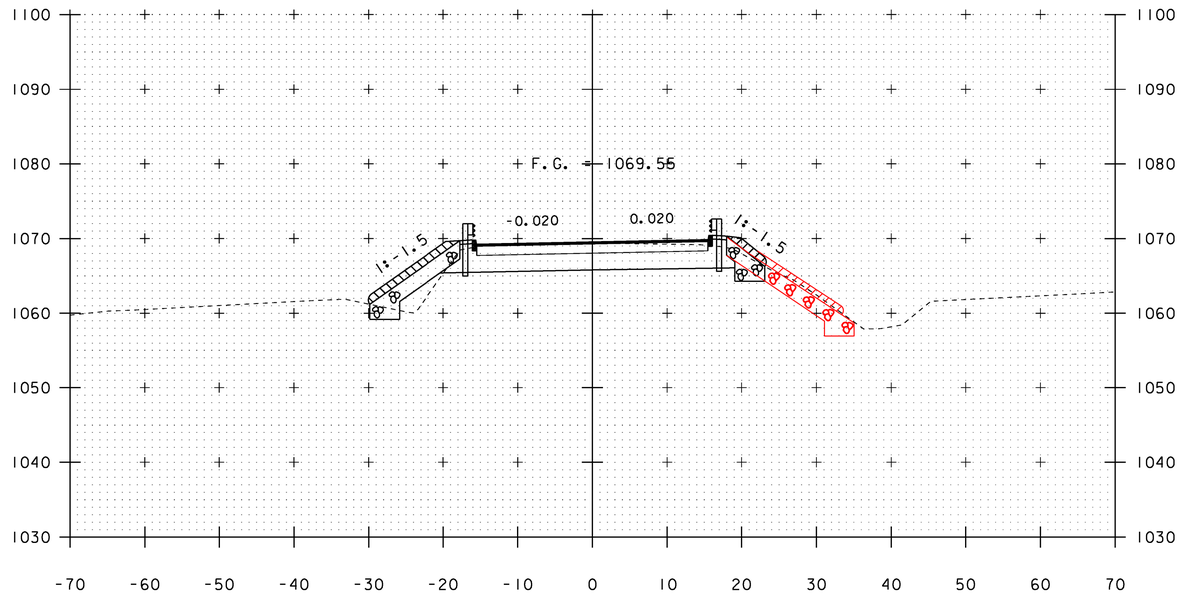
10+75

STA. 10+25 TO STA. 11+00

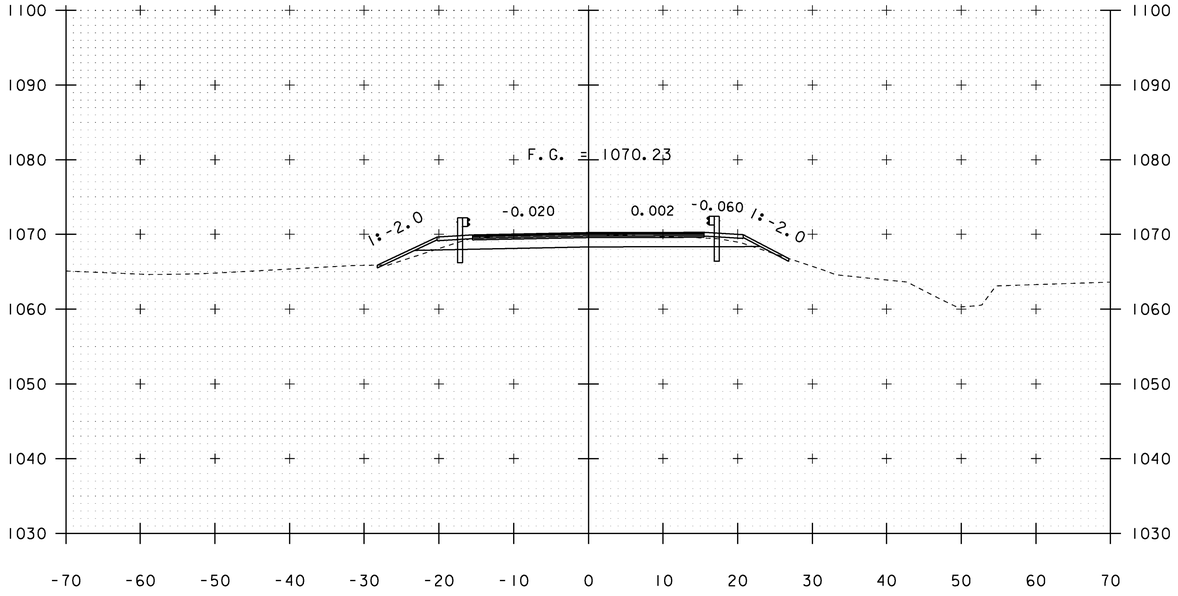
PROJECT NAME:	ANDOVER
PROJECT NUMBER:	BHF 016-1(29)
FILE NAME: sl2b140xs.dgn	PLOT DATE: 06-JAN-2015
PROJECT LEADER: C. CARLSON	DRAWN BY: S. PIRO
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
VT 11 CROSS SECTIONS 1	SHEET 34 OF 48



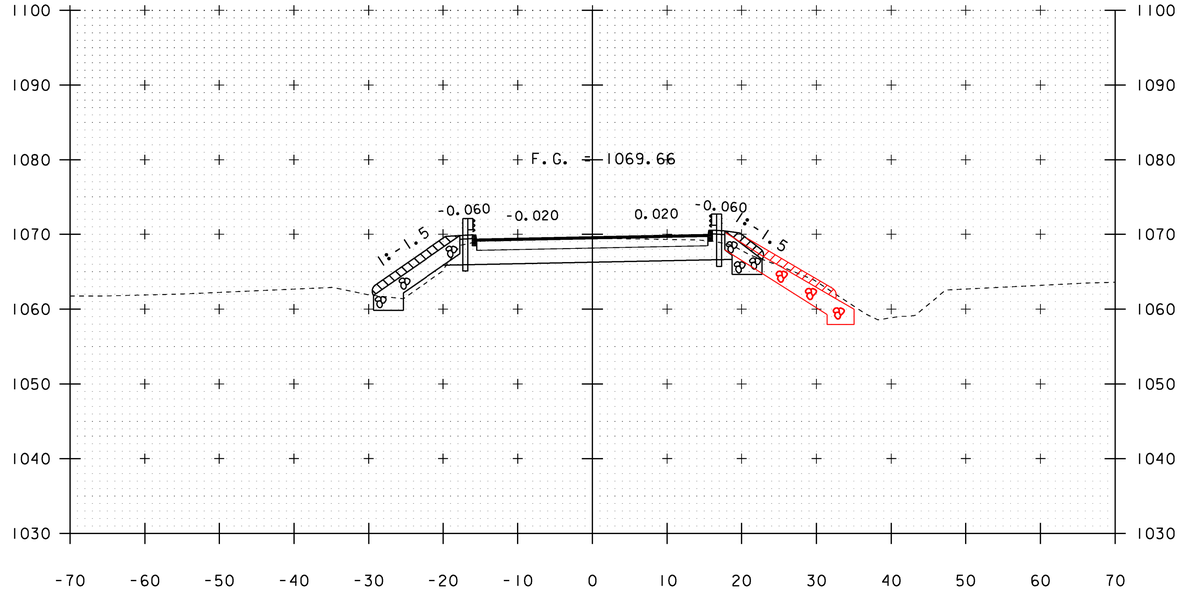
11+50



11+75



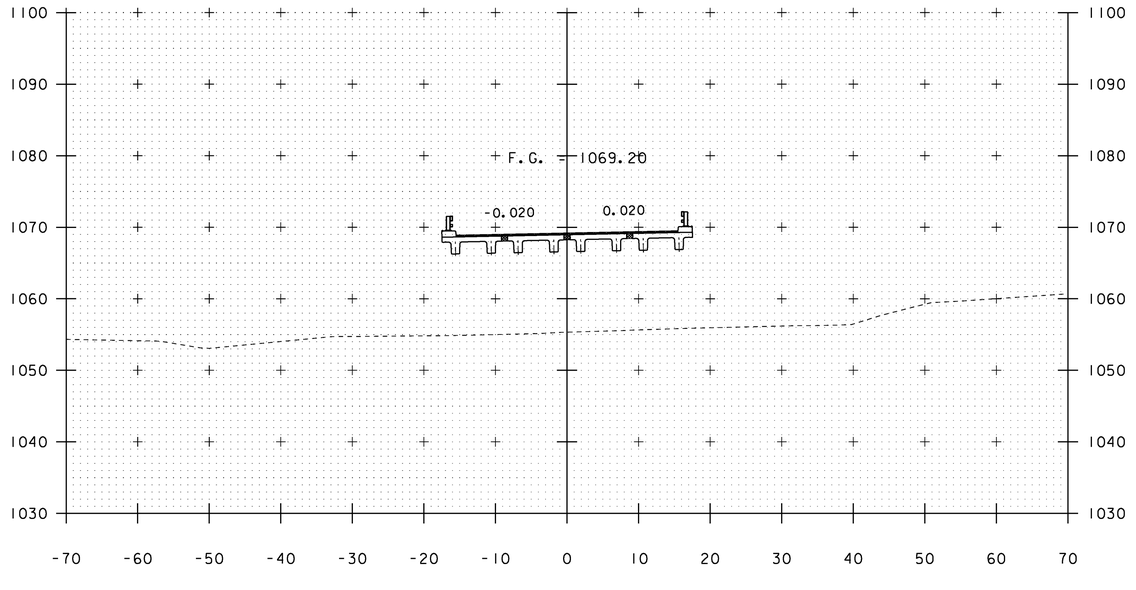
11+25



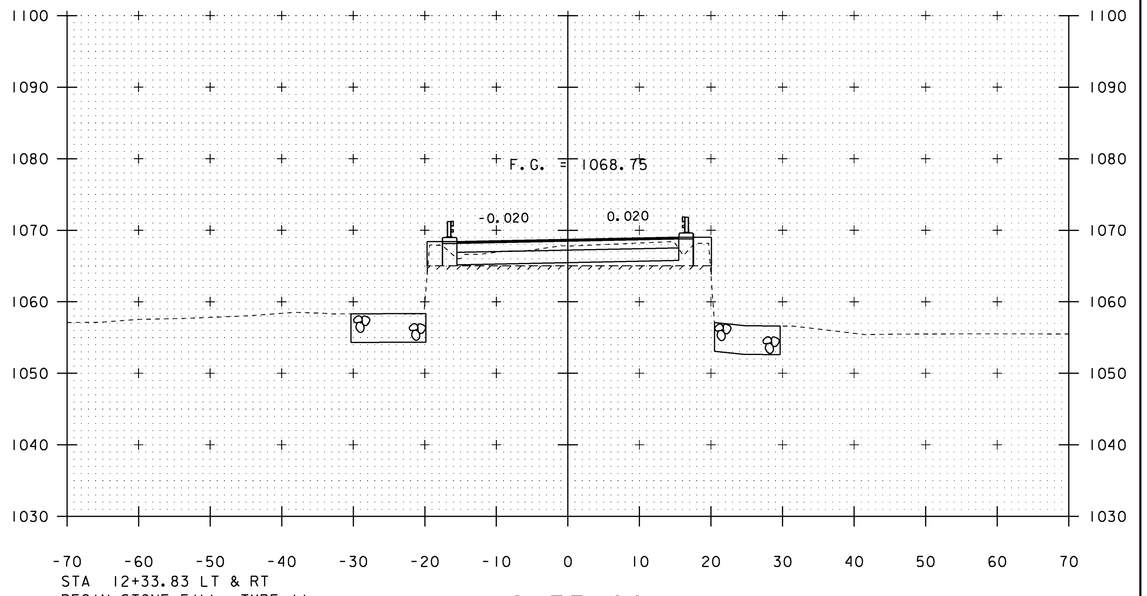
11+66.75

STA. 11+25 TO STA. 11+75

PROJECT NAME:	ANDOVER
PROJECT NUMBER:	BHF 016-1(29)
FILE NAME: sl2bl40xs.dgn	PLOT DATE: 06-JAN-2015
PROJECT LEADER: C. CARLSON	DRAWN BY: S. PIRO
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
VT II CROSS SECTIONS 2	SHEET 35 OF 48

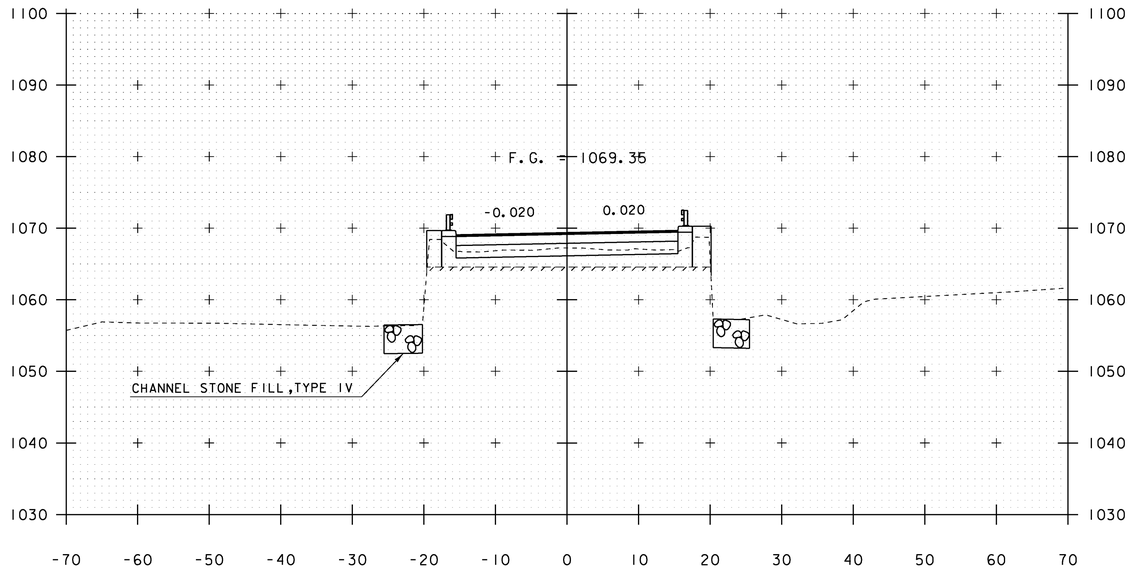


12+00



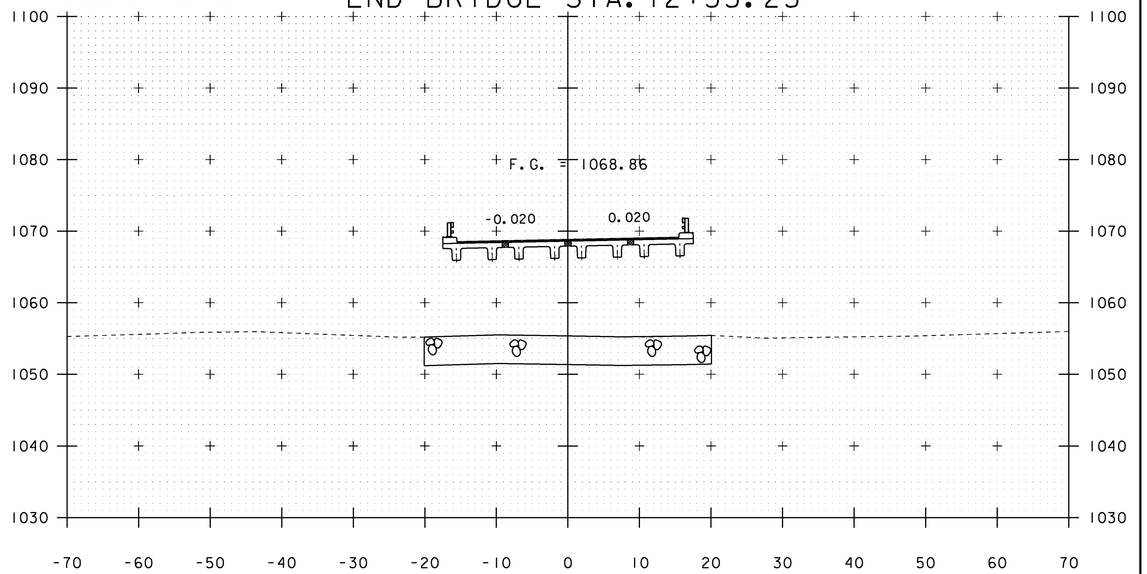
STA 12+33.83 LT & RT
BEGIN STONE FILL, TYPE II
GEOTEXTILE UNDER STONE FILL
GRUBBING MATERIAL

12+33.00
END BRIDGE STA. 12+35.25



STA 11+88.00 LT & RT
END STONE FILL, TYPE II
GEOTEXTILE UNDER STONE FILL
GRUBBING MATERIAL

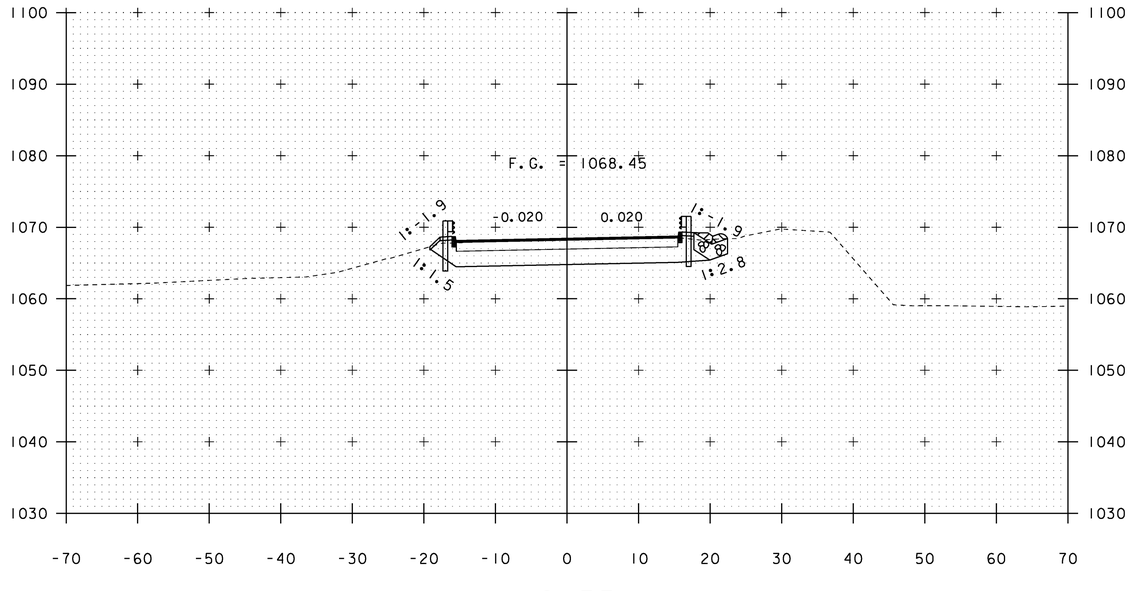
11+89.00
BEGIN BRIDGE STA. 11+86.75



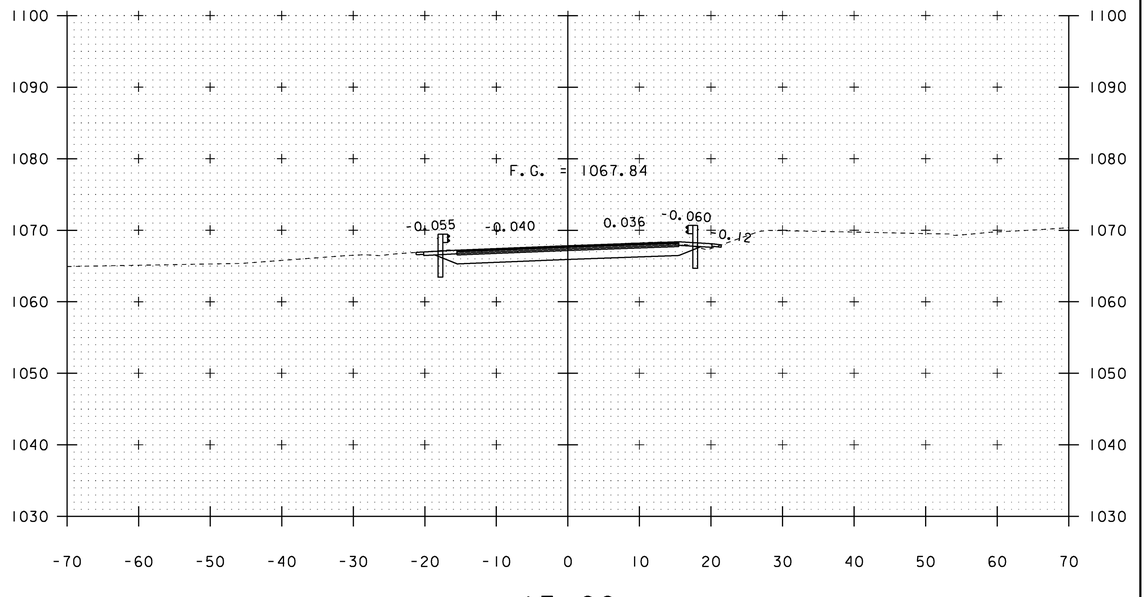
12+25

STA. 11+89 TO STA. 12+33

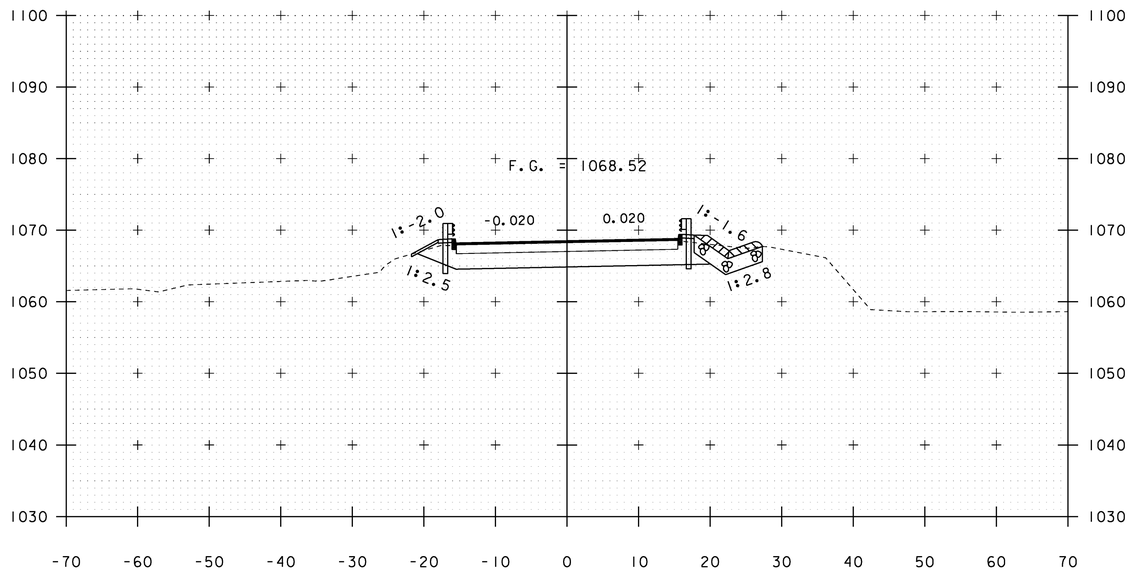
PROJECT NAME:	ANDOVER
PROJECT NUMBER:	BHF 016-1(29)
FILE NAME: sl2b140xs.dgn	PLOT DATE: 06-JAN-2015
PROJECT LEADER: C. CARLSON	DRAWN BY: S. PIRO
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
VT II CROSS SECTIONS 3	SHEET 36 OF 48



12+55

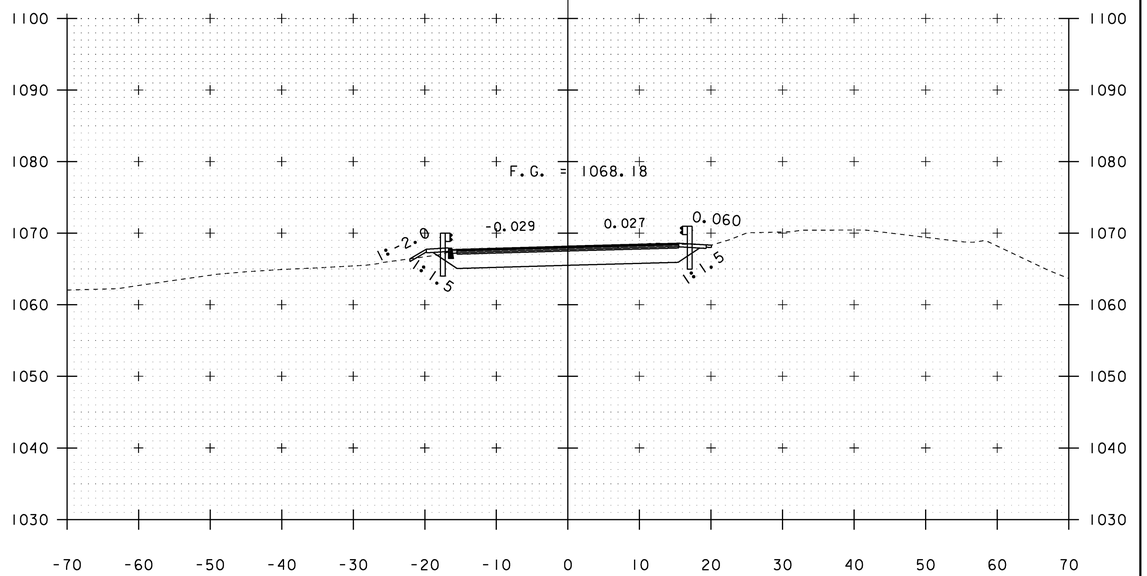


13+00



STA 12+44.00 LT
END STONE FILL, TYPE II
GEOTEXTILE UNDER STONE FILL
GRUBBING MATERIAL

12+50



STA 12+58.50 RT
BEGIN STONE FILL, TYPE II
GEOTEXTILE UNDER STONE FILL
GRUBBING MATERIAL

12+75

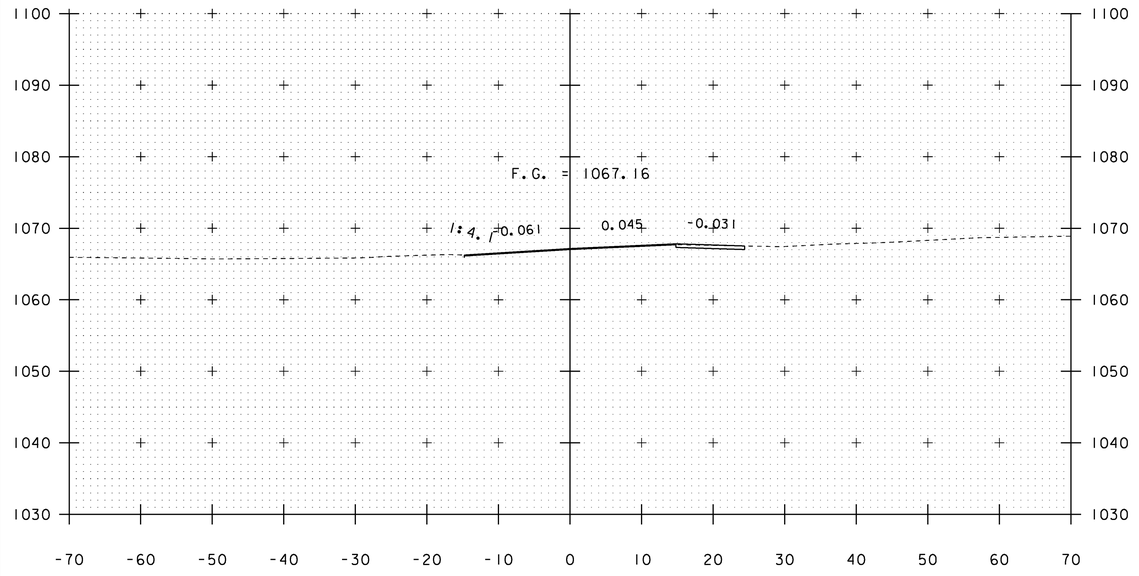
END PROJECT
BEGIN APPROACH

STA. 12+50 TO STA. 13+00

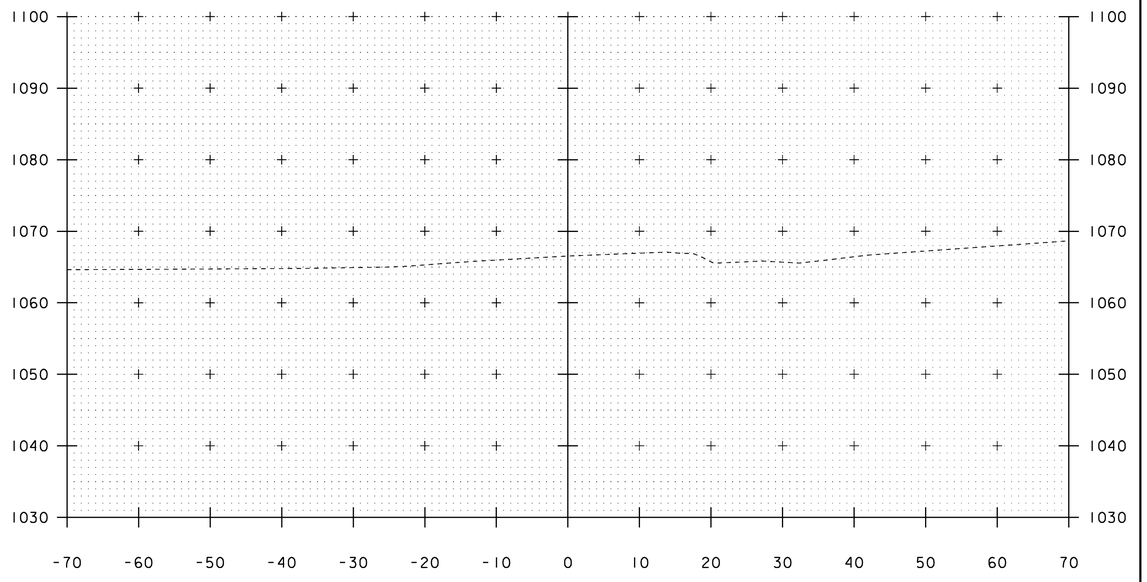
PROJECT NAME: ANDOVER
PROJECT NUMBER: BHF 016-1(29)

FILE NAME: sl2bl40xs.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: D. PETERSON
VT IICROSS SECTIONS 4

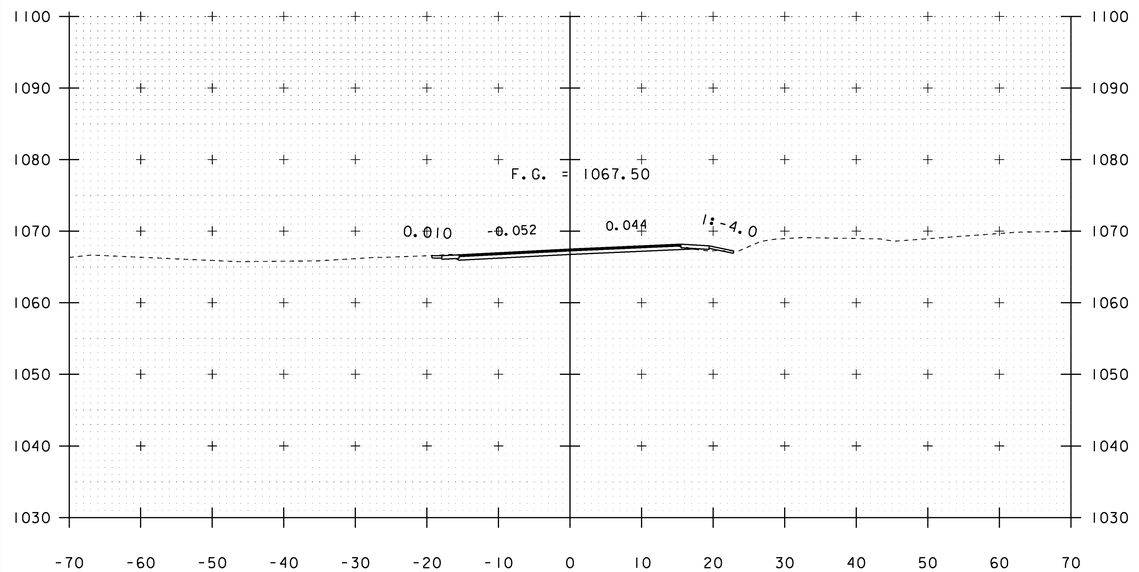
PLOT DATE: 06-JAN-2015
DRAWN BY: S. PIRO
CHECKED BY: D. PETERSON
SHEET 37 OF 48



13+50

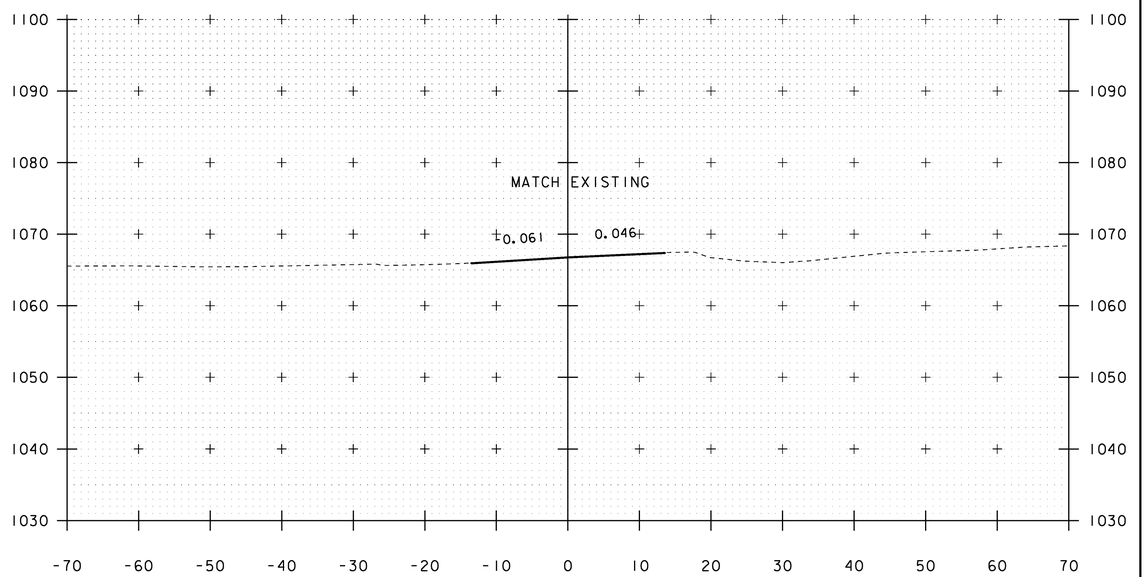


14+00



STA 13+25.00 RT - STA 13+75.00 RT
CONSTRUCT DRIVE

13+25

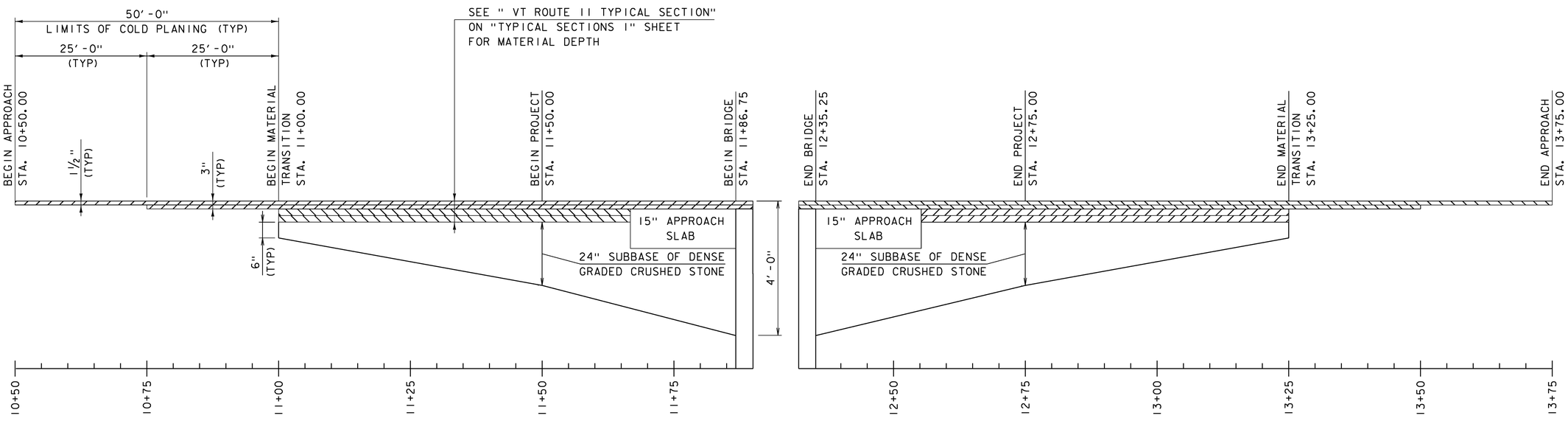


13+75

END APPROACH

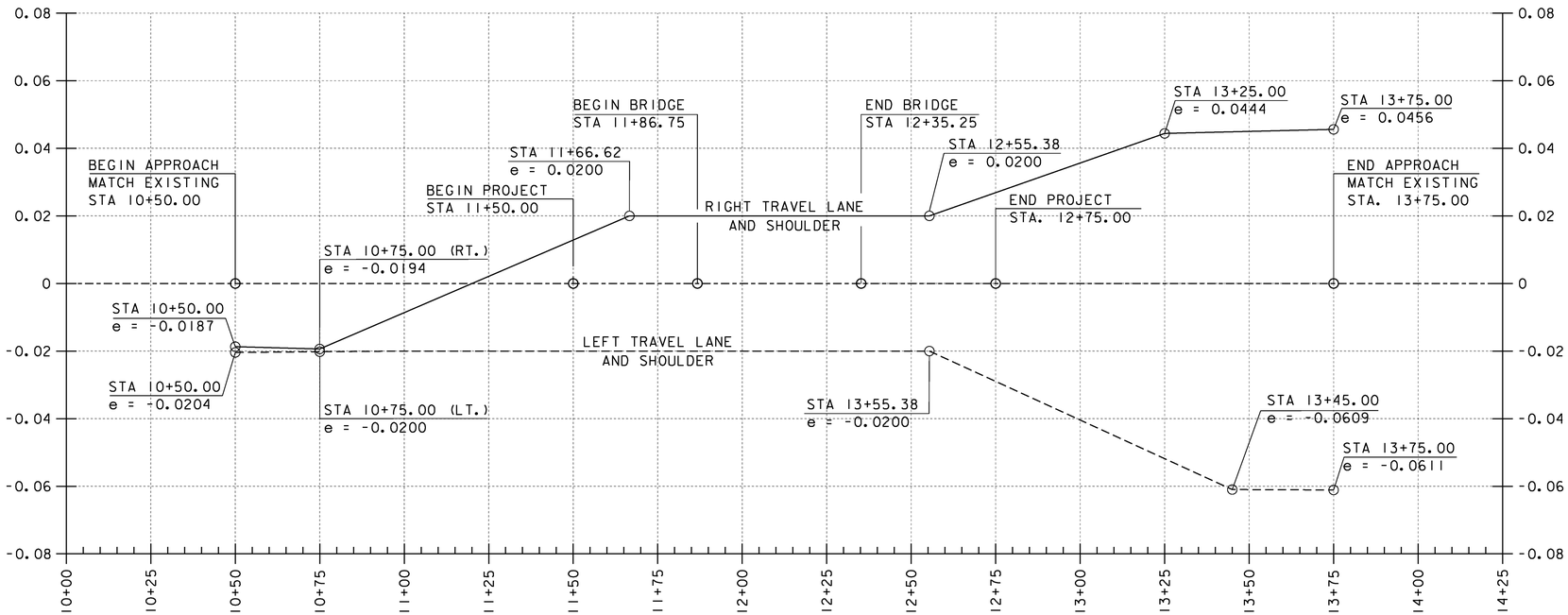
STA. 13+25 TO STA. 14+00

PROJECT NAME:	ANDOVER
PROJECT NUMBER:	BHF 016-1(29)
FILE NAME: sl2bl40xs.dgn	PLOT DATE: 06-JAN-2015
PROJECT LEADER: C. CARLSON	DRAWN BY: S. PIRO
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
VT II CROSS SECTIONS 5	SHEET 38 OF 48



VT II MATERIAL TRANSITION DETAIL

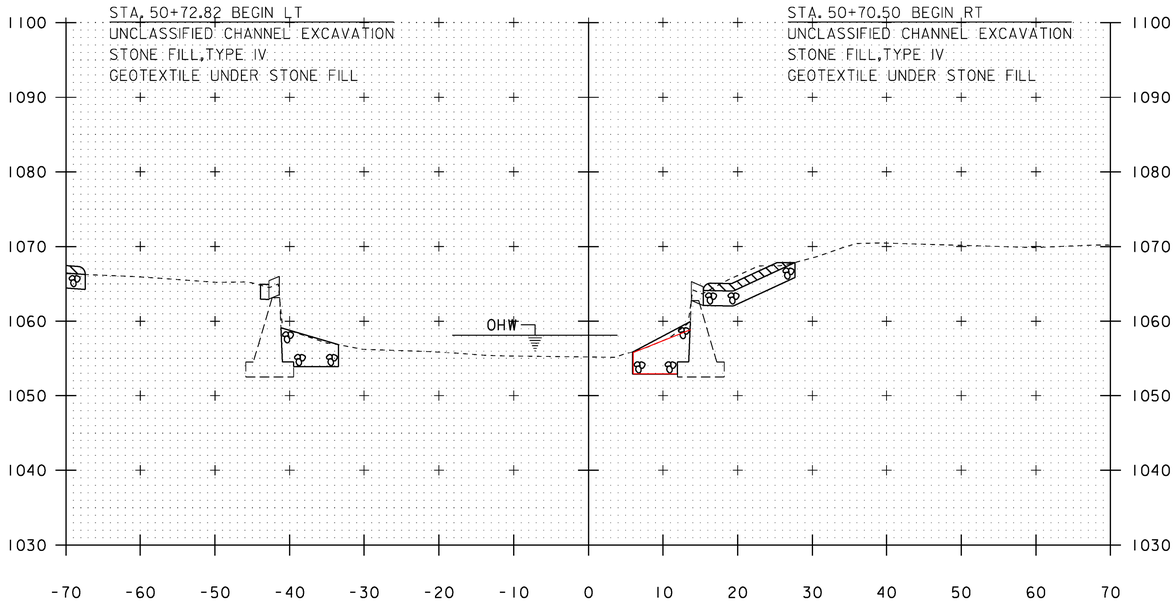
PROJECT NAME:	ANDOVER
PROJECT NUMBER:	BHF 016-1(29)
FILE NAME: sl2bl40pro.dgn	PLOT DATE: 06-JAN-2015
PROJECT LEADER: C. CARLSON	DRAWN BY: S. PIRO
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
MATERIAL TRANSITION DETAIL	SHEET 39 OF 48



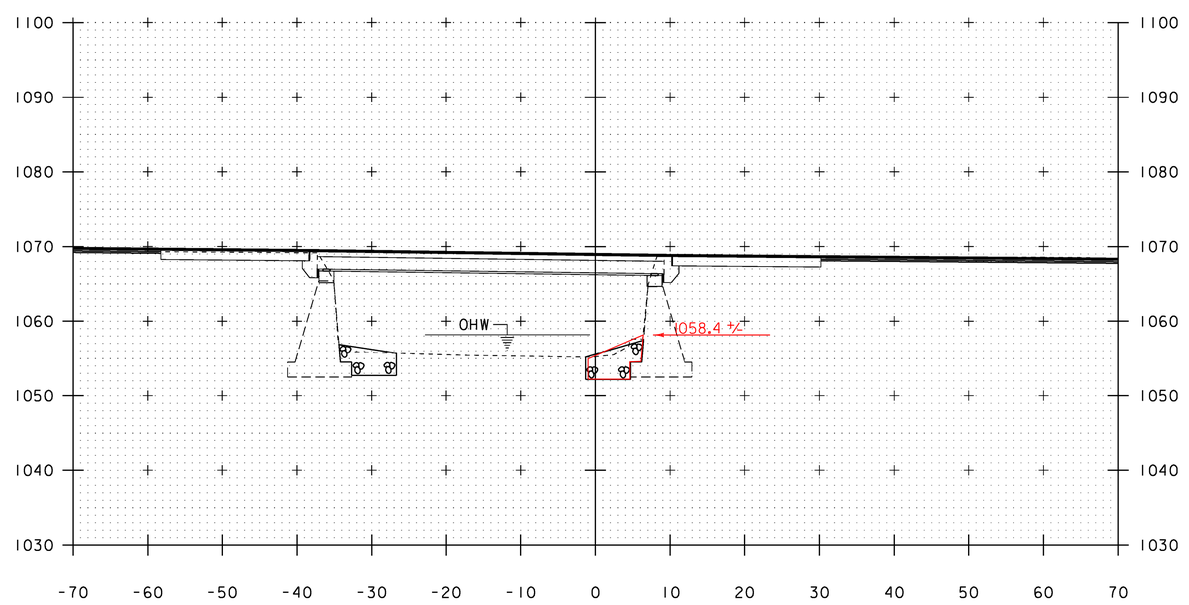
VT 11 BANKING DIAGRAM

HORIZONTAL SCALE: 1" = 20'-0"
VERTICAL SCALE: 1" = 0.02 '/'

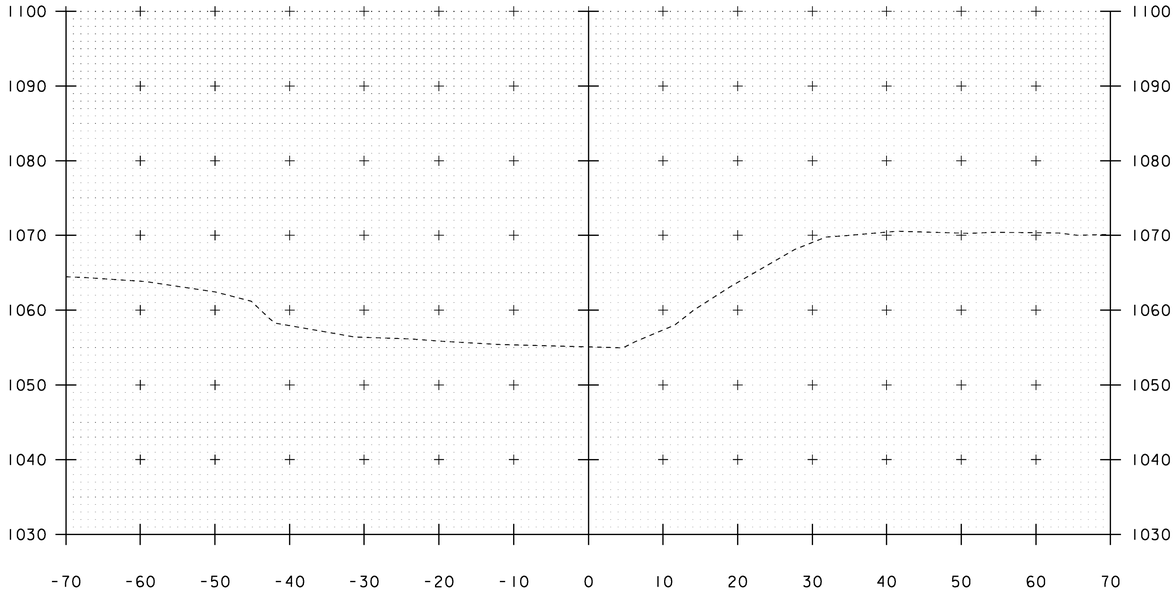
PROJECT NAME:	ANDOVER
PROJECT NUMBER:	BHF 016-1(29)
FILE NAME: sl2bl40pro.dgn	PLOT DATE: 06-JAN-2015
PROJECT LEADER: C. CARLSON	DRAWN BY: S. PIRO
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
BANKING DIAGRAM	SHEET 40 OF 48



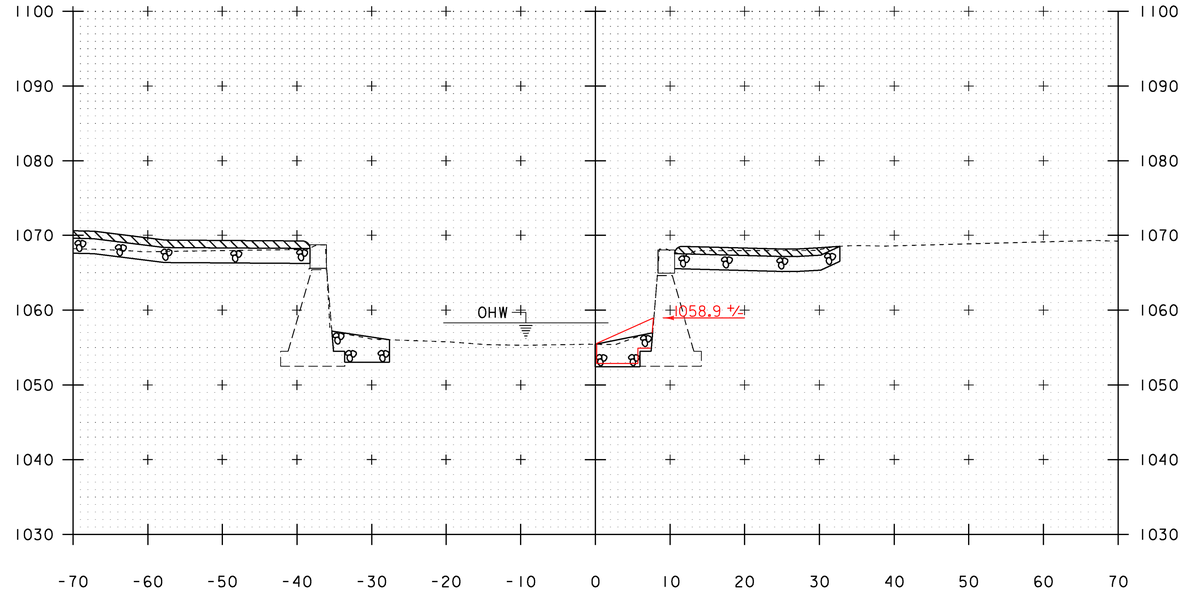
50+75



50+90



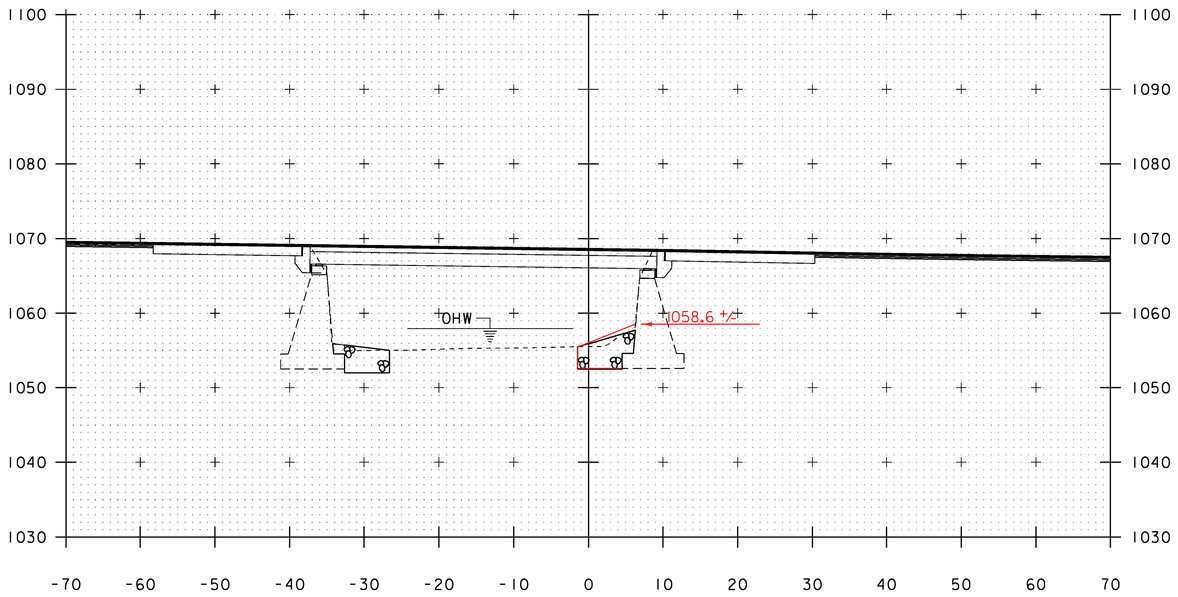
50+70



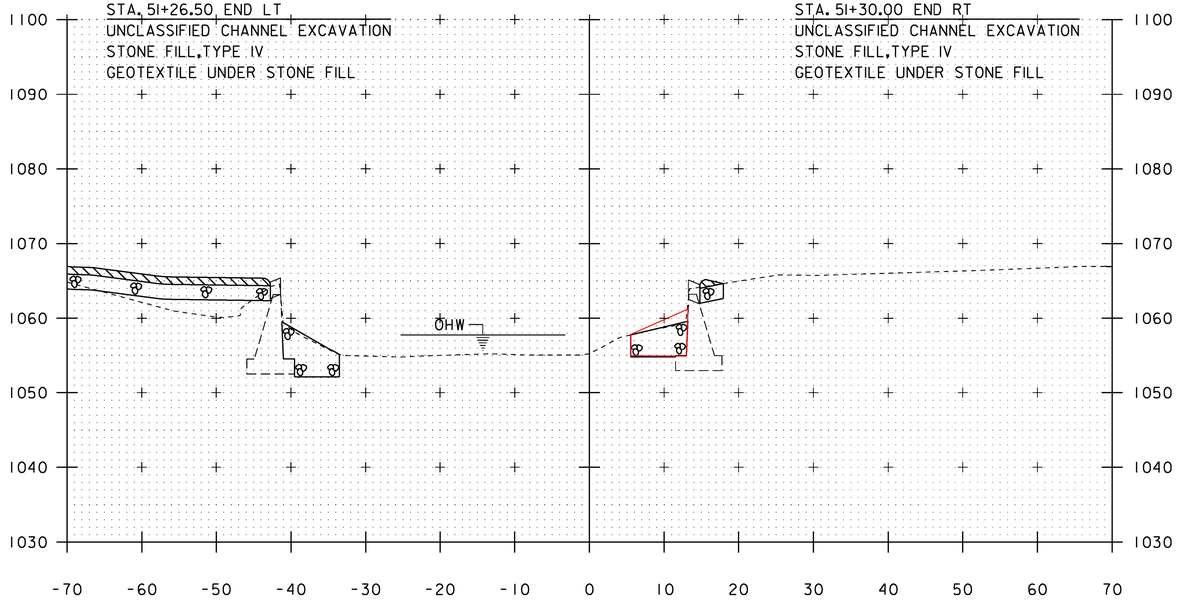
50+80

STA. 50+70 TO STA. 50+90

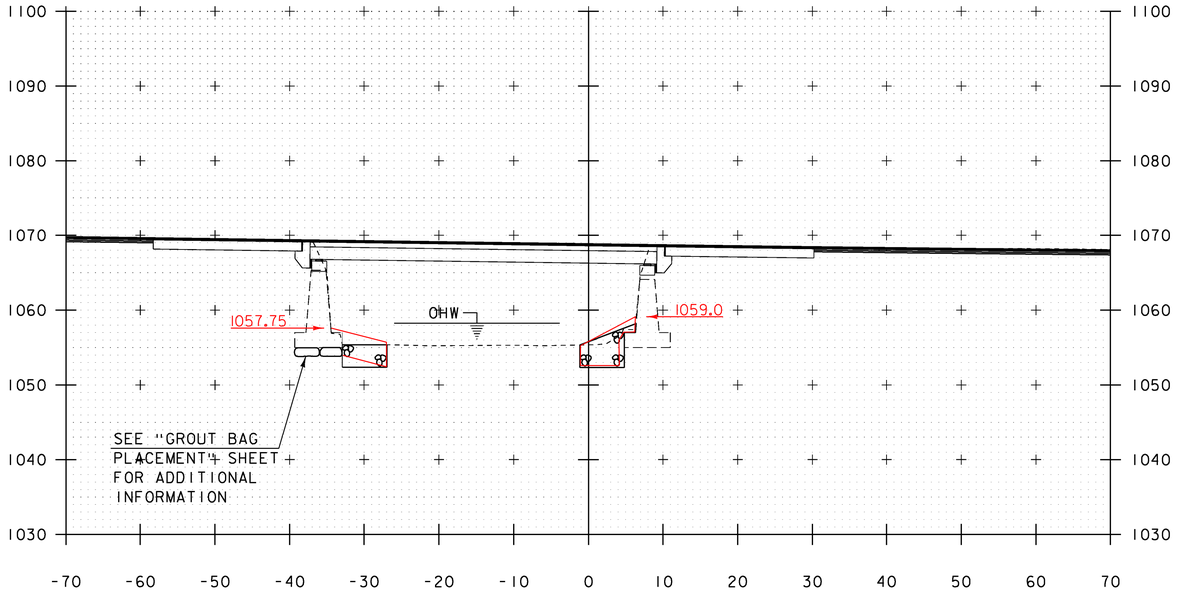
PROJECT NAME:	ANDOVER
PROJECT NUMBER:	BHF 016-1(29)
FILE NAME: s12b140xs.dgn	PLOT DATE: 06-JAN-2015
PROJECT LEADER: C. CARLSON	DRAWN BY: S. PIRO
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
CHANNEL CROSS SECTIONS 1	SHEET 41 OF 48



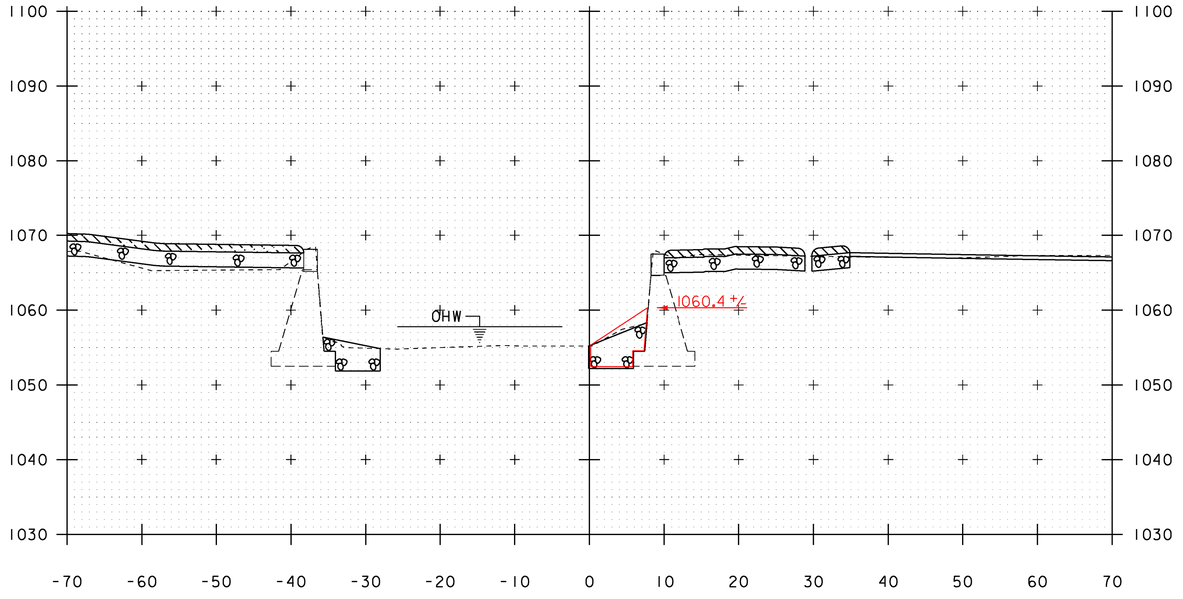
51+10



51+25



51+00



51+20

STA. 51+00 TO STA. 51+25

PROJECT NAME:	ANDOVER
PROJECT NUMBER:	BHF 016-1(29)
FILE NAME: sl2bl40xs.dgn	PLOT DATE: 06-JAN-2015
PROJECT LEADER: C. CARLSON	DRAWN BY: S. PIRO
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
CHANNEL CROSS SECTIONS 2	SHEET 42 OF 48

EPSC PLAN NARRATIVE

1.1 PROJECT DESCRIPTION

THIS PROJECT IS ON VT 11 APPROXIMATELY 4.0 MILES EAST OF JUNCTION WITH VT 121 IN ANDOVER, VT. THIS PROJECT INVOLVES THE REMOVAL AND REPLACEMENT OF THE SUPER STRUCTURE ON BRIDGE NO. 41, AND MINOR ROADWAY APPROACH AND CHANNEL WORK. A NEW TWO LANE, PRECAST CONCRETE NEXT BEAM SUPERSTRUCTURE WILL BE PLACED ONTO A NEW BRIDGE SEAT OVER THE EXISTING ABUTMENTS. THE BRIDGE WILL BE CLOSED AND TRAFFIC WILL BE DETOURED FOR THE PERIOD OF CONSTRUCTION. THE TOTAL LENGTH OF THE PROJECT IS 325 FEET, INCLUDING ROADWAY APPROACHES.

NOTE: AREA OF DISTURBANCE INCLUDES LIMITS OF EARTH DISTURBANCE WITHIN THE PROJECT AREA, AS WELL AS WASTE, BORROW AND STAGING AREAS, AND OTHER EARTH DISTURBING ACTIVITIES WITHIN OR DIRECTLY ADJACENT TO THE PROJECT LIMITS AS SHOWN ON THE ATTACHED EPSC PLAN.

TOTAL AREA OF DISTURBANCE AS SHOWN ON THE ATTACHED EPSC PLAN IS APPROXIMATELY 0.32 ACRES.

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

1.2 SITE INVENTORY

1.2.1 TOPOGRAPHY

THE TOPOGRAPHY OF THE PROJECT SITE IS HILLY TO MOUNTAINOUS WITH SOME OF THE AREA HAVING EROSION DAMAGE FROM HURRICANE IRENE. THE PROJECT AREA CONSISTS OF ESTABLISHED VEGETATION WITH A MIXTURE OF SHRUBS AND GRASS, AND A GRAVEL DRIVEWAY. THERE ARE 3 RESIDENCES IN THE AREA AROUND THE BRIDGE.

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

THE MIDDLE BRANCH OF WILLIAMS RIVER IS THE ONLY WATER SOURCE ON THE PROJECT SITE. THE RIVER IS CLASSIFIED AS SINUOUS, INCISED, AND ALLUVIAL WITH A CONFINED AND VULNERABLE CHANNEL AT THE SITE. THE STREAM BED CONSISTS OF GRAVEL, COBBLES, AND SOME BOULDERS. DUE TO THE NATURE OF THE SURROUNDING TERRAIN THE PROJECT SITE COULD RECEIVE RUNOFF WATER FROM A FEW NEARBY SLOPES.

1.2.3 VEGETATION

THE VEGETATION IN THE PROJECT AREA CONSISTS OF PATCHES OF WOODS, UNDERGROWTH AND GRASS. THE IMPACT TO VEGETATION WILL BE LIMITED TO THAT WHICH IS DIRECTLY AFFECTED BY REHABILITATING THE EXISTING BRIDGE. DISTURBED VEGETATION WILL BE REESTABLISHED WITH STANDARD SEED AND MULCH PRACTICES.

1.2.4 SOILS

ALL 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:
COLTON, FINE SANDY LOAM, 3-8% SLOPES, “K FACTOR” = 0.17. THE SOIL IS CONSIDERED TO HAVE LOW EROSION POTENTIAL.

NOTE: K-VALUES GENERALLY INDICATE THE FOLLOWING:
0.0-0.23 = LOW EROSION POTENTIAL
0.24-0.36 = MODERATE EROSION POTENTIAL
0.37 AND HIGHER = HIGH EROSION POTENTIAL

1.2.5 SENSITIVE RESOURCE AREAS

CRITICAL HABITATS: NO
HISTORICAL OR ARCHEOLOGICAL AREAS: NO
PRIME AGRICULTURAL LAND: NO
THREATENED AND ENDANGERED SPECIES: NO
WATER RESOURCE: MIDDLE BRANCH OF WILLIAMS RIVER
WETLANDS: NO

1.3 RISK EVALUATION

THIS 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 CONSTRUCTION OF THE PROJECT IN ORDER TO MINIMIZE 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 UPON BASED 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 OF 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, WETLANDS 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 CONTRACTORS 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 SHALL BE INSTALLED PRIOR TO ANY UP SLOPE WORK.

SILT FENCE WILL BE INSTALLED AS PROPOSED ON THE EPSC CONSTRUCTION LAYOUT.

FILTER CURTAIN WILL BE INSTALLED AT THE DISCRETION OF THE ENGINEER.

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.

THE PROJECT AREA IS RELATIVELY FLAT. THEREFORE IT IS NOT ANTICIPATED THAT DIVERSION MEASURES WILL BE NECESSARY.

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 ON THIS PROJECT.

1.4.7 CONSTRUCT PERMANENT CONTROLS
PERMANENT STORMWATER TREATMENT DEVICES SHALL BE INSTALLED AS SHOWN ON THE PLANS AND IN ACCORDANCE WITH PERMIT CONDITIONS.

NO PERMANENT CONTROLS ON THIS PROJECT.

1.4.8 STABILIZE EXPOSED SOILS DURING CONSTRUCTION
ALL AREAS OF DISTURBANCE MUST HAVE TEMPORARY STABILIZATION IN PLACE WITHIN 48 HOURS OF DISTURBANCE OR IN ACCORDANCE WITH THE CONSTRUCTION GENERAL PERMIT 3-9020 AUTHORIZATION.

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 1:3.

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.

NO WINTER WORK IS ANTICIPATED.

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
NO DISCHARGE FROM DEWATERING ACTIVITIES IS ANTICIPATED.

1.4.12 INSPECT YOUR SITE
INSPECT THE PROJECT SITE BASED ON SPECIAL PROVISION REQUIREMENTS OR CONSTRUCTION GENERAL PERMIT AUTHORIZATION STIPULATIONS.

1.5 SEQUENCE AND STAGING

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

1.5.2 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.

PROJECT NAME:	ANDOVER
PROJECT NUMBER:	BHF 016-1(29)
FILE NAME: sl2bl40ero_det.dgn	PLOT DATE: 06-JAN-2015
PROJECT LEADER: C. CARLSON	DRAWN BY: S. PIRO
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
EPSC NARRATIVE	SHEET 43 OF 48

SOIL INFORMATION:
ADAMS LOAMY FINE SAND
(HIGHLY ERODIBLE)
K-FACTOR = .17, 25%-60% SLOPES
HYDROLOGICAL SOIL GROUP: A

SOIL INFORMATION:
COLTON FINE SANDY LOAM
K-FACTOR = .17, 3%-8% SLOPES
HYDROLOGICAL SOIL GROUP: A

N

VT STATE PLANE GRID

STATE OF VERMONT
BK.18 PG.57 1.4 ACRES

MIDDLE BRANCH OF THE WILLIAMS RIVER

SAVAGE, NEVE & ANN

ARTESIAN WELL

MED. SPRUCE

GRAVEL DRIVE

EXISTING R.O.W.

VT 11
TO CHESTER

VT 11
TO LONDONDERRY

10+00

11+00

12+00

13+00

14+00

14+75

18" RCP FLOW

18" CPEP FLOW

STONE FILL

GORDON, PATRICK JAMES
LIFE ESTATE TO GORDON, IRENE

HOUGHTON, JOSEPH J. &
KRISTINA DRZAL

FLOW

1070
1060
1050
1040
1030
1020
1010
1000
990
980
970
960
950
940
930
920
910
900
890
880
870
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850
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170
160
150
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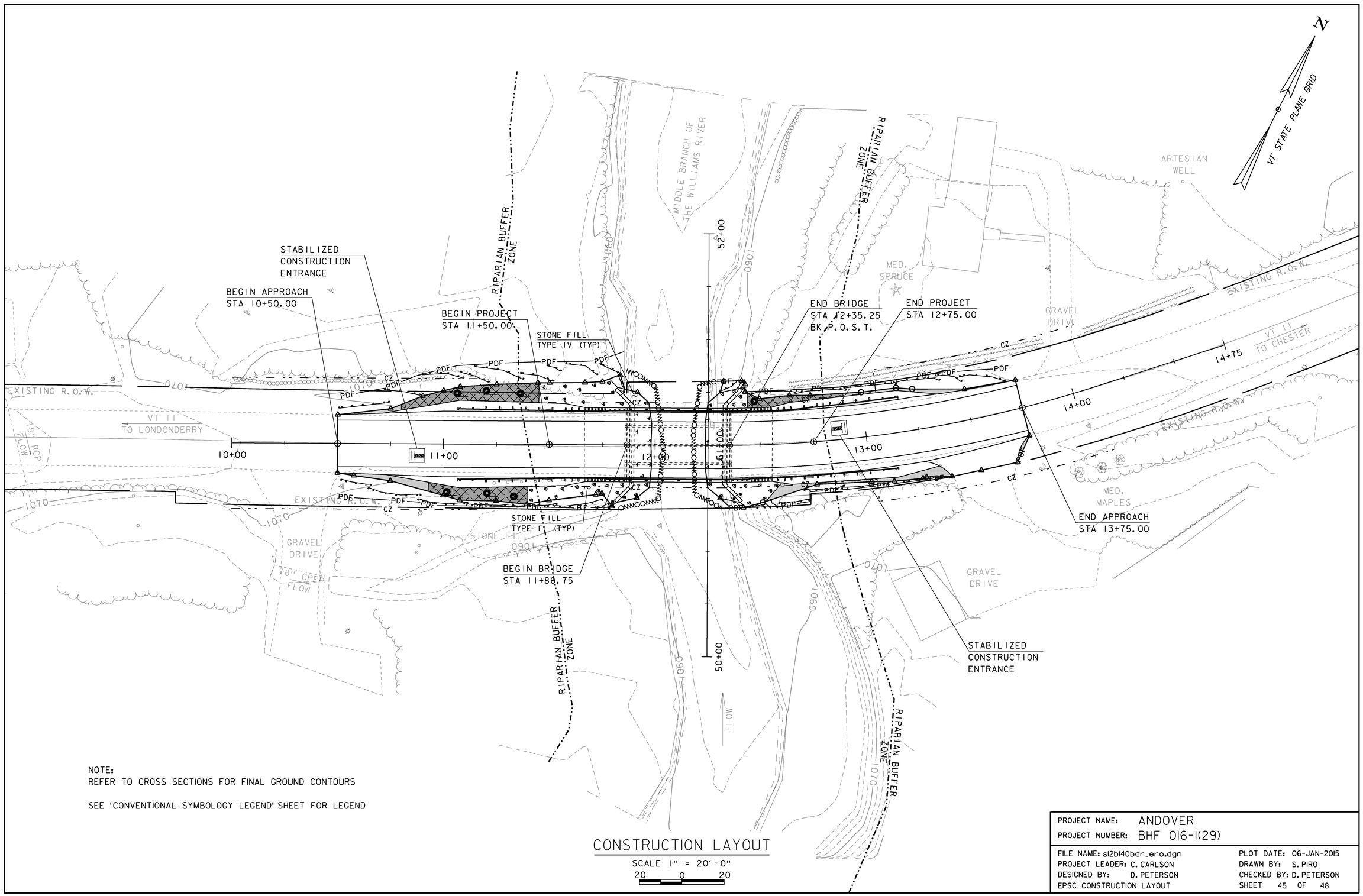
120
110
100
90
80
70
60
50
40
30
20
10
0

EXISTING LAYOUT

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

PROJECT NAME: ANDOVER	
PROJECT NUMBER: BHF 016-1(29)	
FILE NAME: sl2bl40bdr_ero.dgn	PLOT DATE: 06-JAN-2015
PROJECT LEADER: C. CARLSON	DRAWN BY: S. PIRO
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
EPSC EXISTING LAYOUT	SHEET 44 OF 48



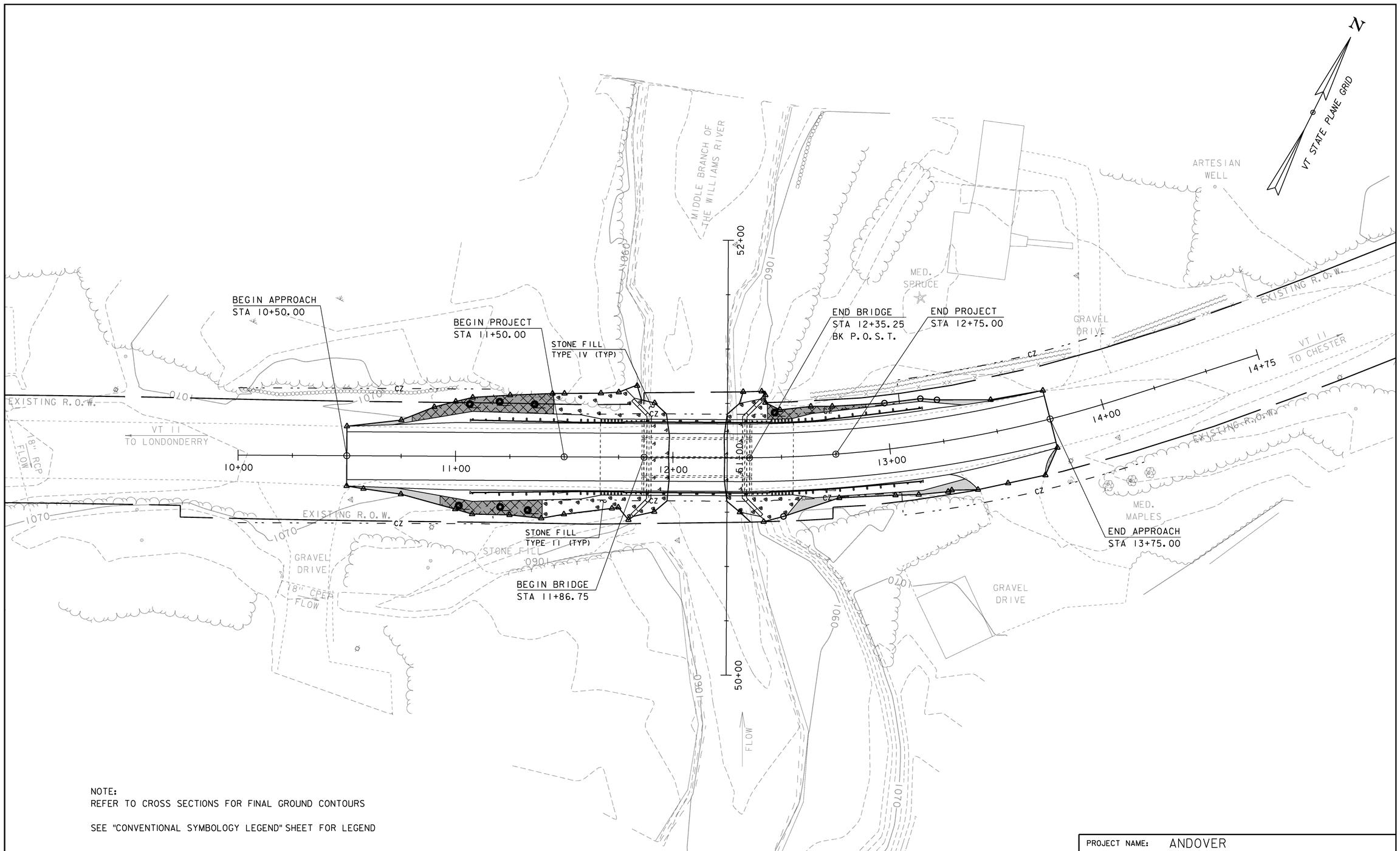
NOTE:
REFER TO CROSS SECTIONS FOR FINAL GROUND CONTOURS

SEE "CONVENTIONAL SYMBOLOGY LEGEND" SHEET FOR LEGEND

CONSTRUCTION LAYOUT

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

PROJECT NAME:	ANDOVER
PROJECT NUMBER:	BHF 016-1(29)
FILE NAME: sl2bl40bdr_ero.dgn	PLOT DATE: 06-JAN-2015
PROJECT LEADER: C. CARLSON	DRAWN BY: S. PIRO
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
EPSC CONSTRUCTION LAYOUT	SHEET 45 OF 48



NOTE:
REFER TO CROSS SECTIONS FOR FINAL GROUND CONTOURS

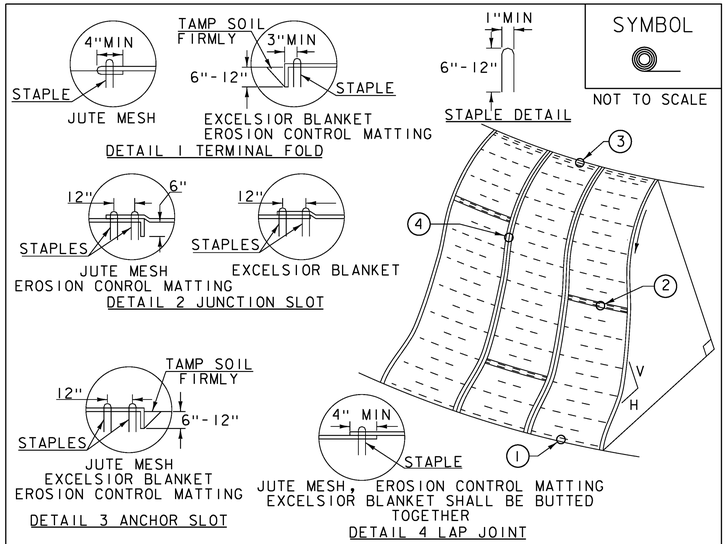
SEE "CONVENTIONAL SYMBOLOGY LEGEND" SHEET FOR LEGEND

FINAL LAYOUT

SCALE 1" = 20'-0"

20 0 20

PROJECT NAME:	ANDOVER
PROJECT NUMBER:	BHF 016-1(29)
FILE NAME: sl2bl40bdr_ero.dgn	PLOT DATE: 06-JAN-2015
PROJECT LEADER: C. CARLSON	DRAWN BY: S. PIRO
DESIGNED BY: D. PETERSON	CHECKED BY: D. PETERSON
EPSC FINAL LAYOUT	SHEET 46 OF 48



SYMBOL

NOT TO SCALE

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

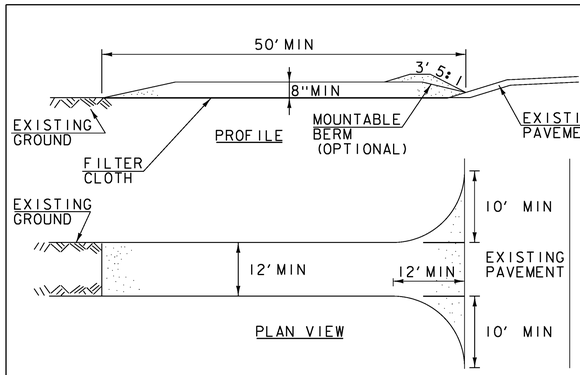
1. RURAL SEED MIX: USE AS INDICATED IN THE PLANS AND/OR FOR ALL ESTABLISHED UPLAND (NON WETLAND) AREAS DISTURBED BY THE CONTRACTOR.
2. URBAN SEED MIX: USE AS INDICATED IN THE PLANS AND/OR FOR ALL ESTABLISHED LAWN AREAS DISTURBED BY THE CONTRACTOR.
3. ALL SEED MIXTURES: SHALL NOT HAVE A WEED CONTENT EXCEEDING 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

THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 651 ~~FOR SEED (PAY ITEM 651.15)~~

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

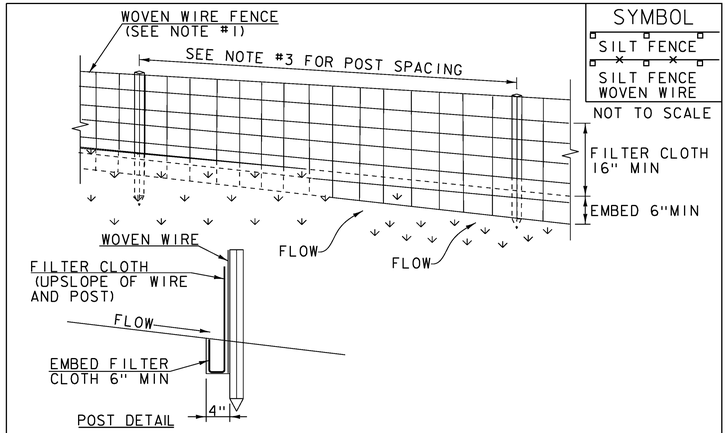
THIS WORK SHALL BE PERFORMED IN ACCORDANCE WITH SECTION 653 FOR VEHICLE TRACKING PAD (PAY ITEM 653.35) OR AS SPECIFIED IN THE CONTRACT.

REVISIONS	
MARCH 24, 2008	WHF
JANUARY 13, 2009	WHF

PROJECT NAME: ANDOVER
PROJECT NUMBER: BHF 016-1(29)

FILE NAME: sl2bl40ero_det.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: D. PETERSON
EPSC DETAIL 1

PLOT DATE: 06-JAN-2015
DRAWN BY: S. PIRO
CHECKED BY: D. PETERSON
SHEET 47 OF 48



SYMBOL

SILT FENCE

SILT FENCE WOVEN WIRE

NOT TO SCALE

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.

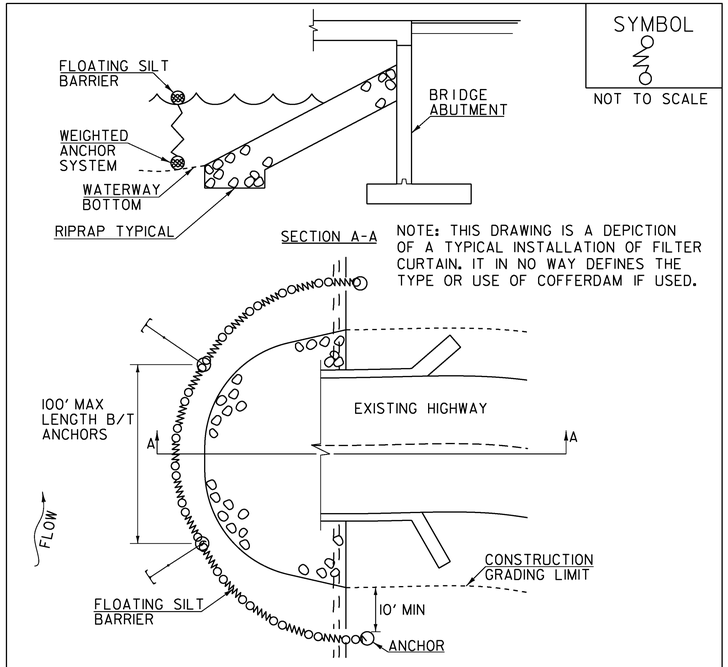
ADAPTED FROM DETAILS PROVIDED BY: NEW YORK STATE DEC
ORIGINALLY DEVELOPED BY USDA-NRCS
VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION

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



SYMBOL

NOT TO SCALE

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.

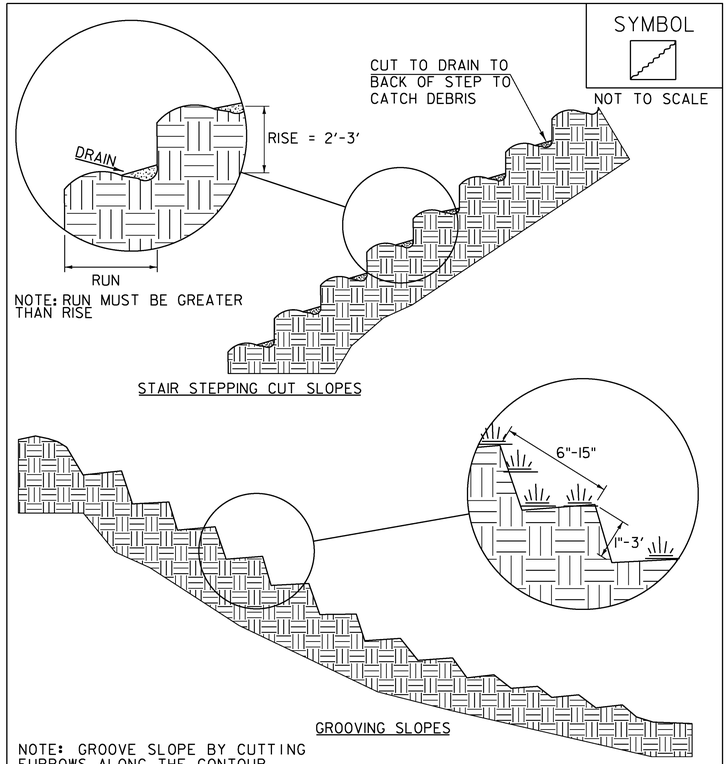
CONSTRUCTION SPECIFICATIONS

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

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

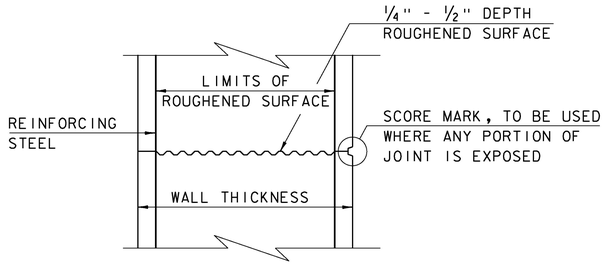
PROJECT NAME: ANDOVER
PROJECT NUMBER: BHF 016-1(29)

FILE NAME: sl2bl40ero_det.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: D. PETERSON
EPSC DETAIL 2

PLOT DATE: 06-JAN-2015
DRAWN BY: S. PIRO
CHECKED BY: D. PETERSON
SHEET 48 OF 48

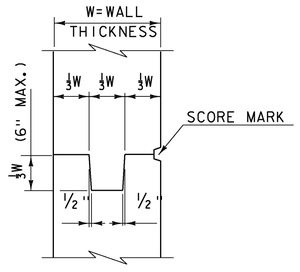
CONCRETE GENERAL NOTES

1. ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 1" x 1"
2. REINFORCING STEEL SIZE AND SPACING SHOWN IN THE PLANS IS BASED ON 60 KSI STEEL, UNLESS NOTED OTHERWISE. WITH THE ENGINEER'S PERMISSION, BAR SIZE AND SPACING MAY BE MODIFIED ACCORDING TO THE LATEST AASHTO LRFD BRIDGE DESIGN SPECIFICATION AND STRUCTURES DESIGN MANUAL WHEN USING HIGHER STRENGTH STEEL.

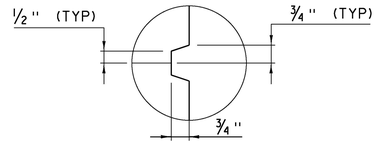


TYPICAL HORIZONTAL CONSTRUCTION JOINT
(NOT TO SCALE)

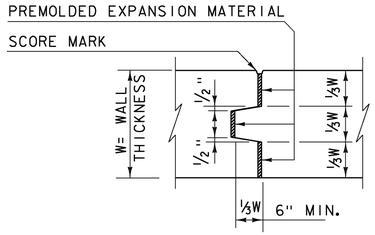
1. THE SURFACE OF THE CONCRETE CONSTRUCTION JOINTS SHALL BE CLEANED AND FREE OF LAITANCE.
2. IMMEDIATELY BEFORE NEW CONCRETE IS PLACED, ALL CONSTRUCTION JOINTS SHALL BE WETTED AND STANDING WATER REMOVED.



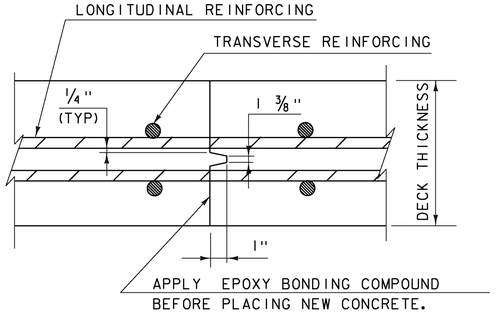
TYPICAL CONCRETE CONSTRUCTION JOINT
(NOT TO SCALE)



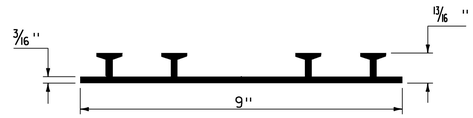
SCORE MARK DETAIL
(NOT TO SCALE)



TYPICAL CONCRETE EXPANSION JOINT
(NOT TO SCALE)



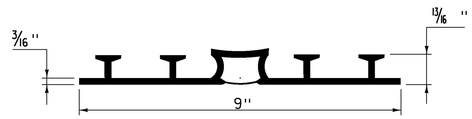
TRANSVERSE BRIDGE SLAB CONSTRUCTION JOINT DETAILS
(NOT TO SCALE)



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.

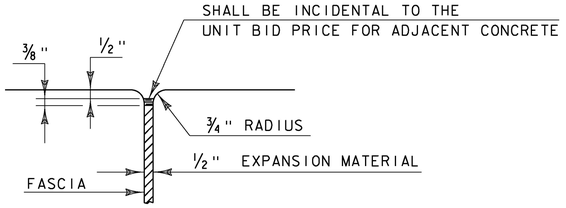
OTHER CONFIGURATIONS OF WATERSTOP MAY BE USED UPON APPROVAL OF THE ENGINEER.



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.



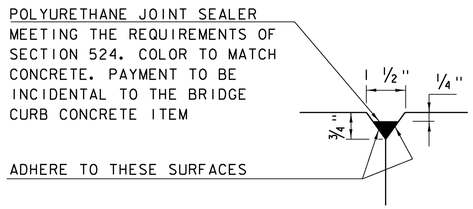
JOINT BETWEEN FASCIA AND WINGWALL
(NOT TO SCALE)

REVISIONS	
MAY 7, 2010	APPROVED FOR USE BY VAOT STRUCTURES SECTION
FEBRUARY 9, 2012	REBAR SUBSTITUTION ALLOWANCE ADDED TO CONCRETE GENERAL NOTES.

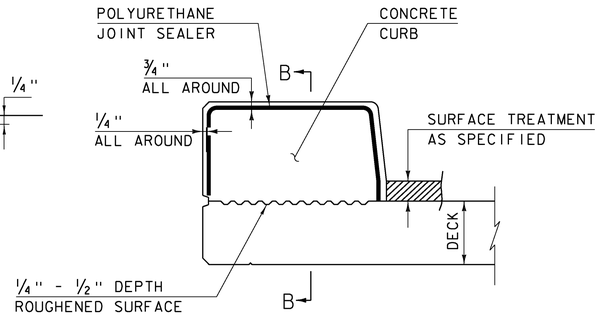
CONCRETE DETAILS AND NOTES

VERMONT AGENCY OF TRANSPORTATION
STRUCTURES - SECTION

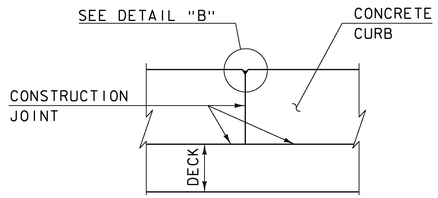
STRUCTURES DETAIL
SD-501.00



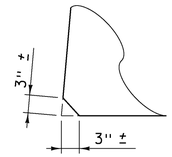
DETAIL "B"
(NOT TO SCALE)



CONCRETE CURB JOINT SECTION
(NOT TO SCALE)

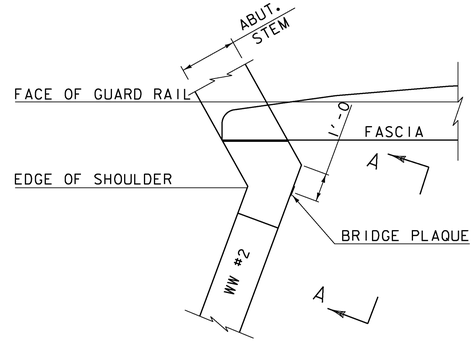


SECTION B - B
(NOT TO SCALE)



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.

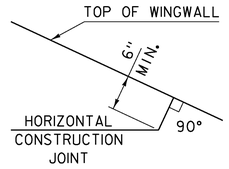
2. IF THE CONTRACTOR CHOOSES NOT TO USE AN APPROVED SHRINKAGE REDUCING ADMIXTURE, THE CURBS SHALL BE CONSTRUCTED WITH CONSTRUCTION JOINTS SPACED AT A MAXIMUM OF 15'-0" CENTER TO CENTER AND 2'-0" MINIMUM FROM THE CENTER OF NEAREST BRIDGE RAILING POST.

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.

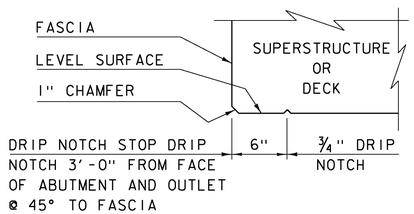
4. WHEN CURB JOINTS ARE USED THE CURBS SHALL BE PLACED IN ALTERNATE SECTIONS WITH A MINIMUM OF 48 HOUR DELAY BETWEEN ADJACENT PLACEMENTS.

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.

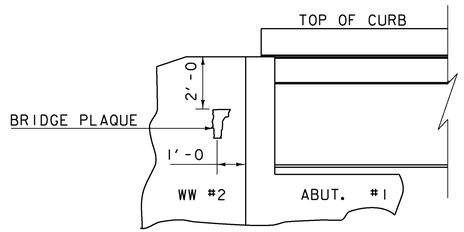
6. THE JOINT SPACING AND DETAILS SHOWN SHALL APPLY TO SIDEWALKS WHEN SHOWN IN THE PLANS.



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.

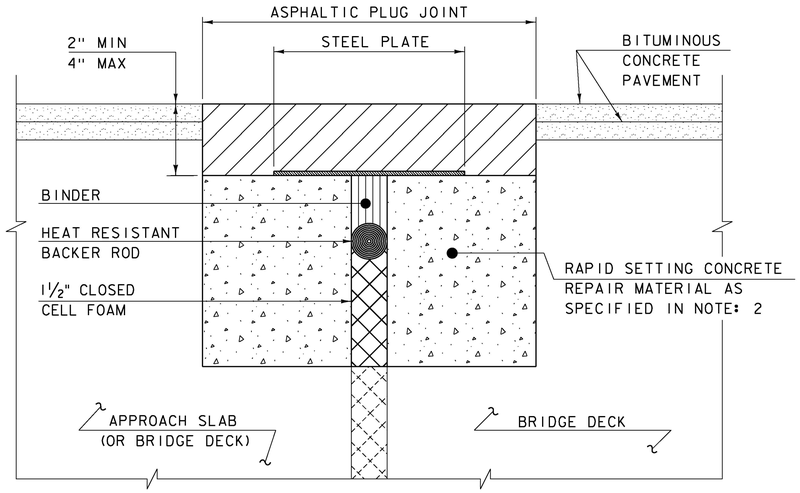
PAYMENT FOR INSTALLATION OF THE BRIDGE PLAQUE SHALL BE INCIDENTAL TO THE ADJACENT CONCRETE.

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



ASPHALTIC PLUG JOINT DETAIL - REHAB

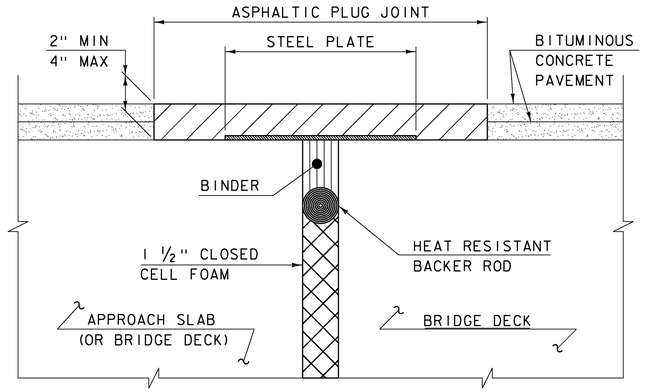
NOTES:

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 COARSE AGGREGATE.

2. THE CONTRACTOR SHALL REPLACE REMOVED MATERIAL THAT IS LESS THAN 4" FROM FINISHED GRADE WITH ASPHALTIC PLUG JOINT MATERIAL MEETING THE REQUIREMENTS OF SUBSECTION 707.15. ALL REMOVED MATERIAL THAT IS GREATER THAN 4 INCHES FROM FINISHED GRADE SHALL BE REPLACED WITH RAPID SETTING CONCRETE REPAIR MATERIAL WITH COARSE AGGREGATE MEETING THE REQUIREMENTS OF SUBSECTION 780.04.

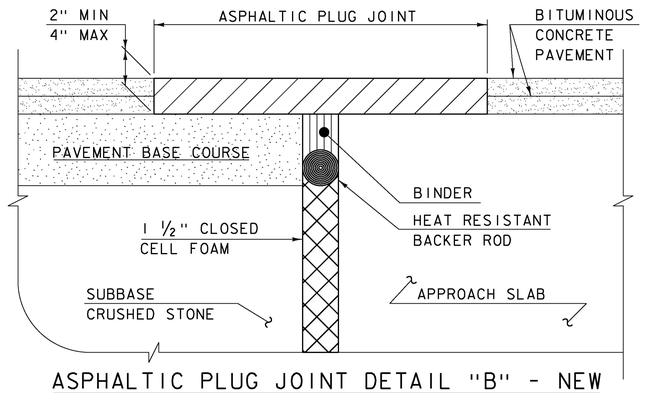
3. REINFORCING STEEL NOT SHOWN FOR CLARITY.

4. 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.



ASPHALTIC PLUG JOINT DETAIL "A" - NEW

NOTE:
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.



ASPHALTIC PLUG JOINT DETAIL "B" - NEW

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. PLACE PROPERLY SIZED HEAT RESISTANT BACKER ROD IN THE MOVEMENT GAP ALLOWING FOR 1" +/- OF BINDER ABOVE THE ROD.
5. HEAT AND PLACE THE BINDER MATERIAL AS RECOMMENDED BY THE MANUFACTURER.
6. IMMEDIATELY AFTER TOP COATING, CAST AN ANTI-SKID MATERIAL OVER THE JOINT TO REDUCE THE RISK OF TRACKING.

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.

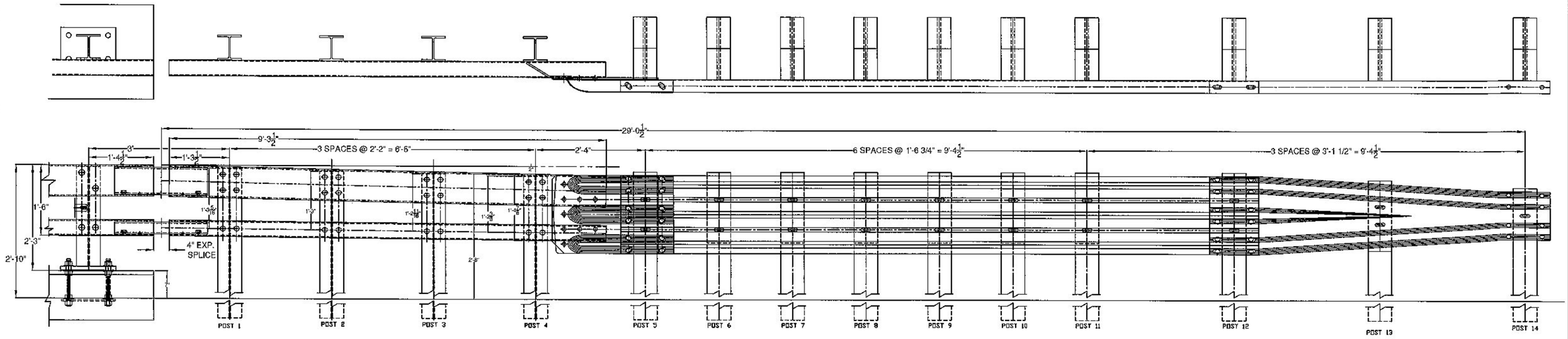
DETAILS ON THIS SHEET ARE NOT TO SCALE.

REVISIONS	
MAY 7, 2010	APPROVED FOR USE BY VAOT STRUCTURES SECTION
AUGUST 29, 2011	ADD DETAIL "B" AND REV. NOTES

BRIDGE JOINT
ASPHALTIC PLUG

VERMONT AGENCY OF TRANSPORTATION
STRUCTURES - DIVISION

STRUCTURES DETAIL
SD-516.10

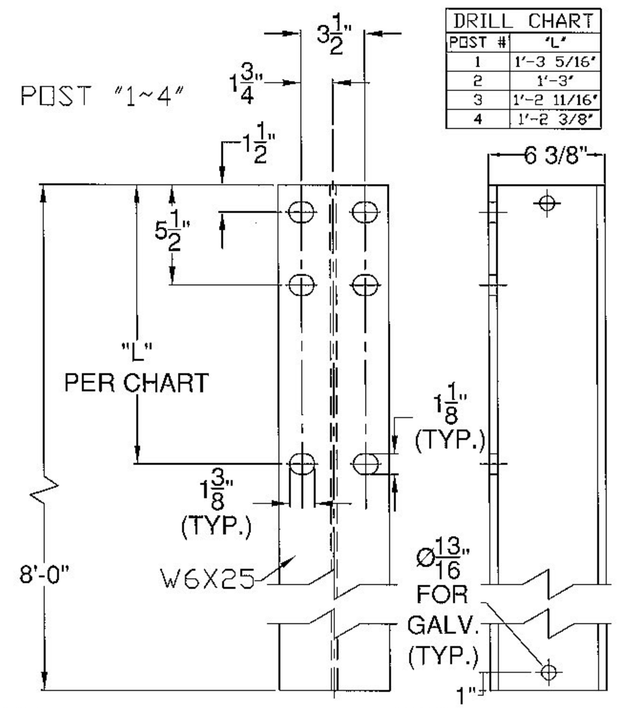


HARDWARE APPLICATION

	QTY	DESCRIPTION	APPLICATION
A	8	ø 5/8" X 2" HEX BOLTS	USED IN SPLICE TUBES
B	8	ø 5/8" FLAT WASHER, HARDENED, TYPE A, PLAIN WIDE	FOR SPLICE TUBES,
C	7	ø 3/4" X 6" CARRIAGE BOLT, & NUT	TERM. CONN, & CONN. PLATE TO RAIL
D	1	ø 3/4" X 2" CARRIAGE BOLT, & NUT	DEFLECTOR PLATE TO CONN. PLATE
E	19	ø 5/8" X 1'-6" GUARDRAIL POST BOLT, F.W. & NUT	THRIE BEAM, TO OFFSET BLOCK, & 6x8" WOOD POST
F	32	ø 5/8" X 1 1/4" BUTTON HEAD SPLICE BOLT, RECESSED NUT & F.W.	FASTEN PANEL COMPONENTS TOGETHER, (THRIE, TERMINAL CONNECTOR, TRANSITION SECTION)
G	19	3/16" PLATE WASHER @ 1 3/4" X 3"	USED IN PANEL VALLEY, W/ 18" BOLT
H	16	ø 3/4" X 6" SLOTTED ROUND HEAD BOLT, FL. WASHER, & LOCK NUT	FASTEN 4X4 & 4X8 RAIL TO RAIL POST 1~4

BILL OF MATERIAL (621.72) PER EACH CORNER

	QTY	PART #	DESCRIPTION	ASTM DESIGNATION
	1	5143.90056	THRIE BEAM TERMINAL CONNECTION (10 Ga)	AASHTO M180
	1	6029.01133	THRIE BEAM TRANSITION @ 7'-3 1/2" (10 Ga)	AASHTO M180
	1	0033.90349	3/8" CONNECTION PLATE	A709 Gr.36
	2	5029.00016	12' 6" THRIE BEAM (12Ga)	AASHTO M180
	1	0033.90058	W6X25 POST @ 8'-0" (POST 1)	A572 Gr. 50
	1	0033.90059	W6X25 POST @ 8'-0" (POST 2)	A572 Gr. 50
	1	0033.90060	W6X25 POST @ 8'-0" (POST 3)	A572 Gr. 50
	1	0033.90061	W6X25 POST @ 8'-0" (POST 4)	A572 Gr. 50
	1	0033.90350	DEFLECTOR PLATE (APPROACH / RIGHT)	A36
	1	0033.90351	DEFLECTOR PLATE (TRAILING / LEFT)	A36
	1	0033.91146	8" X 4" X 5/16" RAIL @ 9'-3 1/2"	A500 Gr. B
	1	0033.91145	4" X 4" X 1/4" RAIL @ 9'-3 1/2"	A500 Gr. B
	1	0033.90056	8" X 4" X 3/16" END CAP	A36
	1	0033.90057	4" X 4" X 3/16" END CAP	A36
	1	0033.90352	3" x 3" x 5/16" EXP. SPLICE TUBE @ 1' 11 3/4"	A500 Gr. B
	1	0033.90353	7" x 3" x 3/8" EXP. SPLICE TUBE @ 1' 11 3/4"	A500 Gr. B
	8	0033.90053	ø 3/4" SCH. 40 PIPE @ 1/2"	A53
A	8	0080.05045	ø 5/8" X 2" HEX BOLTS	A307
B	8	0080.15910	ø 5/8" FLAT WASHER, HARDENED, TYPE A, PLAIN WIDE	A307
C	7	0080.06300	ø 3/4" X 6" CARRIAGE BOLT, & NUT	A307
D	1	0080.06081	ø 3/4" X 2" CARRIAGE BOLT, & NUT	A307
E	19	T.B.D.	ø 5/8" X 1'-6" GUARDRAIL POST BOLT, F.W. & NUT	A307
F	32	T.B.D.	ø 5/8" X 1 1/4" BUTTON HEAD SPLICE BOLT, RECESSED NUT & F.W.	A307
G	19	0080.15913	3/16" PLATE WASHER @ 1 3/4" X 3"	A709
H	16	0080.06290	ø 3/4" X 6" SLOTTED, ROUND HEAD BOLT, F.W., & LOCKNUT	A449, F436, & A563
	8	0009.00070	6 X 8" WOOD POST @ 7'-0" (POST 5~12)	WOOD
	1	0009.00071	6 X 8" WOOD POST @ 7'-0" (POST 13)	WOOD
	1	0009.00072	6 X 8" WOOD POST @ 7'-0" (POST 14)	WOOD
	8	0009.00180	6 X 8" WOOD BLOCKOUTS @ 1'-6" (FOR POST 5~12)	WOOD
	8	0009.00123	6 X 8" WOOD BLOCKOUTS @ 1'-6" (FOR POST 13)	WOOD
	1	0009.00122	6 X 8" WOOD BLOCKOUTS @ 1'-2" (FOR POST 14)	WOOD



DRILL CHART	
POST #	'L'
1	1'-3 5/16"
2	1'-3"
3	1'-2 11/16"
4	1'-2 3/8"

NOTE: THE EAST END OF THE BRIDGE HAS A 575' RADIUS. THIS CAN BE ACCOMPLISHED WITH THE PLAY IN THE APPROACH RAIL SPLICES AND THE FLEXIBILITY OF THE THRIE BEAM IN THE FIELD.

Vermont Agency of Transportation
RECEIVED
CK'D BY D. PETERSON OK'D BY C. CARLSON
June 18, 2015
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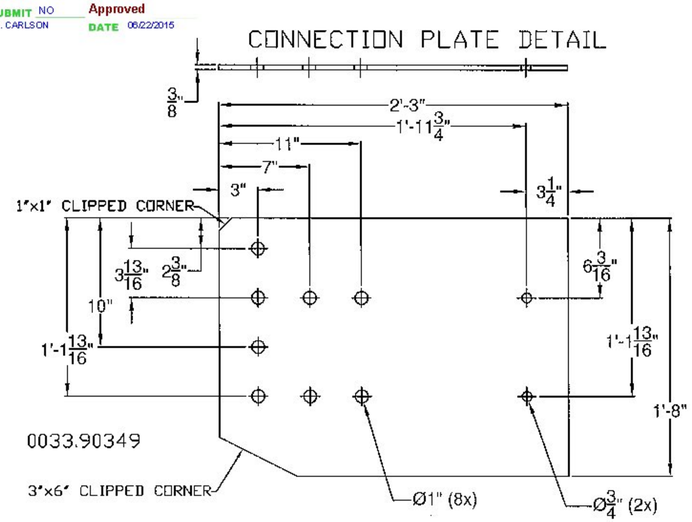
BY C. CARLSON DATE 06/22/2015



ITEM #: 621.72

STRUCTURAL STEEL TO COMPLY W/ ASTM A6

GALAVANIZING TO BE PER ASTM A123, UNLESS OTHERWISE SPECIFIED.

TOLERANCE UNLESS OTHERWISE NOTED:
HOLES - ± 1/32"
FRACTIONS - ± 1/16"
ANGLES - ± 1/2°

SHEET 1 OF 3

2 RAIL BRIDGE RAIL TO GUARDRAIL TRANSITION

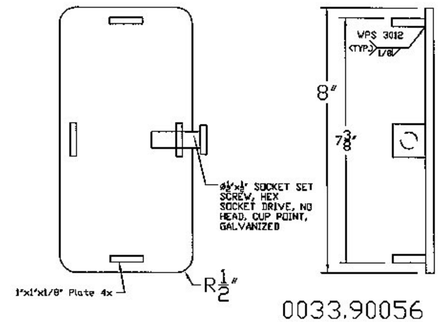
PROJECT: ANDOVER BHF 016-1 (29) VT RTE11, RURAL MINOR ARTERIAL, BRIDGE NO. 41
TOWN OF ANDOVER, WINDSOR COUNTY, VERMONT

R	NO.	DATE	DESCRIPTION	BY
E	1	5/28/15	REVISED PER 5/18/15 MARK-UP	E.P.
V	2	5/29/15	REVISED PER 5/29/15 EMAIL	E.P.
E	3	6/1/15	REVISED PER 6/1/15 MARK-UP	E.P.

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

NSBA CERTIFIED FABRICATOR
ORTHOGRAPHIC PROJECTION

DRAWN	E.P.	5/14/15
CHECKED	D.L.	5/14/15
APPROVED		
SCALE	SCHEMATIC	
DRAWING NO.	F.R.L. ANDOVER	



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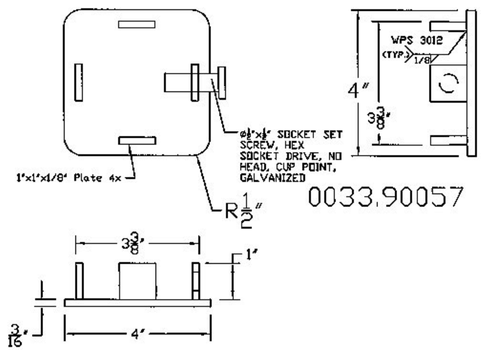

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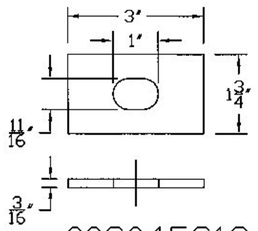
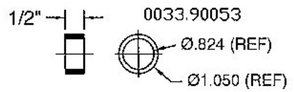
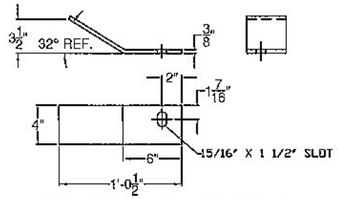


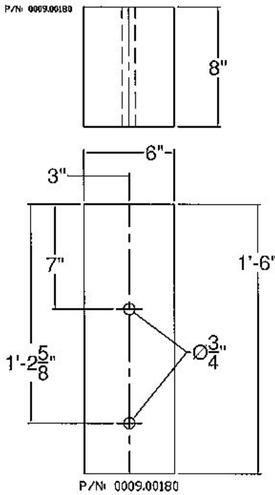
0080.15913
PLATE WASHER



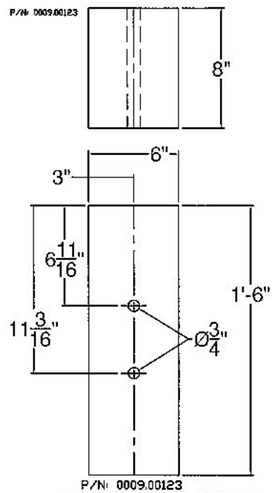
3/4" SCH. 40 PIPE SPACER



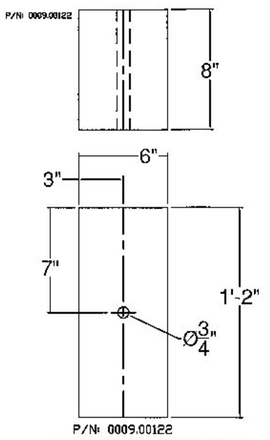
DEFLECTOR PLATE DETAIL
0033.90350 - APPROACH SHOWN
0033.90351 - TRAILING-OPPOSITE BEND



WOOD BLOCKOUT
FOR POST 5~12



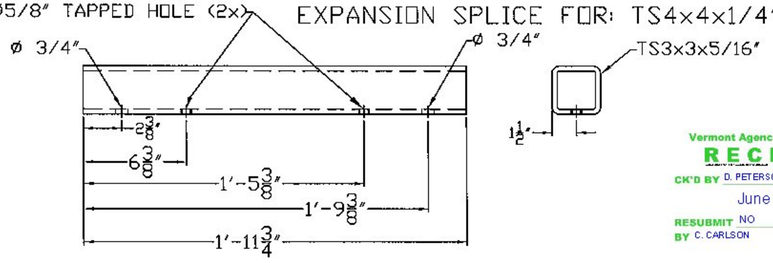
WOOD BLOCKOUT
FOR POST 13

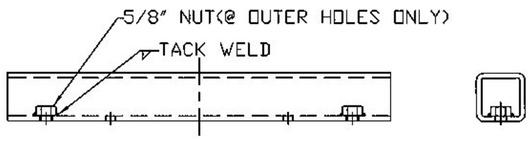


WOOD BLOCKOUT
FOR POST 14

ø5/8" TAPPED HOLE (2x)

EXPANSION SPLICE FOR: TS4x4x1/4"





0033.90352

Vermont Agency of Transportation
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CK'D BY D. PETERSON CK'D BY C. CARLSON
June 18, 2015
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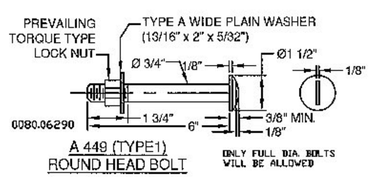
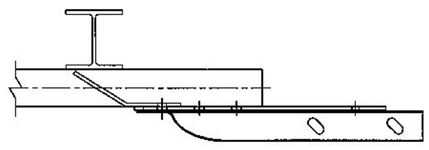
BY C. CARLSON DATE 06/22/2015



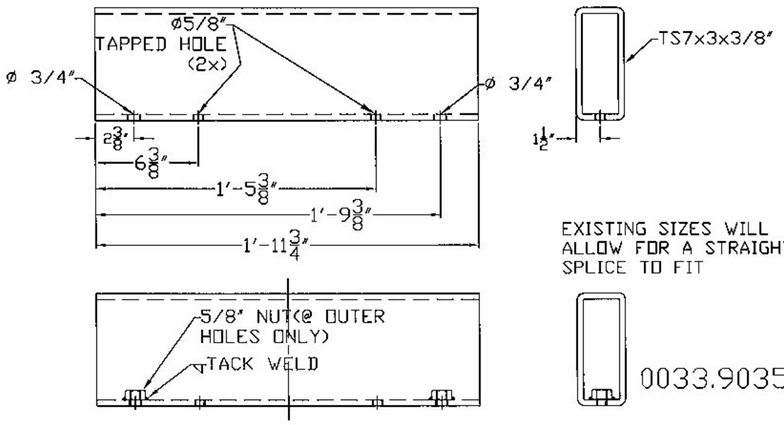
A 449 (TYPE1)
ROUND HEAD BOLT

ONLY FULL DIA. BOLTS WILL BE ALLOWED



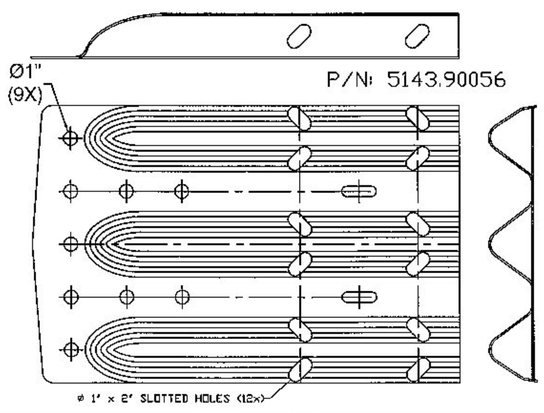
TOP VIEW OF DEFLECTOR IN POSITION
(TOP RAIL REMOVED FOR CLARITY)

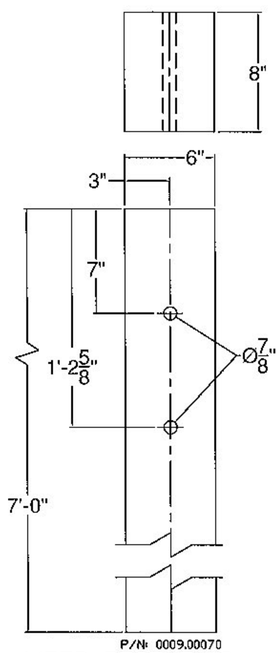
EXPANSION SPLICE FOR: TS8x4x5/16"



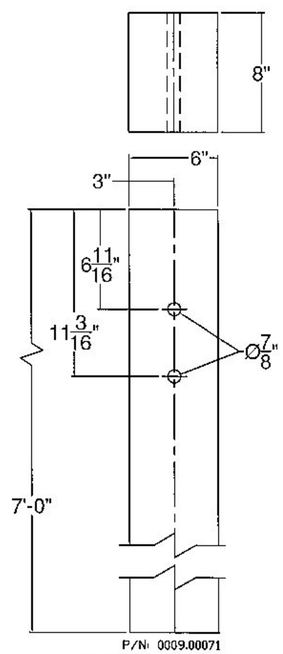
EXISTING SIZES WILL ALLOW FOR A STRAIGHT SPLICE TO FIT

0033.90353

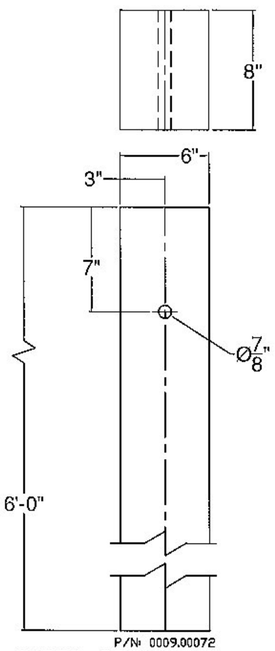




WOOD POST 5~12



WOOD POST 13



WOOD POST 14

ITEM #: 621.72

SHEET 2 OF 3

APPROVED BY:

2 RAIL BRIDGE RAIL TO GUARDRAIL TRANSITION

PROJECT: ANDOVER BHF 016-1 (29) VT RTE11, RURAL MINOR ARTERIAL, BRIDGE NO. 41
TOWN OF ANDOVER, WINDSOR COUNTY, VERMONT

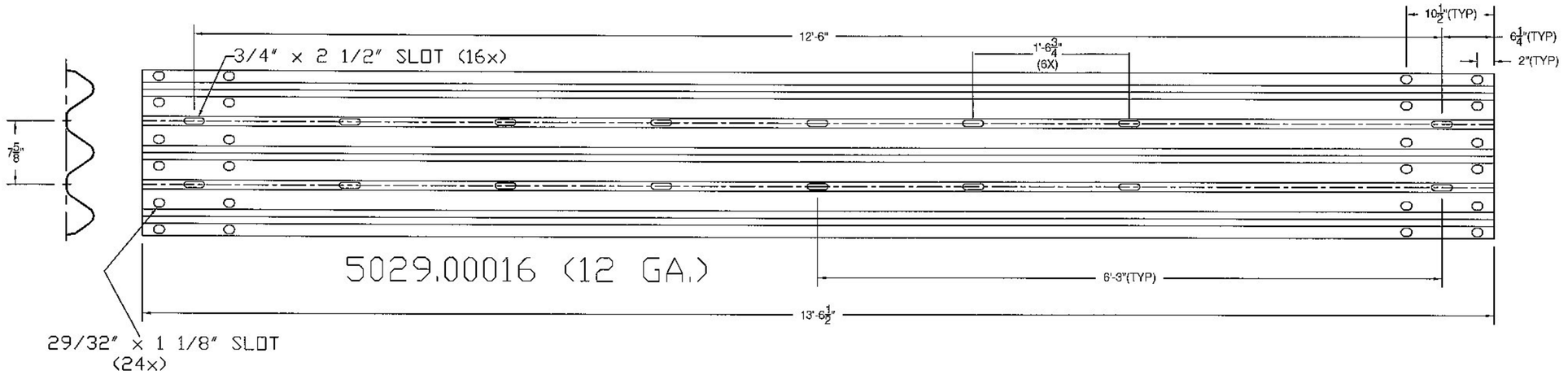
R	NO.	DATE	DESCRIPTION	BY
E	1	5/28/15	REVISED PER 5/18/15 MARK-UP	E.P.
V	2	5/29/15	REVISED PER 5/29/15 EMAIL	E.P.

R	NO.	DATE	DESCRIPTION	BY
E	3	6/1/15	REVISED PER 6/1/15 MARK-UP	E.P.
V				

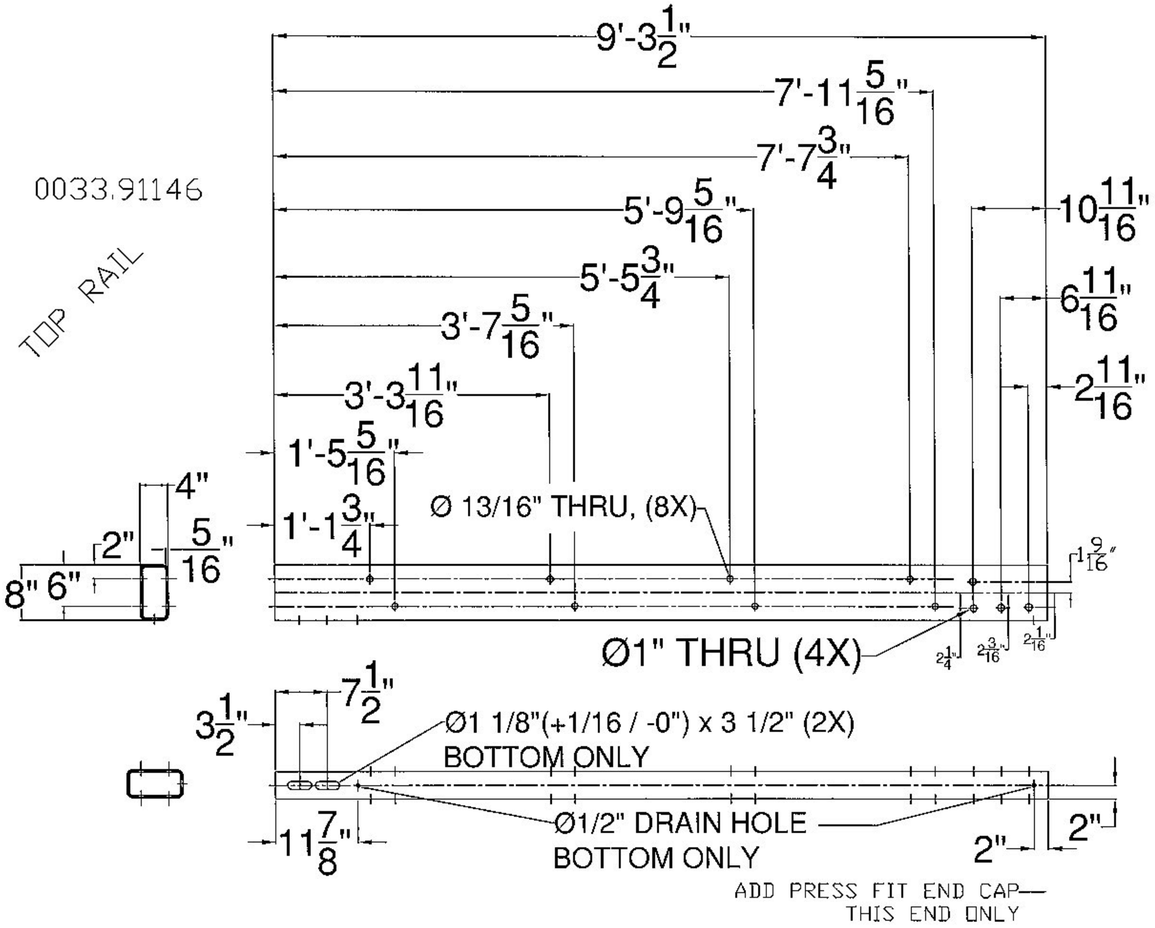
ELDERLEE, INC.
OAKS CORNERS, NEW YORK 14518
E-Mail: dlong@elderlee.com
Tel: 315-789-6670 Fax: 315-789-6615

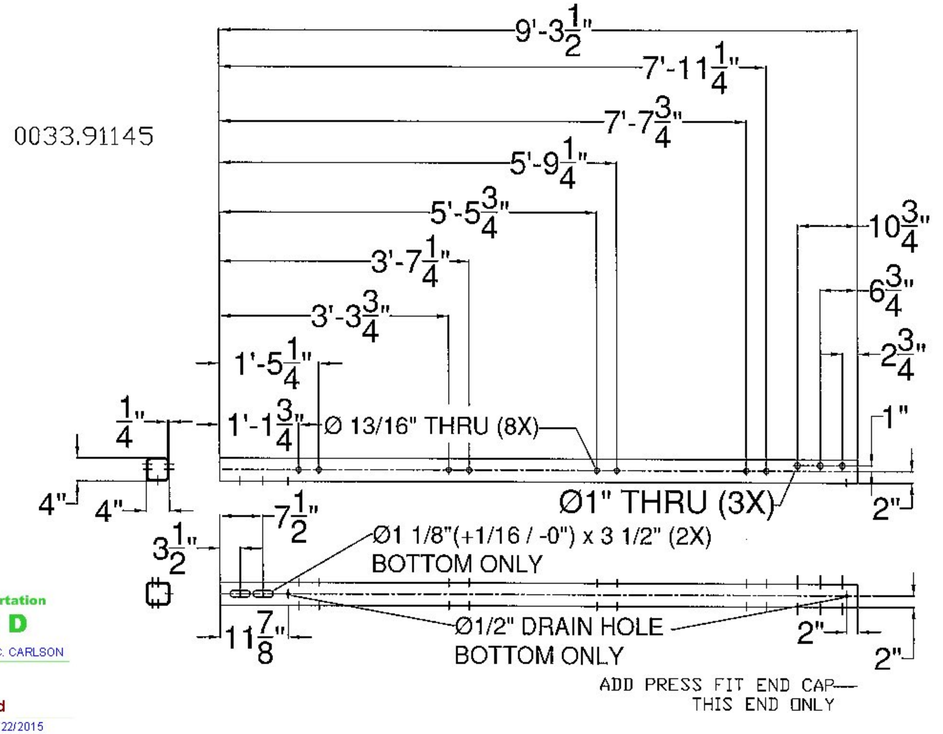
CERTIFIED FABRICATOR

DRAWN	E.P.	5/14/15
CHECKED	D.L.	5/14/15
APPROVED		
SCALE	SCHEMATIC	
DRAWING NO.	F.R.L. ANDOVER	



NOTES
1. ALL WORK AND MATERIALS SHALL CONFORM TO SECTION 525.
2. PRIOR TO GALVANIZING THE ASSEMBLED POST, GRIND ALL EDGES TO A MINIMUM
RADIUS OF 1/16".
3. ALL POSTS SHALL BE SET NORMAL TO GRADE.
4. SECTIONS OF RAIL TUBE SHALL BE ATTACHED TO A MINIMUM OF TWO BRIDGE RAIL
POSTS AND PREFERABLY TO AT LEAST FOUR POSTS.
5. RAIL TUBE EXPANSION JOINTS SHALL PROVIDED IN ANY RAIL BAY SPANNING THE
END OF AN INTEGRAL ABUTMENT BRIDGE AND AT ALL SUPERSTRUCTURE EXPANSION
JOINTS. EXPANSION JOINT WIDTH SHALL BE 4" AT 45°F AND WILL BE ADJUSTED
IN THE FIELD BY THE ENGINEER FOR OTHER TEMPERATURES.
6. HOLES IN RAILS FOR RAIL TUBE ATTACHMENT WILL BE FIELD-DRILLED. HOLES
SHALL BE COATED WITH AN APPROVED ZINC-RICH PAINT PRIOR TO INSTALLATION.
7. RAIL POST ANCHORING NUTS SHALL BE TIGHTENED TO A SNUG FIT AND GIVEN AN
ADDITIONAL ONE-EIGHTH TURN.
8. RAIL TUBES SHALL BE ATTACHED USING 3/4" FULL DIAMETER BODY ASTM A 449
(TYPE 1) ROUND HEAD BOLTS INSERTED THROUGH THE FACE OF THE TUBE. HOLES
IN POSTS SHALL BE 1/16" LARGER THAN THE BOLT SIZE.
9. ANY BENDING OF RAIL SHALL BE DONE AT A FABRICATION PLANT ACCORDING TO
A PROCEDURE PROVIDED BY THE FABRICATOR.
10. THE MINIMUM DISTANCE FROM THE POST TO AN EXPANSION JOINT SHALL BE
DETERMINED BY THE MINIMUM EDGE DISTANCE OF 5" FROM ANY ANCHOR STUD
TO THE END OF THE SLAB, OR TO THE EXPANSION JOINT RECESS POUR, IF ONE IS USED.
11. SEE STANDARD DRAWING G-1 FOR DETAILS OF DELINEATORS. A DELINEATOR
SHALL BE INSTALLED AT 30 FOOT SPACING OR THE NEAREST POST. WHITE IS TO BE INSTALLED ON THE DRIVER'S RIGHT. FOR ONE WAY BRIDGES, YELLOW
IS TO BE INSTALLED ON THE DRIVER'S LEFT. PAYMENT SHALL BE INCIDENTAL
TO OTHER ITEMS.
12. THIS RAILING MEETS THE REQUIREMENTS FOR A TL-4 SERVICE LEVEL.





Vermont Agency of Transportation
RECEIVED
CK'D BY D. PETERSON OK'D BY C. CARLSON
June 18, 2015
RESUBMIT NO Approved
BY C. CARLSON DATE 06/22/2015

ITEM #: 621.72

SHEET 3 OF 3

APPROVED BY:

2 RAIL BRIDGE RAIL TO GUARDRAIL TRANSITION

PROJECT: ANDOVER BHF 016-1 (29) VT RTE11, RURAL MINOR ARTERIAL, BRIDGE NO. 41
TOWN OF ANDOVER, WINDSOR COUNTY, VERMONT

R	NO.	DATE	DESCRIPTION	BY
E	1	5/28/15	REVISED PER 5/18/15 MARK-UP	E.P.
V	2	5/29/15	REVISED PER 5/29/15 EMAIL	E.P.

R	NO.	DATE	DESCRIPTION	BY
E	3	6/1/15	REVISED PER 6/1/15 MARK-UP	E.P.
V				

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

CERTIFIED FABRICATOR

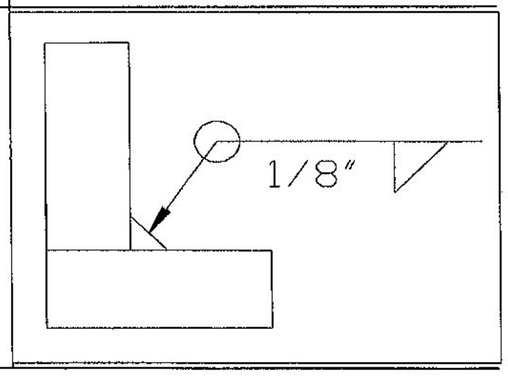
DRAWN	E.P.	5/14/15
CHECKED	D.L.	5/14/15
APPROVED		
SCALE	SCHEMATIC	
DRAWING NO.	P.H.L. ANDOVER	

WELDING PROCEDURE SPECIFICATION

PQR ELDERLEE #3

Material Specification	ASTM-A500-A53-GRADE B TO A36
Welding Process	FCAW-G
Manual or Machine	SEMAUTOMATIC
Position of Welding	1G
Filler Metal Specification	A5.29
Filler Metal Classification	E81T1-NI1C-JH4
Flux	N/A
Shielding Gas	CO 2 Dew Point -40DEG F FLOW RATE 50 CFH
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	310	25	11	
Variable	LIMITS	341 TO 269	27 TO 23	12 TO 10	

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

Procedure No. 3012
Revision No. _____

Contractor Elderlee, Inc.
Authorized By RANDY SCOTT
Date 3/20/2014

Vermont Agency of Transportation

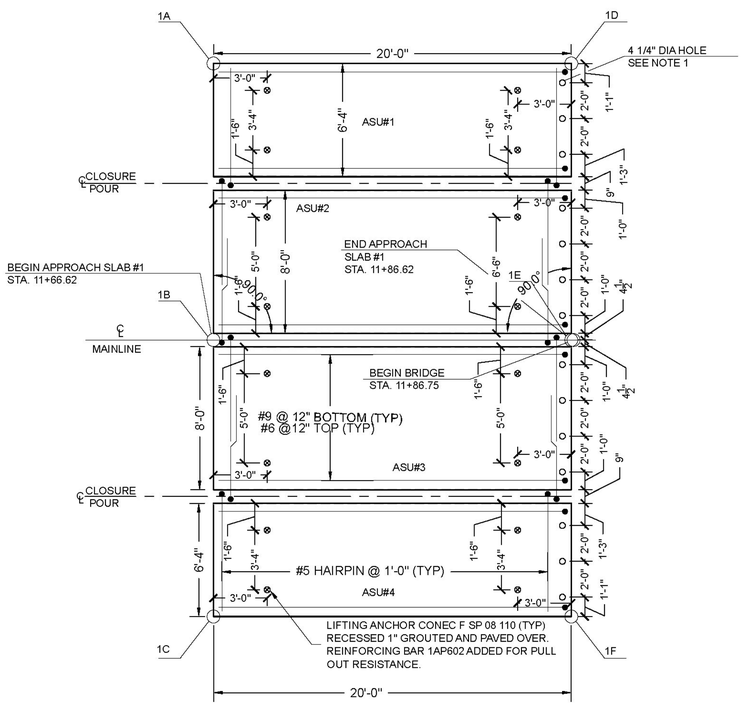
RECEIVED

CK'D BY R. FOSTER **OK'D BY** D. PETERSON

June 1, 2015

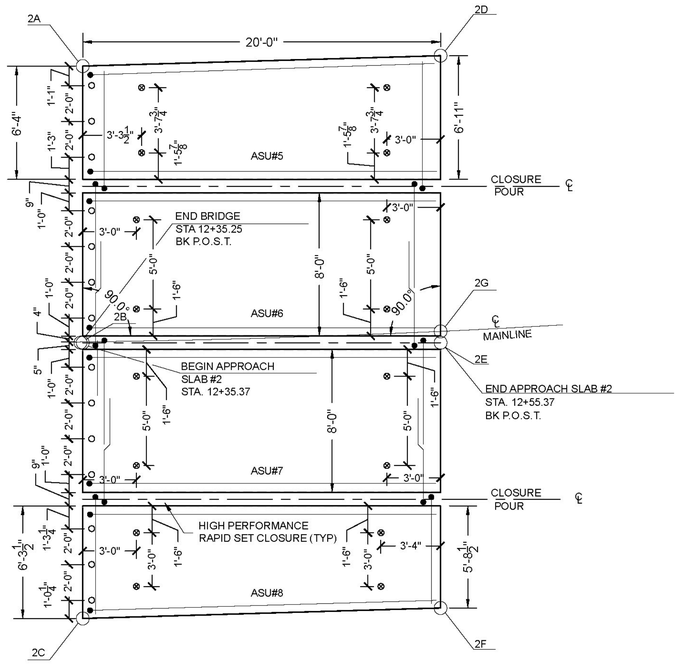
RESUBMIT NO **Approved**

BY C. CARLSON **DATE** 06/12/2015



APPROACH SLAB #1 PLAN VIEW

NTS



APPROACH SLAB #2 PLAN VIEW

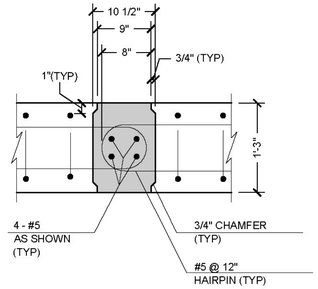
NTS

NOTE:
1. 4 1/4" DIA. HOLES FORMED WITH 4" PVC ARE PROVIDED IN THE APPROACH SLAB TO ALIGN TO THE #8 BARS DOWELS PROTRUDING FROM THE SLAB SEAT. THESE LOCATIONS HAVE BEEN COORDINATED WITH THE SOLID SLAB BRIDGE DECK FABRICATOR.

ASU = APPROACH SLAB UNIT

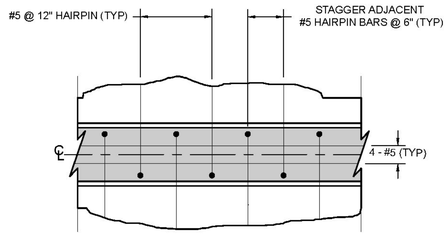
APPROACH SLAB WEIGHTS

ASU #1	24,000LBS
ASU #2	30,000LBS
ASU #3	30,000LBS
ASU #4	24,000LBS
ASU #5	25,000LBS
ASU #6	30,000LBS
ASU #7	30,000LBS
ASU #8	23,000LBS



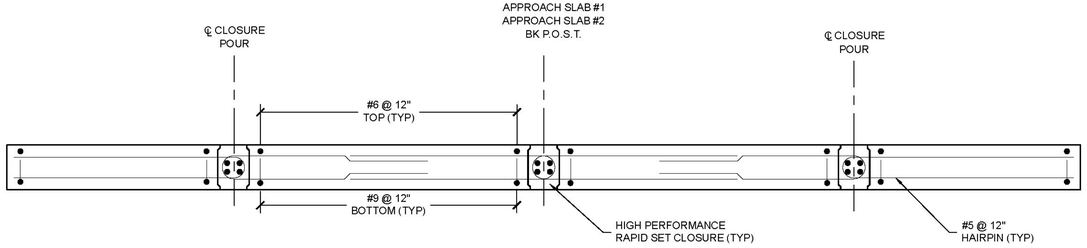
CLOSURE POUR DETAIL SECTION

NTS



CLOSURE POUR PLAN

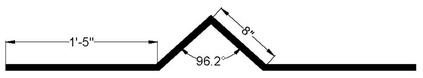
NTS

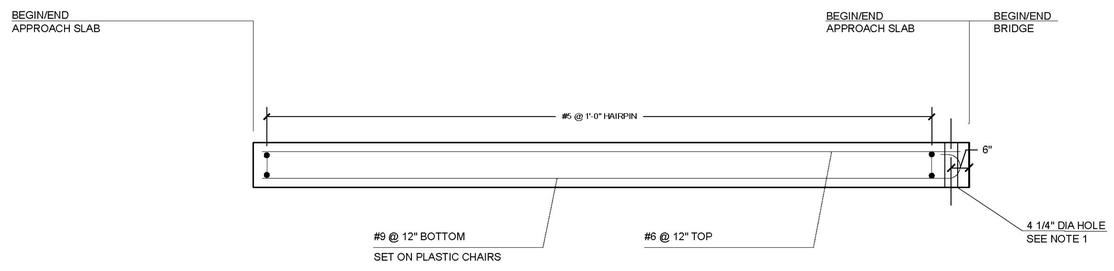


TYPICAL SECTION

NTS

1AP602 LIFTING DEVICE HOLD DOWN





APPROACH SLAB ELEVATION VIEW

NTS

STATE OF VERMONT
RONALD K. BELL
No. 6614
REGISTERED
PROFESSIONAL ENGINEER

NOTE:
NF = NEAR FACE
FF = FAR FACE
EF = EACH FACE
3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
2'-7" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

	STATION	OFFSET	ELEVATION
1A	11+66.62	-15.46	1069.10
1B	11+66.62	℄	1069.41
1C	11+66.62	15.46	1069.72
1D	11+86.62	-15.46	1068.83
1E	11+86.62	℄	1069.14
1F	11+86.62	15.46	1069.45
2A	12+35.57	-15.42	1068.16
2B	12+35.37	℄	1068.47
2C	12+35.19	15.46	1068.78
2D	12+56.13	-15.39	1067.88
2E	12+55.39	℄	1068.20
2F	12+54.68	15.45	1068.52
2G	12+55.37	0.63	1068.51

APPROACH SLAB ELEVATIONS

ALL ELEVATIONS ARE TOP OF SLAB

Vermont Agency of Transportation
RECEIVED
CK'D BY D.PETERSON OK'D BY C. CARLSON
June 9, 2015
RESUBMIT NO Approved
BY C. CARLSON DATE 06/11/2015

REV. NO.	DATE:
2	6/08/15
1	5/21/15

RENAUD BROS. INC.
283 FT. BRIDGEMAN RD. VERNON VT., 05354
PH. (802) 257-7383 FAX: (802) 257-7508

SHEET NAME: APPROACH SLAB PLANS
PROJECT NAME: ANDOVER
PROJECT NO: BHF 016-1 (29)
DRAWN BY: CE
CHK'D BY:
DATE: 05/08/2015
SHEET NO. 1 OF 6

ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O
	ASU #1																
	8	9	20'- 6"	1AP901	1	1'- 0"	19'- 6"					-- --		0'- 9"			
	8	6	19'- 6"	1AP601	STR	19'- 6"											
	4	6	4'- 2"	1AP602	4	-- --	1'- 5"	0'- 8"	-- --	0'- 8"	1'- 5"	-- --	5 3/8"				
	4	5	19'- 6"	1AP501	STR	19'- 6"											
	21	5	13'- 10"	1AP503	S11								6'- 9"				0'- 7"
	ASU #2																
⧺	8	9	20'- 6"	1AP901	1	1'- 0"	19'- 6"					-- --		0'- 9"			
	8	6	19'- 6"	1AP601	STR	19'- 6"											
	4	6	4'- 2"	1AP602	4	-- --	1'- 5"	0'- 8"	-- --	0'- 8"	1'- 5"	-- --	5 3/8"				
	4	5	19'- 6"	1AP501	STR	19'- 6"											
	42	5	12'- 3"	1AP502	S11								5'- 11"				0'- 7"
	ASU #3																
	8	9	20'- 6"	1AP901	1	1'- 0"	19'- 6"					-- --		0'- 9"			
⧺	8	6	19'- 6"	1AP601	STR	19'- 6"											
	4	6	4'- 2"	1AP602	4	-- --	1'- 5"	0'- 8"	-- --	0'- 8"	1'- 5"	-- --	5 3/8"				
	4	5	19'- 6"	1AP501	STR	19'- 6"											
	42	5	12'- 3"	1AP502	S11								5'- 11"				0'- 7"
	ASU #4																
	8	9	20'- 6"	1AP901	1	1'- 0"	19'- 6"					-- --		0'- 9"			
	8	6	19'- 6"	1AP601	STR	19'- 6"											
	4	6	4'- 2"	1AP602	4	-- --	1'- 5"	0'- 8"	-- --	0'- 8"	1'- 5"	-- --	5 3/8"				
⧺	21	5	13'- 10"	1AP503	S11								6'- 9"				0'- 7"
	ASU #5																
⧺	8	9	20'- 5"	2AP901	1	1'- 0"	19'- 6"					-- --		0'- 9"			
	8	6	19'- 5"	2AP601	STR	19'- 6"											
	4	6	4'- 2"	1AP602	4	-- --	1'- 5"	0'- 8"	-- --	0'- 8"	1'- 5"	-- --	5 3/8"				
	4	5	19'- 5"	2AP501	STR	19'- 6"											
	2	5	15'- 1"	2AP511	S11								7'- 4"				0'- 7"
	2	5	14'- 11"	2AP512	S11								7'- 3"				0'- 7"
	2	5	14'- 10"	2AP513	S11								7'- 3"				0'- 7"
	2	5	14'- 8"	2AP514	S11								7'- 2"				0'- 7"
	2	5	14'- 7"	2AP515	S11								7'- 1"				0'- 7"
	2	5	14'- 5"	2AP516	S11								7'- 0"				0'- 7"
	2	5	14'- 4"	2AP517	S11								7'- 0"				0'- 7"
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	2	5	14'- 1"	2AP519	S11								6'- 10"				0'- 7"
	2	5	13'- 11"	2AP520	S11								6'- 9"				0'- 7"
	2	5	13'- 10"	2AP521	S11								6'- 9"				0'- 7"
	ASU #6																
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⧺	8	6	19'- 6"	2AP601	STR	19'- 6"											
	4	6	4'- 2"	1AP602	4	-- --	1'- 5"	0'- 8"	-- --	0'- 8"	1'- 5"	-- --	5 3/8"				
	4	5	19'- 6"	2AP501	STR	19'- 6"											
	42	5	12'- 3"	2AP502	S11								5'- 11"				0'- 7"
	ASU #7																
	8	9	20'- 6"	2AP901	1	1'- 0"	19'- 6"					-- --		0'- 9"			
	8	6	19'- 6"	2AP601	STR	19'- 6"											
	4	6	4'- 2"	1AP602	4	-- --	1'- 5"	0'- 8"	-- --	0'- 8"	1'- 5"	-- --	5 3/8"				
	4	5	19'- 6"	2AP501	STR	19'- 6"											
⧺	42	5	12'- 3"	2AP502	S11								5'- 11"				0'- 7"
	ASU #8																
	8	9	20'- 6"	2AP901	1	1'- 0"	19'- 6"					-- --		0'- 9"			
	8	6	19'- 6"	2AP601	STR	19'- 6"											
	4	6	4'- 2"	1AP602	4	-- --	1'- 5"	0'- 8"	-- --	0'- 8"	1'- 5"	-- --	5 3/8"				
	2	5	13'- 9"	2AP501	S11								6'- 8"				0'- 7"
	2	5	13'- 8"	2AP501	S11								6'- 8"				0'- 7"
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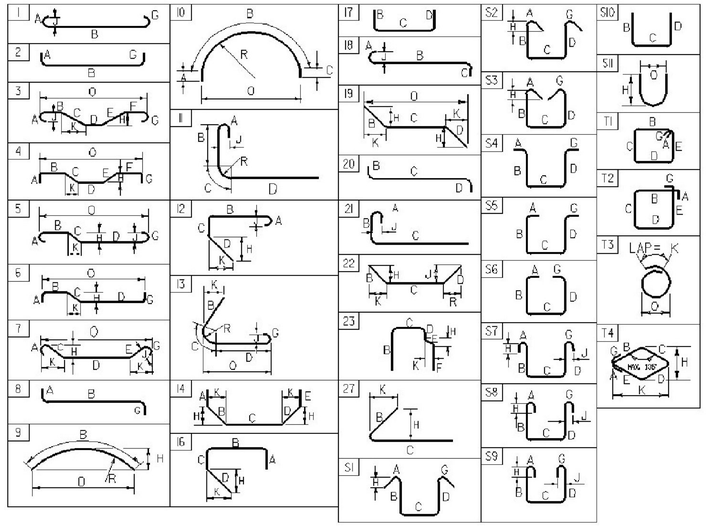
	2	5	13'- 5"	2AP502	S11								6'- 6"				0'- 7"
	2	5	13'- 4"	2AP503	S11								6'- 6"				0'- 7"
	2	5	13'- 2"	2AP504	S11								6'- 5"				0'- 7"
	2	5	13'- 1"	2AP506	S11								6'- 4"				0'- 7"
	2	5	12'- 11"	2AP507	S11								6'- 3"				0'- 7"
	2	5	12'- 10"	2AP508	S11								6'- 3"				0'- 7"
	2	5	12'- 8"	2AP509	S11								6'- 2"				0'- 7"
	2	5	12'- 7"	2AP510	S11								6'- 1"				0'- 7"

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. △ DENOTES TWO EXTRA BARS ADDED FOR TESTING PURPOSES.
11. .3 IN BAR MARK SUFFIX DENOTES LEVEL III 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

Vermont Agency of Transportation

RECEIVED

CK'D BY D.PETERSON OK'D BY C. CARLSON

June 9, 2015

RESUBMIT NO Approved

BY C. CARLSON DATE 06/11/2015

REINFORCING SCHEDULE

REV. NO.	DATE:
3	06/08/15
2	05/21/15
1	05/08/15

BRI RENAUD BROS. INC.
283 Ft. BRIDGEMAN RD. VERNON VT., 05354
PH. (802) 257-7883 FAX (802) 257-7308

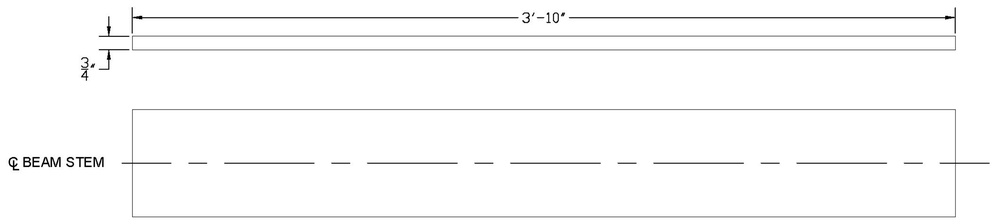
SHEET NAME: APPROACH SLAB PLANS

PROJECT NAME: ANDOVER

PROJECT NO: BHF 016-1 (29)

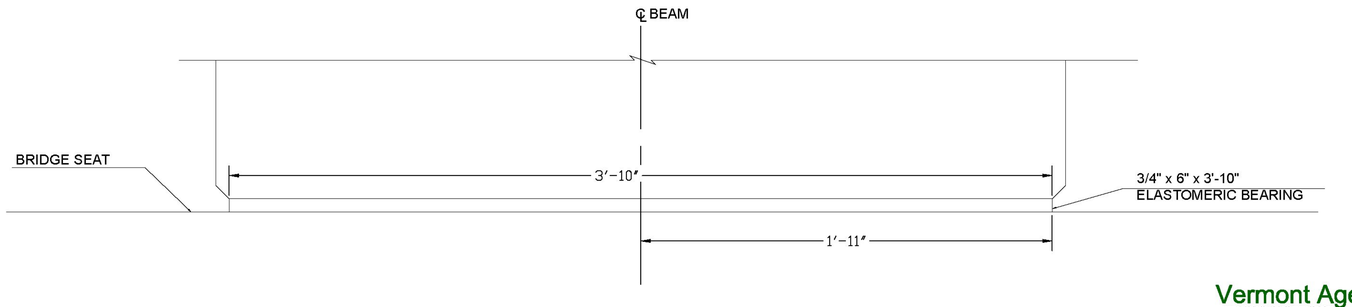
DRAWN BY: CE | CHK'D BY: | DATE: 04/29/2015

SHEET NO. 2 OF 6



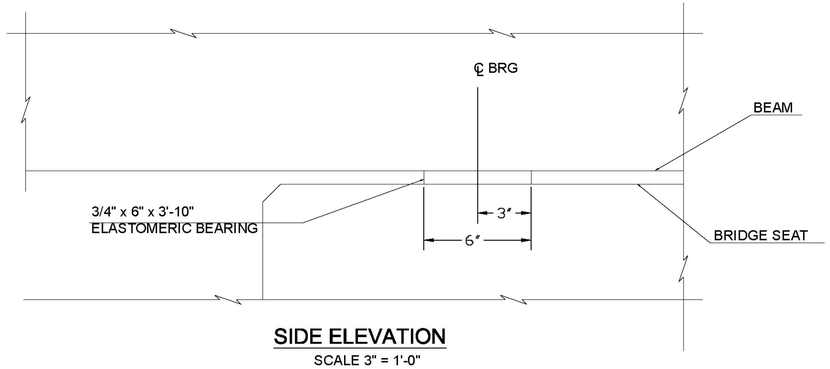
ELASTOMERIC BEARING DETAIL

SCALE 3" = 1'-0"



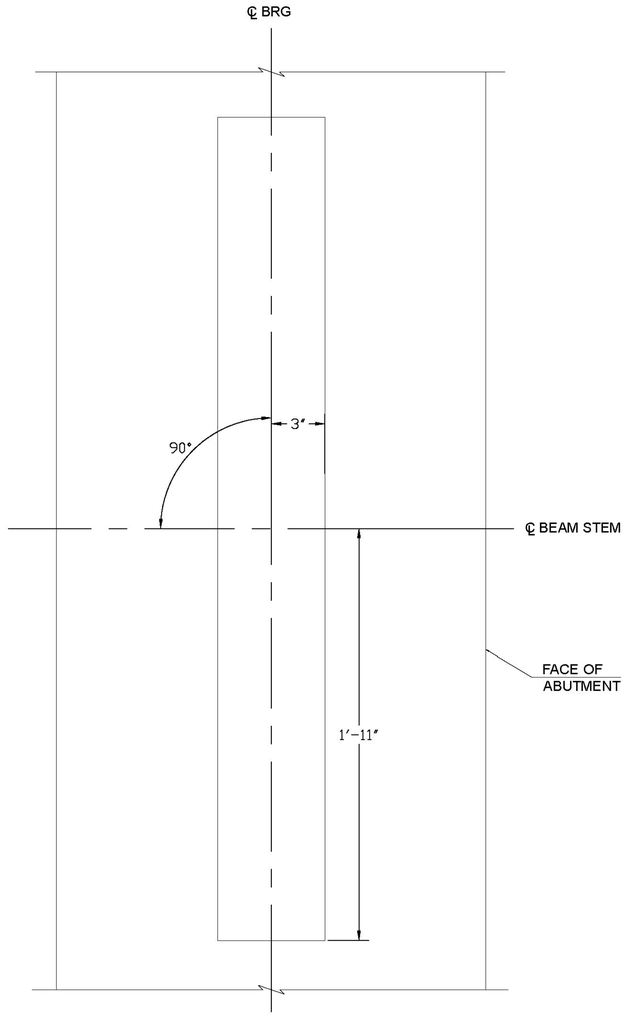
FRONT ELEVATION

SCALE 3" = 1'-0"



SIDE ELEVATION

SCALE 3" = 1'-0"



PLAN

SCALE 3" = 1'-0"

Vermont Agency of Transportation

RECEIVED

ON: June 10, 2015

and Checked for

CONFORMANCE

BY: D. PETERSON DATE: 06/12/2015

50

BEARING NOTES

1. BEARINGS SHALL CONFORM TO THE APPLICABLE SUBSECTIONS OF SECTIONS 531 AND 731.
2. THE ELASTOMER SHALL BE GRADE 60 SHORE A DUROMETER.
3. THE ELASTOMER SHALL MEET THE REQUIREMENTS OF LOW TEMPERATURE ZONE D, GRADE 4.
4. THE INSTALLER IS ADVISED TO HAVE A MINIMUM OF 18 - 1/4" x 6" x 3'-10" GALVANIZED STEEL SHIMS AVAILABLE FOR USE FOR ELEVATION ADJUSTMENTS UPON THE SETTING OF THE SUPERSTRUCTURE UNITS. THE SHIMS SHALL BE FABRICATED ACCORDING TO SECTION 531 AND SHALL BE INCLUDED UNDER ITEM 531.16, "BEARING DEVICE ASSEMBLY, PLAIN ELASTOMERIC PAD".

REV. NO.	DATE:

RENAUD BROS. INC.
283 FT. BRIDGEMAN RD. VERNON VT., 05354
PH. (802) 257-7583 FAX (802) 257-7308

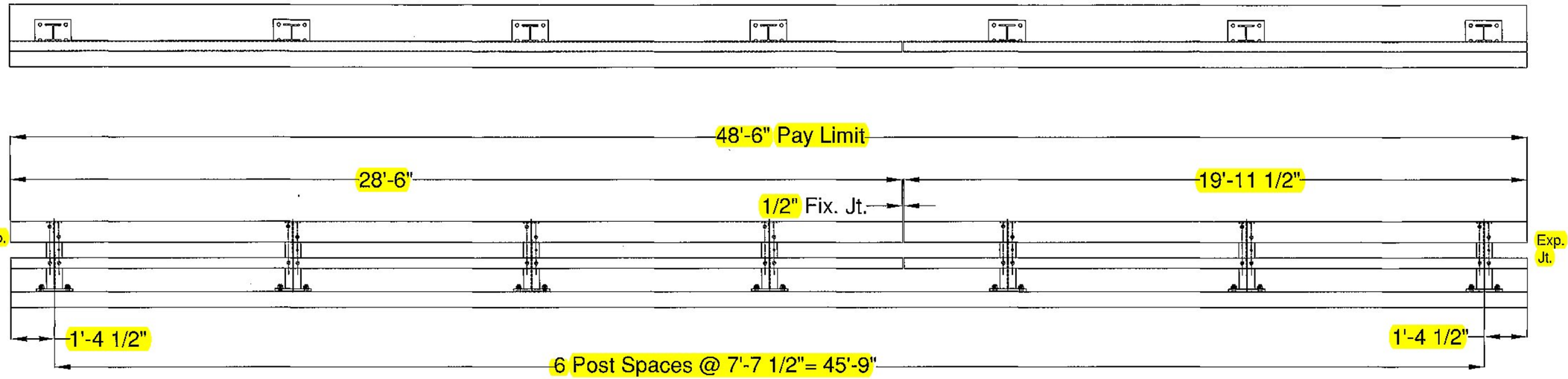
SHEET NAME: BRIDGE BEARINGS

PROJECT NAME: ANDOVER

PROJECT NO: BHF 016-1 (29)

DRAWN BY:	CHK'D BY:	DATE:
CE		06/08/2015

SHEET NO. 4 OF 4



Vermont Agency of Transportation

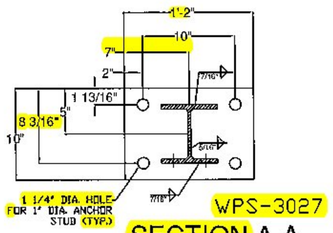
RECEIVED

CK'D BY D. PETERSON OK'D BY C. CARLSON

June 1, 2015

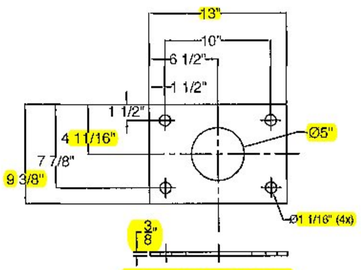
RESUBMIT NO Approved AsNoted

BY C. CARLSON DATE 08/12/2015



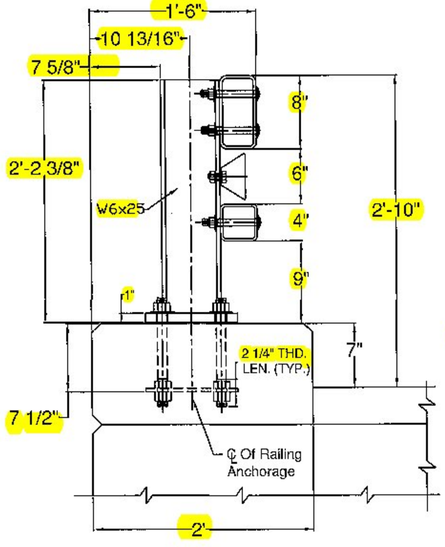
WPS-3027

SECTION A-A

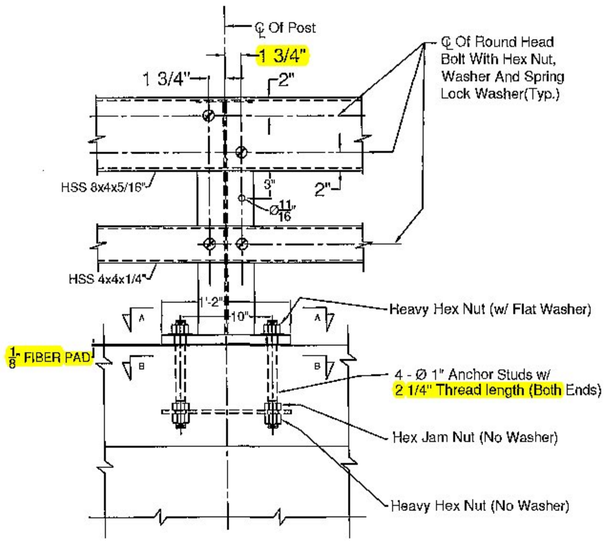


ANCHOR PLATE

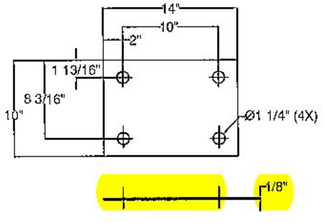
SECTION B-B



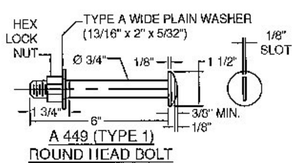
Typical Post Section



Typical Post Elevation



1/8" PREFORMED BEARING PAD



A 449 (TYPE 1) ROUND HEAD BOLT

2 1/4"

BILL OF MATERIAL

QTY	PART #	DESCRIPTION	ASTM DESIGNATION
14	0033.90344	TWO RAIL POST @ 2'-2 3/8" O.A.	A572 Gr. 50
2	0033.900050	4" X 4" X 1/4" RAIL @ 28'-6"	A500 Gr. B
2	0033.900051	4" X 4" X 1/4" RAIL @ 19'-11 1/2"	A500 Gr. B
2	0033.900052	4" X 8" X 5/16" RAIL @ 28'-6"	A500 Gr. B
2	0033.900053	4" X 8" X 5/16" RAIL @ 19-11 1/2"	A500 Gr. B
2	0033.90052	3" X 3" X 5/16" FIX. SPL. TUBE @ 1'-8"	A500 Gr. B
2	0033.90033	3" X 7" X 3/8" FIX. SPL. TUBE @ 1'-8"	A500 Gr. B
14	0033.00299	3/8" X 9 3/8" X 13" ANCHOR PLATES	A36
14	0033.00052	1/8" FIBER PAD @ 10" X 14" (S-360A)	AASHTO M251
*58	0042.21012	Ø 1" X 12" ANCHOR STUDS W/ 2 1/2" THREADED ENDS	A449
*114	0080.16901	Ø 1" HEAVY HEX NUTS	A563
56	0080.16905	Ø 1" HEX JAM NUTS	A325
*58	0089.16911	Ø 1" FLAT WASHERS	F436
56	0080.06290	Ø 3/4" X 6" ROUND HEAD BOLT, NUT, FLAT WASHER, L.W.	A449, A563, ASME B18.21.1
16	0080.05045	Ø 5/8" X 1 3/4" HEX BOLT, & F.W.	A307
4	-	ALUMINUM DELINEATERS	SUPPLIED BY FRL

* - 2 EXTRA FOR VAOT TESTING

NOTES:
1. ALL WORK AND MATERIALS SHALL CONFORM TO SECTION 525.
2. PRIOR TO GALVANIZING THE ASSEMBLED POST, GRIND ALL EDGES TO A MINIMUM RADIUS OF 1/16".
3. ALL POSTS SHALL BE SET NORMAL TO GRADE.
4. SECTIONS OF RAIL TUBE SHALL BE ATTACHED TO A MINIMUM OF TWO BRIDGE RAIL POSTS AND PREFERABLY TO AT LEAST FOUR POSTS.
5. RAIL TUBE EXPANSION JOINTS SHALL PROVIDED IN ANY RAIL BAY SPANNING THE END OF AN INTEGRAL ABUTMENT BRIDGE AND AT ALL SUPERSTRUCTURE EXPANSION JOINTS. EXPANSION JOINT WIDTH SHALL BE 4" AT 45°F AND WILL BE ADJUSTED IN THE FIELD BY THE ENGINEER FOR OTHER TEMPERATURES.
6. HOLES IN RAILS FOR RAIL TUBE ATTACHMENT WILL BE FIELD-DRILLED. HOLES SHALL BE COATED WITH AN APPROVED ZINC-RICH PAINT PRIOR TO INSTALLATION.
7. RAIL POST ANCHORING NUTS SHALL BE TIGHTENED TO A SNUG FIT AND GIVEN AN ADDITIONAL ONE-EIGHTH TURN.
8. RAIL TUBES SHALL BE ATTACHED USING 3/4" FULL DIAMETER BODY ASTM A 449 (TYPE I) ROUND HEAD BOLTS INSERTED THROUGH THE FACE OF THE TUBE. HOLES IN POSTS SHALL BE 1/16" LARGER THAN THE BOLT SIZE.
9. ANY BENDING OF RAIL SHALL BE DONE AT A FABRICATION PLANT ACCORDING TO A PROCEDURE PROVIDED BY THE FABRICATOR.
10. THE MINIMUM DISTANCE FROM THE POST TO AN EXPANSION JOINT SHALL BE DETERMINED BY THE MINIMUM EDGE DISTANCE OF 5" FROM ANY ANCHOR STUD TO THE END OF THE SLAB, OR TO THE EXPANSION JOINT RECESS POUR, IF ONE IS USED.
11. SEE STANDARD DRAWING G-1 FOR DETAILS OF DELINEATORS. A DELINEATOR SHALL BE INSTALLED AT 30 FOOT SPACING OR THE NEAREST POST. WHITE IS TO BE INSTALLED ON THE DRIVER'S RIGHT. FOR ONE WAY BRIDGES, YELLOW IS TO BE INSTALLED ON THE DRIVER'S LEFT. PAYMENT SHALL BE INCIDENTAL TO OTHER ITEMS.
12. THIS RAILING MEETS THE REQUIREMENTS FOR A TL-4 SERVICE LEVEL.

ITEM #: 525.33

STRUCTURAL STEEL TO COMPLY W/ ASTM A6

GALAVANIZING TO BE PER ASTM A123, UNLESS OTHERWISE SPECIFIED.

TOLERANCE UNLESS OTHERWISE NOTED:
HOLES - ± 1/32"
FRACTIONS - ± 1/16"
ANGLES - ± 1/2°

SHEET 1 OF 2

BRIDGE RAIL DETAILS SHEET

PROJECT: ANDOVER BHF 016-1 (29) VT RTE11, RURAL MINOR ARTERIAL, BRIDGE NO. 41
TOWN OF ANDOVER, WINDSOR COUNTY, VERMONT

R	NO.	DATE	DESCRIPTION	BY
E	1	5/28/15	REVISED PER 5/18/15 MARK-UP	E.P.
V	2	5/29/15	REVISED PER 5/29/15 EMAIL	E.P.

R	NO.	DATE	DESCRIPTION	BY
E				
V				

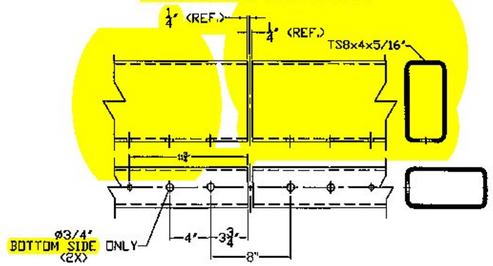
ELDERLEE, INC.
OAKS CORNERS, NEW YORK 14518
email: dlong@elderlee.com / epeek@elderlee.com
Tel: 315-789-6670 Fax: 315-789-6615

AISC CERTIFIED FABRICATOR

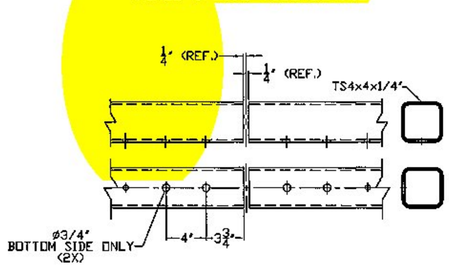
ORTHOGRAPHIC PROJECTION

DRAWN	E.P.	4/29/15
CHECKED	D.L.	4/29/15
APPROVED		
SCALE	SCHEMATIC	
DRAWING NO.	F.R.L. ANDOVER	

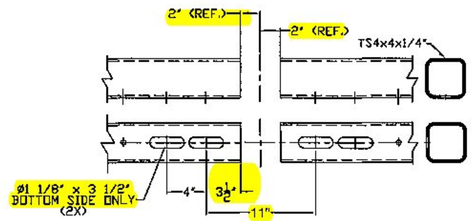
FIXED SPLICE TUBE DETAIL



FIXED SPLICE TUBE DETAIL



EXPANSION SPLICE TUBE DETAIL



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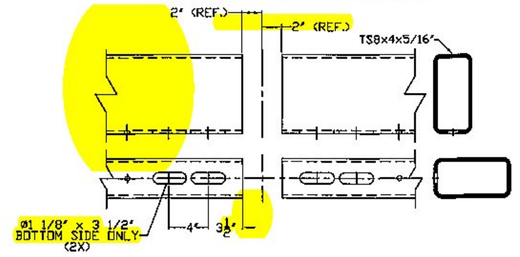
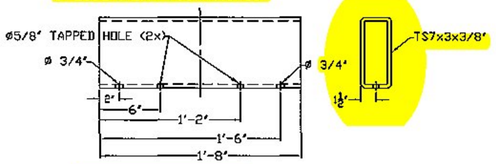


SPLICE FOR: TS8x4x5/16"



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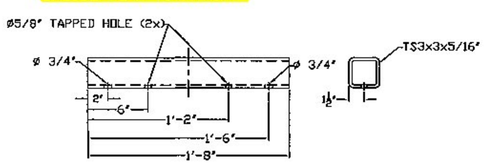
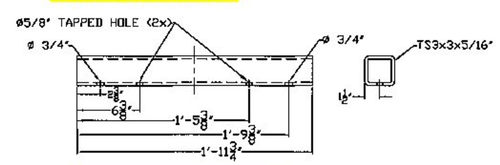


SPLICE FOR: TS4x4x1/4"



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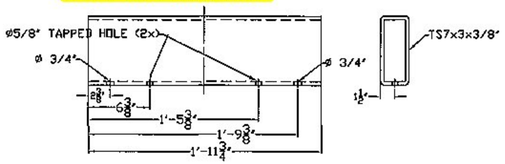
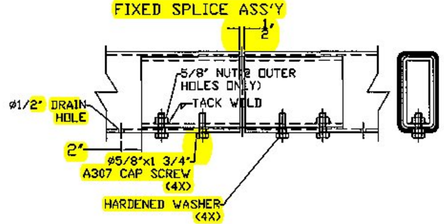
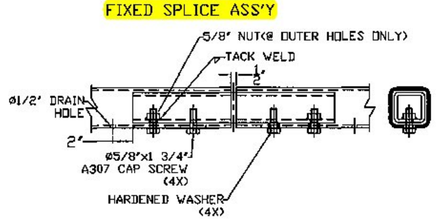


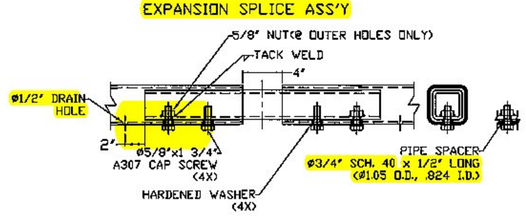
FIXED SPLICE ASS'Y



FIXED SPLICE ASS'Y



EXPANSION SPLICE ASS'Y



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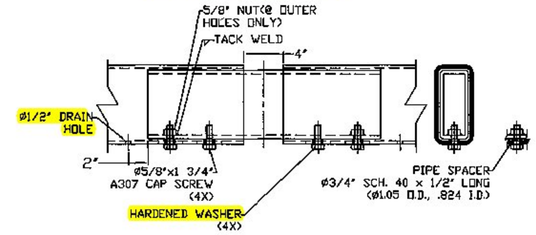
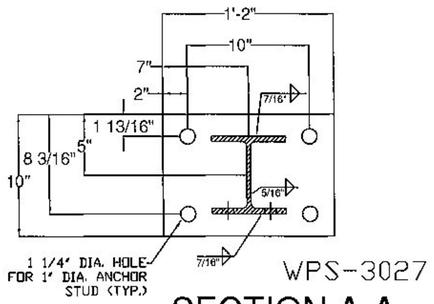
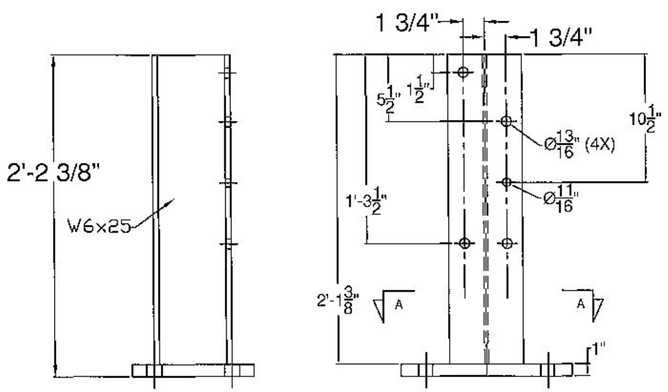




WPS-3027

SECTION A-A



Vermont Agency of Transportation

RECEIVED

CK'D BY D. PETERSON OK'D BY C. CARLSON

June 1, 2015

RESUBMIT NO Approved

BY C. CARLSON DATE 06/12/2015

ITEM #: 525.33

SHEET 2 OF 2

STRUCTURAL STEEL TO COMPLY W/ ASTM A6

GALAVANIZING TO BE PER ASTM A123, UNLESS OTHERWISE SPECIFIED.

TOLERANCE UNLESS OTHERWISE NOTED:
HOLES - ± 1/32"
FRACTIONS - ± 1/16"
ANGLES - ± 1/2°

BRIDGE RAIL DETAILS SHEET

PROJECT: ANDOVER BHF 016-1 (29) VT RTE11, RURAL MINOR ARTERIAL, BRIDGE NO. 41
TOWN OF ANDOVER, WINDSOR COUNTY, VERMONT

R	NO.	DATE	DESCRIPTION	BY	R	NO.	DATE	DESCRIPTION	BY
E	1	5/28/15	REVISED PER 5/18/15 MARK-UP	E.P.	E				
V	2	5/29/15	REVISED PER 5/29/15 EMAIL	E.P.	V				

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

AISC CERTIFIED FABRICATOR

ORTHOGRAPHIC PROJECTION

DRAWN	E.P.	4/29/15
CHECKED	D.L.	4/29/15
APPROVED		
SCALE	SCHEMATIC	
DRAWING NO.	F.R.L. ANDOVER	

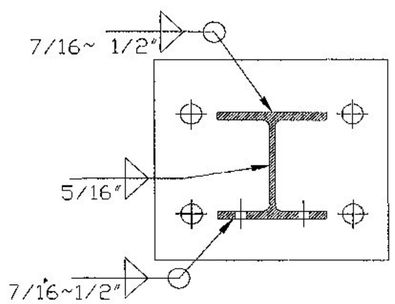
WELDING PROCEDURE SPECIFICATION

PQR ELDERLEE#1

Material Specification	A572 GRD. 50 /A992-06a		
Welding Process	FCAW		
Manual or Machine	SEMAUTOMATIC		
Position of Welding	FLAT/HORIZONTAL		
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	



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

Procedure No. 3027
Revision No.

Contractor Elderlee, Inc.
Authorized By RANDY SCOTT
Date 4/4/2014

Vermont Agency of Transportation

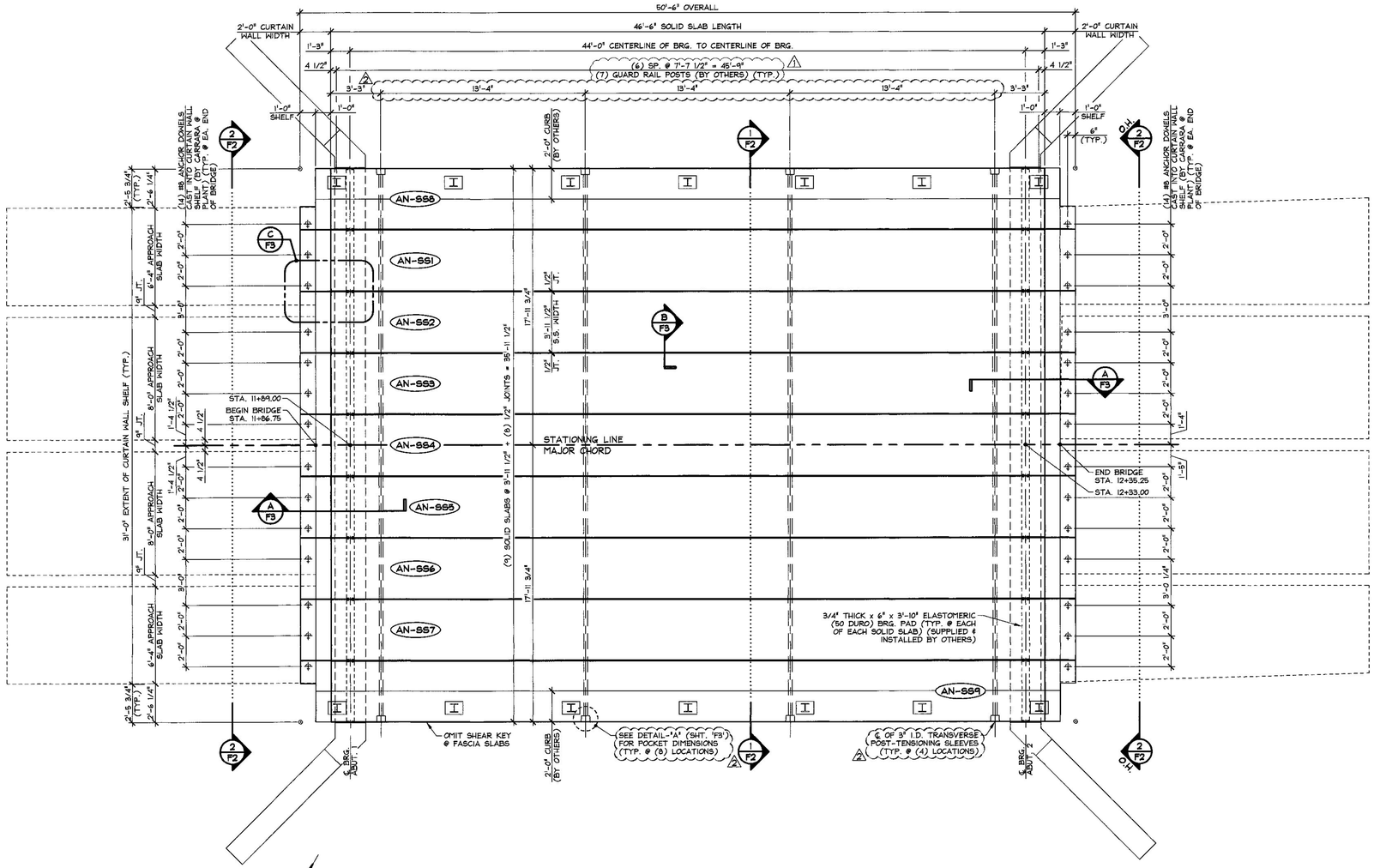
RECEIVED

CK'D BY R. FOSTER OK'D BY D. PETERSON

April 30, 2015

RESUBMIT NO Approved

BY C. CARLSON DATE 5/14/2015



1/F1 PRESTRESSED SOLID SLAB LAYOUT WITH PRECAST CURTAIN WALLS

1/4" = 1'-0"

VOIDED SLAB GENERAL NOTES

1. MIN. CONCRETE STRENGTH AT 28 DAYS SHALL BE 6,000 PSI.
2. MIN. CONCRETE STRENGTH AT STRESS TRANSFER SHALL BE 4,000 PSI.
3. REINFORCING STEEL SHALL BE GR-60, ASTM A-615 (AASHTO M31) LEVEL 1 (EPOXY COATED).
4. PRESTRESSING STRANDS SHALL CONFORM TO ASTM A-416 (AASHTO M203) AND SHALL CONSIST OF 0.60"ø x 270 KSI 7-WIRE LOW RELAXATION STRANDS.
5. PRESTRESSING STRANDS SHALL EACH BE PULLED TO HAVE A NET TENSION OF 44.0 K AFTER ACCOUNTING FOR CHUCK SLIPPAGE. TENSION SHALL BE VERIFIED BY MEASURING STRAND ELONGATION. (SEE EXAMPLE ELONGATION CALCULATION AND TENSIONING PROCEDURE, THIS SHEET.)
6. ENDS OF PRESTRESSING STRANDS SHALL BE CUT FLUSH WITH END OF SOLID SLABS USING AN ABRASIVE WHEEL (UNLESS NOTED OTHERWISE) AND TWO PART EPOXY PAINTED.
7. ALL EXPOSED CORNERS SHALL BE CHAMFERED 3/4".
8. THE TOP OF SLABS SHALL RECEIVE A SMOOTH FLOAT FINISH (UNLESS NOTED OTHERWISE).
9. SHEAR KEY SURFACES SHALL BE SAND BLASTED CLEAN.
10. SLABS SHALL BE HANDLED AND ERECTED USING THE LIFTING LOOPS ONLY. RIGGING SHALL BE CONFIGURED SUCH THAT EQUAL FORCES ARE APPLIED TO EACH OF THE TWO LIFTING LOOPS AT EACH END OF THE SLAB. THE MINIMUM SLING ANGLE FROM THE HORIZONTAL SHALL BE 60°. **THE PINS OF THE SHACKLES SHALL BE PLACED THROUGH THE LIFTING LOOPS. SEE DETAIL, SHEET F3'.** SLABS SHALL BE STORED AND TRANSPORTED WITH TIMBER SUPPORTS WITHIN 2'-0" OF THE SLAB ENDS, UNLESS APPROVED BY J.P. CARRARA & SONS, INC.

    ONCE SLABS HAVE BEEN ERECTED, CUT LIFTING LOOPS AT RECESS, EPOXY PAINT AND PATCH AS REQUIRED (BY OTHERS).
11. MATERIAL SPECIFICATION AND MIX DESIGN SHALL CONFORM TO VERMONT SPEC. P510.02 AND P510.05 RESPECTIVELY.

    DESIGN MIX: J.P.C. BRIDGE MIX #425M (NO DCI)
12. QUALITY CONTROL PROCEDURES ARE IN ACCORDANCE WITH PCI REQUIREMENTS. J.P. CARRARA & SONS, INC. IS A PCI CERTIFIED PLANT.
13. CURING METHOD: AS SOON AS THE TOP OF SLAB IS FINISHED, A COVER OF INSULATED POLY. THE DESIRED CURING TEMPERATURE RANGE SHALL NOT DROP BELOW 70°F. THE TEMPERATURE SHALL BE RECORDED BY AUTOMATIC SENSOR INSTRUMENTS ON GRAPH CHARTS, SPACED NOT MORE THAN 100' APART AND WILL CONTINUE UNTIL RELEASE STRENGTH IS ACHIEVED. EACH CHART SHALL BE MARKED WITH THE CASTING DATED AND LOCATION OF THE RECORDER. IF NECESSARY TO MAINTAIN CASTING BED TEMPERATURE PRIOR TO CONCRETE PLACEMENT OR TO ACCELERATE EARLY AGE STRENGTH GAIN, EXTERNAL RADIANT HEAT MAY BE EMPLOYED VIA HOT WATER DUCTS BENEATH AND WITHIN THE PERIPHERY OF THE CASTING BED. MAXIMUM CURING TEMPERATURE SHALL NOT EXCEED PCI SPECIFIED LIMITS.
14. TRANSVERSE POST-TENSIONING SEQUENCE:
    A. ERECT SOLID SLABS, AND POST-TENSION TENDONS TO APPROXIMATELY 3,000 LBS.
    B. GROUT SHEAR KEYS (BY OTHERS).
    C. ONCE SHEAR KEY GROUT HAS ATTAINED A MINIMUM COMPRESSIVE STRENGTH OF 1,500 PSI; POST-TENSION TENDONS TO 44,000 LBS.
    D. EXCESS TENDON LENGTH SHALL BE CUT USING AN ABRASIVE WHEEL.
    E. APPLY TWO PART EPOXY TO EXPOSED TENDON AND CHUCK (BY OTHERS).
15. OWNER SHALL PROVIDE APPROPRIATE WATERPROOFING TO GROUTED SHEAR KEYS. J.P. CARRARA & SONS, INC. SHALL NOT BE HELD LIABLE FOR PROBLEMS ASSOCIATED WITH MOISTURE INFILTRATING GROUTED SHEAR KEYS.

EXAMPLE PRESTRESSING STRAND ELONGATION CALC. AND TENSIONING

(NOT TO BE USED FOR CONSTRUCTION)

SIZE & GRADE: 0.60"ø x 270 KSI
AREA: 0.217 IN^2
TENSION: 44,000 LB. EACH STRAND
GRIP-TO-GRIP: 189'-0" = 189.00'
Es = 28,600,000 PSI (ASSUMED FOR THESE CALCULATIONS; VALUE TO BE OBTAINED FOR STRAND SPOOL ACTUALLY USED)

EXAMPLE:

$$\Delta = \frac{PL}{AE} = \frac{(44{,}000 - 3{,}000) \times 189.00 \times 12}{0.217 \times 28{,}600{,}000} = 14.983"$$

THEREFORE: (TOLERANCES ± 5%)
△ UPPER LIMIT = 1.05 x 14.983" = 15.73" = 15 3/4"
△ LOWER LIMIT = 0.95 x 14.983" = 14.23" = 14 1/4"

EXTRA FORCE REQUIRED TO COMPENSATE FOR 1/2" CHUCK SLIPPAGE:

$$\Delta P = \frac{0.5 \times 41{,}000}{14.983} = 1{,}368 \text{ LBS.}$$

TOTAL TENSIONING FORCE = 44,000 + 1,368 = 45,368 LBS.

STRAND TENSIONING PROCEDURE:

1. PULL EACH STRAND INITIALLY TO 3,000# LBS. AND MARK STRAND.
2. THEN PULL EACH STRAND TO A TOTAL TENSION OF 45,368# LBS. AND MEASURE ELONGATION AFTER SEATING. IT MUST BE BETWEEN 14 1/4"# AND 15 3/4"#.

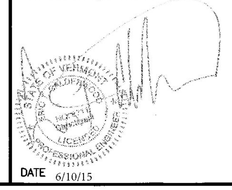
    # NOTE: FORCES READ ON STRESSING JACK GAUGES MUST BE MADE TO CORRESPOND TO ABOVE VALUES BASED ON CALIBRATION DATA FOR SPECIFIC JACK USED.

DESIGN LIVE LOAD: HL-93

△ 6-9-15 REVISE POST-TENSIONING
△ 6-1-15 REVISED AS NOTED

Vermont Agency of Transportation
RECEIVED
ON: June 10, 2015
and Checked for
CONFORMANCE
BY: D. PETERSON DATE: 06/11/2015

APPROVAL STAMP:
FOR DESIGN AND FABRICATION



DATE 6/10/15

J.P. CARRARA & SONS INC.
Precast & Prestress Manufacturer
2484 CASE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010

RENAUD BROS, INC.
CONTRACTOR
VERNON, VERMONT

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF WINDSOR

DATE: MAY 6, 2015
SCALE: NOTED

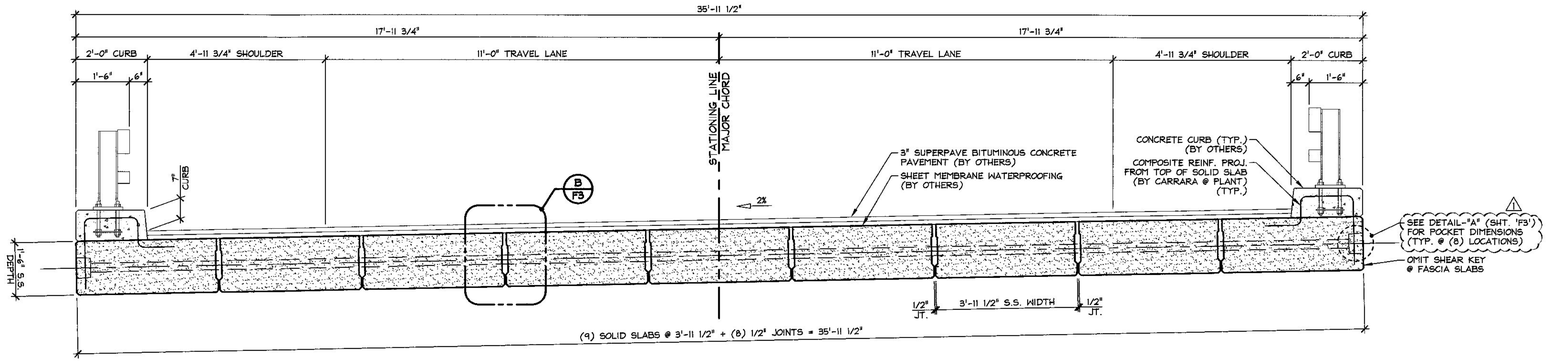
TOWN OF ANDOVER
VT RTE 11, RURAL MINOR ARTERIAL
BRIDGE NO.: 41 PROJECT NO.: BHF 016-1(29)

CHKD: J.C. DFTM: B.L.
JOB NO: 23465-015

PRESTRESSED SOLID SLAB LAYOUT

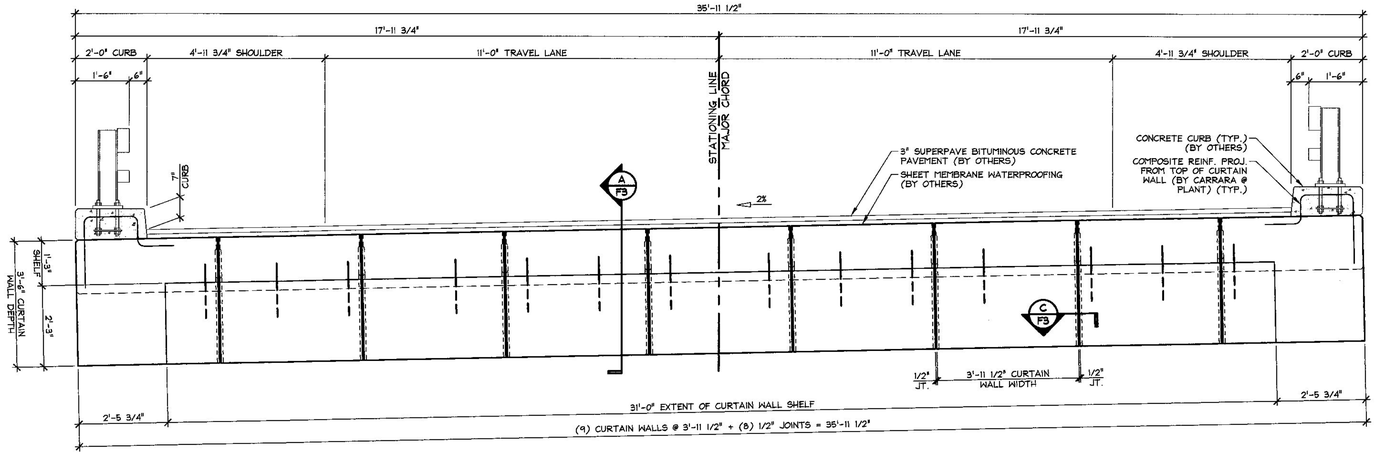
DWG. NO: F1

F:\VT-Bridges\23465-15 Andover 41\23465-F1.dwg, 6/9/2015 3:01:55 PM



1/F2 TRANSVERSE SOLID SLAB SECTION

1/2" = 1'-0"



2/F2 CURTAIN WALL ELEVATION

1/2" = 1'-0"

Vermont Agency of Transportation

RECEIVED

ON: June 10, 2015

and Checked for

CONFORMANCE

BY: D. PETERSON DATE: 06/11/2015

⚠ 6-9-15 REVISED AS NOTED

APPROVAL STAMP:
FOR DESIGN AND FABRICATION

STATE OF VERMONT · DEPARTMENT OF · JAMES C. LOCKWOOD · 082.0007742 · LICENSED · PROFESSIONAL ENGINEER

DATE 6/10/15

J.P. CARRARA & SONS INC.
Precast & Prestress Manufacturer
2464 CASE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010

RENAUD BROS, INC.
CONTRACTOR
VERNON, VERMONT

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF WINDSOR

DATE: MAY 6, 2015
SCALE: NOTED
CHKD: J.C. DFTM: B.L.
JOB NO: 23465-015

TOWN OF ANDOVER
VT RTE 11, RURAL MINOR ARTERIAL
BRIDGE NO.: 41 PROJECT NO.: BHF 016-1(29)

TRANSVERSE SECTION & CURTAIN WALL ELEVATION

DWG. NO: F2

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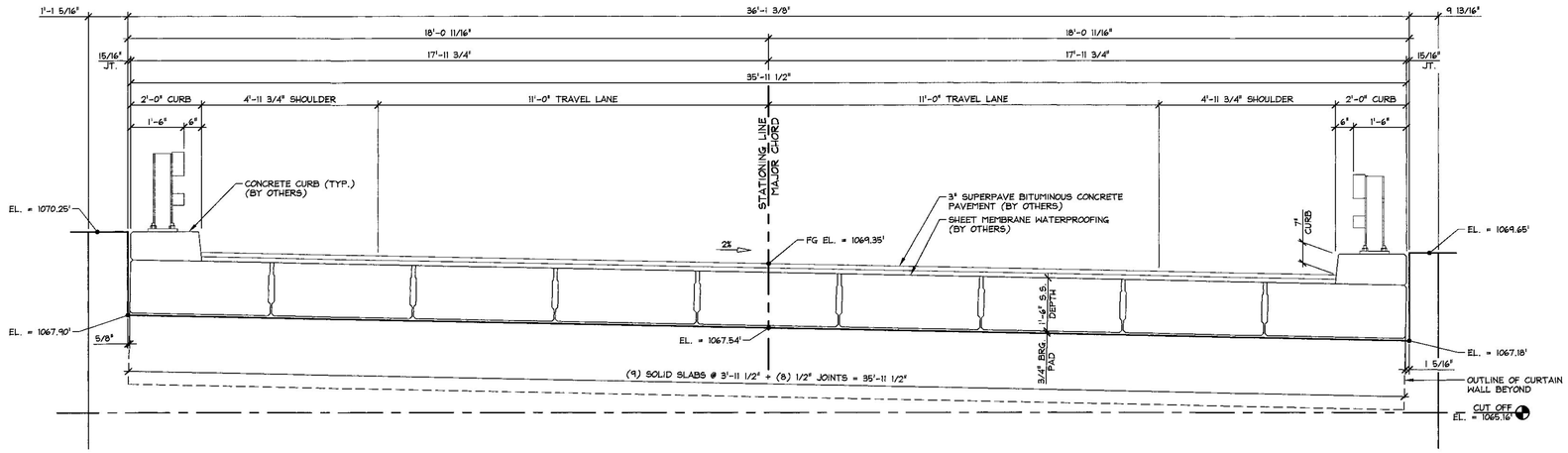
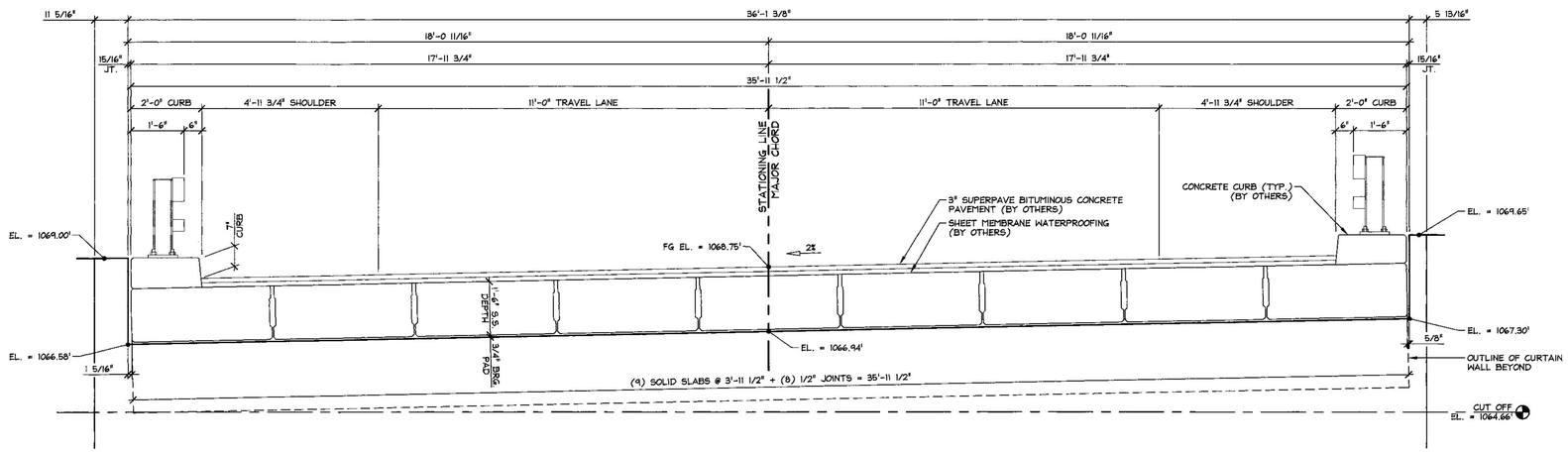


1 / F2.1 ABUTMENT NO. 1 PARTIAL ELEVATION

1/2" = 1'-0"



2 / F2.1 ABUTMENT NO. 2 PARTIAL ELEVATION

1/2" = 1'-0"

Vermont Agency of Transportation

RECEIVED

ON: June 10, 2015

and Checked for

CONFORMANCE

BY: D. PETERSON DATE: 06/11/2015

⚠ 6-1-15 GENERAL REVISIONS

APPROVAL STAMP:
FOR DESIGN AND FABRICATION

STATE OF VERMONT · BRIAN L. DAVIS · 2015 · PROFESSIONAL ENGINEER · LICENSED

DATE 6/10/15

J.P. CARRARA & SONS INC.
Precast & Prestress Manufacturer
2464 CASE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010

RENAUD BROS, INC.
CONTRACTOR
VERNON, VERMONT

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF WINDSOR

DATE: MAY 6, 2015

SCALE: NOTED

TOWN OF ANDOVER
VT RTE 11, RURAL MINOR ARTERIAL
BRIDGE NO.: 41 PROJECT NO.: BHF 016-1(29)

CHKD: J.C. DFTM: B.L.

JOB NO: 23465-015

PARTIAL ABUTMENT ELEVATIONS

DWG. NO: F2.1

F:\VT-Bridges\23465-15 Andover 41\23465-F2-1.dwg, 6/9/2015 3:03:47 PM

Vermont Agency of Transportation

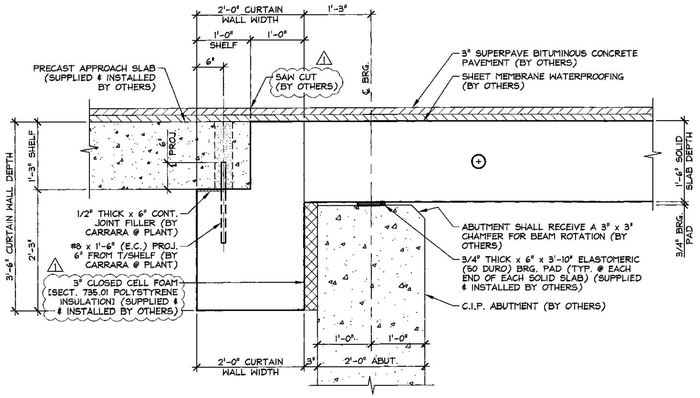
RECEIVED

ON: June 10, 2015

and Checked for

CONFORMANCE

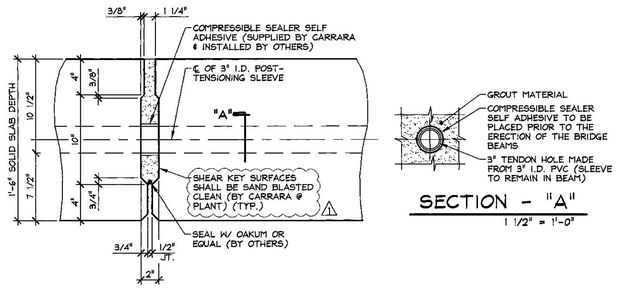
BY: D. PETERSON DATE: 06/11/2015



A F3 BEARING SECTION

SOLID SLAB PROJECTING REINFORCING AND CURTAIN WALL REINFORCING NOT SHOWN FOR CLARITY

3/4" = 1'-0"

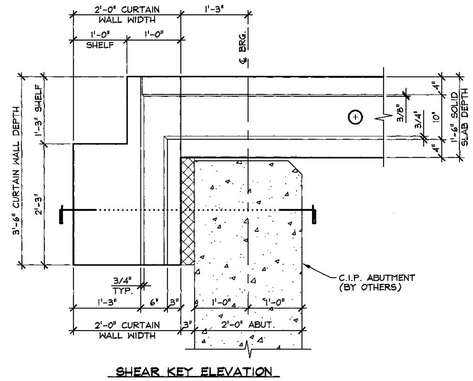


SECTION - "A"

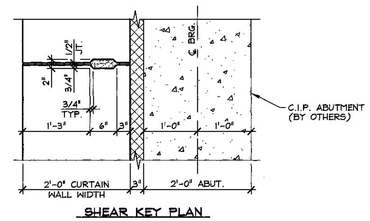
1 1/2" = 1'-0"

B F3 SOLID SLAB SHEAR KEY SECTION @ P.T. SLEEVE

1 1/2" = 1'-0"



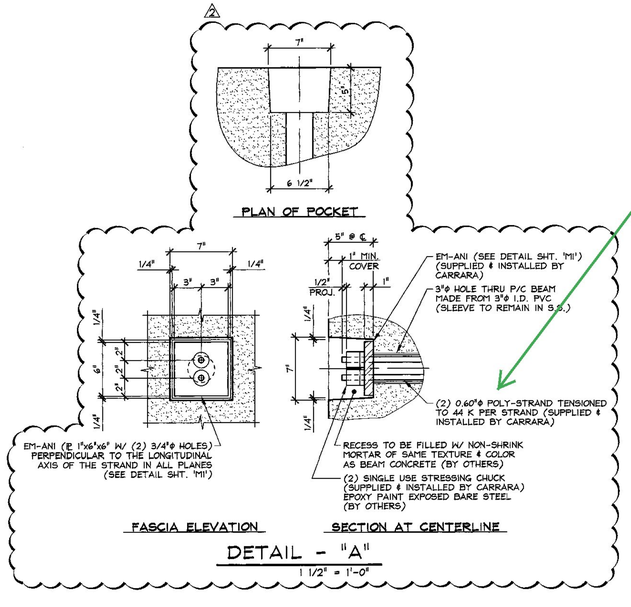
SHEAR KEY ELEVATION



SHEAR KEY PLAN

C F3 CURTAIN WALL SHEAR KEY DETAILS

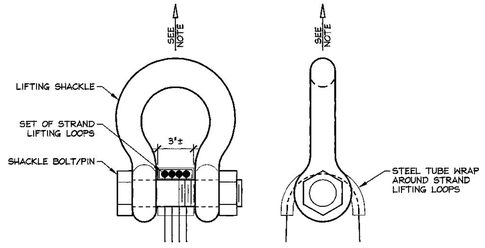
3/4" = 1'-0"



DETAIL - "A"

1 1/2" = 1'-0"

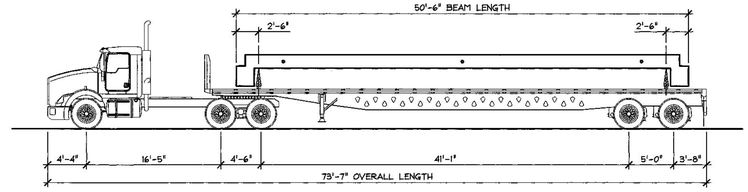
Vtrans is ok with using two 0.6 dia strands on this project.



NOTE: SOLID SLABS SHALL BE HANDLED AND ERECTED USING THE LIFTING LOOPS ONLY. RIGGING SHALL BE CONFIGURED SUCH THAT EQUAL FORCES ARE APPLIED TO EACH SET OF LIFTING LOOPS AT EACH END OF THE SLAB. THE MINIMUM SLING ANGLE FROM THE HORIZONTAL SHALL BE 60°. SHACKLE BOLT/PIN SHALL BE PLACED UNDER LIFT LOOPS AS SHOWN. DESIGN AND CONFIGURATION OF RIGGING BY PURCHASER.

LIFTING SHACKLE DETAILS

N.T.S.



SHIPPING DETAIL

N.T.S.

2 6-9-15 REVISE POST-TENSIONING

1 6-1-15 REVISED AS NOTED

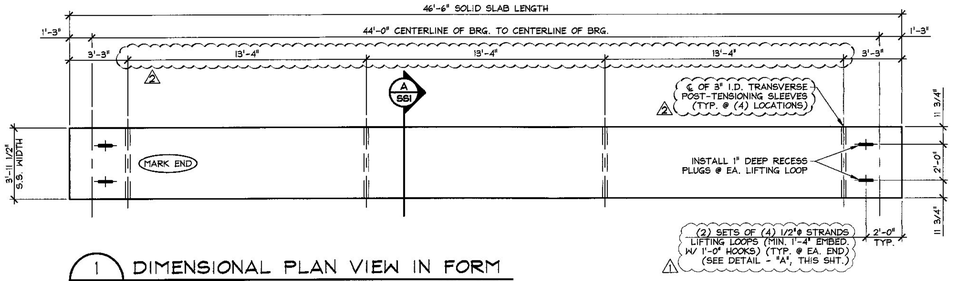
APPROVAL STAMP: FOR DESIGN AND FABRICATION

STATE OF VERMONT — JOSEPH C. CARRARA — 10023 — REGISTERED PROFESSIONAL ENGINEER

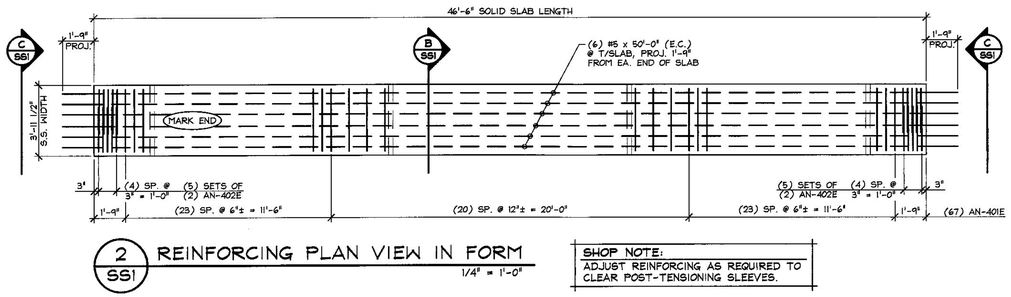
DATE 6/10/15

J.P. CARRARA & SONS INC. Precast & Prestress Manufacturer 2464 CASE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010	RENAUD BROS, INC. CONTRACTOR VERNON, VERMONT
STATE OF VERMONT AGENCY OF TRANSPORTATION COUNTY OF WINDSOR	DATE: MAY 6, 2015 SCALE: NOTED
TOWN OF ANDOVER VT RTE 11, RURAL MINOR ARTERIAL BRIDGE NO.: 41 PROJECT NO.: BHF 016-1(29)	CHKD: J.C. DFTM: B.L. JOB NO: 23465-015
SUPERSTRUCTURE DETAILS	DWG. NO: F3

F:\VT-Bridges\23465-15 Andover 4\123465-F3.dwg, 8/9/2015 3:06:10 PM



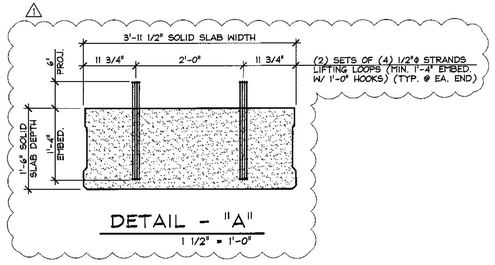
1 SS1 DIMENSIONAL PLAN VIEW IN FORM
1/4" = 1'-0"



2 SS1 REINFORCING PLAN VIEW IN FORM
1/4" = 1'-0"

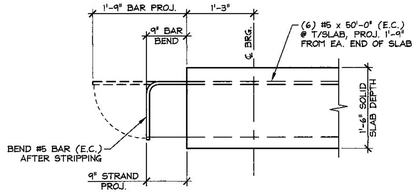
SHOP NOTE:
ADJUST REINFORCING AS REQUIRED TO CLEAR POST-TENSIONING SLEEVES.

Vermont Agency of Transportation
RECEIVED
ON: June 10, 2015
and Checked for
CONFORMANCE
BY: D. PETERSON DATE: 06/11/2015

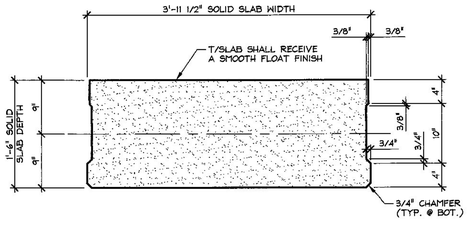


DETAIL - "A"
1 1/2" = 1'-0"

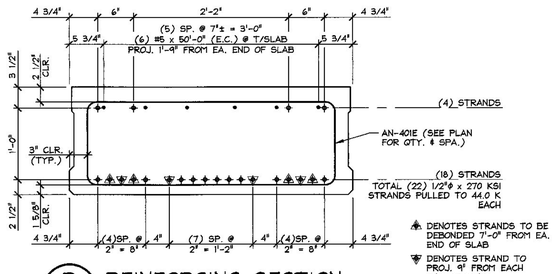
DETENSIONING SCHEDULE
N.T.S.



D SS1 PROJ. STRAND & BAR BEND DETAIL
3/4" = 1'-0"

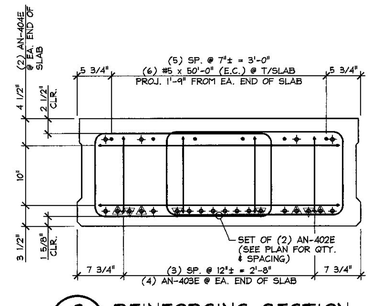


A SS1 DIMENSIONAL SECTION
1" = 1'-0"



▲ DENOTES STRANDS TO BE DEBONDED 7'-0" FROM EA. END OF SLAB
▼ DENOTES STRAND TO PROJ. 9" FROM EACH END OF SLAB

B SS1 REINFORCING SECTION @ MID-SPAN
1" = 1'-0"



C SS1 REINFORCING SECTION @ SLAB END
1" = 1'-0"

▲2 6-9-15 REVISE POST-TENSIONING
▲1 6-1-15 REVISED AS NOTED

MARK:	AN-SS1	QTY.:	1	WT.:	20.27 T	VOL.:	10.01 cy
MARK:	AN-SS2	QTY.:	1	WT.:	20.27 T	VOL.:	10.01 cy
MARK:	AN-SS3	QTY.:	1	WT.:	20.27 T	VOL.:	10.01 cy
MARK:	AN-SS4	QTY.:	1	WT.:	20.27 T	VOL.:	10.01 cy
MARK:	AN-SS5	QTY.:	1	WT.:	20.27 T	VOL.:	10.01 cy
MARK:	AN-SS6	QTY.:	1	WT.:	20.27 T	VOL.:	10.01 cy
MARK:	AN-SS7	QTY.:	1	WT.:	20.27 T	VOL.:	10.01 cy

MATERIAL LIST / SOLID SLAB

ITEM	MARK	DESCRIPTION	QTY./SLAB
1	AN-401E	#4 BENT BAR (LEVEL 1, EPOXY COATED)	67
2	AN-402E	#4 BENT BAR (LEVEL 1, EPOXY COATED)	20
3	AN-403E	#4 BENT BAR (LEVEL 1, EPOXY COATED)	8
4	AN-404E	#4 BENT BAR (LEVEL 1, EPOXY COATED)	4
5			
6		#5 x 50'-0" (LEVEL 1, EPOXY COATED)	6
7			
8			
9		SET OF (4) 1/2"ϕ STRAND LIFTING LOOPS	4
10			

APPROVAL STAMP:
FOR DESIGN AND FABRICATION
STATE OF VERMONT — NICHOLAS J. CODE — No. 10,008 — LICENSED PROFESSIONAL ENGINEER
DATE 6/10/15

J.P. CARRARA & SONS INC.
Precast & Prestress Manufacturer
2464 OSE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010

RENAUD BROS, INC.
CONTRACTOR
VERNON, VERMONT

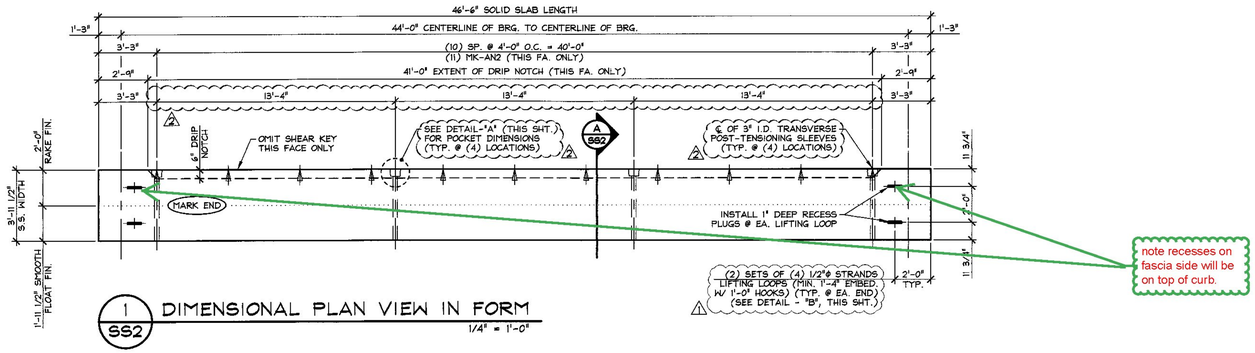
STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF WINDSOR

TOWN OF ANDOVER
VT RTE 11, RURAL MINOR ARTERIAL
BRIDGE NO.: 41 PROJECT NO.: BHF 016-1(29)

PRESTRESSED SOLID SLAB DETAILS

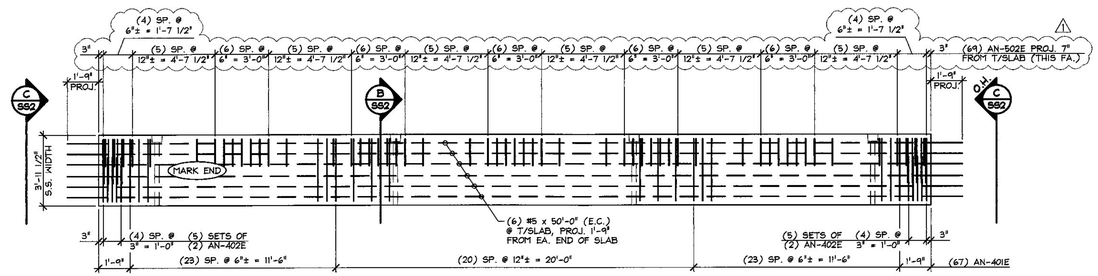
DATE: MAY 6, 2015
SCALE: NOTED
CHKD: J.C. DFTM: B.L.
JOB NO: 23465-015
DWG. NO: SS1

F:\VT-Bridges\23465-15 Andover 41\23465-SS1.dwg, 6/9/2015 3:07:56 PM



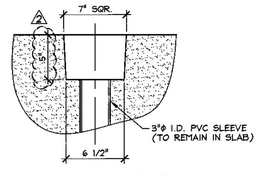
note recesses on fascia side will be on top of curb.

1 SS2 DIMENSIONAL PLAN VIEW IN FORM
1/4" = 1'-0"

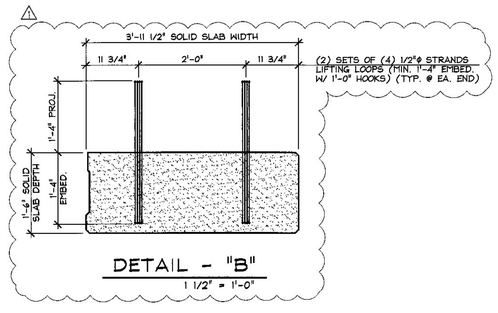


2 SS2 REINFORCING PLAN VIEW IN FORM
1/4" = 1'-0"

SHOP NOTE:
ADJUST REINFORCING AS REQUIRED TO CLEAR POST-TENSIONING SLEEVES AND POCKETS.



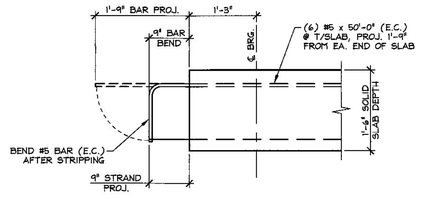
DETAIL - "A"
1 1/2" = 1'-0"



DETAIL - "B"
1 1/2" = 1'-0"

DETENSIONING SCHEDULE
N.T.S.

1	9									10	2
3	5	7	11	13	15	17	19	21	22	20	18	16	14	12	8	6	4

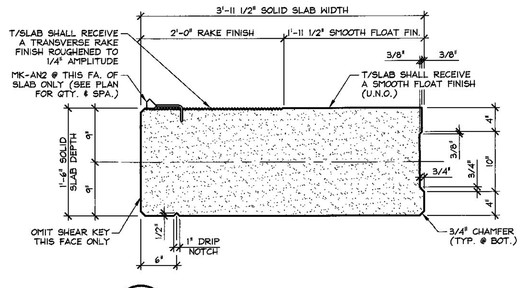


D SS2 PROJ. STRAND ϕ BAR BEND DETAIL
3/4" = 1'-0"

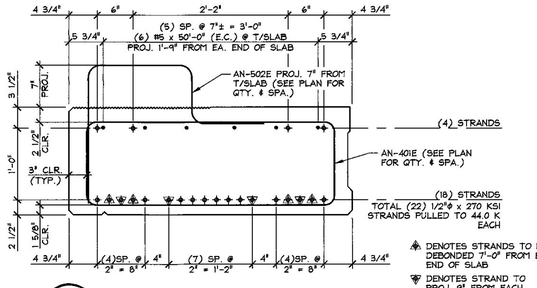
MARK:	AN-SS8	QTY.:	1	WT.:	20.48 T	VOL.:	10.11 cy
MARK:	AN-SS9	QTY.:	1	WT.:	20.48 T	VOL.:	10.11 cy

MATERIAL LIST / SOLID SLAB

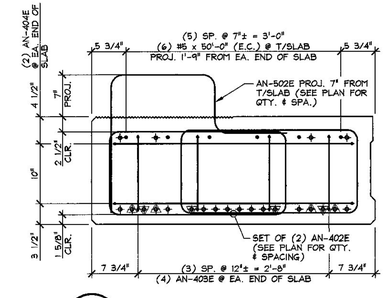
ITEM	MARK	DESCRIPTION	QTY./SLAB
1	AN-401E	#4 BENT BAR (LEVEL I, EPOXY COATED)	67
2	AN-402E	#4 BENT BAR (LEVEL I, EPOXY COATED)	20
3	AN-403E	#4 BENT BAR (LEVEL I, EPOXY COATED)	8
4	AN-404E	#4 BENT BAR (LEVEL I, EPOXY COATED)	4
5			
6	AN-502E	#5 BENT BAR (LEVEL I, EPOXY COATED)	69
7		#5 x 50'-0" (LEVEL I, EPOXY COATED)	6
8			
9	MK-AN2	DAYTON C-24 TYPE 4-APR DECK FORM HANGER (GALV.)	11
10		SET OF (4) 1/2"ϕ STRAND LIFTING LOOPS	4



A SS2 DIMENSIONAL SECTION
1" = 1'-0"



B SS2 REINFORCING SECTION @ MID-SPAN
1" = 1'-0"



C SS2 REINFORCING SECTION @ SLAB END
1" = 1'-0"

△ 6-9-15 REVISE POST-TENSIONING
△ 6-1-15 REVISED AS NOTED

APPROVAL STAMP:
FOR DESIGN AND FABRICATION
STATE OF VERMONT — DEPARTMENT OF TRANSPORTATION — LICENSED PROFESSIONAL ENGINEER
DATE 6/10/15

J.P. CARRARA & SONS INC.
Precast & Prestress Manufacturer
2464 CASE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010

RENAUD BROS, INC.
CONTRACTOR
VERNON, VERMONT

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF WINDSOR

DATE: MAY 6, 2015
SCALE: NOTED
CHKD: J.C. DFTM: B.L.
JOB NO: 23465-015

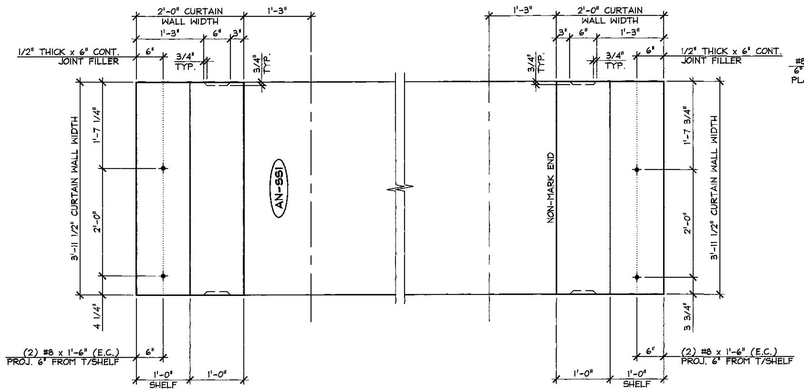
TOWN OF ANDOVER
VT RTE 11, RURAL MINOR ARTERIAL
BRIDGE NO.: 41 PROJECT NO.: BHF 016-1(29)

PRESTRESSED SOLID SLAB DETAILS

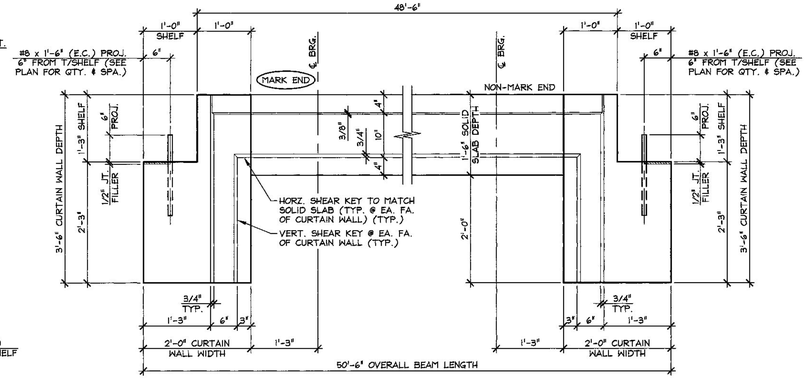
DWG. NO: SS2

Vermont Agency of Transportation
RECEIVED
ON: June 10, 2015
and Checked for
CONFORMANCE
BY: D. PETERSON DATE: 06/11/2015

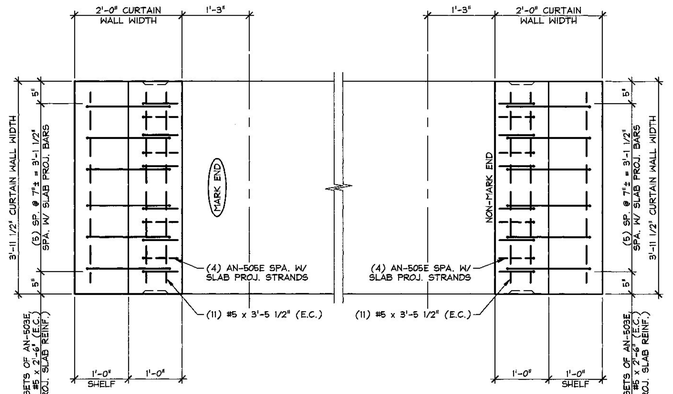
F:\VT-Bridges\23465-15 Andover 41\23465-SS2.dwg, 6/9/2015 3:10:30 PM



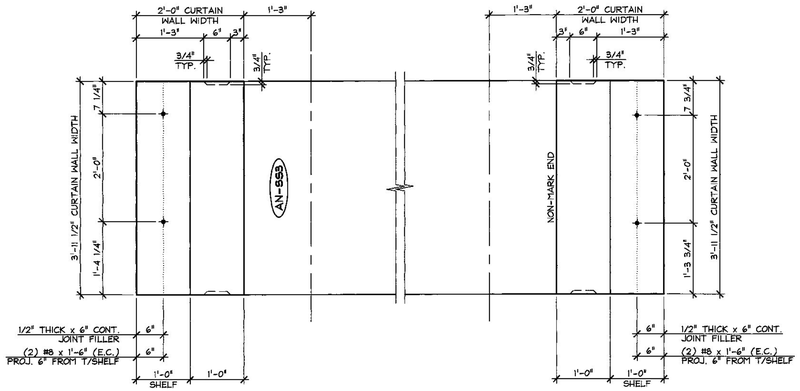
1 CW1 DIMENSIONAL PLAN VIEW IN FORM
3/4" = 1'-0"



4 CW1 DIMENSIONAL ELEVATION
3/4" = 1'-0"

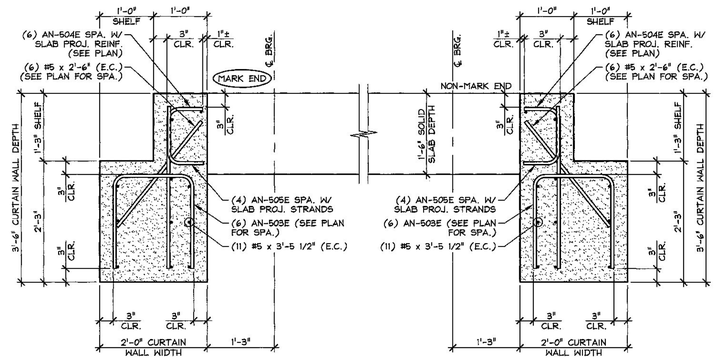


5 CW1 REINFORCING PLAN VIEW IN FORM
3/4" = 1'-0"



2 CW1 DIMENSIONAL PLAN VIEW IN FORM
3/4" = 1'-0"

3 CW1 DIMENSIONAL PLAN VIEW IN FORM
3/4" = 1'-0"



6 CW1 REINFORCING SECTION
3/4" = 1'-0"

MARK: AN-SS1	QTY.: 1
MARK: AN-SS3	QTY.: 1
MARK: AN-SS4	QTY.: 1

SHOP NOTE:
TOP OF CURTAIN WALL SHALL RECEIVE A FINISH MATCHING SOLID SLAB.

10.01 cy = SOLID SLAB
0.84 cy = CURTAIN WALL (MARK END)
0.84 cy = CURTAIN WALL (NON-MARK END)
11.69 cy = TOTAL SLAB VOL.

20.27 T = SOLID SLAB
1.71 T = CURTAIN WALL (MARK END)
1.71 T = CURTAIN WALL (NON-MARK END)
23.69 T = TOTAL SLAB WT.

MATERIAL LIST / CURTAIN WALL

ITEM	MARK	DESCRIPTION	QTY./CURTAIN WALL	
			MARK END	NON-MARK END
1	AN-503E	#5 BENT BAR (LEVEL 1, EPOXY COATED)	6	6
2	AN-504E	#5 BENT BAR (LEVEL 1, EPOXY COATED)	6	6
3	AN-505E	#5 BENT BAR (LEVEL 1, EPOXY COATED)	4	4
4		#5 x 2'-6" (LEVEL 1, EPOXY COATED)	6	6
5		#5 x 3'-5 1/2" (LEVEL 1, EPOXY COATED)	11	11
6				
7		#8 x 1'-6" (LEVEL 1, EPOXY COATED)	2	2
8				

Vermont Agency of Transportation
RECEIVED
ON: June 10, 2015
and Checked for
CONFORMANCE
BY: D. PETERSON DATE: 06/11/2015

APPROVAL STAMP:
FOR DESIGN AND FABRICATION
STATE OF VERMONT ENGINEERING DIVISION LICENSED PROFESSIONAL ENGINEER
DATE 6/10/15

J.P. CARRARA & SONS INC.
Precast & Prestress Manufacturer
2464 CASE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010

RENAUD BROS, INC.
CONTRACTOR
VERNON, VERMONT

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF WINDSOR

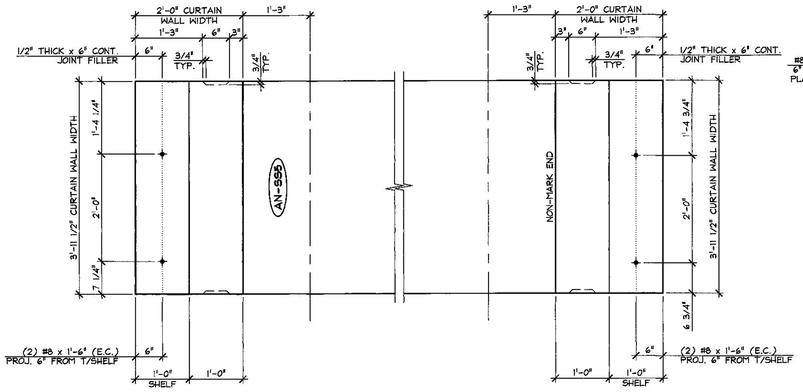
DATE: MAY 6, 2015
SCALE: NOTED
CHKD: J.C. DFTM: B.L.
JOB NO: 23465-015

TOWN OF ANDOVER
VT RTE 11, RURAL MINOR ARTERIAL
BRIDGE NO.: 41 PROJECT NO.: BHF 016-1(29)

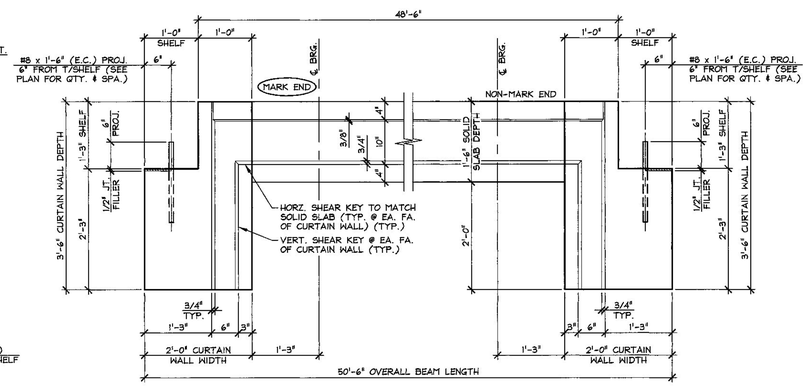
PRECAST CURTAIN WALL DETAILS

DWG. NO: CW1

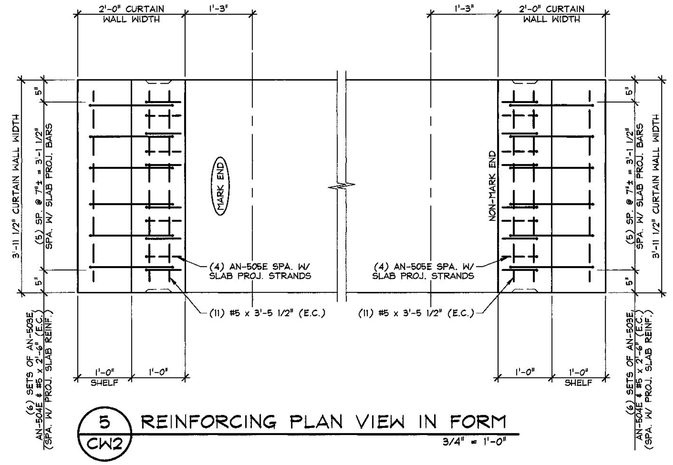
F:\VT-Bridges\23465-15 Andover 41\23465-CW1.dwg, 6/9/2015 3:27:21 PM



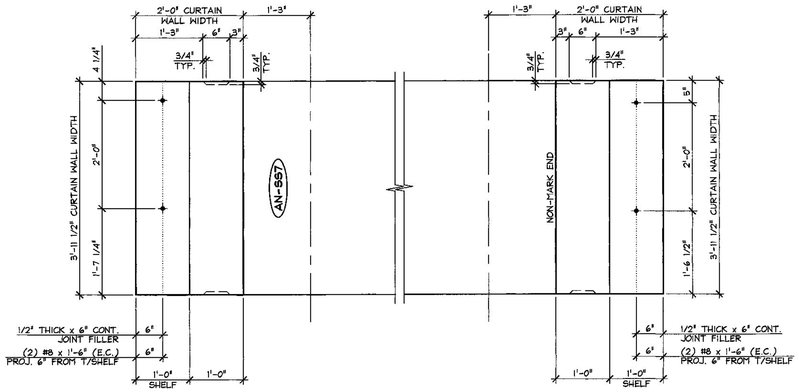
1 CW2 DIMENSIONAL PLAN VIEW IN FORM
3/4" = 1'-0"



4 CW2 DIMENSIONAL ELEVATION
3/4" = 1'-0"



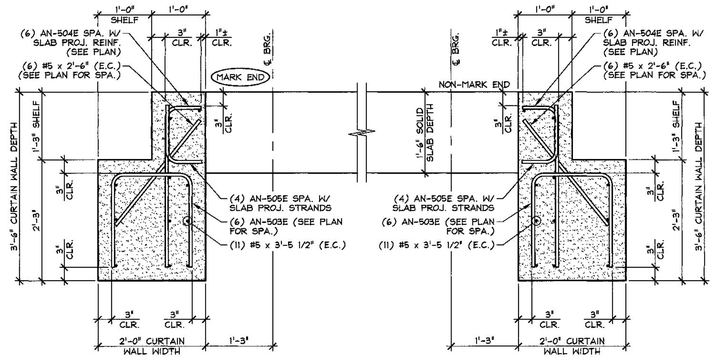
5 CW2 REINFORCING PLAN VIEW IN FORM
3/4" = 1'-0"



2 CW2 DIMENSIONAL PLAN VIEW IN FORM
3/4" = 1'-0"

THIS PLAN NOT USED

3 CW2 DIMENSIONAL PLAN VIEW IN FORM
3/4" = 1'-0"



6 CW2 REINFORCING SECTION
3/4" = 1'-0"

10.01 cy = SOLID SLAB
0.84 cy = CURTAIN WALL (MARK END)
0.84 cy = CURTAIN WALL (NON-MARK END)
11.69 cy = TOTAL SLAB VOL.

20.27 T = SOLID SLAB
1.71 T = CURTAIN WALL (MARK END)
1.71 T = CURTAIN WALL (NON-MARK END)
23.69 T = TOTAL SLAB WT.

MARK: AN-SS5	QTY.: 1
MARK: AN-SS7	QTY.: 1
MARK:	QTY.:

SHOP NOTE:
TOP OF CURTAIN WALL SHALL RECEIVE A FINISH MATCHING SOLID SLAB.

MATERIAL LIST / CURTAIN WALL

ITEM	MARK	DESCRIPTION	QTY./CURTAIN WALL	
			MARK END	NON-MARK END
1	AN-503E	#5 BENT BAR (LEVEL 1, EPOXY COATED)	6	6
2	AN-504E	#5 BENT BAR (LEVEL 1, EPOXY COATED)	6	6
3	AN-505E	#5 BENT BAR (LEVEL 1, EPOXY COATED)	4	4
4		#5 x 2'-6" (LEVEL 1, EPOXY COATED)	6	6
5		#5 x 3'-5 1/2" (LEVEL 1, EPOXY COATED)	11	11
6				
7		#8 x 1'-6" (LEVEL 1, EPOXY COATED)	2	2
8				

Vermont Agency of Transportation
RECEIVED
ON: June 10, 2015
and Checked for
CONFORMANCE
BY: D. PETERSON DATE: 06/11/2015

APPROVAL STAMP:
FOR DESIGN AND FABRICATION
STATE OF VERMONT · JAMES C. CARROLL III · 10,031 · REGISTERED PROFESSIONAL ENGINEER
DATE 6/10/15

J.P. CARRARA & SONS INC.
Precast & Prestress Manufacturer
2464 CASE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010

RENAUD BROS, INC.
CONTRACTOR
VERNON, VERMONT

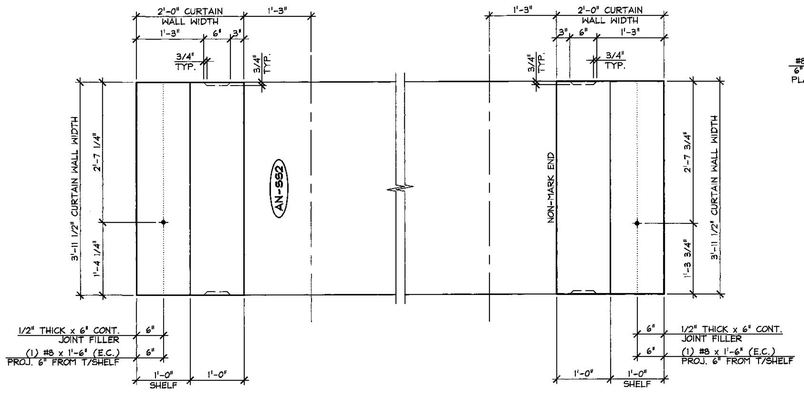
STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF WINDSOR

TOWN OF ANDOVER
VT RTE 11, RURAL MINOR ARTERIAL
BRIDGE NO.: 41 PROJECT NO.: BHF 016-1(29)

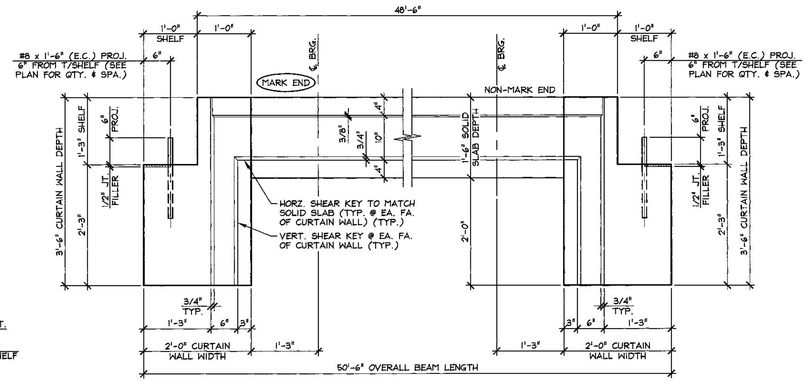
PRECAST CURTAIN WALL DETAILS

DATE: MAY 6, 2015
SCALE: NOTED
CHKD: J.C. DFTM: B.L.
JOB NO: 23465-015
DWG. NO: CW2

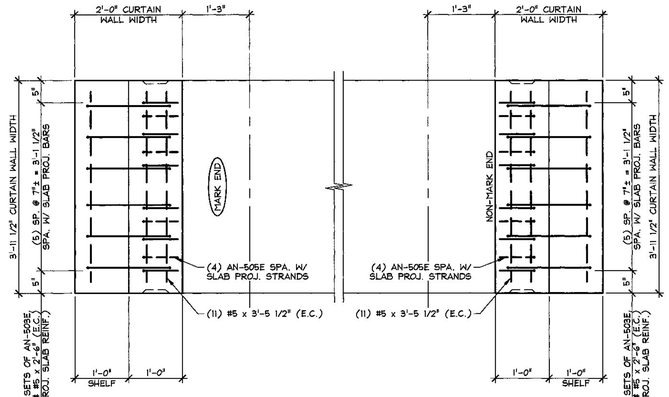
F:\VT-Bridges\23465-15 Andover 41\23465-CW2.dwg, 6/9/2015 3:28:55 PM



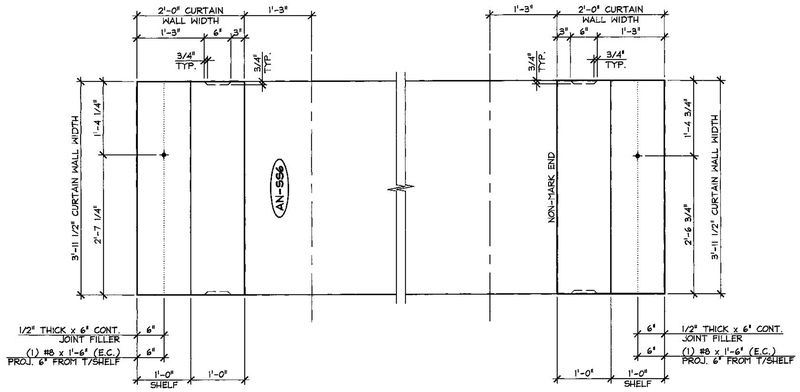
1 CW3 DIMENSIONAL PLAN VIEW IN FORM
3/4" = 1'-0"



4 CW3 DIMENSIONAL ELEVATION
3/4" = 1'-0"



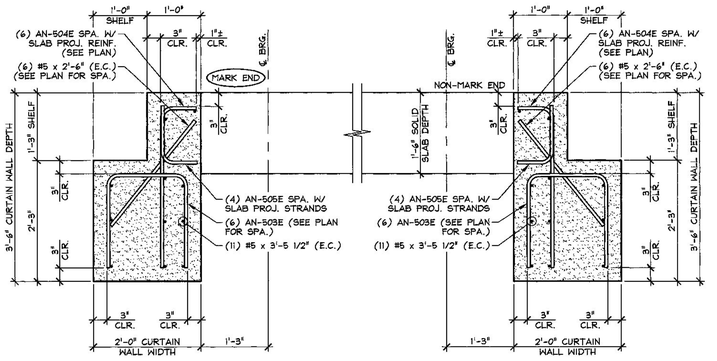
5 CW3 REINFORCING PLAN VIEW IN FORM
3/4" = 1'-0"



2 CW3 DIMENSIONAL PLAN VIEW IN FORM
3/4" = 1'-0"

THIS PLAN NOT USED

3 CW3 DIMENSIONAL PLAN VIEW IN FORM
3/4" = 1'-0"



6 CW3 REINFORCING SECTION
3/4" = 1'-0"

MARK: AN-SS2	QTY.: 1
MARK: AN-SS6	QTY.: 1
MARK:	QTY.:

SHOP NOTE:
TOP OF CURTAIN WALL SHALL RECEIVE A FINISH MATCHING SOLID SLAB.

10.01 cy = SOLID SLAB
0.84 cy = CURTAIN WALL (MARK END)
0.84 cy = CURTAIN WALL (NON-MARK END)
11.69 cy = TOTAL SLAB VOL.

20.27 T = SOLID SLAB
1.71 T = CURTAIN WALL (MARK END)
1.71 T = CURTAIN WALL (NON-MARK END)
23.69 T = TOTAL SLAB WT.

MATERIAL LIST / CURTAIN WALL

ITEM	MARK	DESCRIPTION	QTY./CURTAIN WALL	
			MARK END	NON-MARK END
1	AN-503E	#5 BENT BAR (LEVEL 1, EPOXY COATED)	6	6
2	AN-504E	#5 BENT BAR (LEVEL 1, EPOXY COATED)	6	6
3	AN-505E	#5 BENT BAR (LEVEL 1, EPOXY COATED)	4	4
4		#5 x 2'-6" (LEVEL 1, EPOXY COATED)	6	6
5		#5 x 3'-5 1/2" (LEVEL 1, EPOXY COATED)	11	11
6				
7		#8 x 1'-6" (LEVEL 1, EPOXY COATED)	1	1
8				

Vermont Agency of Transportation
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BY: D. PETERSON DATE: 06/11/2015

APPROVAL STAMP:
FOR DESIGN AND FABRICATION
STATE OF VERMONT · DEPARTMENT OF HIGHWAYS · LICENSED PROFESSIONAL ENGINEER
DATE 6/10/15

J.P. CARRARA & SONS INC.
Precast & Prestress Manufacturer
2464 CASE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010

RENAUD BROS, INC.
CONTRACTOR
VERNON, VERMONT

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF WINDSOR

DATE: MAY 6, 2015
SCALE: NOTED
CHKD: J.C. DFTM: B.L.
JOB NO: 23465-015

TOWN OF ANDOVER
VT RTE 11, RURAL MINOR ARTERIAL
BRIDGE NO.: 41 PROJECT NO.: BHF 016-1(29)

PRECAST CURTAIN WALL DETAILS

DWG. NO: CW3

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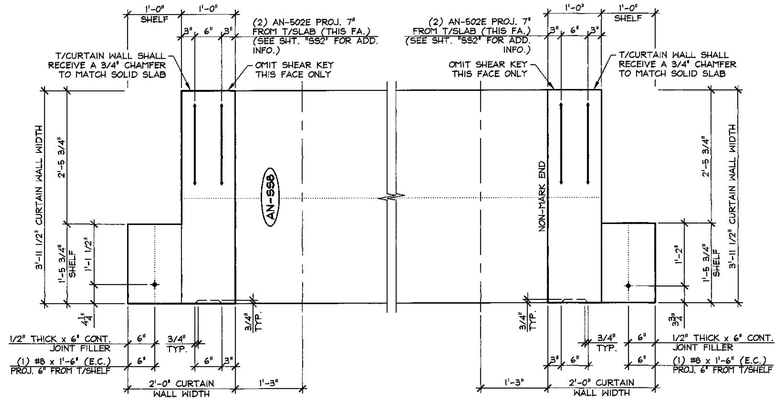
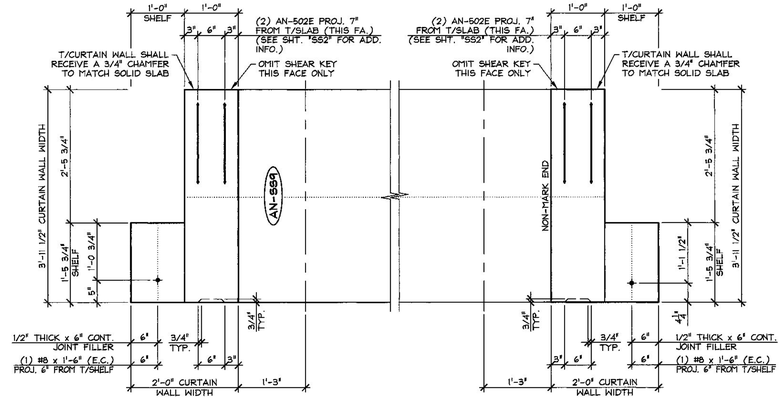
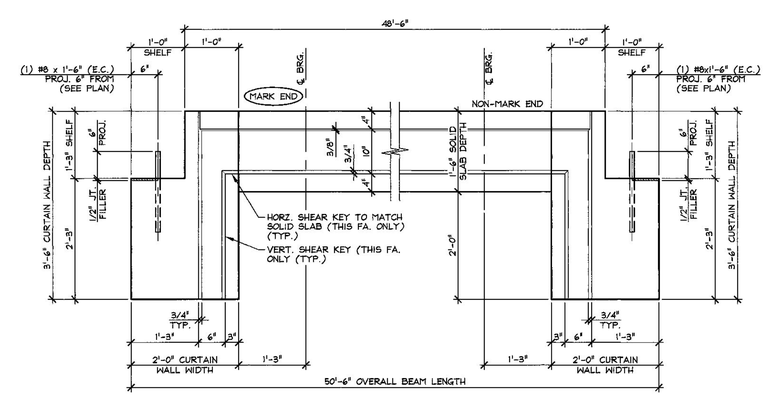


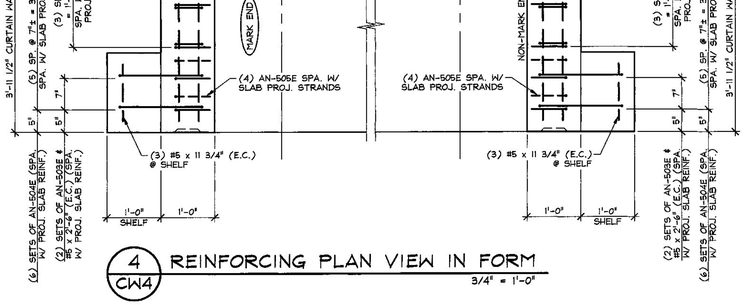
1 CW4 DIMENSIONAL PLAN VIEW IN FORM
3/4" = 1'-0"



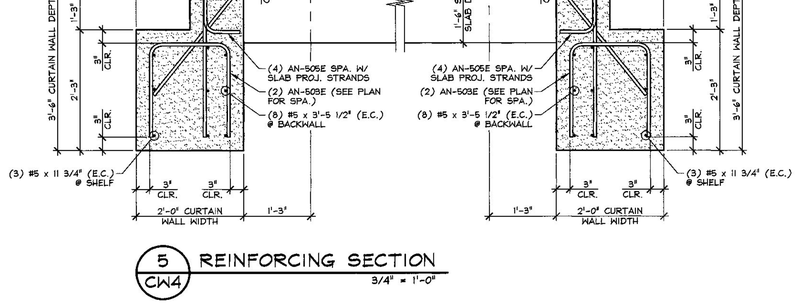
2 CW4 DIMENSIONAL PLAN VIEW IN FORM
3/4" = 1'-0"



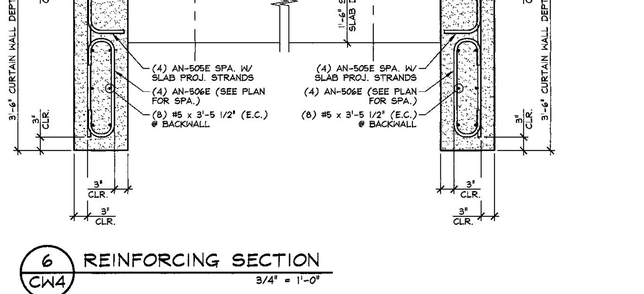
3 CW4 DIMENSIONAL ELEVATION
3/4" = 1'-0"



4 CW4 REINFORCING PLAN VIEW IN FORM
3/4" = 1'-0"



5 CW4 REINFORCING SECTION
3/4" = 1'-0"



6 CW4 REINFORCING SECTION
3/4" = 1'-0"

MARK: AN-SS8	QTY.: 1
MARK: AN-SS9	QTY.: 1

SHOP NOTE:
TOP OF CURTAIN WALL SHALL RECEIVE A FINISH MATCHING SOLID SLAB.

MATERIAL LIST / CURTAIN WALL

ITEM	MARK	DESCRIPTION	QTY./CURTAIN WALL	
			MARK END	NON-MARK END
1	AN-502E	#5 BENT BAR (LEVEL 1, EPOXY COATED)	2	2
2	AN-503E	#5 BENT BAR (LEVEL 1, EPOXY COATED)	2	2
3	AN-504E	#5 BENT BAR (LEVEL 1, EPOXY COATED)	6	6
4	AN-505E	#5 BENT BAR (LEVEL 1, EPOXY COATED)	4	4
5	AN-506E	#5 BENT BAR (LEVEL 1, EPOXY COATED)	6	6
6		#5 x 2'-6" (LEVEL 1, EPOXY COATED)	2	2
7		#5 x 3'-5 1/2" (LEVEL 1, EPOXY COATED)	8	8
8		#5 x 11 3/4" (LEVEL 1, EPOXY COATED)	3	3
9				
10		#8 x 1'-6" (LEVEL 1, EPOXY COATED)	1	1

10.11 cy = SOLID SLAB
0.64 cy = CURTAIN WALL (MARK END)
0.64 cy = CURTAIN WALL (NON-MARK END)
11.39 cy = TOTAL SLAB VOL.

20.48 T = SOLID SLAB
1.29 T = CURTAIN WALL (MARK END)
1.29 T = CURTAIN WALL (NON-MARK END)
23.06 T = TOTAL SLAB WT.

Vermont Agency of Transportation
RECEIVED
ON: June 10, 2015
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CONFORMANCE
BY: D. PETERSON DATE: 06/11/2015

APPROVAL STAMP:
FOR DESIGN AND FABRICATION
STATE OF VERMONT
JOSEPH C. CARRARA
No. 10,000
LICENSED
PROFESSIONAL ENGINEER
DATE 6/10/15

J.P. CARRARA & SONS INC.
Precast & Prestress Manufacturer
2464 CASE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010

RENAUD BROS, INC.
CONTRACTOR
VERNON, VERMONT

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF WINDSOR

DATE: MAY 6, 2015
SCALE: NOTED
CHKD: J.C. DFTM: B.L.
JOB NO: 23465-015

TOWN OF ANDOVER
VT RTE 11, RURAL MINOR ARTERIAL
BRIDGE NO.: 41 PROJECT NO.: BHF 016-1(29)

PRECAST CURTAIN WALL DETAILS

DWG. NO: CW4

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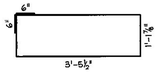
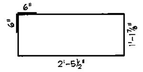
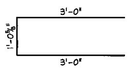


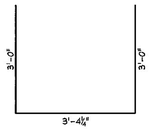
AN-401E
#4 BENT BAR
LEVEL I (EPOXY COATED)
USE 2"ϕ (50 mm) PIN
(603) REQ'D.



AN-402E
#4 BENT BAR
LEVEL I (EPOXY COATED)
USE 2"ϕ (50 mm) PIN
(180) REQ'D.



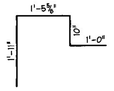
AN-403E
#4 BENT BAR
LEVEL I (EPOXY COATED)
USE 2"ϕ (50 mm) PIN
(72) REQ'D.



AN-404E
#4 BENT BAR
LEVEL I (EPOXY COATED)
USE 2"ϕ (50 mm) PIN
(36) REQ'D.

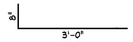
THIS DETAIL NOT USED

AN-501E



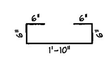
AN-502E
#5 BENT BAR
LEVEL I (EPOXY COATED)
USE 2¾"ϕ (70 mm) PIN
(146) REQ'D.

AN-503E
#5 BENT BAR
LEVEL I (EPOXY COATED)
USE 2¾"ϕ (70 mm) PIN
(92) REQ'D.



AN-504E
#5 BENT BAR
LEVEL I (EPOXY COATED)
USE 2¾"ϕ (70 mm) PIN
(108) REQ'D.

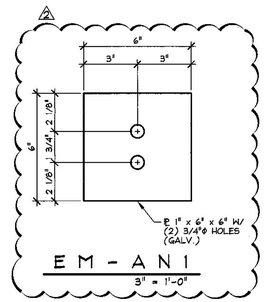
AN-505E
#5 BENT BAR
LEVEL I (EPOXY COATED)
USE 2¾"ϕ (70 mm) PIN
(72) REQ'D.



AN-506E
#5 BENT BAR
LEVEL I (EPOXY COATED)
USE 2¾"ϕ (70 mm) PIN
(24) REQ'D.

MISCELLANEOUS MATERIALS

ITEM	MARK	QTY.	DESCRIPTION	REMARKS
1	EM-AN1	8	1" THICK x 6" x 6" W/ (1) 3/4"ϕ HOLE (GALV.)	FOR ERECTION; SEE DETAIL THIS SHEET
2		16	0.60"ϕ SINGLE USE STRESSING CHUCK	FOR ERECTION
3		8	0.60"ϕ x 270 KSI x 38'-9" LONG POLYSTRAND	FOR ERECTION
4		32	COMPRESSIBLE SEALER SELF ADHESIVE	FOR ERECTION
5				
6				
7				
8		54	#5 x 50'-0" (LEVEL I, EPOXY COATED)	
9				
10	MK-AN2	22	DAYTON C-24 TYPE 4-APR DECK FORM HANGER	GALVANIZE
11		36	SET OF (4) 1/2"ϕ STRAND LIFTING LOOPS	
12				
13				
14				
15		92	#5 x 2'-6" (LEVEL I, EPOXY COATED)	CAST INTO CURTAIN WALL
16		186	#5 x 3'-5 1/2" (LEVEL I, EPOXY COATED)	CAST INTO CURTAIN WALL
17		12	#5 x 11 3/4" (LEVEL I, EPOXY COATED)	CAST INTO CURTAIN WALL
18				
19		28	#8 x 1'-6" (LEVEL I, EPOXY COATED)	CAST INTO CURTAIN WALL
20				



EM - AN1
3" = 1'-0"

Vermont Agency of Transportation
RECEIVED
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CONFORMANCE
BY: D. PETERSON DATE: 06/11/2015

△2 6-9-15 REVISE POST-TENSIONING
△1 6-1-15 REVISED AS NOTED

APPROVAL STAMP:
FOR DESIGN AND FABRICATION
STATE OF VERMONT · CHRISTOPHER D. HOUGH · 10,536 · MECHANICAL ENGINEER · LICENSED · PROFESSIONAL ENGINEER
DATE 6/10/15

J.P. CARRARA & SONS INC.
Precast & Prestress Manufacturer
2464 CASE STR., MIDDLEBURY, VERMONT 05753 Phone:(802)388-6361 Fax:(802)388-9010

RENAUD BROS, INC.
CONTRACTOR
VERNON, VERMONT

STATE OF VERMONT AGENCY OF TRANSPORTATION
COUNTY OF WINDSOR

TOWN OF ANDOVER
VT RTE 11, RURAL MINOR ARTERIAL
BRIDGE NO.: 41 PROJECT NO.: BHF 016-1(29)

MATERIALS LIST

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CHKD: J.C. DFTM: B.L.
JOB NO: 23465-015
DWG. NO: M1

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