

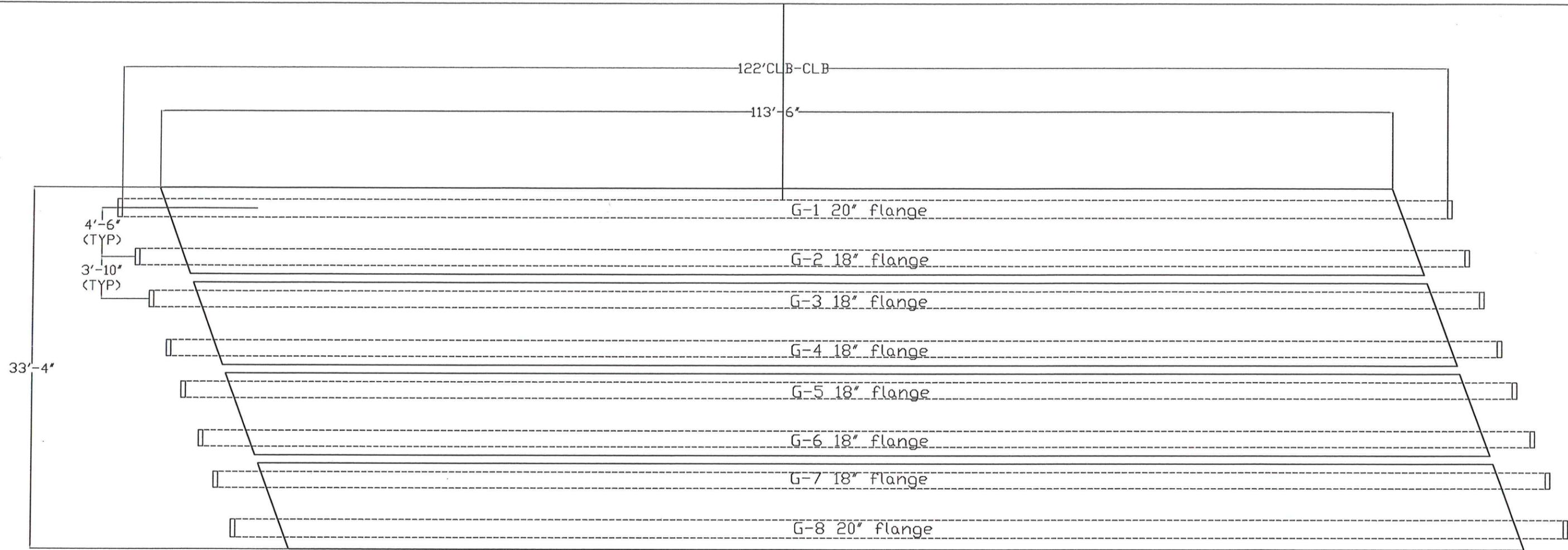
CAVENDISH ER BRF 0146 (13)
CONTRACTOR FABRICATED PBU UNITS

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

(REVISION #1 2/17/2014)

(REVISION #2 3/17/2014)

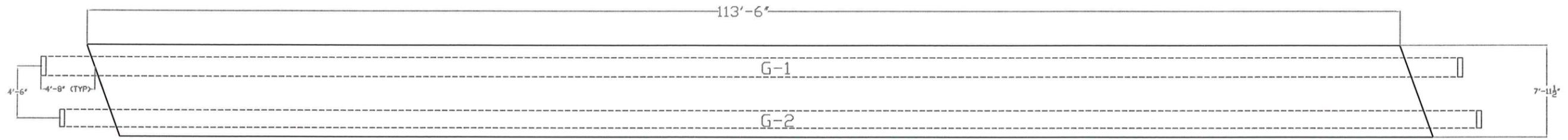
COLD RIVER BRIDGES, LLC 10 LANBRO LANE TEL 603-756-9300 WALPOLE, NH FAX 603-756-9303	
CAVENDISH ER BRF 0146(13)	
COVER SHEET/INDEX	SHEET NUMBER COVER
DATE: 2-17-14	Scale:



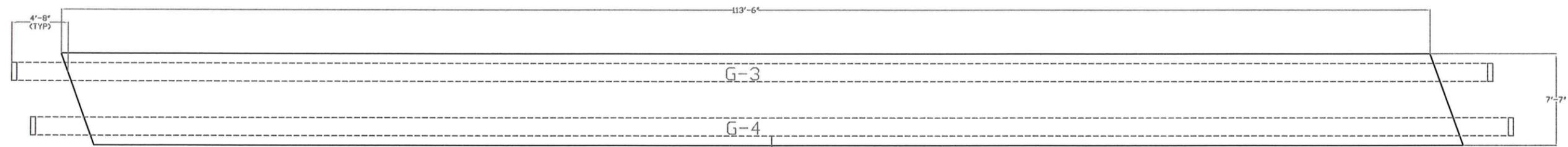
NOTES:
 FINISHES
 TOP-SCREED
 SIDES-FORM WIRE BRUSH&POWER WASH
 BOTTOM-FORM
 ENDS-FORM WIRE BRUSH&POWER WASH
 CONCRETE- VERMONT CLASS HPC A $f_c' = 5000$
 psi @ 28 days

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

COLD RIVER BRIDGES, LLC 10 LANBRO LANE WALPOLE, NH TEL 603-756-9300 FAX 603-756-9303	
CAVENDISH ER BRF 0146(13)	
PBU PLAN	SHEET NUMBER
DATE: 2-17-14	1
scale:	



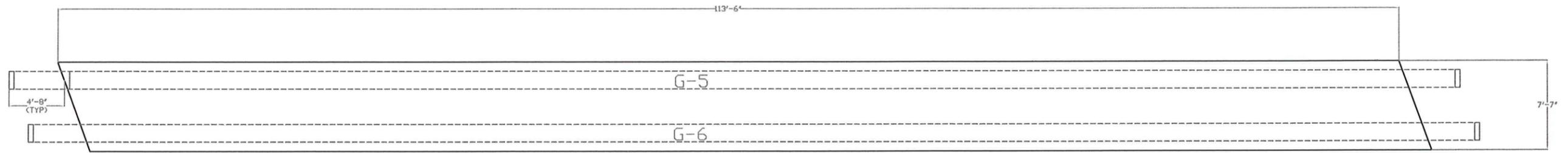
PBU #1 EXTERIOR UNIT



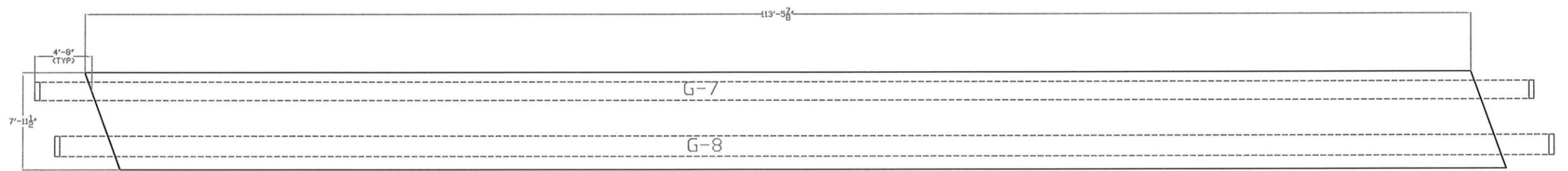
PBU #2 INTERIOR UNIT

<REVISION #1 2/17/2014> <REVISION #2 3/17/2014>

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CAVENDISH ER BRF 0146<13>	
PBU #1, AND #2	SHEET NUMBER 2
DATE: 2-17-14	scale:



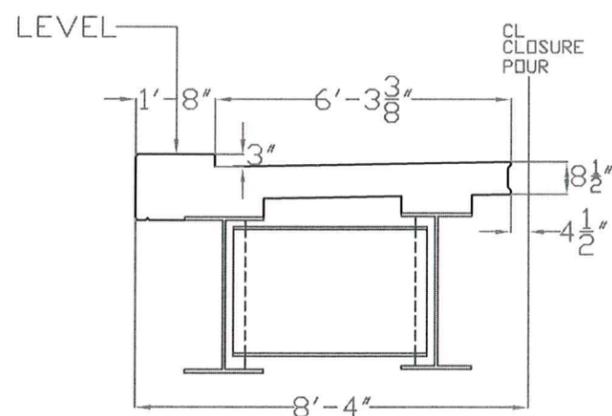
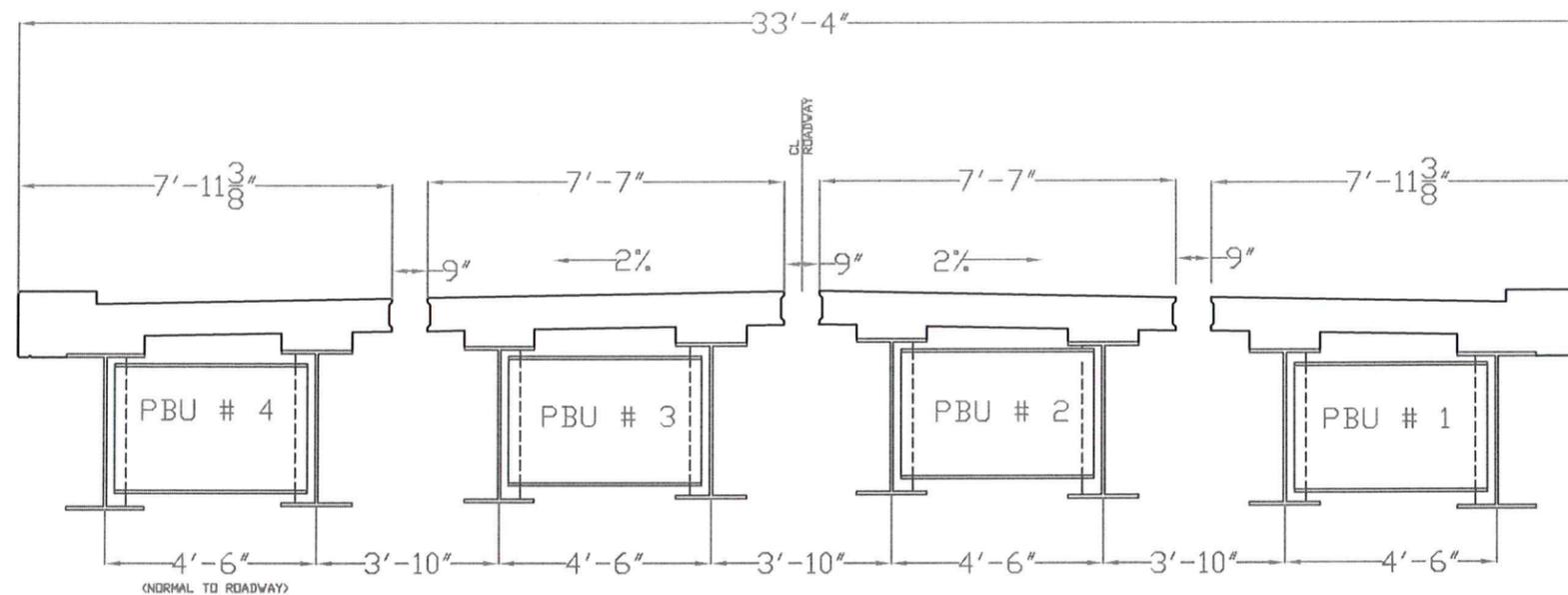
PBU #3 INTERIOR UNIT



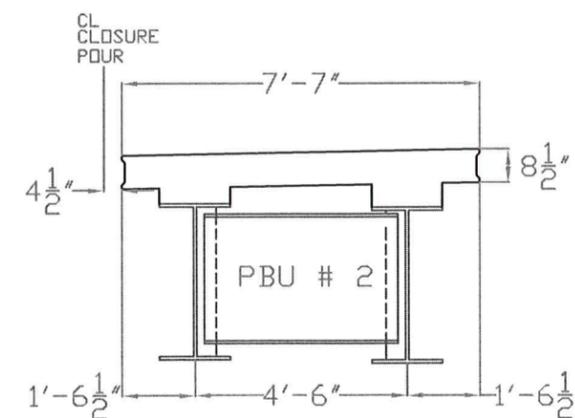
PBU #4 EXTERIOR UNIT

COLD RIVER BRIDGES, LLC 10 LANBRO LANE WALPOLE, NH TEL 603-756-9300 FAX 603-756-9303	
CAVENDISH ER BRF 0146(13)	
PBU #3 AND #4	SHEET NUMBER 3
DATE: 2-17-14	scale:

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



TYPICAL EXTERIOR PBU

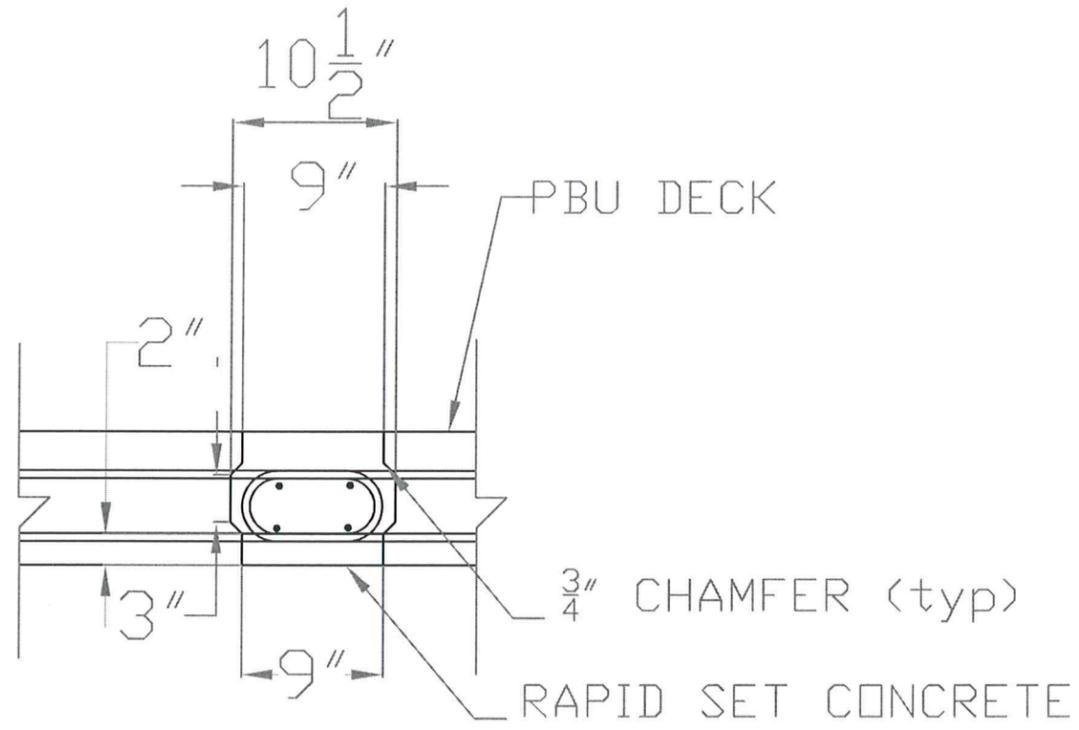


TYPICAL INTERIOR PBU

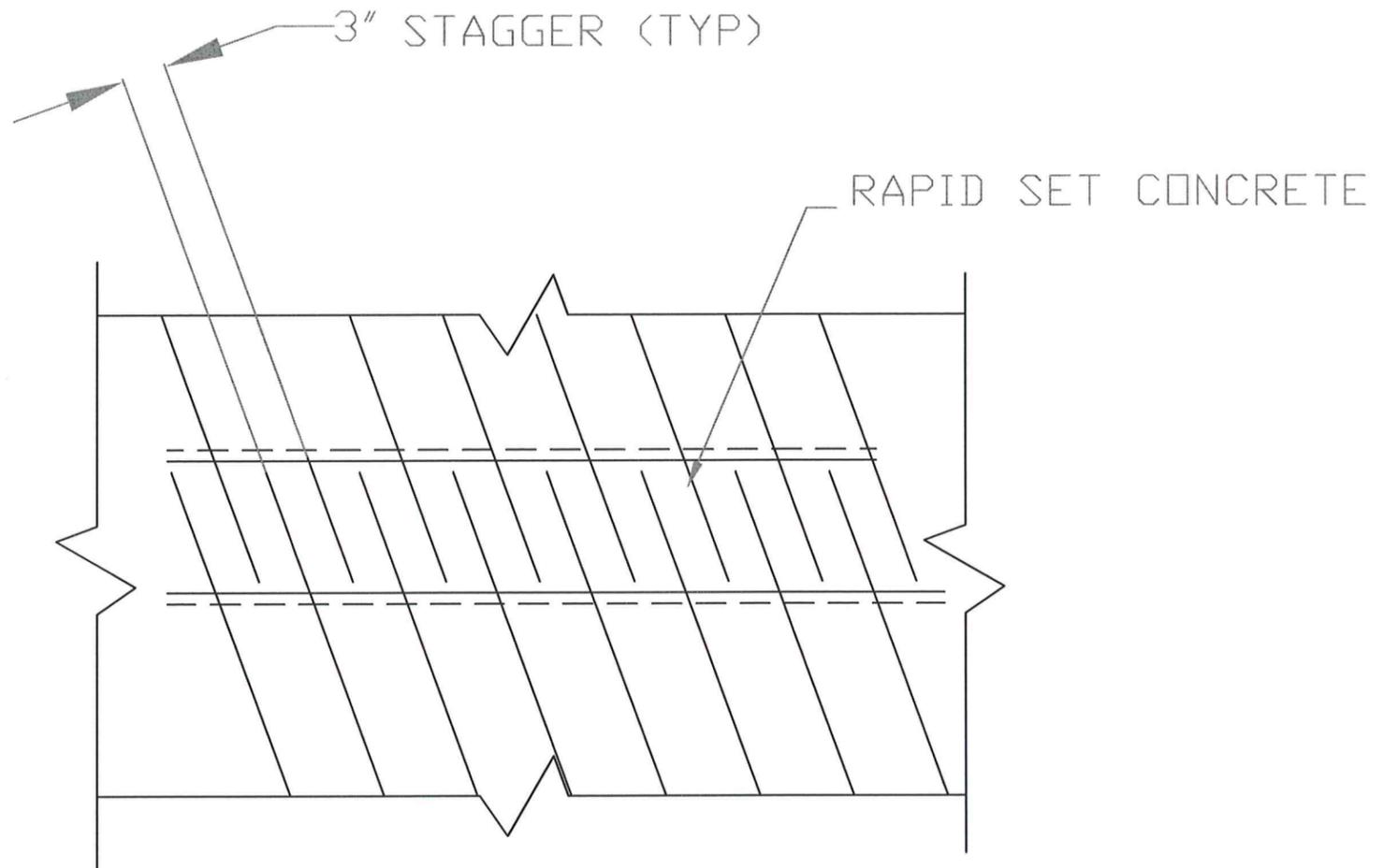
** SEE STRUCTURAL STEEL DRAWINGS FOR GIRDER INFORMATION AND LAY-OUT

<REVISION #1 2/17/2014>
<REVISION #2 3/17/2014>

COLD RIVER BRIDGES, LLC 10 LANBRO LANE WALPOLE, NH TEL 603-756-9300 FAX 603-756-9303	
CAVENDISH ER BRF 0146(13)	
PBU DETAILS	SHEET NUMBER
DATE: 2/17/14	4
scale:	



CLOSURE POUR SECTION



CLOSURE POUR PLAN

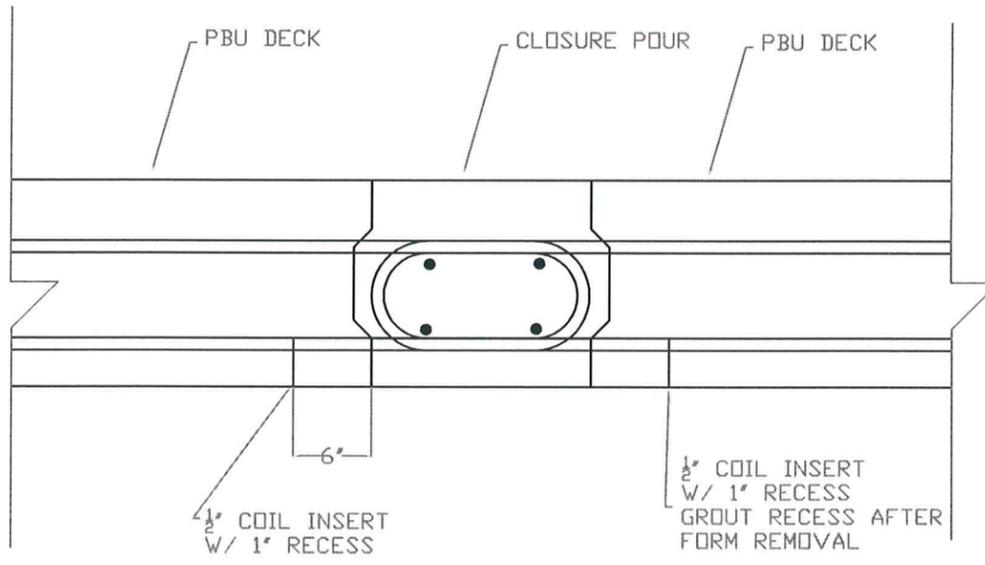
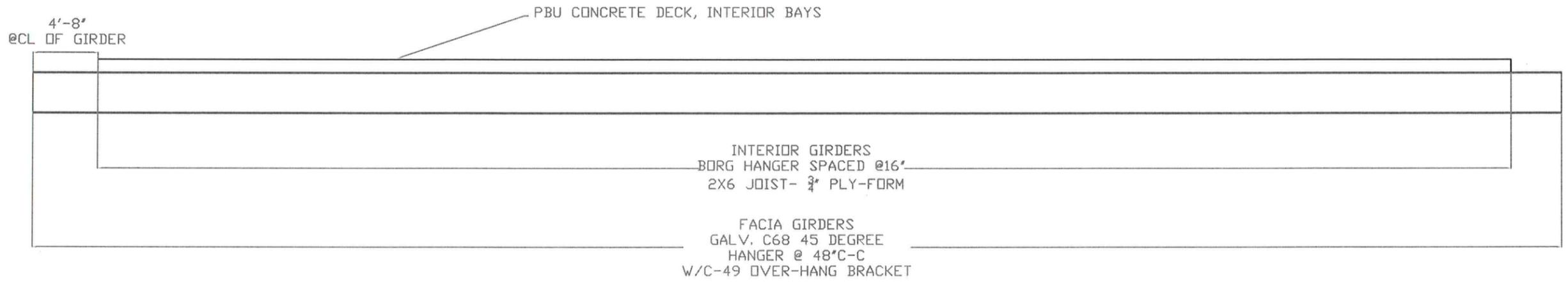
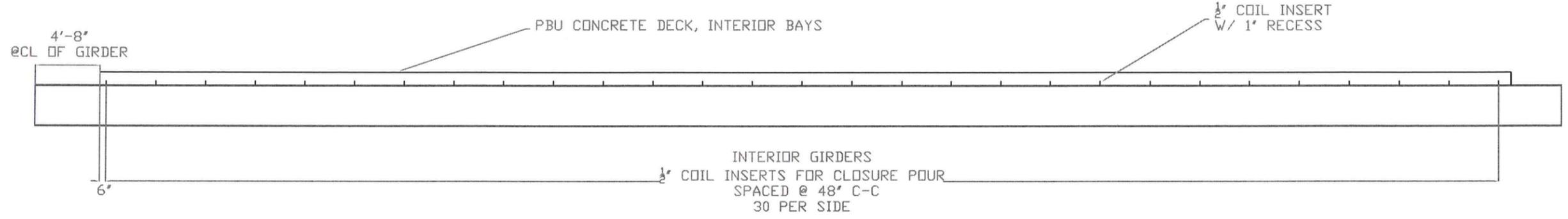
<REVISION #1 2/17/2014>

<REVISION #2 3/17/2014>

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

CAVENDISH ER BRF 0146(13)

CLOSURE POUR DETAILS	SHEET NUMBER
DATE: 2-17-14	5
scale:	



(REVISION #1 2/17/2014)

(REVISION #2 3/17/2014)

COLD RIVER BRIDGES, LLC 10 LANBRO LANE WALPOLE, NH TEL 603-756-9300 FAX 603-756-9303	
CAVENDISH ER BRF 0146(13)	
PBU CLOSURE POUR COIL INSERT LAY-OUT DATE: 1-6-14	SHEET NUMBER 6
Scale:	

PLEASE SEE SHEETS 7 AND 7A POSTED ON
SHAREPOINT. THIS SHOULD HELP WITH
PDF CLARITY. FULL SIZE SHEETS WILL BE
SUPPLIED FOR FIELD INSTALLATION

<REVISION #1 2/17/2014>
<REVISION #2 3/17/2014>

COLD RIVER BRIDGES, LLC 10 LANBRO LANE TEL 603-756-9300 WALPOLE, NH FAX 603-756-9303	
CAVENDISH ER BRF 0146<13>	
PBU R-BAR	SHEET NUMBER
DATE: 2/17/14	7
scale:	

QUALITY CONTROL PROCEDURES-PORTABLE BRIDGE UNITS.

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

PORTABLE BRIDGE UNIT DIMENSIONAL TOLERANCES

- +/- 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 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 WIDTH +/- 3/8"
 11. EACH PIECE OF PRE-CAST SHALL BE MARKED WITH ITS UNIT NUMBER AND CASTING DATE
 12. CURING WILL MEET THE REQUIREMENTS OF SUBSECTION 501.17 (2) BURLAP CURE. PLACEMENT OF BURLAP WILL FOLLOW THE PROGRESS OF THE SCREED MACHINE FROM A WORK-PLATFORM WITH A LAG TIME NOT TO EXCEED 10 MINUTES.CRB WILL HAVE A POWER WASHER ON SITE FOR THE PURPOSE OF FOGGING AS NECESSARY. THE PROJECT SUPERINTENDENT WILL BE RESPONSIBLE FOR MONITORING THE CURE. ANY ADJUSTMENTS REQUIRED OR REQUESTED BY THE RESIDENT ENGINEER WILL BE MADE TO MAINTAIN THE PROPER 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.
 13. CONCRETE FINISHING.
PBU FINISH WILL BE A VIBRATORY SCREED FINISH, THE MORRISON SCREED WILL SPAN THE ENTIRE WIDTH OF THE PBU UNITS AND WILL RIDE ON THE FASCIA PANELS. DRY RUNS WILL BE PERFORMED AND ADJUSTMENTS WILL BE MADE TO THE SCREED TO THE SATISFACTION OF THE ENGINEER. TOLERANCE FOR SCREED MACHINE +/-1/4". HAND FINISHING WILL BE ALLOWED ONLY WERE IT IS NOT POSSIBLE TO USE THE SCREED MACHINE. MAGNESIUM BULL FLOATS IF NECESSARY WILL BE USED FROM A WORK BRIDGE POSITIONED BEHIND THE SCREED TO REMOVE ANY IRREGULARITIES IN THE CONCRETES SURFACE..

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

COLD RIVER BRIDGES, LLC 10 LANBRO LANE TEL 603-756-9300 WALPOLE, NH FAX 603-756-9303	
CAVENDISH ER BRF 0146(13)	
QC PROCEDURES/PLAN	SHEET NUMBER
DATE: 1-8-14	8
scale:	

REPAIR OF UNITS:

1. Minor defects in the PBU units shall be fixed using an overhead and vertical repair material from the Vermont Agency of Transportation Approved Products list.

2. Cracking .01" or less shall be sealed with a penetrating sealing from the Vermont Agency of Transportation Approved Products list.

Crack widths measuring .01"-.08" shall be filled with an epoxy injected crack filler from the Vermont Agency of Transportation Approved Products List.

Production Site Handling: Units shall not be lifted or moved until design strength has been met.

Pre-Assembly: Cold River Bridges will be casting the PBU Units on site. Each unit will be constructed adjacent to the location of the new bridge. PBU units will be cast simultaneously. The unit will be cast at the same time with only 19" between bulk-heads

pre-assembly will not be required.

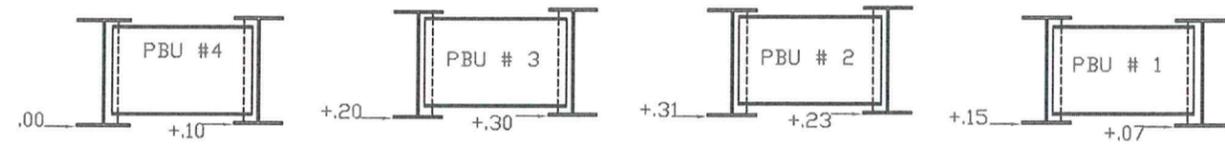
Shipping and Handling: PBU units will be constructed on site and laterally moved into place on rollers. The PBU Units will be jacked down onto the final bearing.

Do to time restrictions during the BCP any repair work (if needed) will be repaired before the pbu units are in final placement.

<REVISION #1 2/17/2014>

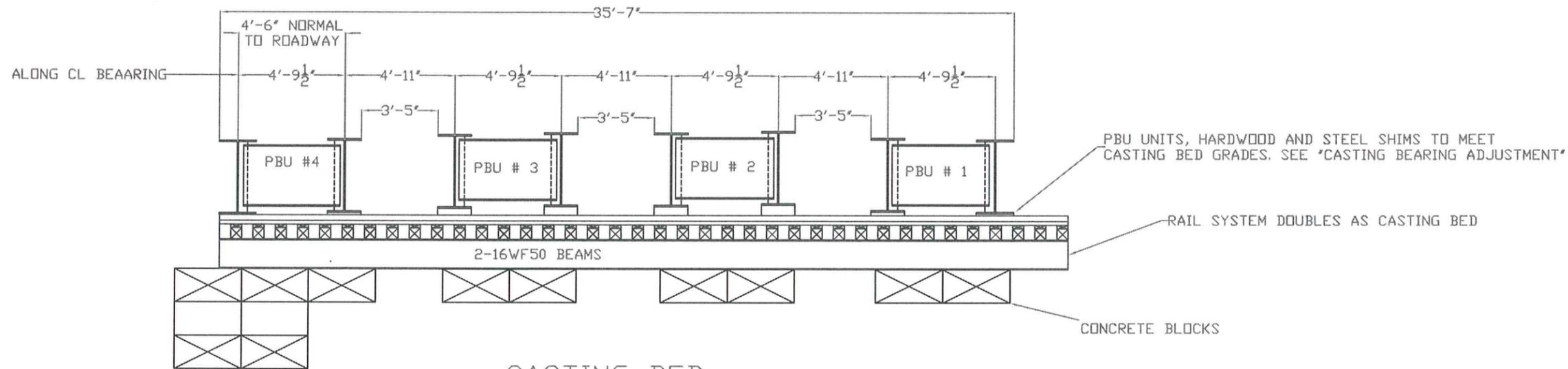
<REVISION #2 3/17/2014>

COLD RIVER BRIDGES, LLC	
10 LANBRO LANE WALPOLE, NH	
TEL 603-756-9300	FAX 603-756-9303
CAVENDISH ER BRF 0146<13>	
QC PROCEDURES/PLAN	SHEET NUMBER
DATE: 1-7-14	scale: 9



BEARING ADJUSTMENT FOR CASTING BED

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



CASTING BED

(REVISION #1 2/17/2014)

COLD RIVER BRIDGES, LLC	
10 LANBRO LANE	
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CAVENDISH ER BRF 0146(13)	
PBU-CASTING PLAN	SHEET NUMBER
DATE: 2-17-14	10
scale:	

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

STRUCTURAL CONCRETE MIX DESIGN SUBMISSION

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

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

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:	Specific Gravity	_____	_____	lb/cy	_____	_____	cf
701.02 Source: _____							
Brand Name: _____							
Cement Type III:	Specific Gravity	_____	_____	lb/cy	_____	_____	cf
701.04 Source: _____							
Brand Name: _____							
Blended Cement:	Specific Gravity	<u>3.020</u>	<u>705</u>	lb/cy	<u>3.74</u>	<u>3.74</u>	cf
701.06 Source: <u>LAFARGE - TERCEM - MONTREAL, EAST PLANT</u>							
Brand Name: _____							
Cement with Slag:	Specific Gravity	_____	_____	lb/cy	_____	_____	cf
701.07 Source: _____							
Brand Name: _____							
Pozzolan:	Specific Gravity	_____	_____	lb/cy	_____	_____	cf
725.03(a) Source: _____							
Brand Name: _____							
Fly Ash:	Specific Gravity	_____	_____	lb/cy	_____	_____	cf
725.03(a) Source: _____							
Brand Name: _____							
Silica Fume:	Specific Gravity	_____	_____	lb/cy	_____	_____	cf
725.03(b) Source: _____							
Brand Name: _____							
Slag:	Specific Gravity	_____	_____	lb/cy	_____	_____	cf
725.03(c) Source: _____							
Brand Name: _____							
Water			<u>32</u> gals	<u>267</u> lb/cy	<u>4.28</u> cf		
Air Content Target			<u>-7.0</u> %		<u>1.89</u> cf		
Coarse Aggregate 3/8"	Absorption	_____	Specific Gravity	_____	_____	_____	cf
704.02A Source: _____							
Coarse Aggregate 3/4"	Absorption	<u>0.80</u>	Specific Gravity	<u>2.880</u>	<u>1888</u> lb/cy	<u>9.39</u> cf	
704.02B Source: <u>COLD RIVER MATERIALS PIT - N WALPOLE, NH</u>							
Coarse Aggregate 1 1/2"	Absorption	_____	Specific Gravity	_____	_____	_____	cf
704.02C Source: _____							
Fine Aggregate:	Absorption	<u>0.90</u>	Specific Gravity	<u>2.670</u>	<u>1283</u> lb/cy	<u>7.70</u> cf	
704.01 Source: <u>NEWPORT SAND & GRAVEL - NEWPORT, NH</u>			Fineness Modulus	<u>2.83</u>			
Air Entrainment Admixture	Specific Gravity	_____		<u>1.5</u> oz/cy			
725.02(b) Source: <u>MASTER BUILDERS INC - MESQUITE, TX</u>							
Brand Name: <u>MasterAir AE 200 / Micro Air</u>							
Retarder Admixture:	Specific Gravity	_____		<u>1</u> oz/cwt			
725.02(c) Source: <u>MASTER BUILDERS INC - MESQUITE, TX</u>							
Brand Name: <u>MasterSet R100 / Pozzolith 100XR</u>							
High Range Water Reducer Admixture:	Specific Gravity	_____		<u>3</u> oz/cwt			
725.02(h) Source: <u>MASTER BUILDERS INC - MESQUITE, TX</u>							
Brand Name: <u>MasterGlenium 7500</u>							
Other Admixtures:	Specific Gravity	_____		<u>2</u> oz/cwt	<u>0.00</u> cf		
Source: _____							
Brand Name: <u>BASF, MasterSure Z60</u>							
Source: _____	Specific Gravity	_____			<u>0.00</u> cf		
Brand Name: _____							
Source: _____	Specific Gravity	_____			<u>0.00</u> cf		
Brand Name: _____							
Source: _____							
Brand Name: _____							
TOTAL		<u>47.570</u>		<u>3943</u> lb	<u>27.00</u> cf		

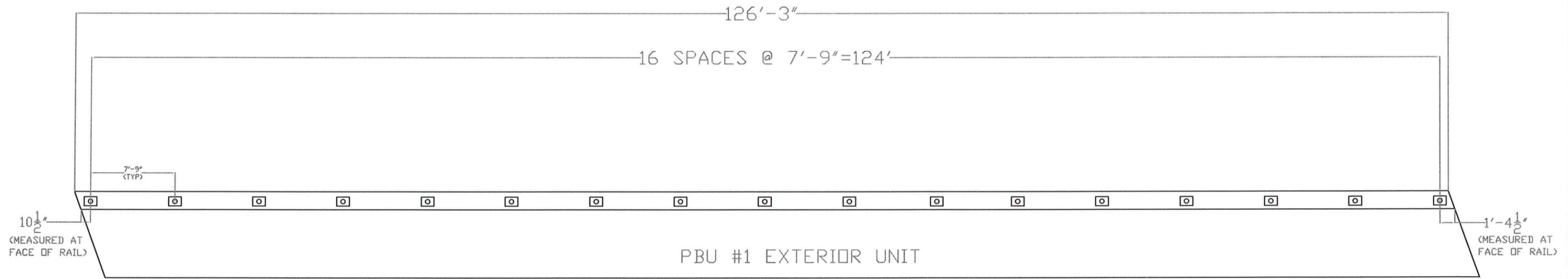
Approved by Justin Wild, Composite Materials Engineer 2/11/14 for use
 on Cavendish ER BRF 0146(13) contractor self performing
 rework. Supplied strength data is design content does not represent
 expected on project air content and not sum of admix design
 make up. Based on cementitious amount and favorable curing
 Notes: conditions, mix should obtain 5000 psi in 28 days

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

(REVISION #1 2/17/2014)

(REVISION #2 3/17/2014)

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CAVENDISH ER BRF 0146(13)	
PBU CONCRETE MIX DESIGN	SHEET NUMBER
DATE: 2-17-14	11
Scale:	



WEST RAILING PLAN VIEW
(EAST RAIL SIMILAR)

COLD RIVER BRIDGES, LLC	
10 LANBRO LANE	
TEL 603-756-9300	WALPOLE, NH FAX 603-756-9303
CAVENDISH ER BRF 0146(13)	
ANCHORAGE LAY-OUT	SHEET NUMBER
DATE: 2-19-14	12
scale:	