WARREN BRF 013-4(32)
CONTRACTOR FABRICATED PBU UNITS

ROBERT M. SUTHERLAND, P
ENGINEERS-SURVEYORS-MATERIAL TESTI
PLATTSBURGH NEW YORK

REV	REVISION	DATE
1	PER REVIEWER COMMENTS	05/22/14

REVISIONS

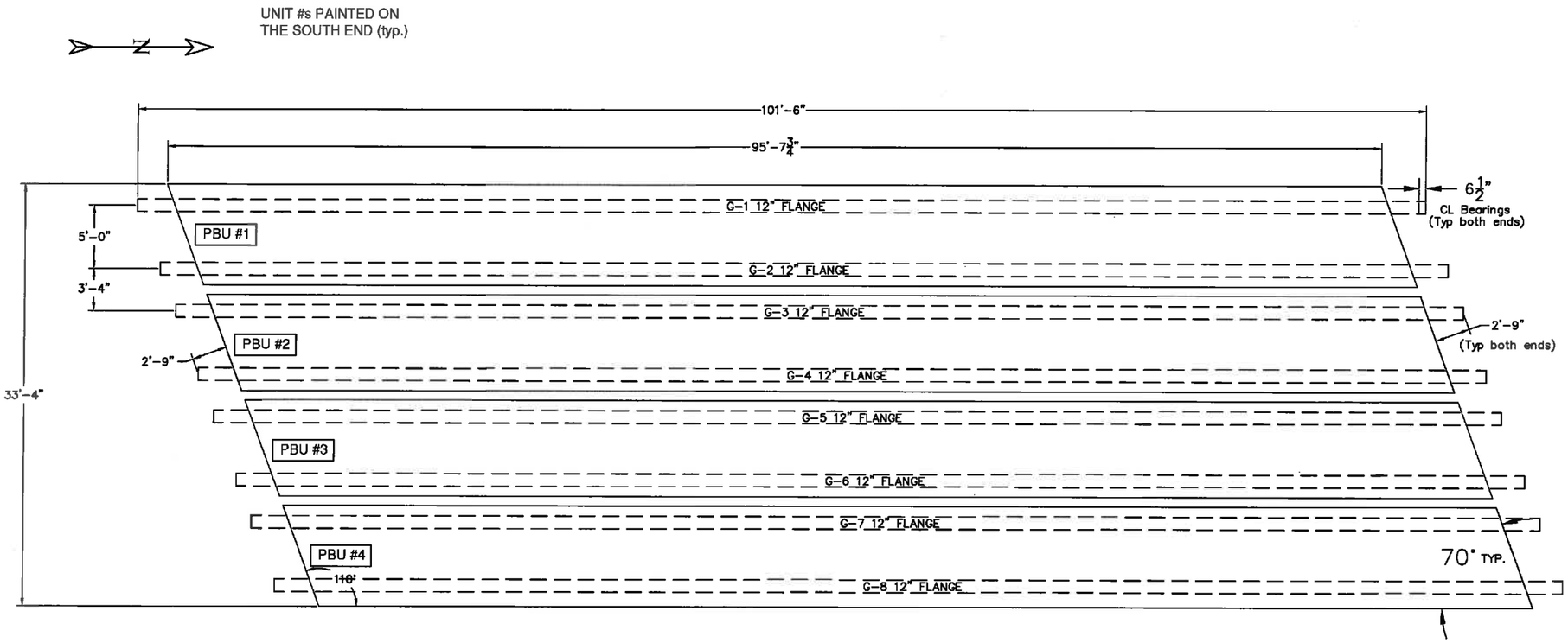
PROJECT
WARREN BRF
013-4(32)
VT ROUTE 100
WARREN, VT

CLIENT
LUCK BROTHERS, INC.
TRADE ROAD
PLATTSBURGH, NY 12901

SHEET TITLE
PRE-CAST BRIDGE UNIT
COVER SHEET / INDEX

DRAWN BY: KTW
CHECKED BY: TL
DATE: 04/28/14
SHEET NO:
COVER

UNIT #s PAINTED ON
THE SOUTH END (typ.)



ROBERT M. SUTHERLAND, P
ENGINEERS–SURVEYORS–MATERIAL TEST
PLATTSBURGH NEW YORK

REV	REVISION	DATE
1	PER REVIEWER COMMENTS	05/22/14

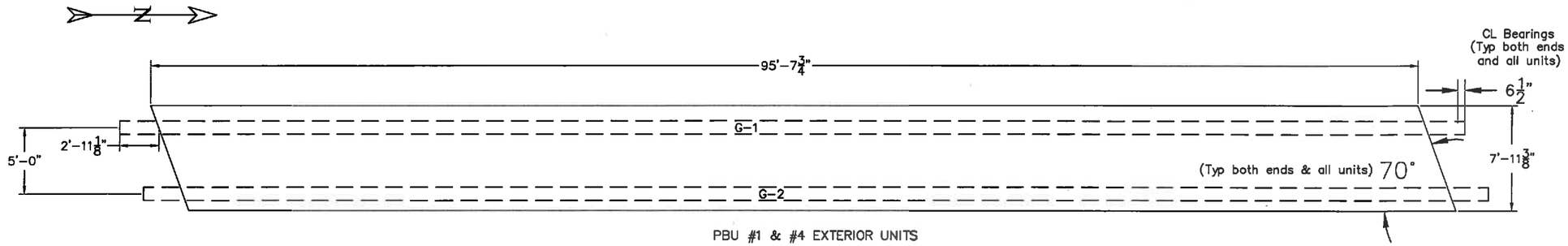
REVISIONS

PROJECT
WARREN BRF
013-4(32)
VT ROUTE 100
WARREN, VT

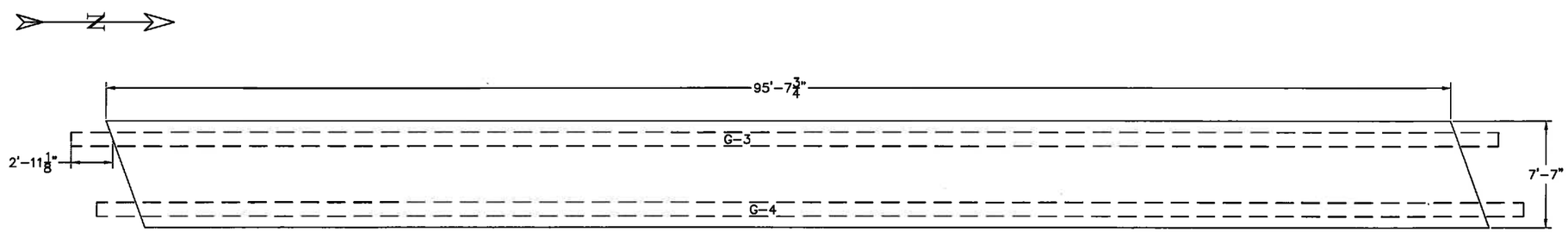
CLIENT
LUCK BROTHERS, INC.
TRADE ROAD
PLATTSBURGH, NY 12901

SHEET TITLE
PRE-CAST BRIDGE UNIT
PLAN

DRAWN BY: KTW
CHECKED BY: TL
DATE: 04/28/14
SHEET NO:
1



PBU #1 & #4 EXTERIOR UNITS



PBU #2 & #3 INTERIOR UNITS

ROBERT M. SUTHERLAND, P
ENGINEERS–SURVEYORS–MATERIAL TESTI
PLATTSBURGH NEW YORK

1	PER REVIEWER COMMENTS	05/22/14
REV	REVISION	DATE

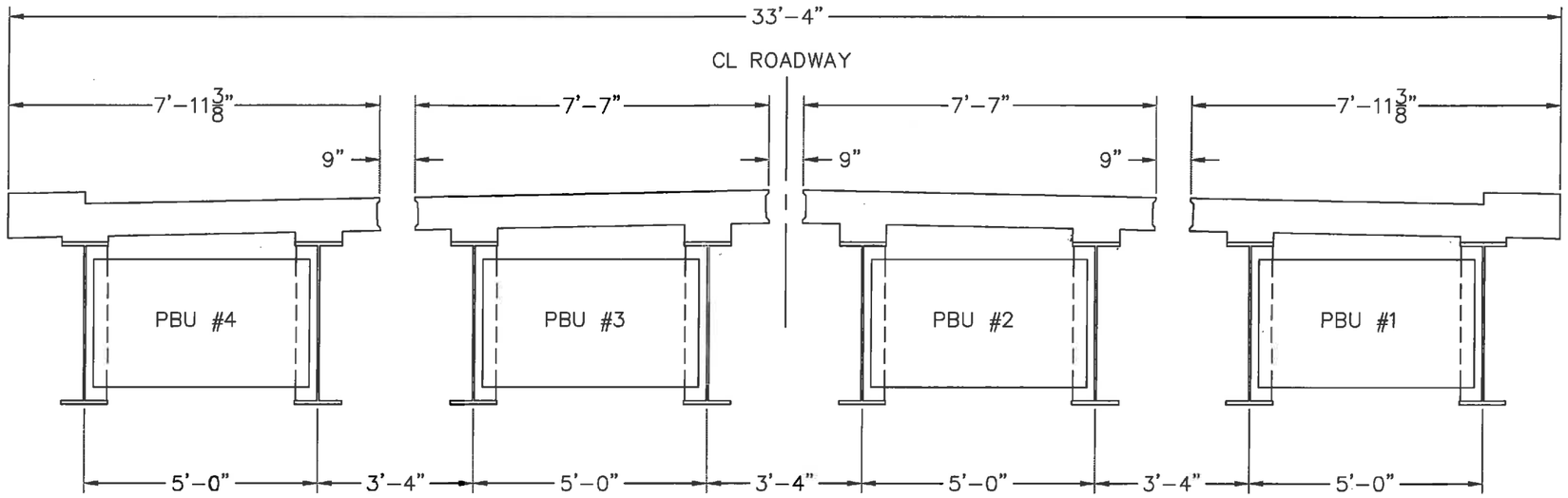
REVISIONS

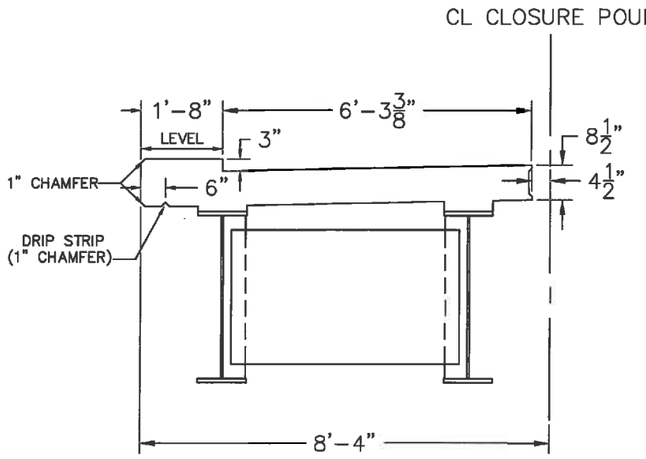
PROJECT
WARREN BRF
013-4(32)
VT ROUTE 100
WARREN, VT

CLIENT
LUCK BROTHERS, INC.
TRADE ROAD
PLATTSBURGH, NY 12901

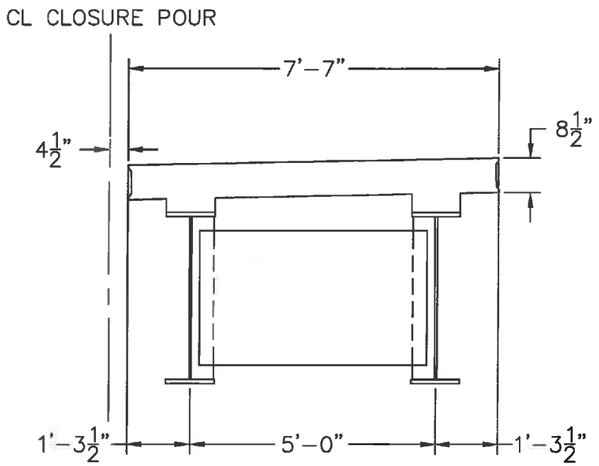
SHEET TITLE
PRE-CAST BRIDGE UNIT
PBU #1 thru #4

DRAWN BY: KTW
CHECKED BY: TL
DATE: 04/28/14
SHEET NO:
2





TYPICAL EXTERIOR PBU



TYPICAL INTERIOR PBU

ROBERT M. SUTHERLAND, P
ENGINEERS–SURVEYORS–MATERIAL TESTI
PLATTSBURGH NEW YORK

REV	REVISION	DATE
1	PER REVIEWER COMMENTS	05/22/14

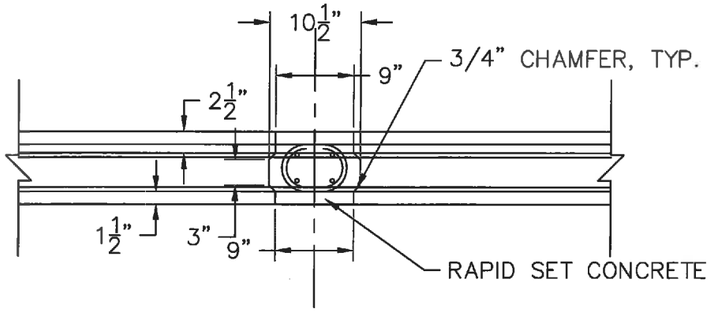
REVISIONS

PROJECT
WARREN BRF
013-4(32)
VT ROUTE 100
WARREN, VT

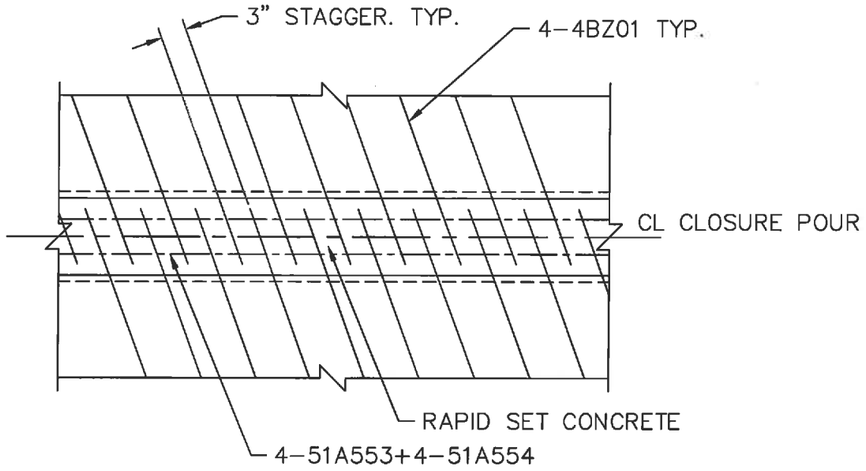
CLIENT
LUCK BROTHERS, INC.
TRADE ROAD
PLATTSBURGH, NY 12901

SHEET TITLE
PRE-CAST BRIDGE UNIT
PBU DETAILS

DRAWN BY: KTW
CHECKED BY: TL
DATE: 04/28/14
SHEET NO:
3



CLOSURE POUR SECTION



CLOSURE POUR PLAN

ROBERT M. SUTHERLAND, P
ENGINEERS-SURVEYORS-MATERIAL TESTI
PLATTSBURGH NEW YORK

REV	REVISION	DATE
1	PER REVIEWER COMMENTS	05/22/14

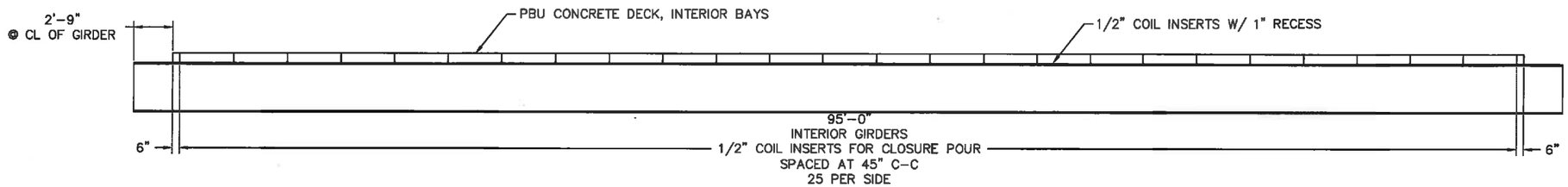
REVISIONS

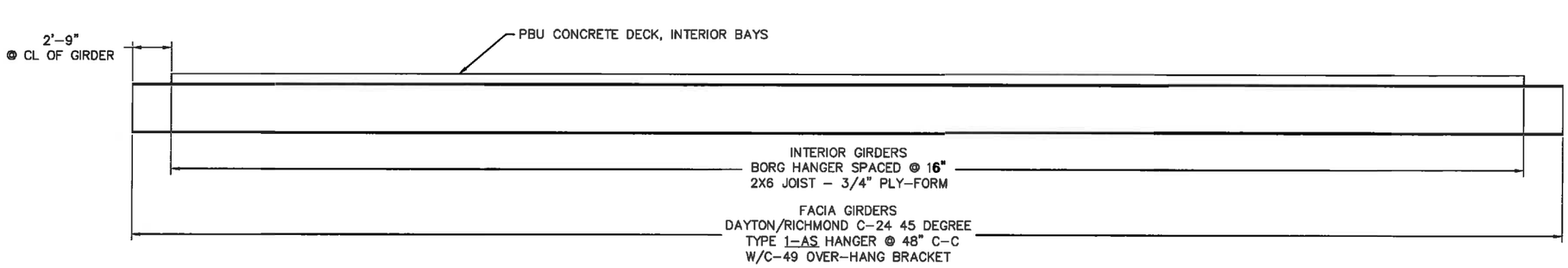
PROJECT
WARREN BRF
013-4(32)
VT ROUTE 100
WARREN, VT

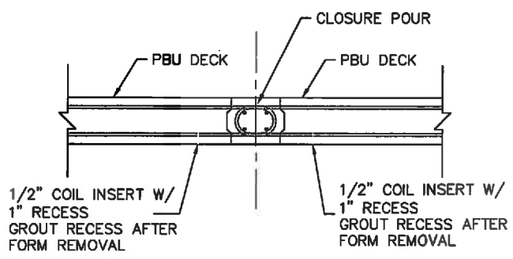
CLIENT
LUCK BROTHERS, INC.
TRADE ROAD
PLATTSBURGH, NY 12901

SHEET TITLE
PRE-CAST BRIDGE UNIT
CLOSURE POUR DETAILS

DRAWN BY: KTW
CHECKED BY: TL
DATE: 04/28/14
SHEET NO:
4







ROBERT M. SUTHERLAND, P
ENGINEERS-SURVEYORS-MATERIAL TESTI
PLATTSBURGH NEW YORK

1	PER REVIEWER COMMENTS	05/22/14
REV	REVISION	DATE

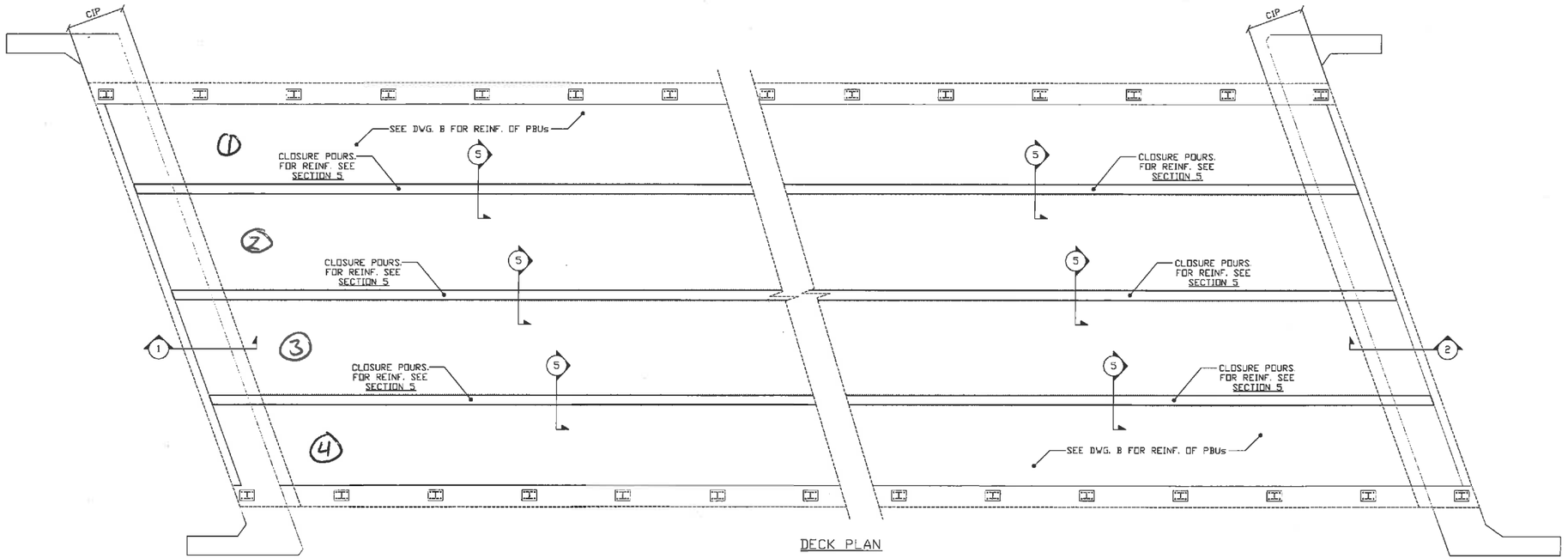
REVISIONS

PROJECT
WARREN BRF
013-4(32)
VT ROUTE 100
WARREN, VT

CLIENT
LUCK BROTHERS, INC.
TRADE ROAD
PLATTSBURGH, NY 12901

SHEET TITLE
PBU CLOSURE POUR
COIL INSERT LAYOUT

DRAWN BY: KTW
CHECKED BY: TL
DATE: 04/28/14
SHEET NO:
5



DECK PLAN

Drawing Sheet : A

BAR LIST

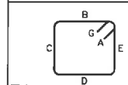
Bar Mark	Qty	Size	Total Length	Type	'A'	'B'	'C'	'D'	'E'	'F'	'G'	'H'	'J'	'K'	'O'	'R'
⚠																
51A501	✳ 14	#5	35'-0"			35'-0"										
51A502	8	#5	35'-0"			35'-0"										
51A503	16	#5	7'-1"			7'-1"										
51A504	12	#5	3'-0"			3'-0"										
51A550	18	#5	14'-10"	T1	0'-5 ½"	3'-4 ½"	3'-7"	3'-4 ½"	3'-7"		0'-5 ½"					
51A551	18	#5	14'-6"	T1	0'-5 ½"	3'-4 ½"	3'-5"	3'-4 ½"	3'-5"		0'-5 ½"					
51A553	✳ 12	#5	30'-0"			30'-0"										
51A554	12	#5	19'-0"			19'-0"										
⚠																
52A501	14	#5	35'-0"			35'-0"										
52A502	8	#5	35'-0"			35'-0"										
52A503	16	#5	7'-1"			7'-1"										
52A504	12	#5	3'-0"			3'-0"										
52A550	18	#5	14'-10"	T1	0'-5 ½"	3'-4 ½"	3'-7"	3'-4 ½"	3'-7"		0'-5 ½"					
52A551	18	#5	14'-6"	T1	0'-5 ½"	3'-4 ½"	3'-5"	3'-4 ½"	3'-5"		0'-5 ½"					
61A650	✳ 37	#6	7'-2"	17		3'-7"	3'-7"									
62A650	✳ 37	#6	7'-2"	17		3'-7"	3'-7"									
81A801	✳ 22	#8	2'-0"			2'-0"										
82A801	✳ 22	#8	2'-0"			2'-0"										

CONTRACT DWGS. BAR MARK
BAR SIZE
5 | 1A501

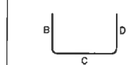
✳ BARS FOR TESTING PURPOSES INCLUDED

Length

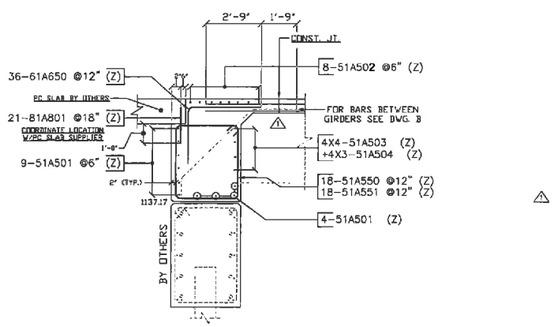
0



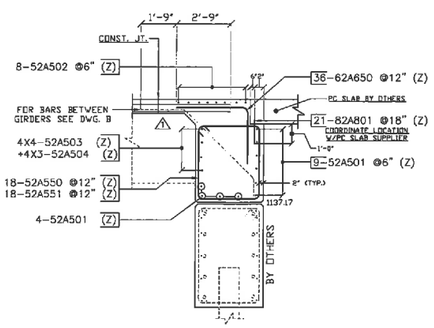
T1 Hooks A & G optional



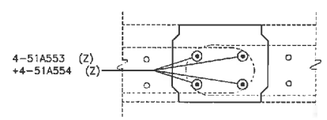
17



SECT. 1



SECT. 2



(3 THUS)

SECT. 5

ALL DUAL COATED REINF. DENOTED (Z)

LEGEND:
CONT.-CONTINUOUS
TRANS.-TRANSVERSE
DWLS.-DOWELS
VERTS.-VERTICAL
HORIZ.-HORIZONTAL
T&B -TOP & BOTTOM
I.F.-INNER FACE
O.F.-OUTER FACE
E.E.-EACH END
E.F.-EACH FACE
F.F.-FRONT FACE
R.F.-REAR FACE
E.W.-EACH WAY
O.C.-ON CENTER
L.W.-LONG WAY
S.W.-SHORT WAY

Vermont Agency of Transportation
RECEIVED
ON: April 11, 2014
and Checked for
CONFORMANCE
BY: Rob Young DATE: 04/14/2014

FOR APPROVAL

ELEVATIONS & DIMENSIONS SHOWN ON THIS DWG. ARE FOR REINF. DETAILING PURPOSES ONLY AND ARE NOT INTENDED FOR CONSTRUCTION.

REINF. BARS ASTM A615 GRADE 60 DUAL COATED

VERIFICATION OF UNCLEAR INFORMATION MAY BE REQUESTED ON THIS DRAWING. SHOULD VERIFICATION BE LEFT UN-ADDRESSED IT WILL REMAIN AS SHOWN AND ASSUME TO BE CORRECT.

___X___ Approved ___ Approved As Noted
_____ Rejected

This review is only for general conformance with the design concept and the information given in the Contract Documents. Corrections or comments made on the shop drawings during the review do not relieve the Contractor from compliance with the requirements of the Plans and Specifications. Review of a specific item shall not include review of an assembly of which an item is a component. The Contractor is responsible for dimensions to be confirmed and correlated at the job site; information that pertains solely to the fabrication process or to the means, methods, techniques, sequences and procedures of construction; coordination of the Work with that of other trades and performing all Work in a safe and satisfactory manner.

Date 4/14/2014

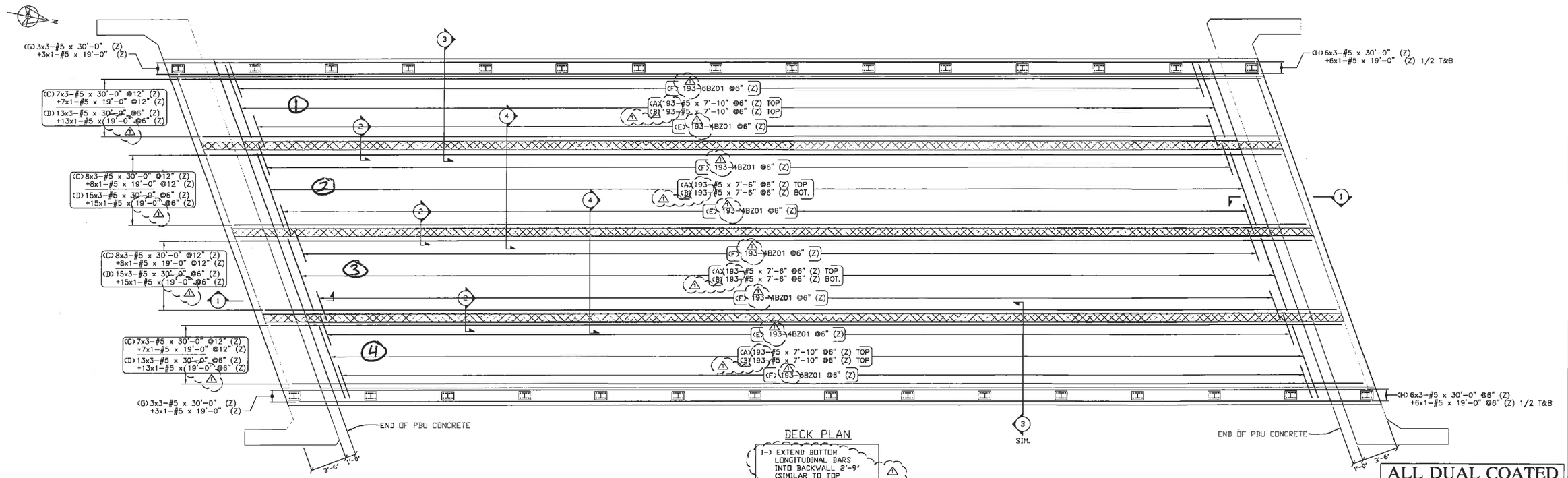
McFarland Johnson

By D. Kull

6			
5			
4			
3			
2	4-10-14	⚠	REVISED/ENG.COM/FOR APPROVAL
1	3-3-14		FOR APPROVAL
DATE	REV #		SENT FOR

DIMENSION
DIMENSION FABRICATORS INC.
2600 7TH STREET SCOTIA, N.Y. 12302
PH (518) 374-1036
FAX (518) 374-1630
www.dimensionfabricators.com

STRUCTURE	VTAOT WARREN BRF 013-4(32) PRECAST
LOCATION	BRIDGE 166 ROUTE 100 (MINOR ARTERIAL) WARREN, VT
ARCHITECT	
ENGINEER	
CUSTOMER	LUCK BROTHERS INC.
DRAWN BY	ED
DATE	3/3/14
DPI #	8747
DRAWING COVERS	LEVEL 2 ABUTMENT DUAL COATED CIP REINFORCING
DRAWING #	A



DECK PLAN

1-> EXTEND BOTTOM LONGITUDINAL BARS INTO BACKWALL 2'-9" (SIMILAR TO TOP LONGITUDINAL BARS

2-> PBU TRANSVERSE BARS DO NOT CONTINUE INTO ABUTMENT CLOSURE POUR SEE SHEET 25

ALL DUAL COATED REINF. DENOTED (Z)

NOTES
MIN. LAP FOR LONGITUDINAL #5 BARS = 1'-9"

LEGEND:
CONT.-CONTINUOUS
TRANS.-TRANSVERSE
DWLS.-DOWELS
VERTS.-VERTICAL
HORIZ.-HORIZONTAL
T&B -TOP & BOTTOM
I.F.-INNER FACE
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E.F.-EACH FACE
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R.F.-REAR FACE
E.W.-EACH WAY
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L.W.-LONG WAY
S.W.-SHORT WAY

FOR APPROVAL

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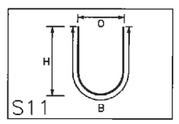
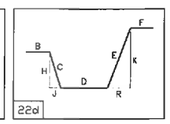
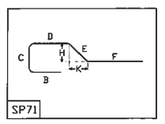
REINF. BARS ASTM A615 GRADE 60 DUAL COATED

VERIFICATION OF UNCLEAR INFORMATION MAY BE REQUESTED ON THIS DRAWING. SHOULD VERIFICATION BE LEFT UN-ADDRESSED IT WILL REMAIN AS SHOWN AND ASSUME TO BE CORRECT.

Release Number: 006			BAR LIST													
Bar Mark	Qty	Size	Total Length	Type	'A'	'B'	'C'	'D'	'E'	'F'	'G'	'H'	'J'	'K'	'O'	'R'
4BZ01	Δ1158	#4	6'-8 ½"	S11		6'-8 ½"						3'-3"			0'-4 ½"	
5BZ01	72	#5	9'-0"	22D			2'-0"	5'-9"	1'-3"			1'-5"	1'-5"	0'-10 ¼"		0'-10 ¼"
6BZ01	Δ 386	#6	6'-7 ½"	SP71		1'-3"	0'-7 ½"	1'-2 ¾"	0'-4 ¼"	3'-2"		0'-3"		0'-3"		







Vermont Agency of Transportation
RECEIVED
ON: April 11, 2014
and Checked for
CONFORMANCE
BY: Rob Young DATE: 04/15/2014

_X_ Approved ____ Approved As Noted
____ Rejected

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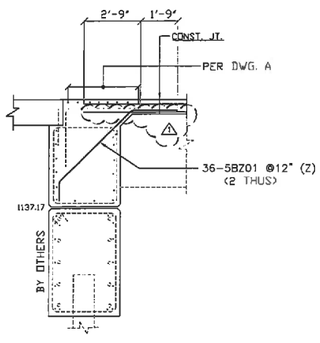
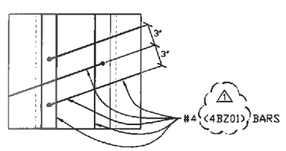
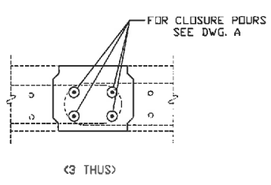
Date 4/14/2014
McFarland Johnson
By D. Kull



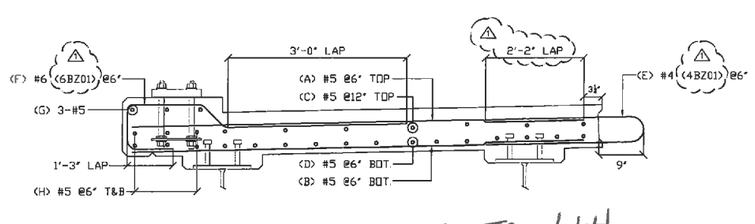
SECT. 1



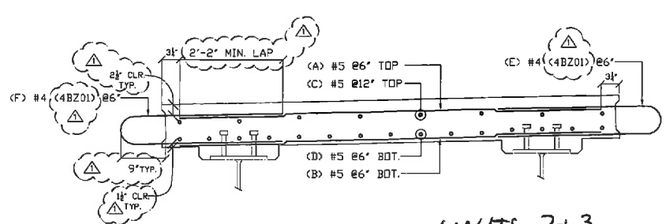
SECT. 2
PLAN VIEW



SECT. 2



SECT. 3 UNITS 1+4



SECT. 4 UNITS 2+3

6			
5			
4			
3			
2	4-10-14	Δ	REVISED/ENG.COM/FOR APPROVAL
1	3-3-14		FOR APPROVAL
DATE	REV.#		SENT FOR

DIMENSION
DIMENSION FABRICATORS INC.
2300 7TH STREET
SCOTIA, N.Y. 12302
PH: (518) 374-1828
FAX: (518) 374-6830
www.dimensionfabricators.com

STRUCTURE	VTAOT WARREN BRF 013-4(32)
LOCATION	BRIDGE 166 ROUTE 100 (MINOR ARTERIAL) WARREN, VT
ARCHITECT	
ENGINEER	
CUSTOMER	LUCK BROTHERS INC.
DRAWN BY ED	DATE 3/3/14
DRAWING #	8747
DRAWING COVERS	PRE-FAB BRIDGE UNITS DUAL COATED REINFORCING
DRAWING #	B

7

QUALITY CONTROL PROCEDURES–PORTABLE BRIDGE UNITS.

ALL PROCEDURES, MATERIALS AND METHODS TO BE IN COMPLIANCE WITH PAGE 26 – SPECIAL PROVISIONS – PREFABRICATED BRIDGE UNIT SUPERSTRUCTURE.

1. S.D. IRELAND WILL BE SUPPLYING THE CONCRETE FROM ITS MONTPELIER PLANT AND WILL BE RESPONSIBLE FOR THE CONTRACTOR/SUPPLIER QC TESTING DURING CONCRETE PLACEMENT. S.D. IRELAND WILL SUPPLY AN ON SITE TECHNICIAN TO MONITOR AND DOCUMENT AIR CONTENT, WATER CEMENT RATIO AND SLUMP OF EACH TRUCK. S. D. IRELAND WILL ALSO PRODUCE CONCRETE TEST CYLINDERS FOR 7, 14, 28 DAY STRENGTHS. S.D. IRELAND WILL BE RESPONSIBLE FOR ANY ADJUSTMENTS TO THE CONCRETE AT THE PLANT AND OR IN THE FIELD TO MEET THE REQUIRED SPECIFICATIONS.
2. A PRE–PRODUCTION MEETING SHALL BE HELD BETWEEN THE CONTRACTOR AND RESIDENT ENGINEER BEFORE CONCRETE PLACEMENT.
3. VTRANS WILL RETAIN THEIR RESPONSIBILITIES FOR QUALITY ACCEPTANCE TESTING.
4. FOUR EXTRA CYLINDER SETS PER CONCRETE PLACEMENT SHALL BE TAKEN FOR EARLY STRENGTH BREAKS.
5. ALL INSIDE FORM DIMENSION AND R–BAR SPACING AND CLEARANCES SHALL BE REVIEWED AND DOCUMENTED BY THE CONTRACTOR AND RESIDENT ENGINEER BEFORE CASTING IS COMMENCED. ANY DEFICIENCIES SHALL BE CORRECTED TO MEET THE TOLERANCES BELOW.
6. BEFORE FORMS ARE ERECTED THE CONTRACTOR WILL PROFILE THE GIRDERS AT THE CASTING SITE THIS INFORMATION WILL BE USED TO DETERMINE BLOCKING DISTANCES AS DIRECTED BY THE ENGINEER.
7. FORMS SHALL HAVE A GENEROUS COATING OF FORM OIL APPLIED. CAUTION WILL BE TAKEN NOT TO HAVE PONDING OF FORM OIL IN THE BASE OF THE FORM OR ON ANY R–BAR.
8. ALL PRE–CAST WILL BE INSPECTED BY BOTH THE CONTRACTOR AND THE RESIDENT ENGINEER AND DOCUMENTED.
9. CURE WILL MEET THE REQUIREMENTS OF SECTION 501.17, AND WILL BE CONTINUOUSLY COVERED WITH WET BURLAP FOR THE SPECIFIED CURE PERIOD.

PORTABLE BRIDGE UNIT DIMENSIONAL TOLERANCES
+/– 1/4" – REINFORCING PLACEMENT, +/– 1/4" COVER AND CLEARANCE, 1" BAR SPACING.
LENGTH (EACH UNIT) +/– 3/4" (LENGTH OF ADJACENT UNITS SHOULDN'T VARY BY MORE THAN 3/4")
WIDTH +/– 3/8"
DEVIATION FROM DIAGONALS +/– 3/4" (HORIZONTAL)
DEVIATION SQUARENESS OR SKEW +/– 3/4"
HORIZONTAL ALIGNMENT +/– 3/8"

10. FIELD INSTALLATION TOLERANCES:
VERTICAL DEVIATION BETWEEN UNITS PRIOR TO GROUTING– +/– 1/4" (VERTICAL DEVIATIONS EXCEEDING 1/4" SHALL BE GROUND WITH DIAMOND CUP WHEELS OR OTHER MECHANICAL METHODS). THE CASTING OF ALL PBU UNITS WILL HAPPEN SIMULTANEOUSLY WITH A SINGLE SCREED MACHINE SPANNING THE ENTIRE WIDTH OF PBU 1–4. THIS SHOULD MINIMIZE ANY IRREGULARITIES IN THE JOINTS DEVIATION IN JOINT WITH– +/– 3/8".
11. EACH PIECE OF PRE–CAST SHALL BE MARKED WITH ITS UNIT NUMBER AND CASTING DATE AND ORIENTATION (MARKINGS PLACED ON THE SOUTH END OF THE UNIT.
12. CURING WILL MEET THE REQUIREMENTS OF SUBSECTION 501.17 (2) BURLAP CURE. PLACEMENT OF BURLAP WILL FOLLOW THE PROGRESS OF THE SCREED MACHINE FROM A WORK–PLATFORM WITH A LAG TIME NOT TO EXCEED 10 MINUTES. CRB WILL HAVE A POWER WASHER ON SITE FOR THE PURPOSE OF FOGGING AS NECESSARY. THE PROJECT SUPERINTENDENT WILL BE RESPONSIBLE FOR MONITORING THE CURE. ANY ADJUSTMENTS REQUIRED OR REQUESTED BY THE RESIDENT ENGINEER WILL BE MADE TO MAINTAIN THE PROPER CURING OF THE PBU UNITS. CRB WILL CHECK THE CURE DAILY INCLUDING WEEKENDS AND OTHER NON–WORKING DAYS. ALL CURING ACTIVITIES WILL BE DOCUMENTED ON THE CONTRACTORS DAILY REPORT. SILANE SEALER TO BE APPLIED TO THE UNITS AFTER CURING AND PRIOR TO SHIPPING.
13. CONCRETE FINISHING:
PBU FINISH WILL BE VIBRATORY SCREED FINISH. THE MORRISON SCREED WILL SPAN THE ENTIRE WIDTH OF THE PBU UNITS AND WILL RESIDE ON THE FASCIA PANELS. DRY RUNS WILL BE PERFORMED AND ADJUSTMENTS WILL BE MADE TO THE SCREED TO THE SATISFACTION OF THE ENGINEER. TOLERANCE FOR SCREED MACHINE +/– 1/4". HAND FINISHING WILL BE ALLOWED ONLY WERE IT IS NOT POSSIBLE TO USE THE SCREED MACHINE. MAGNESIUM BULL FLOATS IF NECESSARY WILL BE USED FROM A WORK BRIDGE POSITIONED BEHIND THE SCREED TO REMOVE ANY IRREGULARITIES IN THE CONCRETES SURFACE.

REPAIR OF UNITS
1. MINOR DEFECTS IN THE PBU UNITS AS DEFINED IN THE CONTRACT SPECIAL PROVISION PAGE 29, PARAGRAPH (m) SHALL BE FIXED USING AN OVERHEAD AND VERTICAL REPAIR MATERIAL FROM THE VERMONT AGENCY OF TRANSPORTATION APPROVED PRODUCTS LIST.
2. CRACKING .01" OR LESS SHALL BE SEALED WITH A PENETRATING SEALING FROM THE VERMONT AGENCY OF TRANSPORTATION APPROVED PRODUCTS LIST.
3. CRACK WIDTHS MEASURING .01"–.08" SHALL BE FILLED WITH AN EPOXY INJECTED CRACK FILLER FROM VERMONT AGENCY OF TRANSPORTATION APPROVED PRODUCT LIST.
4. PRODUCTION SITE HANDLING UNITS SHALL NOT BE LIFTED OR MOVED UNTIL DESIGN STRENGTH OF 4,000 PSI HAS BEEN MET.

PRE–ASSEMBLY:
LUCK BROTHERS, INC. WILL BE CASTING THE PBU UNITS OFF SITE. EACH UNIT WILL BE CONSTRUCTED IN A CASTING YARD APPROXIMATELY 2 MILES FROM THE SITE. PBU UNITS WILL BE CAST SIMULTANEOUSLY. THE UNIT WILL BE CAST AT THE SAME TIME WITH ONLY 9" BETWEEN BULK–HEADS. PRE–ASSEMBLY WILL NOT BE REQUIRED.

SHIPPING AND HANDLING:
PBU UNITS WILL BE CONSTRUCTED OFF SITE AND MOVED INTO PLACE ON TRAILERS AS PER ERECTION PLAN TO BE SUBMITTED UNDER SEPARATE COVER. THE PBU UNITS WILL BE INSTALLED WITH CRANES AS PER ERECTION PLAN UNDER SEPARATE COVER. DO TO TIME RESTRICTIONS DURING THE BCP ANY REPAIR WORK (IF NEEDED) WILL BE REPAIRED BEFORE THE PBU UNIT ARE IN FINAL PLACEMENT. REPAIRS PRIOR TO FINAL PLACEMENT OF PBU'S DOES NOT RELIEVE THE CONTRACTOR FROM REPAIRING DEFECTS OR DAMAGE (IF NECESSARY) TO THE PBU'S DURING PLACEMENT AND SUBSEQUENT CONSTRUCTION ACTIVITIES.

ROBERT M. SUTHERLAND, P
ENGINEERS–SURVEYORS–MATERIAL TESTI
PLATTSBURGH NEW YORK

REV	REVISION	DATE
1	PER REVIEWER COMMENTS	05/22/14

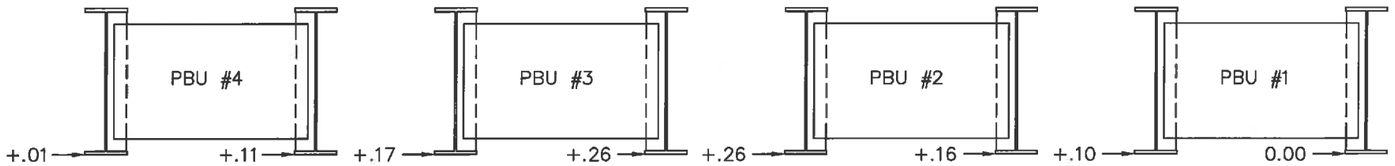
REVISIONS

PROJECT
WARREN BRF
013-4(32)
VT ROUTE 100
WARREN, VT

CLIENT
LUCK BROTHERS, INC.
TRADE ROAD
PLATTSBURGH, NY 12901

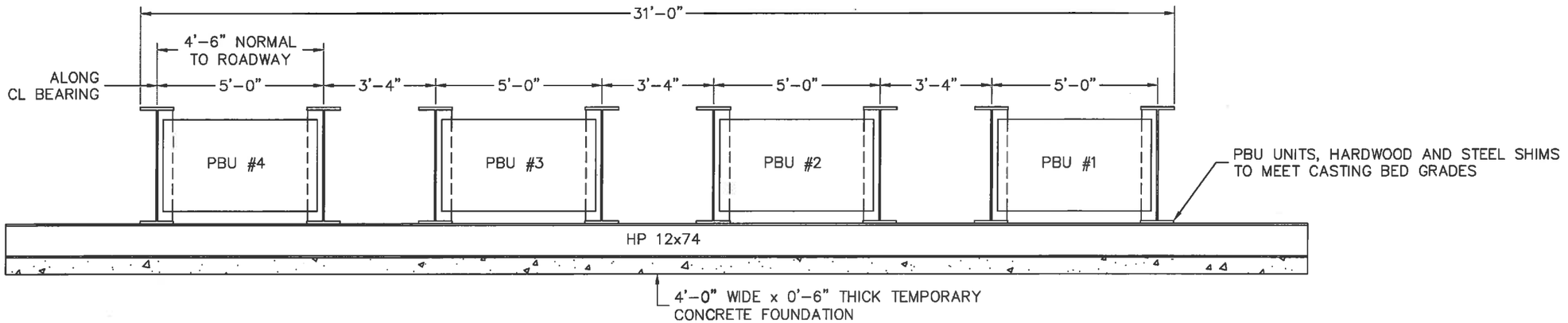
SHEET TITLE
QUALITY CONTROL
PROCEDURES/PLAN

DRAWN BY: KTW
CHECKED BY: TL
DATE: 04/28/14
SHEET NO:
8



BEARING ADJUSTMENT FOR CASTING BED
LOOKING BACKSTATION

CASTING SEQUENCE:
1. POUR 6" THICK BY 4' WIDE CONCRETE PAD AT ENDS ON COMPACTED SUBGRADE
2. PLACE 12" H-PILE ON CONCRETE PAD
3. SET INDIVIDUAL PLATE GIRDERS, SHIM TO GRADE.
4. BOLT AND TORQUE INDIVIDUAL PBU SECTIONS
5. PROFILE INDIVIDUAL GIRDERS
6. TIE R-BAR, BUILD BULKHEADS PBU-UNITS 1-4
7. SET SCREED, TEST RUN
8. CAST PBU DECK SECTIONS 1-4 SIMULTANEOUSLY



LOOKING BACKSTATION

ROBERT M. SUTHERLAND, P
ENGINEERS-SURVEYORS-MATERIAL TESTI
PLATTSBURGH NEW YORK

1	PER REVIEWER COMMENTS	05/22/14
REV	REVISION	DATE

REVISIONS

PROJECT
WARREN BRF
013-4(32)
VT ROUTE 100
WARREN, VT

CLIENT
LUCK BROTHERS, INC.
TRADE ROAD
PLATTSBURGH, NY 12901

SHEET TITLE
PRE-CAST BRIDGE UNIT
PBU-CASTING PLAN

DRAWN BY: KTW
CHECKED BY: TL
DATE: 04/28/14
SHEET NO:
9

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

STRUCTURAL CONCRETE MIX DESIGN SUBMISSION

Concrete class: HPC A
Additional Description:
Ready Mix Supplier: IRELAND CONCRETE - BURLINGTON, VT
Designed By: Nate Parry
Design strength: 4000 PSI
Design by dry weight or saturated surface dry: SSD

Agency Use Only	
Mix ID	HP00-A-0
Mix Design #	
Approved by	
Approved Date	
Spec Book Year	2014

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

Cement: 701.02	Source: / Brand Name:		Specific Gravity			lb/cy	0.00 cf
Cement Type III: 701.04	Source: / Brand Name:		Specific Gravity			lb/cy	0.00 cf
Blended Cement: 701.06	Source: LAFARGE - TERCEM - MONTREAL, EAST PLANT / Brand Name: Tercem 3000		Specific Gravity	3.020	811	lb/cy	3.24 cf
Cement with Slag: 701.07	Source: / Brand Name:		Specific Gravity			lb/cy	0.00 cf
Pozzolan: 725.03(a)	Source: / Brand Name:		Specific Gravity			lb/cy	0.00 cf
Fly Ash: 725.03(a)	Source: / Brand Name:		Specific Gravity			lb/cy	0.00 cf
Silica Fume: 725.03(b)	Source: / Brand Name:		Specific Gravity			lb/cy	0.00 cf
Slag: 725.03(c)	Source: / Brand Name:		Specific Gravity			lb/cy	0.00 cf
Water					31.5 gals	262.9 lb/cy	4.21 cf
Air Content Target					7.0 %		1.89 cf
Coarse Aggregate 3/8" 704.02A	Source:	Absorption	Specific Gravity			lb/cy	0.00 cf
Coarse Aggregate 3/4" 704.02B	Source: IRELAND PIT - WILLISTON, VT	Absorption 0.37	Specific Gravity	2.600	1725	lb/cy	9.87 cf
Coarse Aggregate 1 1/2" 704.02C	Source:	Absorption	Specific Gravity			lb/cy	0.00 cf
Fine Aggregate: 704.01	Source: HINESBURG SAND & GRAVEL - HINESBURG,	Absorption 1.30	Specific Gravity Fineness Modulus	2.670 1.90	1298	lb/cy	7.79 cf
Air Entrainment Admixture 725.02(b)	Source: W.R. GRACE & CO. - CAMBRIDGE, MA / Brand Name: Darex II AEA		Specific Gravity	1.000	3	oz/cy	
Retarder Admixture: 725.02(c)	Source: MASTER BUILDERS INC - MESQUITE, TX / Brand Name: Pozzolith 100 XR		Specific Gravity	1.000	2	oz/cwt	
High Range Water Reducer Admixture: 725.02(h)	Source: MASTER BUILDERS INC - MESQUITE, TX / Brand Name: Glenium 7500		Specific Gravity	1.000	6.25	oz/cwt	
Other Admixtures:	Source: / Brand Name:		Specific Gravity				0.00 cf
	Source: / Brand Name:		Specific Gravity				0.00 cf
	Source: / Brand Name:		Specific Gravity				0.00 cf
			TOTAL	49.990	3897	lb	27.00 cf

Maximum Water/Cementitious Ratio: 0.44
Maximum Water (gal/cy): 32.2
Slump Min/Max (inch): - min - max
Air Content Min/Max (%): 5.5 min 8.5 max
Design Unit Wt. (lb/cf): 144.33

Notes:

Admixture dosages may vary on the basis of the ambient temperature, travel time, job site conditions and contractors preferred slump.

ROBERT M. SUTHERLAND, P
ENGINEERS–SURVEYORS–MATERIAL TESTI
PLATTSBURGH NEW YORK

REV	REVISION	DATE
1	PER REVIEWER COMMENTS	05/22/14

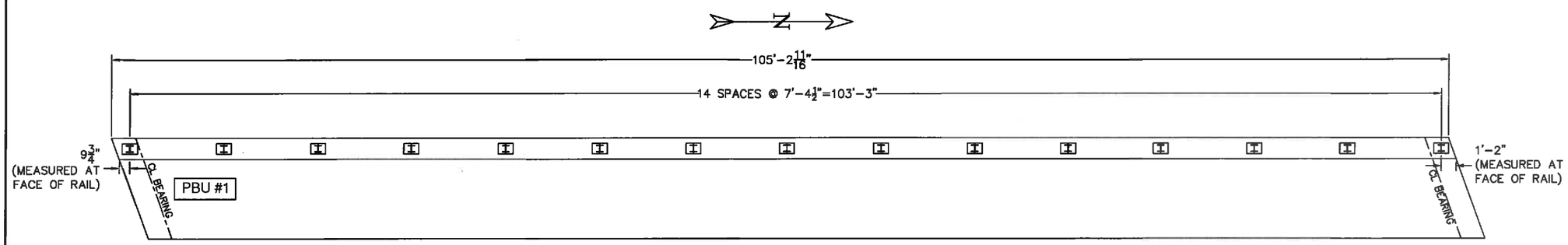
REVISIONS

PROJECT
WARREN BRF
013-4(32)
VT ROUTE 100
WARREN, VT

CLIENT
LUCK BROTHERS, INC.
TRADE ROAD
PLATTSBURGH, NY 12901

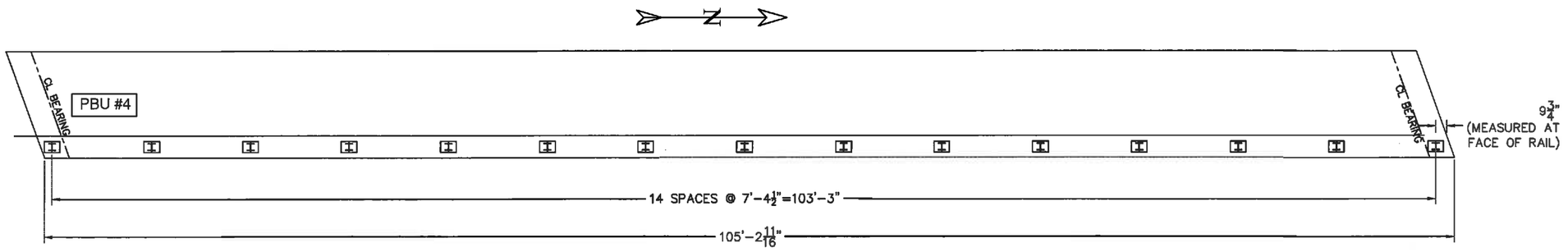
SHEET TITLE
PRE-CAST BRIDGE UNIT
CONCRETE MIX DESIGN

DRAWN BY: KTW
CHECKED BY: TL
DATE: 04/28/14
SHEET NO:
10



BRIDGE RAIL ANCHORAGE LAYOUT PLAN

PBU #1 SHOWN,



BRIDGE RAIL ANCHORAGE LAYOUT PLAN

PBU#4 SHOWN,

ROBERT M. SUTHERLAND, P
ENGINEERS–SURVEYORS–MATERIAL TESTI
PLATTSBURGH NEW YORK

1	PER REVIEWER COMMENTS	05/22/14
REV	REVISION	DATE

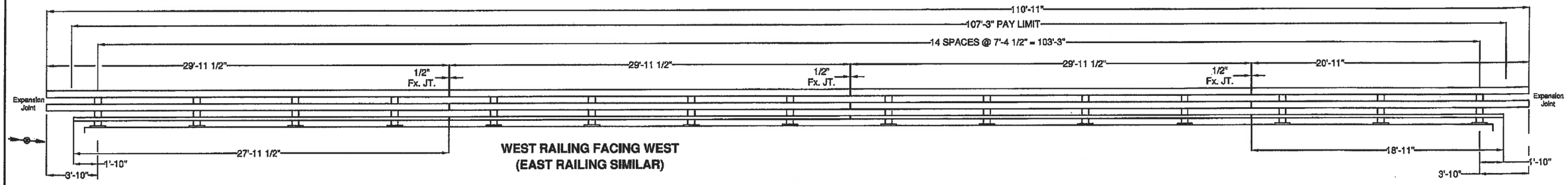
REVISIONS

PROJECT
WARREN BRF
013-4(32)
VT ROUTE 100
WARREN, VT

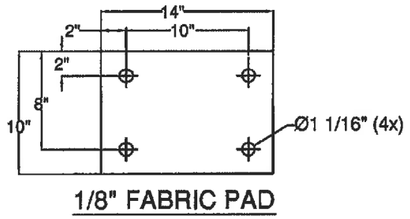
CLIENT
LUCK BROTHERS, INC.
TRADE ROAD
PLATTSBURGH, NY 12901

SHEET TITLE
PRE-CAST BRIDGE UNIT
ANCHORAGE LAYOUT

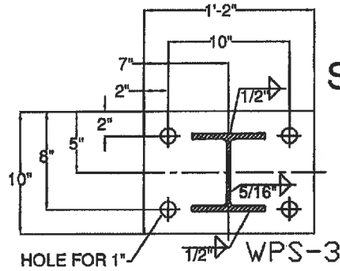
DRAWN BY: KTW
CHECKED BY: TL
DATE: 04/28/14
SHEET NO:
11



WEST RAILING FACING WEST
(EAST RAILING SIMILAR)



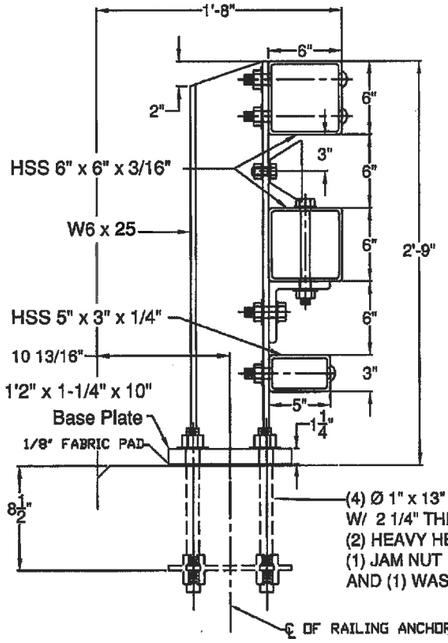
1/8" FABRIC PAD



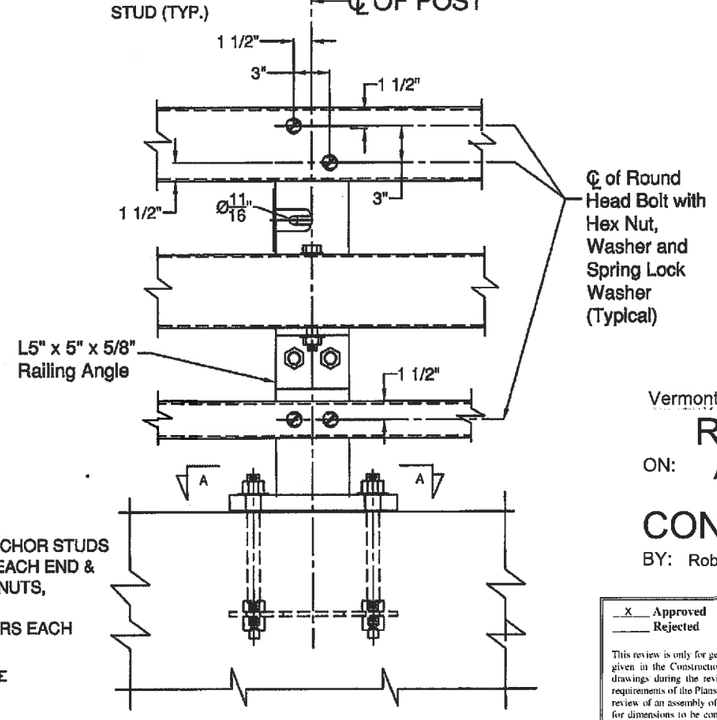
SECTION A-A

WPS-3008

℄ OF POST



SECTION



ELEVATION

STEEL BRIDGE RAILING

Vermont Agency of Transportation

RECEIVED

ON: April 28, 2014

and Checked for

CONFORMANCE

BY: Rob Young DATE: 05/16/2014

_X_ Approved
_____ Rejected

_____ Approved As Noted

This review is only for general conformance with the design concept and the information given in the Construction Documents. Corrections or comments made on the shop drawings during the review do not relieve the Contractor from compliance with the requirements of the Plans and Specifications. Review of a specific item shall not include review of an assembly of which an item is a component. The Contractor is responsible for dimensions to be confirmed and corrected at the job site; information that pertains solely to the fabrication process or to the means, methods, techniques, sequences and procedures of construction; coordination of the Work with that of other trades and performing all Work in a safe and satisfactory manner.

Date 5/16/2014

McFarland Johnson

By D. Kull

BILL OF MATERIAL

ITEM #	QTY	PART #	DESCRIPTION	ASTM DESIGNATION
1	30	0033.03610	W6x25, THREE RAIL POST @ 2'-9" DA ON 1 1/4x10x1'-2" B.P.	A572 Gr. 50
2	2	0033.22800	HSS 3" X 5" X 1/4" RAIL @ 27'-11 1/2"	A500 Gr. B
3	2	0033.13000	HSS 3" X 5" X 1/4" RAIL @ 29'-11 1/2"	A500 Gr. B
4	2	0033.21811	HSS 3" X 5" X 1/4" RAIL @ 18'-11"	A500 Gr. B
5	4	0033.63000	HSS 6" X 6" X 3/16" RAIL @ 29'-11 1/2"	A500 Gr. B
6	8	0033.53000	HSS 6" X 6" X 3/16" RAIL @ 29'-11 1/2"	A500 Gr. B
7	4	0033.62011	HSS 6" X 6" X 3/16" RAIL @ 20'-11"	A500 Gr. B
8	6	0033.00840	2-1/8" X 4-1/4" FIX. SPLICE BAR @ 2'-3"	A572 Gr. 50
9	12	0033.00640	HSS 5" X 5" X 5/16" FIX. SPLICE TUBE @ 2'-3"	A500 Gr. B, A572 Gr. 50
10	30	0033.00220	3/8" X 10" X 14" ANCHOR PLATES	A572 Gr. 50
11	30	0033.90050	1/8" X 10" X 14" FABRIC PAD	AASHTO M251
12	122*	0042.21013	Ø 1" X 13" ANCHOR STUDS, W/ 2 1/4" THD. EACH END	A449 TYPE 1
13	242*	0080.18901	Ø 1" HEAVY HEX NUTS	A563
14	120	0080.18911	Ø 1" FLAT WASHERS	F436
15	120	0080.18905	Ø 1" HEX JAM NUTS	A563
16	120	0080.07500	Ø 7/8" X 8" ROUND HEAD BOLT, NUT, SQ. WASHER, L.W.	A449, A563, F436, ASME D18.2
17	30	0080.06400	Ø 3/4" X 8" HEX BOLT, NUT, (2) F.W., & L.W.	A325, A563, F436, & ASME D18.2
18	60	0080.06140	Ø 3/4" X 2-3/4" HEX BOLT, NUT, (2) F.W., & L.W.	A325, A563, F436, & ASME D18.2
19	48	0080.06340	Ø 3/4" X 7-1/2" HEX BOLT, NUT, & (2) F.W.	A325, A563, & F436
20	24	0080.06255	Ø 3/4" X 4-1/2" HEX BOLT, NUT, & (2) F.W.	A325, A563, & F436
21	30	0033.00500	L5" X 5" X 5/8" RAILING ANGLE @ 6'	A572 Gr. 50
22	TBD		DELINEATORS - NOT SHOWN	(SUPPLIED BY CUSTOMER)

*=2 EXTRA FOR VDOT TESTING

GENERAL NOTES:

1) ALL RAILING IS TO BE FABRICATED AND ERECTED ACCORDING TO SECTION 525 OF THE STANDARD SPECIFICATIONS.
2) PRIOR TO GALVANIZING THE ASSEMBLED POST, GRIND ALL EDGES TO A MINIMUM RADIUS OF 1/16".
3) ALL POST SHALL BE SET NORMAL TO GRADE. THE MAXIMUM CENTER TO CENTER SPACING OF BRIDGE RAIL POST IS 8'-3".
4) SECTIONS OF RAIL TUBE SHALL BE ATTACHED TO A MINIMUM OF TWO BRIDGE POSTS AND PREFERABLY TO AT LEAST 4 POSTS.
5) RAIL TUBE EXPANSION JOINTS SHALL BE PROVIDED IN ANY RAIL BAY SPANNING THE END OF AN INTEGRAL ABUTMENT BRIDGE AND AT ALL SUPER STRUCTURE EXPANSION JOINTS. EXPANSION JOINT WIDTH SHALL BE 4"@ 68°F AND WILL BE ADJUSTED IN THE FIELD BY THE ENGINEER FOR OTHER TEMPERATURES.
6) STD. SPLICE HOLES ONLY IN BRIDGE RAIL TUBES. REST TO BE DRILLED BY CUSTOMER. FIELD DRILLED HOLES TO BE COATED WITH AN APPROVED ZINC-RICH PAINT PRIOR TO INSTALLATION.
7) BOLTS SHALL BE TORQUED SNUG TIGHT (APPROXIMATELY 100 FT-LB).
8) 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 FOR DELINEATORS SHALL BE INCIDENTAL TO OTHER ITEMS.
9) ANY BENDING OF RAIL SHALL BE DONE AT THE 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 THE EXPANSION JOINT RECESS POUR, IF ONE IS USED.
11) PROTRUSIONS CAUSED BY WELDING OR GALVANIZING ARE NOT PERMITTED ON THE ADJOINING SURFACES OF THE BOX BEAM RAILS, SPLICE TUBES AND FILL PLATES.
12) THIS RAILING MEETS THE REQUIREMENTS FOR A TL-4 SERVICE LEVEL.

ITEM #: 525.335

SHEET 1 OF 2

APPROVED BY:

BRIDGE RAIL DETAILS SHEET

WARREN BRF 013-4 (32), VT ROUTE 100 (MINOR ARTERIAL) BRIDGE # 166
TOWN OF WARREN, COUNTY OF WASHINGTON, VT.

REV	NO.	DATE	DESCRIPTION	BY

REV	NO.	DATE	DESCRIPTION	BY

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

AISC CERTIFIED FABRICATOR

DRAWN	E.P.	4/24/14
CHECKED	D.L.	4/24/14
APPROVED	.	.
SCALE	SCHEMATIC	
DRAWING NO.	F.R. LaFAYETTE-WARREN	

12