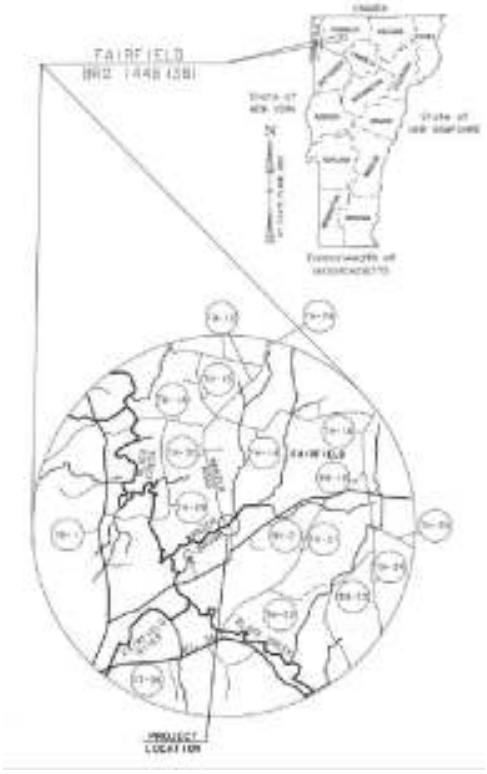
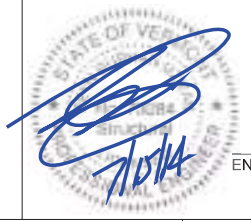
WANZER ROAD OVER WANZER BROOK: BRO 1448(38)
(BRIDGE NO. 48)
FAIRFIELD
FRANKLIN COUNTY
VERMONT

INDEX



"I HEREBY CERTIFY THAT ALL DESIGN ASSUMPTIONS HAVE BEEN VALIDATED EITHER THROUGH CONSTRUCTION DETAILS OR NOTES ON THESE DRAWINGS OR THROUGH THE CONTRACT PLANS AND PROVISIONS."



PREPARED BY:
AIT BRIDGES
20 GODFREY DRIVE
ORONO, ME 04473

ENGINEER

DATE

ADVANCED INFRASTRUCTURE TECHNOLOGIES

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PROJECT: Wanzer Road Bridge No. 48

LOCATION: Fairfield, VT JN: 12018

DRAWING STATUS: Approved for Construction

Correct scale on size B paper (11x17 Ledger)

TITLE: TITLE SHEET AND INDEX

	INITIALS	DATE
DRAWN BY:	JEK	4-9-2014
DESIGNED BY:	JEK	4-9-2014
CHECKED BY:	ZU	5-20-2014

SHEET NUMBER: 1 OF 10

REV: 07-14-2014

SUGGESTED CONSTRUCTION SEQUENCE:

1. FORM ABUTMENTS AND PLACE REBAR
2. ATTACH BEARING PLATE TO SPINE OF TWO OUTSIDE ARCHES (SEE SHEET 9 DETAIL A)
3. INSERT END REINFORCEMENT CAGES INTO ARCH ENDS AND INSTALL ARCHES IN ABUTMENTS
4. PLACE DECKING - CUT TO FIT SKEW - SCREW TO ARCHES - DRILL SHEAR BOLT HOLES AND INSTALL SHEAR BOLTS - INSTALL HEADWALL CLIPS ON OUTER ARCHES
5. CAST ARCHES IN ABUTMENTS
6. DRILL 3" HOLE AT APEX OF ARCH AND FILL ARCHES WITH SELF-CONSOLIDATING CONCRETE - INSTALL CLOSURE STRIP OF DECKING AT APEX OF ARCH TO COVER FILL HOLES
7. INSTALL HEADWALL HARDWARE - ERECT AND TEMPORARILY BRACE HEADWALLS
8. BACKFILL STRUCTURE ATTACHING PRIMARY GEOTEXTILE AT 32" LIFTS TO HEADWALL AND PLACING SECONDARY GEOTEXTILE HALFWAY BETWEEN PRIMARY GEOTEXTILE LIFTS (SEE SHEET 8 FOR DETAILS)
9. INSTALL HEADWALL CAP AND FASCIA PLATES

ARCH FILLING NOTES:

1. SELF-CONSOLIDATING CONCRETE MAY BE PLACED BY PUMP OR WITH A CONCRETE BUCKET AND FUNNEL
2. EACH ARCH WILL TAKE AN ESTIMATED 1.3 CUBIC YARDS OF CONCRETE
3. NO CONCRETE SHALL BE PLACED IN THE ARCH IF IT DOES NOT MEET THE SLUMP FLOW REQUIREMENTS OF 24" - 30" SPREAD
4. DRILL THE 3" FILL HOLE IN THE ARCH AT THE APEX BETWEEN THE GAP IN THE DECKING. LEAVE THE SHEAR BOLTS OUT OF THE ADJACENT CORRUGATIONS TO ALLOW AIR VENTING DURING FILLING. INSERT SHEAR BOLTS AND PLACE CLOSURE STRIP AFTER FILLING IS COMPLETE.
5. ARCHES CAN BE INSPECTED FOR VOIDS AFTER FILLING BY TAPPING THE ARCH AND LISTENING FOR A HOLLOW SOUND. REPAIR IN ACCORDANCE WITH THE SPECIFICATIONS.

HEADWALL CONSTRUCTION NOTES:

1. THE CENTER PANEL SHOULD BE CENTERED OVER THE APEX OF THE ARCH
2. PANELS MUST BE JOINED BY INSERTING THE BUTTERFLY TOGGLE IN THE KEY WAY. THE TOGGLE MAY BE CUT AND INSERTED WITH THE AID OF A PALM HAMMER
3. HEADWALL BACK BATTER OF 1:32 IS TYPICAL TO RESULT IN A VERTICAL INSTALLATION AFTER BACKFILL. ADJUST IN FIELD AS NECESSARY
4. USE ONLY WALK BEHIND COMPACTORS WITHIN 3 FEET OF HEADWALL WITH A MINIMUM OF THREE PASSES
5. BACKFILL ARCH IN MAXIMUM 8" LOOSE LIFTS, ALTERNATING LIFTS ON EACH SIDE OF THE ARCH TO MAINTAIN BALANCED LOADING. THE MAXIMUM DEVIATION FROM EQUAL BACKFILLING WILL BE 24 INCHES.

MATERIAL NOTES:

1. SELECT BACKFILL SHALL CONTAIN NOT MORE THAN 5% FINES (US NO. 200 SIEVE)
2. ALL STRUCTURAL FASTENERS SHALL CONFORM TO AASHTO M232 HOT DIP GALV.
3. ALL SCREWS SHALL BE 410 STAINLESS STEEL
4. STRUCTURAL ADHESIVE SHALL BE PLIOGRIP 7770 OR APPROVED EQUAL

SUPPLIED PARTS LIST:

ARCHES			
1.	9 EA.	COMPOSITE ARCHES - FRP	
DECK			
2.	25 EA.	ATLAS DECK PANELS - FRP, 42' x 20.9" x3.7" - PRE-CUT AND PRE-DRILLED	
3.	1 EA.	DECK CLOSURE STRIP, 42' LONG $\frac{1}{4}$"x8" FRP PLATE	
4.	12 EA.	BEARING PLATES FOR OUTSIDE ARCHES, $\frac{3}{16}$"x6"x96" FRP PLATES	
5.	24 EA.	ADHESIVE FOR DECK-TO-DECK JOINT, PLIOGRIP 7770 - 660 ML TUBES	
DECK-TO-ARCH CONNECTION			
6.	350 EA.	HEADED SHEAR BOLTS FOR INSIDE ARCHES, $\frac{1}{2}$"x6" SS316	
7.	100 EA.	SHEAR RODS FOR OUTSIDE ARCHES, $\frac{1}{2}$"x6" SS316	
8.	450 EA.	WASHERS, $\frac{1}{2}$" SS316	
9.	100 EA.	HEX NUTS, $\frac{1}{2}$" SS316	
10.	480 EA.	SCREWS FOR DECKING, $\frac{1}{4}$"-14x2" ZINC PLATED	
11.	75 EA.	SCREWS FOR BEARING PLATE , #6-20x1" SS410	
HEADWALL			
12.	38 EA.	HEADWALL PANELS - PRE-CUT AND PRE-DRILLED	
13.	1 LUMP SUM	HEADWALL CHANNEL CAP, 20' SECTIONS	
14.	75 EA.	SCREWS FOR HEADWALL CAP , #6-20x1" SS410	
15.	1 LUMP SUM	HEADWALL BUTTERFLY TOGGLE CONNECTION, 20' SECTIONS	
16.	22 EA.	FASCIA PLATES, $\frac{1}{16}$"x8"x48" FRP	
17.	120 EA.	SCREWS FOR FASCIA PLATES, $\frac{1}{4}$"-14x2" ZINC PLATED	
18.	10 EA.	FASCIA PLATE SEALANT, SIKAFLEX 1A, 10 OZ. TUBES	
19.	6 EA.	PRIMARY GEOGRID REINFORCEMENT, 5XT 6'x150' ROLL	
20.	1 EA.	SECONDARY GEOGRID REINFORCEMENT, 2XT 12' x150' ROLL	
HEADWALL-TO-GEOGRID CONNECTION			
21.	80 EA.	HEADWALL SQUARE TUBE WALER, 1-$\frac{1}{2}$" BAR IN 2" TUBE, 23-$\frac{1}{2}$" SECTIONS	
22.	240 EA.	HEADWALL HEX BOLTS, $\frac{1}{2}$"x10" GALV. A307A	
23.	240 EA.	HEADWALL PLATE WASHER $\frac{3}{8}$"x4-$\frac{1}{4}$" OD x $\frac{9}{16}$" ID GALV. A36	
24.	240 EA.	HEADWALL SPACER PIPE, $\frac{1}{2}$" x3-$\frac{3}{16}$" SCH.40 GALV.	
25.	750 EA.	HEADWALL HEAVY HEX NUT, $\frac{1}{2}$" A563DH GALV.	
26.	750 EA.	HEADWALL WASHER, $\frac{1}{2}$" F844 GALV.	
HEADWALL-TO-DECK BASE ANGLE CONNECTION			
27.	106 EA.	ANGLES, 4" WIDE L3-$\frac{1}{2}$"x3-$\frac{1}{2}$"x$\frac{3}{8}$" A36 GALV	
28.	148 EA.	PLATES, $\frac{3}{8}$"x1-$\frac{3}{4}$"x VARIOUS LENGTHS, A36 GALV.	
29.	106 EA.	HEX BOLT, $\frac{1}{2}$"x2-$\frac{1}{2}$" A307A GALV.	
30.	106 EA.	HEAVY HEX NUT, $\frac{1}{2}$" A563DH GALV.	
31.	212 EA.	WASHER, $\frac{1}{2}$" F844 GALV.	
32.	110 EA.	SQUARE BEVEL WASHER, $\frac{1}{2}$" F436-1 GALV.	

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PROJECT: Wanzer Road Bridge No. 48

LOCATION: Fairfield, VT JN: 12018

DRAWING STATUS: Approved for Construction

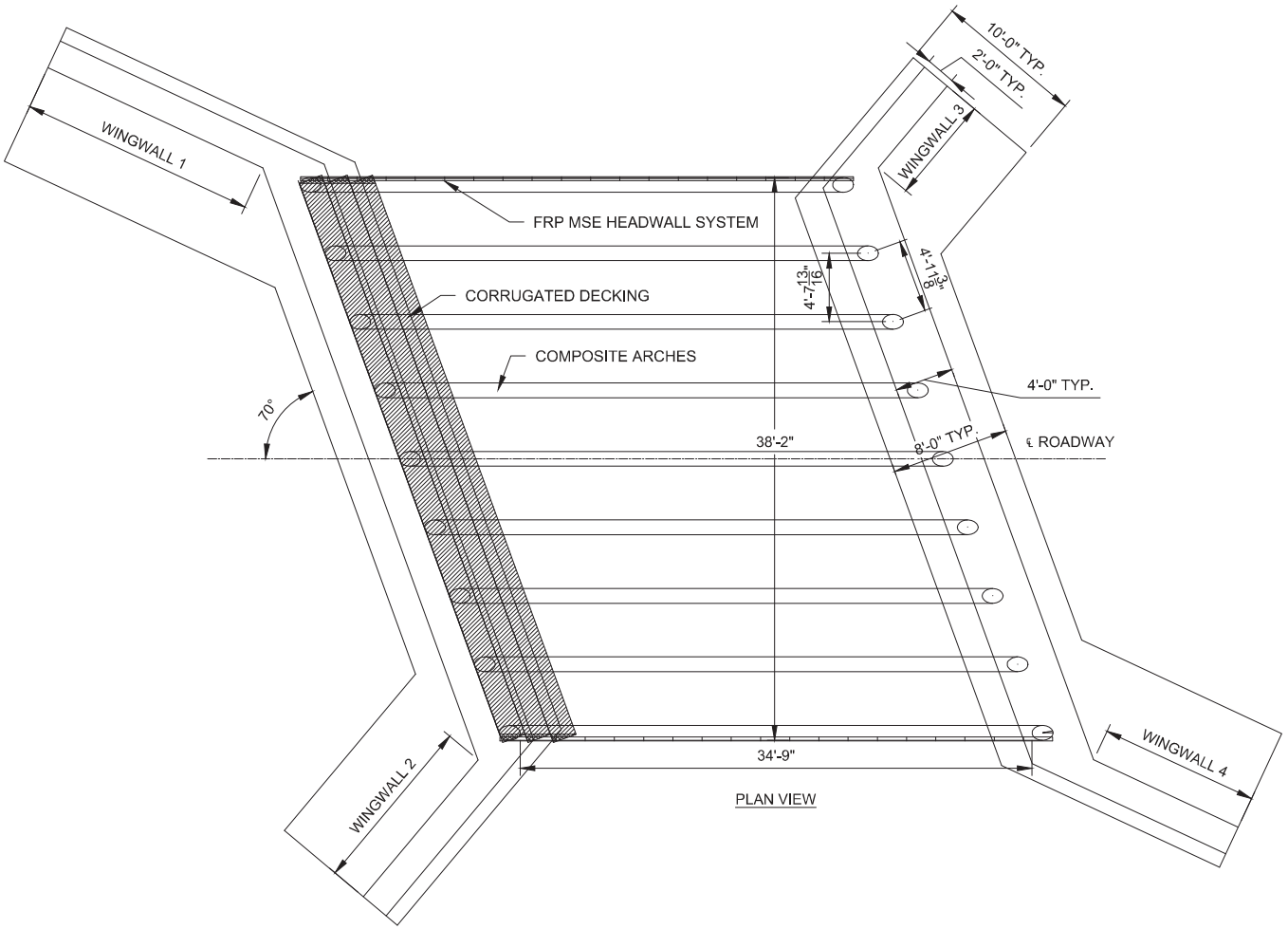
Correct scale on size B paper (11x17 Ledger)

TITLE: CONSTRUCTION NOTES

	INITIALS	DATE
DRAWN BY:	JEK	4-9-2014
DESIGNED BY:	JEK	4-9-2014
CHECKED BY:	ZU	5-20-2014

SHEET NUMBER: 2 OF 10

REV: 07-14-2014



PLAN VIEW

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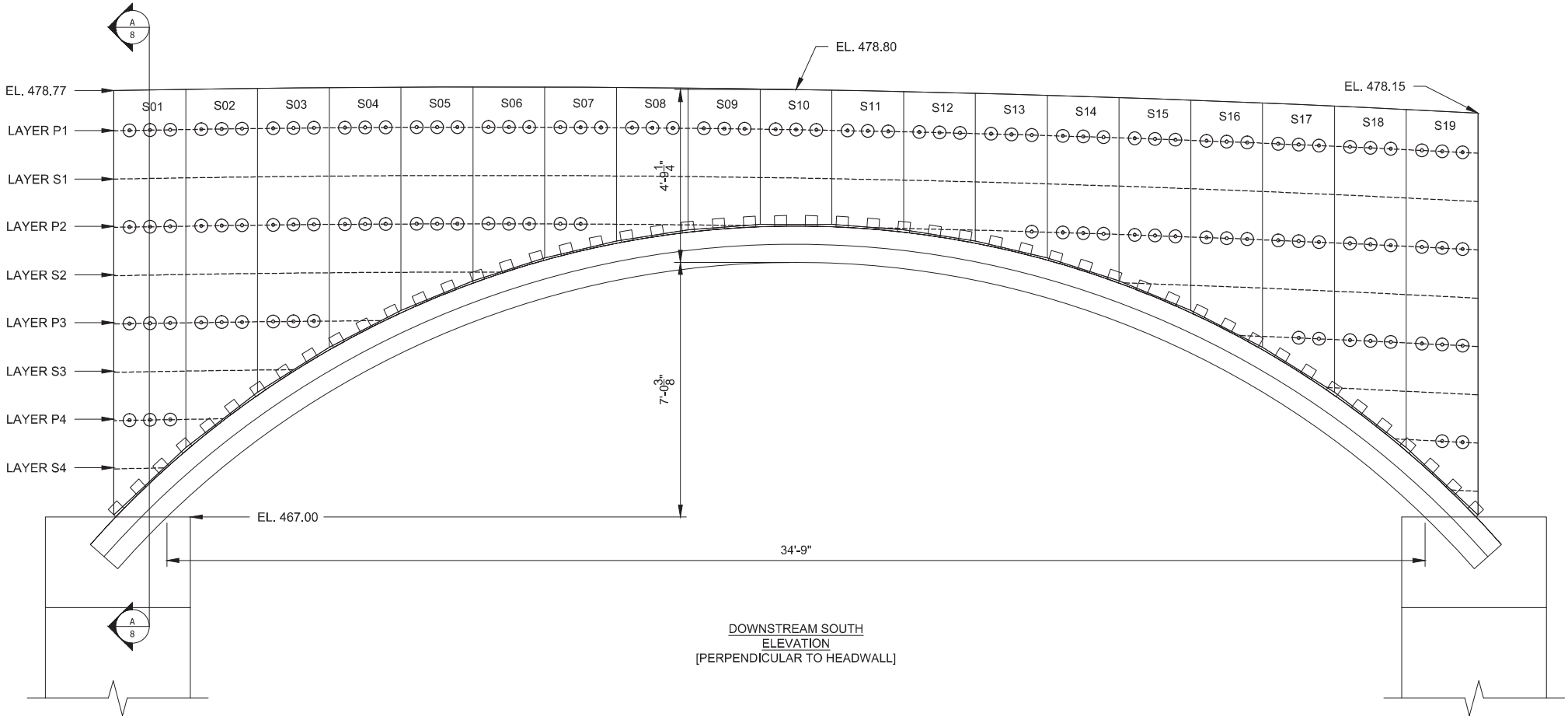
PROJECT: Wanzer Road Bridge No. 48	TITLE: PLAN		SHEET NUMBER: 3 OF 10
LOCATION: Fairfield, VT JN: 12018		INITIALS	DATE
DRAWING STATUS: Approved for Construction	DRAWN BY:	JEK	4-9-2014
	DESIGNED BY:	JEK	4-9-2014
Correct scale on size B paper (11x17 Ledger)	CHECKED BY:	ZU	5-20-2014
			REV: 07-14-2014



DOWNSTREAM SOUTH
ELEVATION
[PERPENDICULAR TO HEADWALL]

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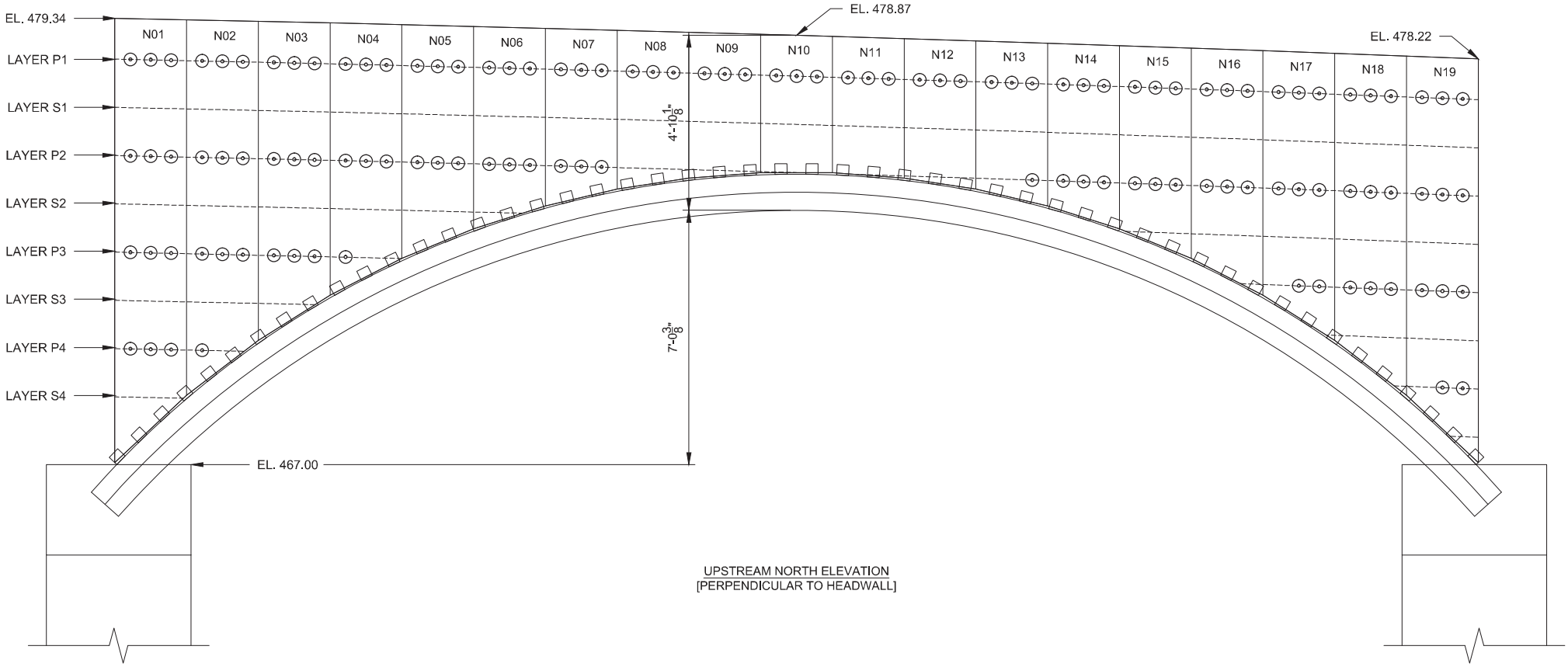
PROJECT: Wanzer Road Bridge No. 48	TITLE: SOUTH ELEVATION		SHEET NUMBER:
LOCATION: Fairfield, VT JN: 12018		INITIALS DATE	4 OF 10
DRAWING STATUS: Approved for Construction	DRAWN BY:	JEK 4-9-2014	
	DESIGNED BY:	JEK 4-9-2014	
Correct scale on size B paper (11x17 Ledger)	CHECKED BY:	ZU 5-20-2014	REV: 07-14-2014



UPSTREAM NORTH ELEVATION
[PERPENDICULAR TO HEADWALL]

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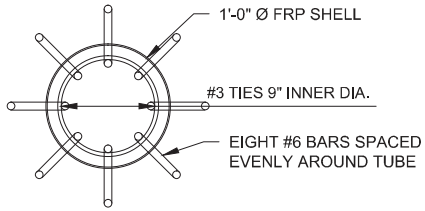
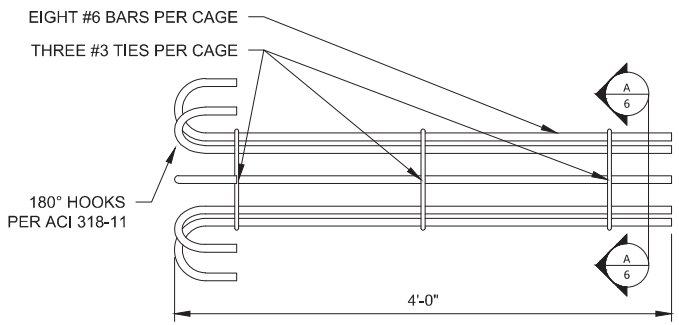
PROJECT: Wanzer Road Bridge No. 48	TITLE: NORTH ELEVATION		SHEET NUMBER: 5 OF 10
LOCATION: Fairfield, VT JN: 12018		INITIALS	DATE
DRAWING STATUS: Approved for Construction	DRAWN BY:	JEK	4-9-2014
	DESIGNED BY:	JEK	4-9-2014
Correct scale on size B paper (11x17 Ledger)	CHECKED BY:	ZU	5-20-2014
			REV: 07-14-2014

FINISHING NOTES:

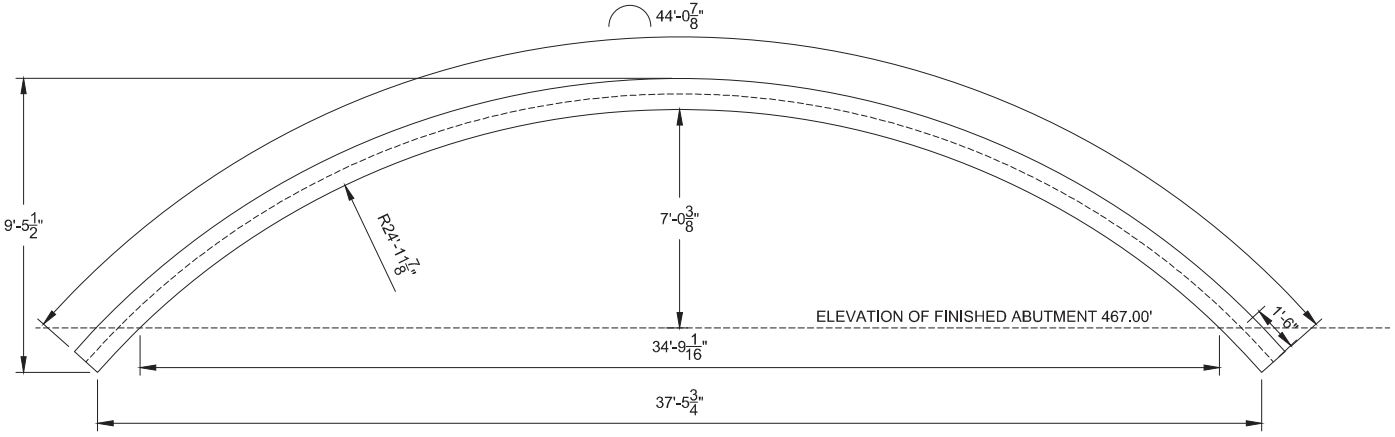
1. ARCH MATERIALS SHALL CONFORM TO SECTION 3 OF "AASHTO LRFD GUIDE SPECIFICATIONS FOR DESIGN OF CONCRETE-FILLED FRP TUBES FOR FLEXURAL AND AXIAL MEMBERS"
2. PROJECT SHALL INCLUDE NINE (9) COMPOSITE ARCHES. ONE (1) LAYER OF AIT12GNP, THREE (3) LAYERS OF AIT12GS, AND DEREKANE 610C VINYL ESTER RESIN.
3. PROJECT SHALL INCLUDE EIGHTEEN (18) END REINFORCEMENT CAGES - SUPPLIED BY ERECTION CONTRACTOR
4. ARCH FINISH COAT SHALL BE SHERWIN-WILLIAMS FLUOROKEM FLUOROPOLYMER URETHANE MCSO SW4028 GYPSUM COLORED PAINT
5. ARCHES SHALL BE MANUFACTURED FOLLOWING AIT QUALITY ASSURANCE PLAN REV. 3.0
6. 3"Ø FILL HOLE AND SHEAR BOLT HOLES SHALL BE DRILLED IN THE FIELD BY ERECTION CONTRACTOR



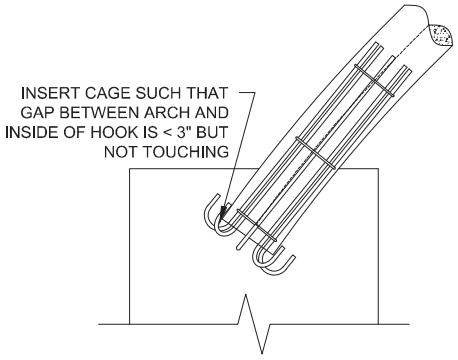
END REINFORCEMENT CAGE
END VIEW SECTION A-A



END REINFORCEMENT CAGE
ELEVATION VIEW



ARCH FINISH DIMENSIONS



END REINFORCEMENT CAGE LOCATION

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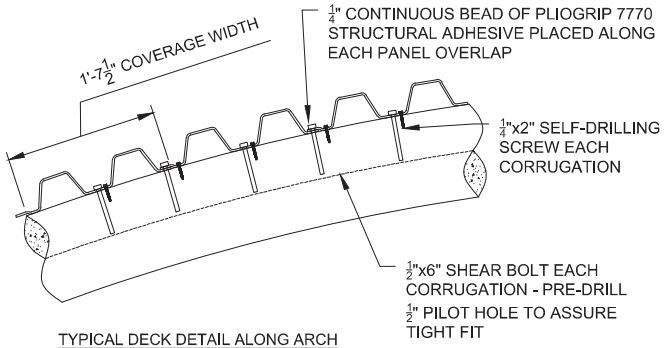
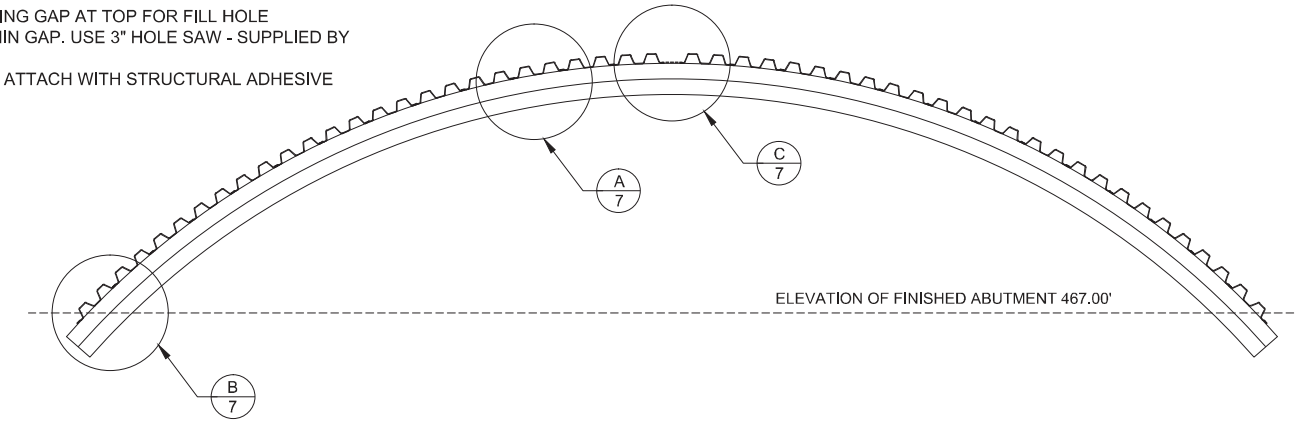
PROJECT: Wanzer Road Bridge No. 48	TITLE: ARCH DETAILS		SHEET NUMBER: 6 OF 10
LOCATION: Fairfield, VT JN: 12018		INITIALS	DATE
DRAWING STATUS: Approved for Construction	DRAWN BY:	JEK	4-9-2014
	DESIGNED BY:	JEK	4-9-2014
Correct scale on size B paper (11x17 Ledger)	CHECKED BY:	ZU	5-20-2014
			REV: 07-14-2014

DECK NOTES:

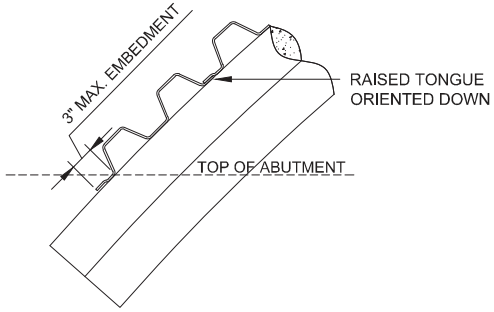
1. PROJECT TO INCLUDE TWENTY-FIVE (25) ATLAS FRP DECK PANELS 42' LONG x 20.9" WIDE (19.5" COVERAGE WIDTH) x 3.7" DEEP
2. BRIDGE WIDTH TO BE SPANNED BY ONE PANEL - NO SPLICING
3. DECK PANELS WILL BE PRE-CUT AND PRE-DRILLED
4. ATTACH PANELS EACH SIDE OF ABUTMENT AND WORK TOWARD CROWN LEAVING GAP AT TOP FOR FILL HOLE
5. DRILL 3" DIAMETER ARCH CONCRETE FILLING HOLE ON SPINE AT CROWN WITHIN GAP. USE 3" HOLE SAW - SUPPLIED BY OTHER
6. FIELD CUT CLOSURE STRIP TO FILL GAP BETWEEN DECK PANELS AT CROWN - ATTACH WITH STRUCTURAL ADHESIVE AND SCREWS



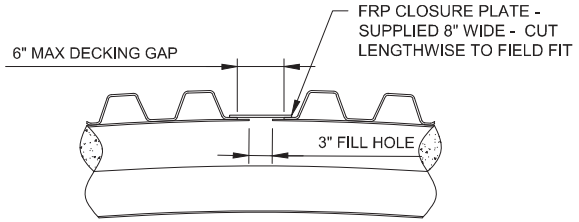
TYPICAL DECK DETAIL ALONG ARCH
DETAIL A



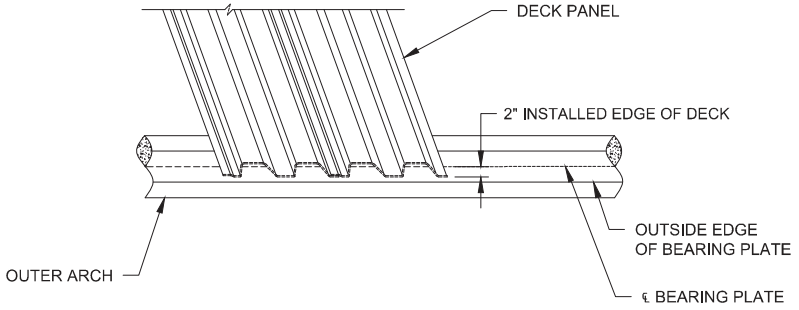
DECK ELEVATION VIEW



DECK DETAIL AT BASE OF ARCH
DETAIL B



DECK DETAIL AT CROWN OF ARCH
DETAIL C



DECK CUTTING DETAIL
PLAN PERSPECTIVE VIEW

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PROJECT: Wanzer Road Bridge No. 48	TITLE: DECK DETAILS			SHEET NUMBER: 7 OF 10
LOCATION: Fairfield, VT JN: 12018		INITIALS	DATE	
DRAWING STATUS: Approved for Construction	DRAWN BY:	JEK	4-9-2014	
	DESIGNED BY:	JEK	4-9-2014	
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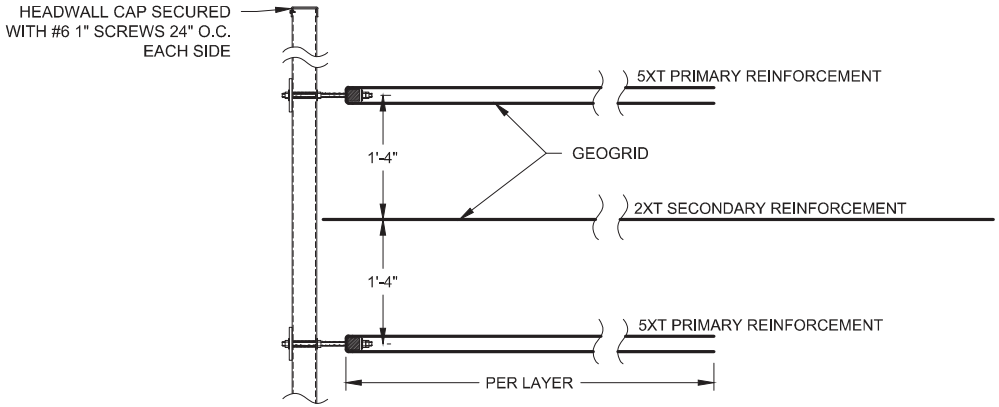
GEOGRID NOTES:

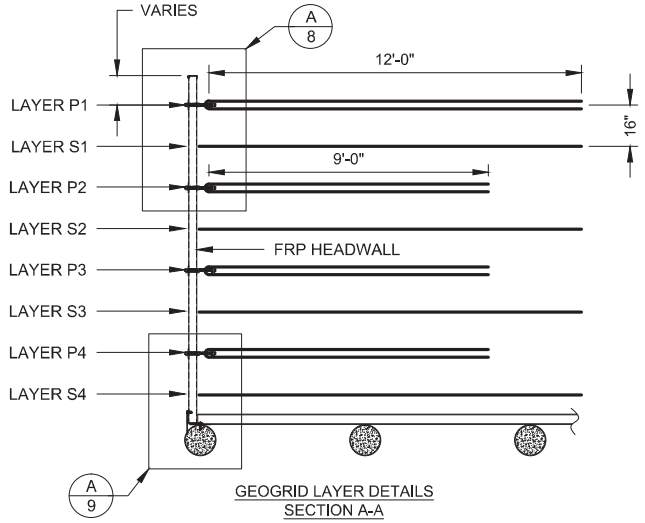
PRIMARY REINFORCEMENT - 5XT
- LAYERS WITH "P" INDICATE PRIMARY REINFORCEMENT WITH TWO TAILS
- PRIMARY REINFORCEMENT IS ATTACHED TO HEADWALL BY WRAPPING CONTINUOUS EQUAL LENGTH TAILS AROUND FRP WALER PERPENDICULAR TO HEADWALL

SECONDARY REINFORCEMENT - 2XT
- LAYERS WITH "S" INDICATE SECONDARY REINFORCEMENT WITH ONE TAIL
- SECONDARY REINFORCEMENT EXTENDS TO THE HEADWALL, BUT IS NOT ATTACHED
- PLACE PARALLEL TO HEADWALL - UNROLL 12' WIDE ROLE PARALLEL TO WALL
- SECONDARY REINFORCEMENT DOES NOT ATTACH TO HEADWALL

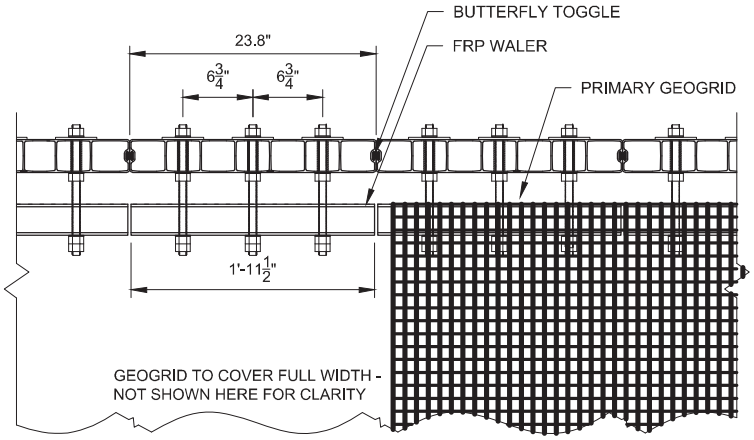
INSTALLATION
- FOLLOW ALL WRITTEN SPECIFICATION WHEN INSTALLING GEOGRID
- INSTALL ALL LAYERS TO THE EXTENTS INDICATED BY DASHED LINES IN ELEVATION DRAWINGS
- ADJACENT LAYERS MUST BE BUTTED TO ONE ANOTHER TO ACHIEVE 100% COVERAGE
- MACHINE DIRECTION OF PRIMARY GEOGRID MUST BE ORIENTED PERPENDICULAR TO WALL
- PRIMARY GEOGRID ROLLS ARE 6' WIDE - EXTRA WIDTH CAN BE BURIED IN BACKFILL OR CUT TO FIT
- PRIMARY GEOGRID IS CUT TO FULL LENGTH - NO SPLICING IN THE MACHINE DIRECTION IS PERMITTED
- SECONDARY GEOGRID ROLLS ARE 12' WIDE AND CUT PERPENDICULAR TO WALL
- SUGGESTED HEADWALL BATTER IS 1:32 BACK FROM VERTICAL (BETWEEN 1.5" - 4.5")
- BACKFILL PLACEMENT SHOULD BE PLACED TO PREVENT DAMAGE AND WRINKLES



HEADWALL-GEOGRID CONNECTION
DETAIL A
ELEVATION VIEW



GEOGRID LAYER DETAILS
SECTION A-A



HEADWALL - GEOGRID CONNECTION
PLAN VIEW

ADVANCED INFRASTRUCTURE TECHNOLOGIES

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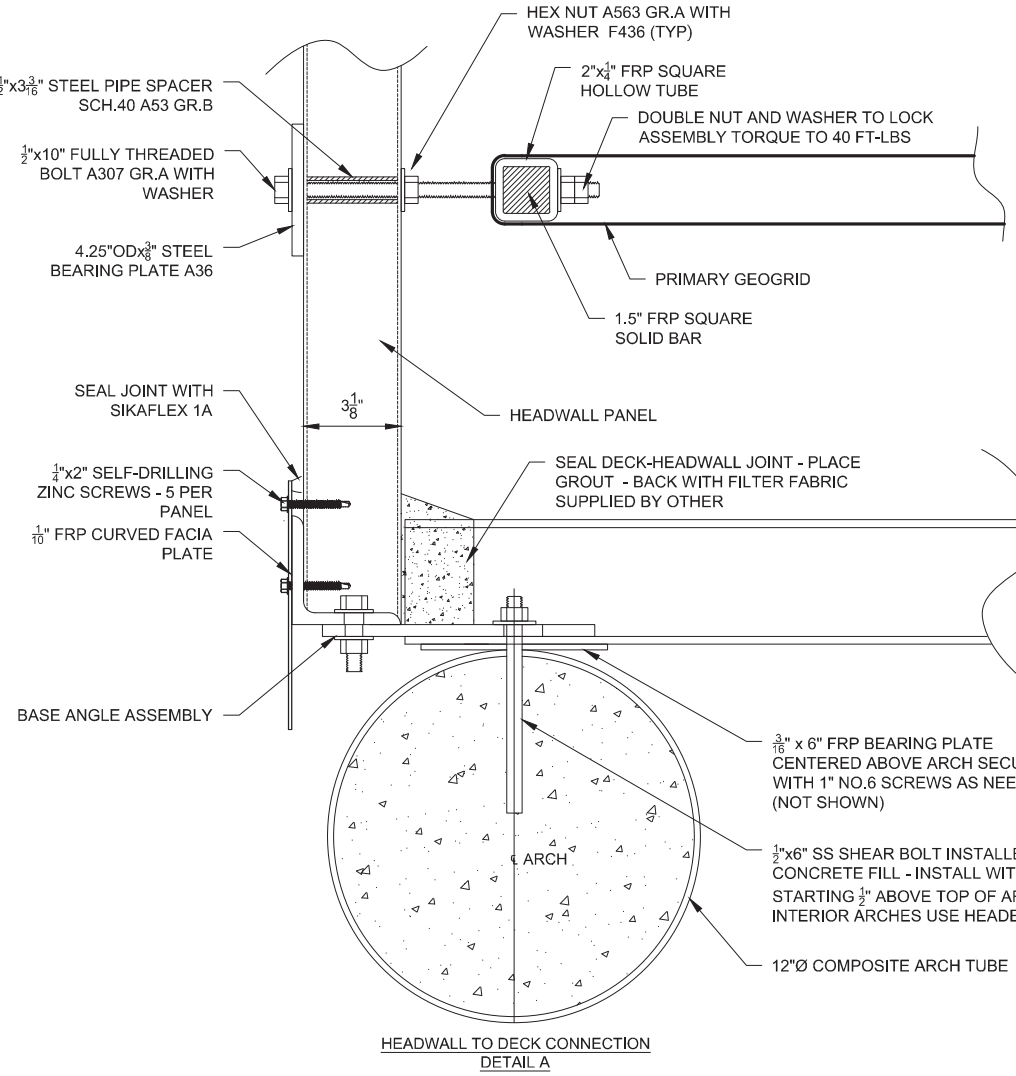
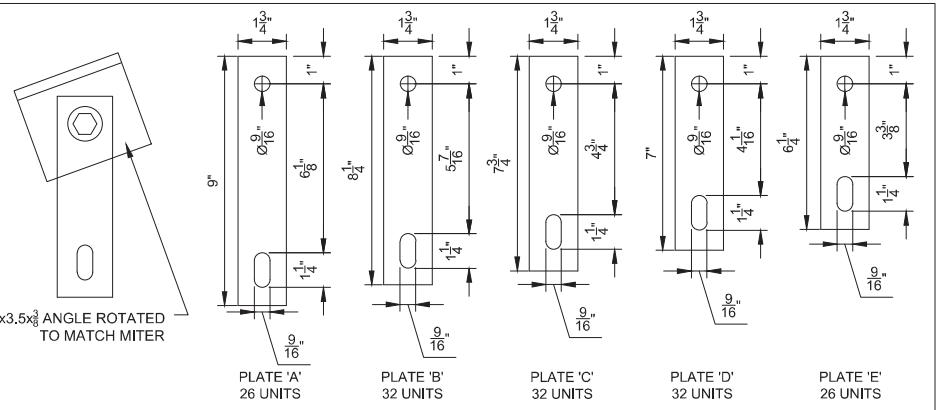
PROJECT: Wanzer Road Bridge No. 48	TITLE: HEADWALL LAYOUT		
LOCATION: Fairfield, VT JN: 12018		INITIALS	DATE
DRAWING STATUS: Approved for Construction	DRAWN BY:	JEK	4-9-2014
	DESIGNED BY:	JEK	4-9-2014
Correct scale on size B paper (11x17 Ledger)	CHECKED BY:	ZU	5-20-2014

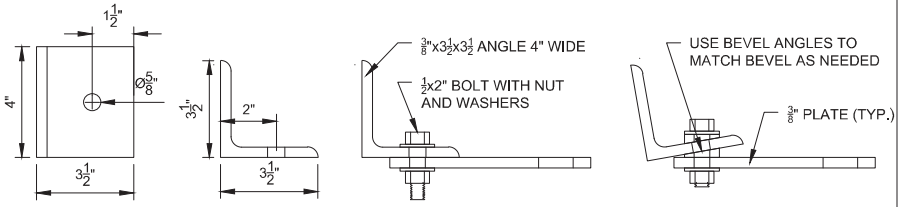
SHEET NUMBER: 8 OF 10

REV: 07-14-2014

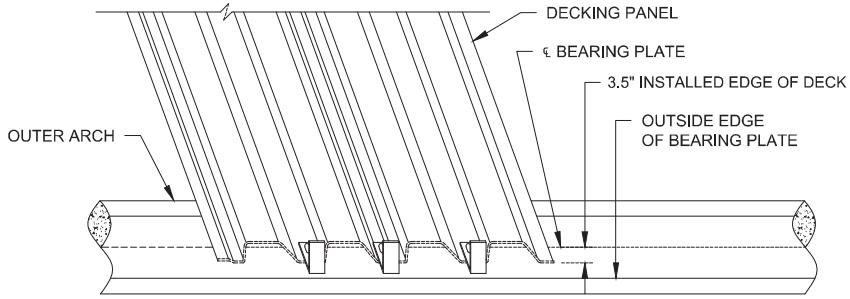


HEADWALL TO DECK CONNECTION
DETAIL A





BASE ANGLE ASEMBLY DETAIL



DECKING-HEADWALL CONNECTION DETAIL
PLAN PERSPECTIVE VIEW

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Orono, Maine 04473
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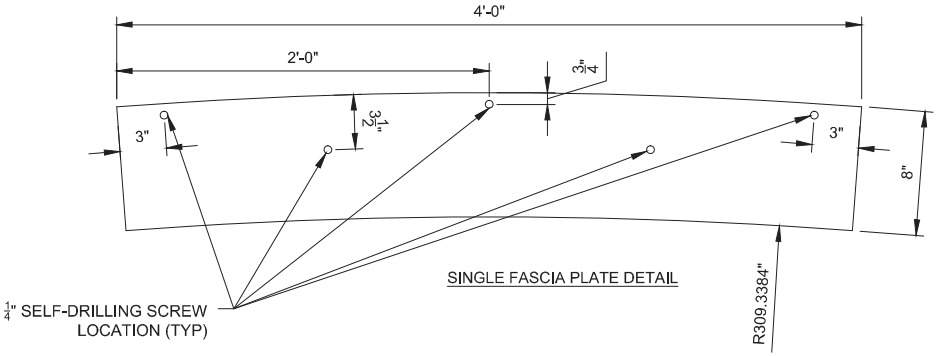
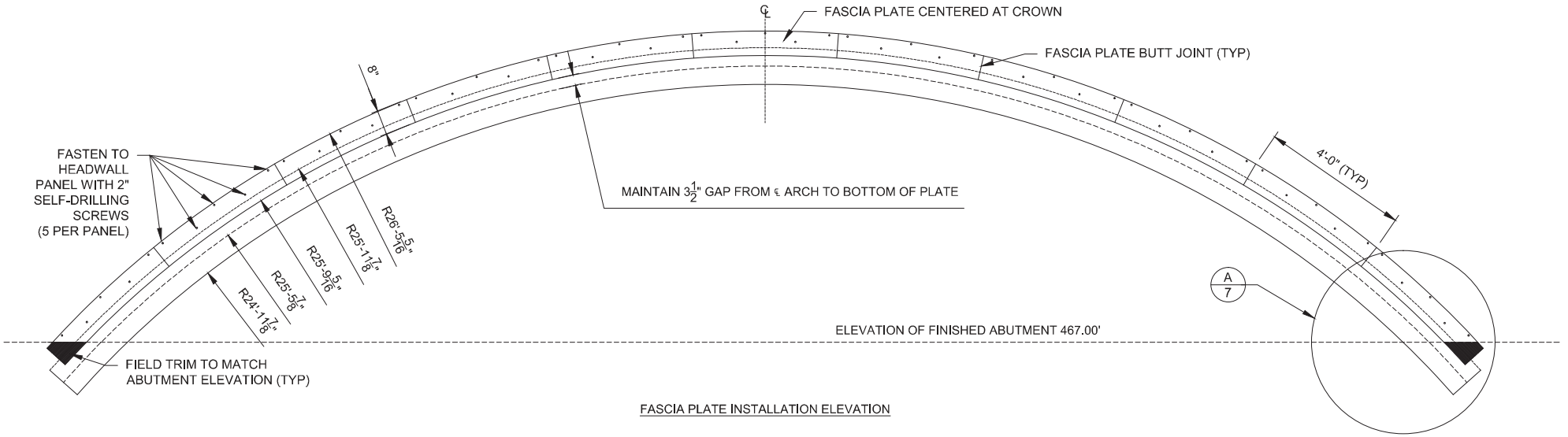
PROJECT: Wanzer Road Bridge No. 48	TITLE: HEADWALL DETAILS		SHEET NUMBER: 9 OF 10
LOCATION: Fairfield, VT JN: 12018		INITIALS	DATE
DRAWING STATUS: Approved for Construction	DRAWN BY:	JEK	4-9-2014
	DESIGNED BY:	JEK	4-9-2014
Correct scale on size B paper (11x17 Ledger)	CHECKED BY:	ZU	5-20-2014
			REV: 07-14-2014

FASCIA PLATE NOTES:

- PROJECT SHALL INCLUDE TWENTY-TWO (22) TOTAL $\frac{1}{10}$" BI-DIRECTIONAL E-GLASS CURVED FASCIA PLATES
- FASCIA PLATES SHALL BE PROVIDED CUT TO DIMENSIONS SHOWN ON PLANS
- FASCIA PLATES WILL NOT BE PRE-DRILLED OR MARKED AT SCREW LOCATIONS
- FASCIA PLATES SHALL BE FINISHED WITH SHERWIN-WILLIAMS FLUOROKEM FLUOROPOLYMER URETHANE MCSO SW4028 GYPSUM COLORED PAINT



SINGLE FASCIA PLATE DETAIL



FASCIA PLATE INSTALLATION ELEVATION

ADVANCED INFRASTRUCTURE TECHNOLOGIES

20 Godfrey Drive
Orono, Maine 04473
Tel 207.866.6526
Fax 207.866.6501
www.aitbridges.com

PROJECT: Wanzer Road Bridge No. 48	TITLE: FASCIA PLATE LAYOUT AND DETAILS		SHEET NUMBER: 10 OF 10
LOCATION: Fairfield, VT JN: 12018		INITIALS	DATE
DRAWING STATUS: Approved for Construction	DRAWN BY:	JEK	4-9-2014
	DESIGNED BY:	JEK	4-9-2014
Correct scale on size B paper (11x17 Ledger)	CHECKED BY:	ZU	5-20-2014
			REV: 07-14-2014