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FINAL HYDRAULIC REPORT

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HYDROLOGIC DATA

Date: February 2015

DRAINAGE AREA : 56.2 sq. mi.
 CHARACTER OF TERRAIN : Mountainous, rural, mix of woods and meadow
 STREAM CHARACTERISTICS : Sinuous, incised, alluvial
 NATURE OF STREAMBED : Sand and gravel

PEAK FLOW DATA

Q 2.33 =	2975 cfs	Q 50 =	8550 cfs
Q 10 =	5250 cfs	Q 100 =	10,300 cfs
Q 25 =	6950 cfs	Q 500 =	15,450 cfs

DATE OF FLOOD OF RECORD : Unknown
 ESTIMATED DISCHARGE : Unknown
 WATER SURFACE ELEV.: Unknown
 NATURAL STREAM VELOCITY : @ Q50 = 8.0 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: 2-span continuous rolled beam bridge
 YEAR BUILT: 1938
 CLEAR SPAN(NORMAL TO STREAM): 122' - 6" pier = 116'
 VERTICAL CLEARANCE ABOVE STREAMBED: ~16'
 WATERWAY OF FULL OPENING: 1760 sq. ft.
 DISPOSITION OF STRUCTURE: Remove and replace
 TYPE OF MATERIAL UNDER SUBSTRUCTURE: See borings

WATER SURFACE ELEVATIONS AT:

Q2.33 =	713.6'	VELOCITY =	6.0 fps
Q10 =	716.5'	"	6.8 fps
Q25 =	717.8'	"	7.8 fps
Q50 =	719.0'	"	8.6 fps
Q100 =	720.1'	"	9.5 fps

LONG TERM STREAMBED CHANGES: Some undermining during high flows and scour hole through the bridge

IS THE ROADWAY OVERTOPPED BELOW Q100: No
 FREQUENCY: N/A
 RELIEF ELEVATION: 725.9'
 DISCHARGE OVER ROAD @Q100: N/A

UPSTREAM STRUCTURE

TOWN: Waitsfield DISTANCE: 8960'
 HIGHWAY #: TH 29 STRUCTURE #: 22
 CLEAR SPAN: 57' CLEAR HEIGHT:
 YEAR BUILT: 1999 FULL WATERWAY:
 STRUCTURE TYPE: Welded pony truss

DOWNSTREAM STRUCTURE

TOWN: Waitsfield DISTANCE: 7970'
 HIGHWAY #: TH 1 STRUCTURE #: CB 4
 CLEAR SPAN: 99' CLEAR HEIGHT:
 YEAR BUILT: 1833, reconstructed 1973 FULL WATERWAY:
 STRUCTURE TYPE: King post wooden covered bridge

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	1.94 4.47	1.46 1.57					
POSTING							
OPERATING	2.52 5.79	1.89 2.29	2.62 3.05	1.54 1.75	2.81 3.31	2.47 2.98	2.4 2.82
COMMENTS:							

PROPOSED STRUCTURE

STRUCTURE TYPE: Single span steel beam bridge
 CLEAR SPAN(NORMAL TO STREAM): 134'
 VERTICAL CLEARANCE ABOVE STREAMBED: ~14'
 WATERWAY OF FULL OPENING: 1575 sq. ft.

WATER SURFACE ELEVATIONS AT:

Q2.33 =	713.5'	VELOCITY =	6.1 fps
Q10 =	716.5'	"	6.9 fps
Q25 =	717.7'	"	7.9 fps
Q50 =	718.9'	"	8.6 fps
Q100 =	720.0'	"	9.5 fps

IS THE ROADWAY OVERTOPPED BELOW Q100: No
 FREQUENCY: N/A
 RELIEF ELEVATION: 725.9'
 DISCHARGE OVER ROAD @Q100: N/A
 AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 722.0' 722.17'
 VERTICAL CLEARANCE: @Q50 = 3.1'

SCOUR: Contraction scour 0' up to Q200

REQUIRED CHANNEL PROTECTION: Stone Fill, Type III

PERMIT INFORMATION

AVERAGE DAILY FLOW: 115 cfs DEPTH OR ELEVATION:
 ORDINARY LOW WATER: 55 cfs ~709'
 ORDINARY HIGH WATER: 1280 cfs ~712'

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: None required.
 CLEAR SPAN (NORMAL TO STREAM):
 VERTICAL CLEARANCE ABOVE STREAMBED:
 WATERWAY AREA OF FULL OPENING:

ADDITIONAL INFORMATION

TRAFFIC MAINTENANCE NOTES

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

DESIGN VALUES

1. DESIGN LIVE LOAD	HL 93
2. FUTURE PAVEMENT	3 INCHES $d_p = 0.0$ INCH
3. DESIGN SPAN	L: 172.00 FT
4. MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)	Δ : 0.00 INCH
5. PRESTRESSING STRAND	f_y : 270 KSI
6. PRECAST CONCRETE STRUCTURE	f'_c : 5.0 KSI
7. PRESTRESSED CONCRETE RELEASE STRENGTH	f'_c : 4.0 KSI
8. SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET)	f'_c : 5.0 KSI
9. CONCRETE, HIGH PERFORMANCE CLASS A	f'_c : 4.0 KSI
10. CONCRETE, HIGH PERFORMANCE CLASS B	f'_c : 3.5 KSI
11. SPECIAL PROVISION (ULTRA HIGH PERFORMANCE CONCRETE)(FPQ)	f'_c : 14.5 KSI
12. REINFORCING STEEL	f_y : 60 KSI
13. STRUCTURAL STEEL AASHTO M270 (WEATHERING)	f_y : 50 KSI
14. SOIL UNIT WEIGHT	γ : 0.140 KSI
15. NOMINAL BEARING RESISTANCE OF SOIL	q_n : ---
16. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	ϕ : ---
17. NOMINAL BEARING RESISTANCE OF ROCK	q_n : 70.0 KSF
18. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	ϕ : 0.45
19. PILE YIELD STRENGTH ASTM A572	f_y : 50 KSI
20. PILE SIZE	HP 14x89
20. ESTIMATED PILE LENGTH	L _p : 50 FT
21. NOMINAL AXIAL PILE RESISTANCE (SEE PROJECT NOTES)	---
22. LATERAL PILE DEFLECTION	Δ : 0.50 INCH
23. BASIC WIND SPEED	V _{3s} : 100 MPH
24. MINIMUM GROUND SNOW LOAD	P _g : ---
25. SEISMIC DATA	P _{gA} : --- S _s : ---
26.	---
27.	---
28.	---

PROJECT NAME: WAITSFIELD

PROJECT NUMBER: BF 013-4(39)

FILE NAME: z12b136quantity.xlsm PLOT DATE: 10/13/2015
 PROJECT LEADER: R.YOUNG DRAWN BY: S. MERKWAN
 DESIGNED BY: VTRANS/D.KULL CHECKED BY: T.KENDRICK
PRELIMINARY INFORMATION SHEET 1 SHEET 2 OF 69

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 ASPHALTIC PLUG	8/29/2011
SD-516.11a	BRIDGE EXPANSION JOINT, VERMONT	2/24/2011
SD-516.11b	BRIDGE EXPANSION JOINT, VERMONT	2/24/2011
SD-601.00	STRUCTURAL STEEL DETAILS AND NOTES	6/4/2010
SD-602.00	STRUCTURAL STEEL PLATE GIRDER DETAILS AND NOTES	5/2/2011

STAMP INDICATES RESPONSIBILITY FOR REVISIONS TO THIS SHEET MARKED REVISION "VE".

REV	DATE	DESCRIPTION	AS BUILT "REBAR" DETAIL		
			LEVEL I	LEVEL II	LEVEL III
△	10/13/15	SHEET ADDITIONS	TYPE:	TYPE:	TYPE:
△		MODIFICATIONS FOR CHANGED DECK TYPE	GRADE:	GRADE:	GRADE:

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT	
2015	4100	610	55	6.2	230	20 year ESAL for flexible pavement from 2015 to 2035 : 1143000
2035	4400	650	55	10.1	400	40 year ESAL for flexible pavement from 2015 to 2055 : 2684000
						Design Speed : 40 mph

PROJECT NOTES

GENERAL

1. ALL MATERIALS AND CONSTRUCTION SHALL CONFORM TO THE STATE OF VERMONT, AGENCY OF TRANSPORTATION'S STANDARD SPECIFICATIONS FOR CONSTRUCTION, DATED 2011, AND ITS LATEST REVISIONS, AND THE AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, LRFD SIXTH EDITION, DATED 2012 AND ITS LATEST REVISIONS.
2. THE BRIDGE IS DESIGNED FOR HL-93 LIVE LOADING.
3. ALL DIMENSIONS SHOWN IN THE PLANS ARE HORIZONTAL OR VERTICAL AND ARE GIVEN AT 68 DEGREES FAHRENHEIT UNLESS OTHERWISE NOTED.
4. ITEM 529.15, "REMOVAL OF STRUCTURE" WILL INCLUDE THE REMOVAL AND DISPOSAL OF THE EXISTING STRUCTURE INCLUDING THE ENTIRE SUPERSTRUCTURE, AND THE EXISTING PIER TO THE TOP OF ITS FOOTING.
5. ABUTMENT 1 SHALL BE REMOVED TO ELEVATION 720. THE COST FOR REMOVAL OF ABUTMENT 1 SHALL BE INCLUDED IN ITEM 203.27 UNCLASSIFIED CHANNEL EXCAVATION.
6. ABUTMENT 2 SHALL BE REMOVED TO ELEVATION 711. THE COST FOR REMOVAL OF ABUTMENT 2 WILL BE INCLUDED IN ITEM 204.25 STRUCTURE EXCAVATION.
7. THE EXISTING STRUCTURAL STEEL IS PAINTED WITH A MATERIAL THAT MAY CONTAIN LEAD. THE CONTRACTOR SHALL FOLLOW ALL APPLICABLE REGULATIONS WHEN HANDLING AND WORKING WITH THIS STEEL. THE REMOVED STRUCTURAL STEEL IS THE PROPERTY OF THE CONTRACTOR. THE CONTRACTOR SHALL INDEMNIFY AND HOLD THE STATE, ITS OFFICERS, AND EMPLOYEES HARMLESS CONCERNING THE CONTRACTOR'S USE OR DISPOSAL OF THE REMOVED EXISTING STRUCTURAL STEEL.
8. ALL PRECAST CONCRETE ELEMENTS SHALL BE FABRICATED TO THE SPECIFIED DIMENSIONS WITHIN THE TOLERANCES DICTATED IN THE PRECAST/PRESTRESSED CONCRETE INSTITUTE TOLERANCE MANUAL FOR PRECAST AND PRESTRESSED CONCRETE CONSTRUCTION, MNL 135-00 AND ITS LATEST REVISIONS.
9. FOR TRAFFIC CONTROL NOTES, SEE SHEET 17.

EARTHWORK

10. 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 STREAM ALTERATION ENGINEER.
11. THE STONE FILL TYPE III UNDER THE BRIDGE AS SHOWN IN THE PLANS SHALL BE PLACED BEFORE THE STEEL GIRDERS ARE SET.
12. AT ABUTMENT NO. 1, THE FILL BEHIND THE ABUTMENTS SHALL NOT BE PLACED ABOVE THE LEVEL OF THE BRIDGE SEAT UNTIL THE GIRDERS ARE SET ON THE BRIDGE SEAT.
13. AT ABUTMENT NO. 2, THE MSE ABUTMENT BACKFILL SECTION SHALL BE PLACED TO THE UPPER PAY LIMIT OF THE ITEM PRIOR TO SETTING THE GIRDERS ON THE BRIDGE SEAT.
14. GUARDRAIL APPROACH RAIL AND STEEL BEAM GUARDRAIL SHALL BE CORED INTO ROCK WHERE REQUIRED AS DIRECTED BY AND TO THE SATISFACTION OF THE ENGINEER. ALL ASSOCIATED COSTS WILL BE INCLUDED IN THE UNIT BID PRICE FOR THE APPROPRIATE RAIL ITEM.

CONCRETE

15. ALL CONCRETE PLACED IN THE TRANSVERSE AND LONGITUDINAL CLOSURE POURS OF THE DECK AND END OF DECK PANELS AT EXPANSION JOINT WILL BE ITEM 900.608 SPECIAL PROVISION (ULTRA HIGH PERFORMANCE CONCRETE)(FPQ).
16. ALL CONCRETE PLACED IN ABUTMENT BACKWALL HEADERS, APPROACH SLAB CLOSURE POURS, AND PILE VOIDS WILL BE PAID ITEM 900.608 (HIGH PERFORMANCE CONCRETE, RAPID SET)(FPQ).
17. ALL CONCRETE PLACED IN THE BRUSH CURBS, WINGWALL CURBS, AND SUBFOOTING (WHERE REQUIRED) WILL BE PAID UNDER ITEM 501.33, CONCRETE, HIGH PERFORMANCE CLASS A.
18. ALL PRECAST SUPERSTRUCTURE, SUBSTRUCTURE AND APPROACH SLAB CONCRETE SHALL MEET THE REQUIREMENTS OF SECTION 540 - PRECAST CONCRETE.
19. ALL REINFORCING STEEL SHALL MEET THE REQUIREMENTS OF SECTION 507 FOR REINFORCING STEEL, LEVEL II. ALL REINFORCING STEEL PLACED IN THE BRUSH CURBS, END OF DECK, APPROACH SLAB CLOSURE POURS AND BACKWALL HEADERS WILL BE PAID FOR UNDER ITEM 507.12, "REINFORCING STEEL, LEVEL II". ALL REINFORCING STEEL IN THE PRECAST ELEMENTS WILL BE INCLUDED IN THE UNIT BID PRICE FOR THE APPROPRIATE PRECAST CONCRETE PAY ITEM.
20. ITEM 514.10, "WATER REPELLENT, SILANE", SHALL BE APPLIED TO ALL EXPOSED CONCRETE SUPERSTRUCTURE AND SUBSTRUCTURE SURFACES, EXCEPT THE UNDERSIDE OF THE DECK BETWEEN DRIP NOTCHES.

- 20A. CONCRETE FOR CAST IN-PLACE PORTIONS OF THE DECK SHALL MEET THE REQUIREMENTS OF SECTION 501 FOR CONCRETE, HIGH PERFORMANCE CLASS A.
- 20B. CONCRETE USED FOR BEDDING MATERIAL BENEATH PRECAST PRESTRESSED CONCRETE DECK PANELS SHALL MEET THE REQUIREMENTS OF SECTION 501 FOR CONCRETE, HIGH PERFORMANCE CLASS AA.

21. ALL PRECAST CONCRETE SURFACES LABELED WITH "EXPOSED COARSE AGGREGATE FINISH" SHALL BE TREATED TO PROVIDE A ROUGHENED/EXPOSED COARSE AGGREGATE SURFACE. THE AMPLITUDE OF THE EXPOSED AGGREGATE SHALL BE A MINIMUM OF 1/8" AND BE COMPLETED PRIOR TO FINAL PLACEMENT OF THE PRECAST COMPONENT. THE FABRICATOR SHALL INDICATE THE METHOD USED TO ACHIEVE THIS PROFILE AND THE METHOD USED TO PROTECT THE REINFORCING STEEL ON THE FABRICATION DRAWINGS.
22. MINIMUM CLEAR COVER FOR REINFORCING STEEL SHALL BE AS FOLLOWS UNLESS NOTED OTHERWISE:
ALONG BACK FACES OF WALLS AGAINST EARTH 2.0 INCH
ALONG TOP SURFACE OF DECK SLAB 1.5 INCH
ALONG BOTTOM SURFACE OF DECK SLAB 1.5 INCH
ELSEWHERE UNLESS OTHERWISE NOTED 3.0 INCH

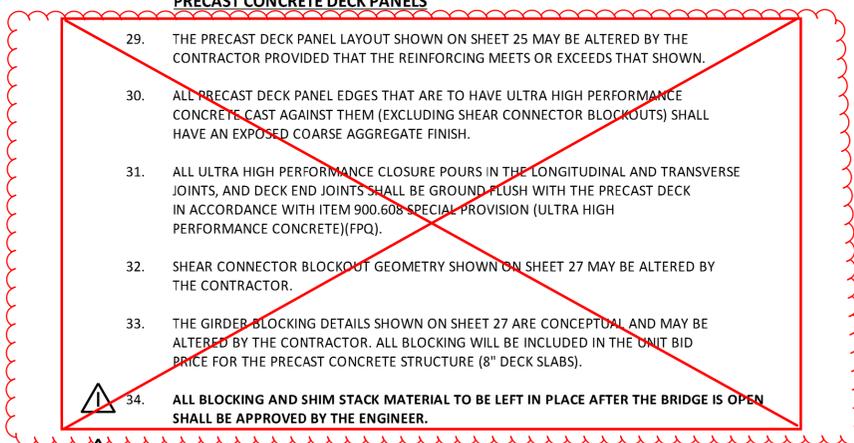


STRUCTURAL STEEL

23. ALL NEW STRUCTURAL STEEL SHALL CONFORM TO AASHTO M270/M270M GRADE 50W AND WILL BE PAID FOR UNDER ITEM 506.55 "STRUCTURAL STEEL PLATE GIRDER" (FPQ) UNLESS NOTED OTHERWISE.
24. ALL MEMBERS MARKED CVN MUST MEET CHARPY V-NOTCH TESTING REQUIREMENTS AS INDICATED IN SUBSECTION 714.01.
25. ALL FIELD CONNECTIONS SHALL BE MADE WITH 7/8" DIAMETER HIGH STRENGTH BOLTS IN 15/16" DIAMETER HOLES, PER SECTION 506. ANY CONNECTION NOT DESIGNATED SHALL BE DETAILED BY THE FABRICATOR AND SUBMITTED WITH SHOP DRAWINGS.
26. TEMPORARY SUPPORTS FOR GIRDER ERECTION WILL BE INCLUDED IN ITEM 506.55 "STRUCTURAL STEEL, PLATE GIRDER" (FPQ). THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN OF THE TEMPORARY GIRDER SUPPORT SYSTEM. STABILITY OF THE GIRDERS UNTIL FULL DEAD LOAD IS APPLIED IS THE RESPONSIBILITY OF THE CONTRACTOR.
27. THE CROSSFRAMES SHALL BE DETAILED TO THE STEEL DEAD LOAD FIT CONDITION.
28. THE ENDS OF THE GIRDERS ARE EXPECTED TO BE OUT-OF-PLUMB UNDER FULL DEAD LOAD.

PRECAST CONCRETE DECK PANELS

29. THE PRECAST DECK PANEL LAYOUT SHOWN ON SHEET 25 MAY BE ALTERED BY THE CONTRACTOR PROVIDED THAT THE REINFORCING MEETS OR EXCEEDS THAT SHOWN.
30. ALL PRECAST DECK PANEL EDGES THAT ARE TO HAVE ULTRA HIGH PERFORMANCE CONCRETE CAST AGAINST THEM (EXCLUDING SHEAR CONNECTOR BLOCKOUTS) SHALL HAVE AN EXPOSED COARSE AGGREGATE FINISH.
31. ALL ULTRA HIGH PERFORMANCE CLOSURE POURS IN THE LONGITUDINAL AND TRANSVERSE JOINTS, AND DECK END JOINTS SHALL BE GROUND FLUSH WITH THE PRECAST DECK IN ACCORDANCE WITH ITEM 900.608 SPECIAL PROVISION (ULTRA HIGH PERFORMANCE CONCRETE)(FPQ).
32. SHEAR CONNECTOR BLOCKOUT GEOMETRY SHOWN ON SHEET 27 MAY BE ALTERED BY THE CONTRACTOR.
33. THE GIRDER BLOCKING DETAILS SHOWN ON SHEET 27 ARE CONCEPTUAL AND MAY BE ALTERED BY THE CONTRACTOR. ALL BLOCKING WILL BE INCLUDED IN THE UNIT BID PRICE FOR THE PRECAST CONCRETE STRUCTURE (8" DECK SLABS).
34. ALL BLOCKING AND SHIM STACK MATERIAL TO BE LEFT IN PLACE AFTER THE BRIDGE IS OPEN SHALL BE APPROVED BY THE ENGINEER.
35. THE CONTRACTOR SHALL PROVIDE STAMPED CALCULATIONS PREPARED BY A LICENSED PROFESSIONAL ENGINEER IN THE STATE OF VERMONT THAT SHOW THAT TENSILE STRESSES ON BOTH FACES OF THE DECK PANELS DO NOT EXCEED THE MODULUS OF RUPTURE DURING THE HANDLING, FABRICATION, SHIPPING, PRE-ASSEMBLY, AND FINAL ERECTION OF THE PANEL.



PRECAST ABUTMENTS AND POST-TENSIONING

36. ABUTMENT FOOTINGS, STEMS AND BACKWALL SHALL BE PRECAST WITH PAYMENT INCLUDED IN THE APPROPRIATE PRECAST CONCRETE PAY ITEM. PAYMENT SHALL INCLUDE ALL WORK NECESSARY TO FABRICATE, DELIVER, AND ASSEMBLE EACH UNIT COMPLETE AND IN-PLACE AS SHOWN ON THE PLANS. ALL APPURTENANCES WILL BE INCIDENTAL TO THE APPROPRIATE PRECAST CONCRETE ABUTMENT PAY ITEM. STABILITY OF ALL PRECAST SUBSTRUCTURE UNITS IS THE RESPONSIBILITY OF THE CONTRACTOR UNTIL ALL REQUIRED BACKFILLING IS COMPLETE.
37. ALL COSTS FOR GROUTING MATERIALS USED IN PRECAST MEMBERS WILL BE INCIDENTAL TO THE APPROPRIATE PRECAST PAY ITEMS UNLESS OTHERWISE NOTED.
38. THE CONTRACTOR IS RESPONSIBLE FOR PROPER FIT-UP OF THE PRECAST AND CAST-IN-PLACE ELEMENTS, PER THE FABRICATORS RECOMMENDATIONS, APPROVED FABRICATION AND WORKING DRAWINGS AND TO THE SATISFACTION OF THE ENGINEER.

39. MECHANICAL GROUTED SPLICE COUPLERS SHALL BE USED TO PROVIDE MOMENT CONNECTIONS BETWEEN MEMBERS AS SHOWN IN THE PLANS. GROUTED SPLICES SHALL DEVELOP A MINIMUM OF 125% OF THE SPECIFIED YIELD STRENGTH OF THE REINFORCING BAR BEING SPLICED. ALL COSTS FOR THE GROUTED SPLICE COUPLERS WILL BE INCLUDED IN THE APPROPRIATE PRECAST PAY ITEM.
40. POST-TENSIONING STRANDS AND CONDUIT SHALL ADHERE TO THE REQUIREMENTS OF SECTION 510 - PRESTRESSED CONCRETE. GALVANIZED ANCHOR ASSEMBLIES, CONDUIT AND POST-TENSIONING STRANDS WILL BE INCLUDED UNDER THE APPROPRIATE PRECAST PAY ITEM. POST TENSIONING STRANDS SHALL BE COVERED WITH SEAMLESS POLYPROPYLENE SHEATH (WITH CORROSION INHIBITOR GREASE BETWEEN SHEATH AND STRAND) FOR THE LENGTH OF THE STRAND, EXCEPT AT ANCHORAGE LOCATIONS.
41. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND DETAILING OF POST TENSIONING ELEMENTS. THE POST TENSIONING DESIGN SHALL FOLLOW CURRENT LRFD AND PCI MANUAL GUIDELINES. **POST TENSIONING BLOCKOUT ELEMENTS SHALL BE ORIENTED PERPENDICULAR TO THE POST-TENSIONING STRANDS.**
42. GALVANIZE ANCHOR ASSEMBLIES (SUPPORT BOLTS, NUTS, WASHERS AND LEVELING PLATES) AFTER FABRICATION ACCORDING TO AASHTO M232M/M232.
43. DESIGN VALUES:
A. CONCRETE COMPRESSIVE STRENGTH: f'c = 5000 psi
B. POST-TENSIONING STRANDS: 0.6 INCH DIAMETER, 270 KSI, LOW RELAXATION 7-WIRE STRANDS.
C. ASSUMED MODULUS OF ELASTICITY IS 28,500 KSI.
D. THERE SHALL BE 2 STRANDS PER CONDUIT.
E. THE JACKING FORCE PER STRAND = 44 KIPS.
44. THE GALVANIZED CORRUGATED STEEL PIPE SHALL MEET THE REQUIREMENTS OF SUBSECTION 711.01. ALL COSTS ASSOCIATED WITH PLACING THE CORRUGATED STEEL PIPE WILL BE INCLUDED IN THE BID PRICE FOR ITEM 540.10 "PRECAST CONCRETE STRUCTURE (ABUTMENT NO. 1)" OR ITEM 540.10 "PRECAST CONCRETE STRUCTURE (ABUTMENT NO. 2)" AS APPROPRIATE.
45. **ERECTION OF THE STEEL GIRDERS SHALL NOT BE PERMITTED UNTIL THE ABUTMENT 1 FOOTING CLOSURE POUR CONCRETE HAS ACHIEVED A STRENGTH OF 1500 PSI.**
46. BACKFILLING ABUTMENT 1 & 2 SHALL NOT BE PERMITTED UNTIL THE GROUTED SPLICE SLEEVE CONNECTION GROUT HAS ACHIEVED A STRENGTH OF 4000 PSI.
47. **ABUTMENT 2 POST TENSIONING SHALL OCCUR PRIOR TO PLACEMENT OF CONCRETE IN THE PILE VOIDS.**
48. PLACEMENT OF THE PRECAST FOOTINGS WITH LEVELING BOLTS SHALL NOT BE PERMITTED UNTIL THE GROUT BED AND SUBFOOTING (WHERE REQUIRED) HAS ACHIEVED A STRENGTH OF 1500 PSI.
49. **THE CONCRETE CURING REQUIREMENTS PER SECTION 501.17 OF THE STANDARD SPECIFICATIONS FOR CONCRETE, HIGH PERFORMANCE CLASS A PLACED IN THE SUBFOOTING (WHERE REQUIRED) ARE ONLY REQUIRED UNTIL THE CONCRETE HAS ACHIEVED A STRENGTH OF 1500 PSI.**
- SUBSTRUCTURE ON LEDGE**
50. PRECAST FOOTINGS AT ABUTMENT 1 SHALL BE FOUNDED ON LEDGE WHICH HAS BEEN CLEANED OF ALL LOOSE ROCK AND DEBRIS TO ENSURE THAT THE SUBSTRUCTURE IS PLACED ON COMPETENT ROCK.
51. UPON COMPLETION OF THE EXCAVATION FOR ABUTMENT 1, AND PRIOR TO PLACING THE PRECAST ABUTMENTS AND PRIOR TO PLACING MATERIAL ON BEDROCK, THE ENGINEER SHALL NOTIFY THE VTRANS GEOLOGIST. THE GEOLOGIST WILL DETERMINE IF THE BEDROCK IS STABLE AND COMPETENT TO OBTAIN THE REQUIRED NOMINAL BEARING RESISTANCE. THE CONTRACTOR SHALL NOTIFY THE GEOLOGIST 24 HOURS IN ADVANCE OF WHEN THE ANALYSIS WILL BE NEEDED.
52. LEDGE THAT IS EXCAVATED FOR PLACEMENT OF THE PRECAST FOOTING (OR SUB-FOOTING IF REQUIRED) SHALL BE EXCAVATED TO PROVIDE A LEVEL SURFACE OR AS DIRECTED BY THE ENGINEER. **THE SUBFOOTING (WHERE REQUIRED) SHALL HAVE A RAKED FINISH.**
53. **ABUTMENT 1 HAS BEEN DESIGNED FOR THE TOP OF FOOTING ELEVATIONS SHOWN ON THE PLANS. LEDGE SHALL BE EXCAVATED DOWN TO THE INDICATED BOTTOM OF FOOTING, INCLUDING 3" MIN GROUT BED, FOR THE FULL WIDTH (TOE TO HEEL) OF THE CONFIGURATION. IF THE LEDGE ELEVATION IS GREATER THAN 6" BELOW THE DESIGN BOTTOM OF FOOTING, A SUBFOOTING SHALL BE POURED SO THAT THE DESIGN TOP OF FOOTING IS AT THE REQUIRED ELEVATION. THE GROUT BED WILL BE PAID UNDER THE APPROPRIATE SECTION 540 CONTRACT ITEM. THE SUBFOOTING, IF REQUIRED, WILL BE PAID UNDER ITEM 501.33 "CONCRETE, HIGH PERFORMANCE CLASS A."**
54. ALL COSTS ASSOCIATED WITH PREVENTING ROCK FROM ENTERING THE MAD RIVER WILL BE INCLUDED IN ITEM 203.27.



REV	DATE	DESCRIPTION
△	10/13/2015	NOTE REVISIONS

REV	DATE	DESCRIPTION
△		NOTE REVISIONS



PROJECT NAME:	WAITSFIELD	PLOT DATE:	10/13/2015
PROJECT NUMBER:	BRF 013-4(39)	DRAWN BY:	S.MERKWAN
FILE NAME:	z12bl36frm.dgn	DESIGNED BY:	D.KULL
PROJECT LEADER:	R.YOUNG	CHECKED BY:	T.KENDRICK
PROJECT NOTES	(1 OF 2)	SHEET	3 OF 69

PILES

- 55. THE PILES SHALL BE HP 14X89 ORIENTED WITH THE STRONG AXIS NORMAL TO THE CENTERLINES OF GIRDERS. PILES SHALL HAVE THE FOLLOWING STRUCTURAL AND PILE DRIVING PROPERTIES:
A. PILE AXIAL PILE RESISTANCE = 1184 KIPS
B. PILE MONITORING METHOD = DYNAMIC PILE LOADING TEST
C. PILE TEST RESISTANCE FACTOR = $\phi=0.65$
D. NOMINAL PILE DRIVING RESISTANCE (RNDR) = 375 KIPS
E. PILE DEFLECTION = 0.5 INCH
- 56. PILE SHOES ARE REQUIRED AND SHALL CONFORM TO SUBSECTION 505.04(F).
- 57. TO ENSURE THAT THE NOMINAL RESISTANCE HAS BEEN OBTAINED AND TO PREVENT OVERSTRESSING OF THE PILES DURING DRIVING OPERATIONS, DYNAMIC TESTING SHALL BE PERFORMED IN ACCORDANCE WITH SUBSECTION 505.04(d)-2 PAYMENT FOR PILE TESTING WILL BE MADE UNDER ITEM 505.45 "DYNAMIC PILE LOADING TEST". A MINIMUM OF ONE DYNAMIC PILE TEST SHALL BE CONDUCTED ON THE FIRST PILE DRIVEN. MORE TESTS MAY BE ORDERED BY THE ENGINEER. ADDITIONAL TEST(S) ORDERED BY THE ENGINEER WILL BE PAID AT THE UNIT BID PRICE FOR CONTRACT ITEM 505.45.

 **RESTRIKING OF THE TEST PILE IS NOT REQUIRED.**

- 59. THE TOPS OF THE PILES AFTER DRIVING SHALL NOT VARY FROM THE LOCATION SHOWN ON THE PLANS BY MORE THAN 3 INCHES. THE PILE ORIENTATION SHALL NOT VARY BY MORE THAN 5 DEGREES. THE CONTRACTOR SHALL DEMONSTRATE HOW TOLERANCE WILL BE MET TO THE SATISFACTION OF THE ENGINEER REGARDLESS OF INSTALLATION METHOD.
- 60. FOR ESTIMATING PURPOSES, THE PILE TIP ELEVATIONS WERE ASSUMED AS SHOWN ON THE BORING LOGS. THE ACTUAL LENGTHS MAY VARY.
- 61. THE PILES SHALL BE DRIVEN TO BEDROCK AND SHALL BE EMBEDDED IN THE GROUND A MINIMUM OF 46 FEET BELOW THE BOTTOM OF THE PILE CAP.

PRECAST APPROACH SLABS

- 62. PRECAST CONCRETE STRENGTH: $f'c = 5,000$ PSI.
- 63. SLAB EDGES IN CONTACT WITH ~~HPC RAPID SET~~ CONCRETE SHALL BE SANDBLASTED PRIOR TO DELIVERY AND POWER WASHED WITH WATER PRIOR TO INSTALLATION.
- 64. FILL APPROACH SLAB CLOSURE POURS WITH ~~HPC RAPID SET~~ CONCRETE IN ACCORDANCE WITH ITEM 900.608, "SPECIAL PROVISION (~~HPC RAPID SET~~ CONCRETE, RAPID SET) (FPQ)". CONCRETE SHALL HAVE A 28-DAY MINIMUM COMPRESSIVE STRENGTH OF ~~5,000~~ PSI.
- 65. THE FABRICATOR MAY ALTER THE DESIGN DETAILED WITHIN THESE PLANS TO ACCOMMODATE THEIR SPECIFIC OPERATION. THIS ALTERATION SHALL BE DESIGNED AND STAMPED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF VERMONT.



DOWNSPOUT NOTES

- 66. PAYMENT FOR ALL MATERIALS AND LABOR RELATED TO THE HOPPER AND DOWNSPOUT ASSEMBLY WILL BE INCLUDED IN ITEM 506.60, STRUCTURAL STEEL AND WILL CONFORM TO AASHTO M270M, GRADE 250.
- 67. BOLTS AND RELATED HARDWARE SHALL CONFORM TO ASTM A 307 GRADE A.
- 68. THE HOPPER AND DOWNSPOUT ASSEMBLY SHALL BE INSTALLED AFTER THE BRIDGE EXPANSION JOINT IS IN PLACE.
- 69. ALL HOPPER AND DOWNSPOUT COMPONENTS AND HARDWARE SHALL BE GALVANIZED UNLESS OTHERWISE NOTED.

RETAINING WALL NOTES

- 70. RETAINING WALLS SHALL BE SELECTED FROM THE LIST OF WALLS ON THE APPROVED VAOT EARTH RETAINING SYSTEM SELECTION CHART. SEE SPECIAL PROVISION. THE RETAINING WALL SHALL HAVE CONCRETE FACING.
- 71. THE WALL WILL BE PAID UNDER ITEM 900.670 SPECIAL PROVISION (RETAINING WALL).
-  72. THE BOTTOM OF WALL SHALL BE A MINIMUM OF 4 FEET BELOW THE FINISHED GRADE IN FRONT OF THE WALL, SEE SHEET 49.
- 73. THE RETAINING WALL SHALL BE DESIGNED IN ACCORDANCE WITH THE 2014 AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS AND ITS LATEST REVISIONS. THE DESIGN SHALL INCLUDE THE EFFECTS OF ALL LOADS INCLUDING, BUT NOT LIMITED TO EARTH SURCHARGE AND HYDROSTATIC PRESSURE.

74. THE FOLLOWING SOIL PROPERTIES SHALL BE USED IN THE DESIGN OF THE RETAINING WALL:

- a. FOUNDATION SOIL DESIGN VALUES
THE NOMINAL (UNFACTORED) BEARING RESISTANCE IS A FUNCTION OF THE EFFECTIVE FOOTING WIDTH AND VARIES LINEARLY FROM 7.5 KSF (EFFECTIVE WIDTH = 4') TO 17.5 KSF (EFFECTIVE WIDTH = 10')
- b. FOUNDATION SOIL PARAMETERS
UNIT WEIGHT: 130 PCF
FRICTION ANGLE: 38 DEG
- c. RETAINED SOIL PARAMETERS
UNIT WEIGHT: 140 PCF
FRICTION ANGLE: 34 DEG
- d. RESISTANCE FACTORS (LRFD)
BEARING RESISTANCE: 0.45
SLIDING RESISTANCE: 0.80
SETTLEMENT RESISTANCE: 1.0
SCOUR RESISTANCE: 1.0

75. THE INTERFACE BETWEEN THE RETAINING WALL AND THE ABUTMENT STEM SHALL BE DESIGNED TO ALLOW 0.5 INCHES OF MOVEMENT. A JOINT DETAIL SHALL BE SUBMITTED TO THE PROJECT MANAGER FOR REVIEW AND APPROVAL. ALL COMPONENTS WILL BE INCLUDED IN THE UNIT PRICE FOR ITEM 900.670 SPECIAL PROVISION (RETAINING WALL).

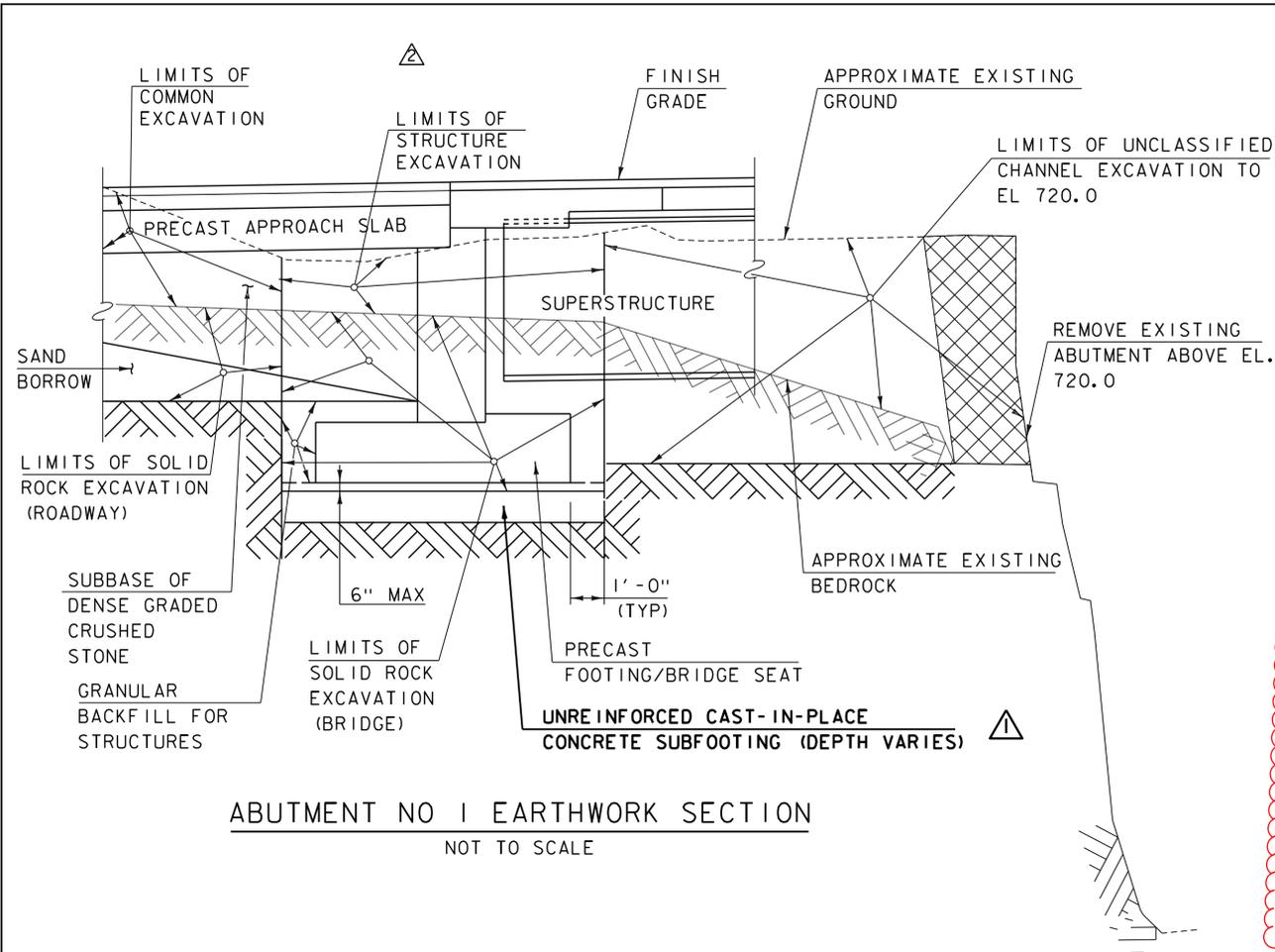


REV	DATE	DESCRIPTION
		NOTE REVISIONS

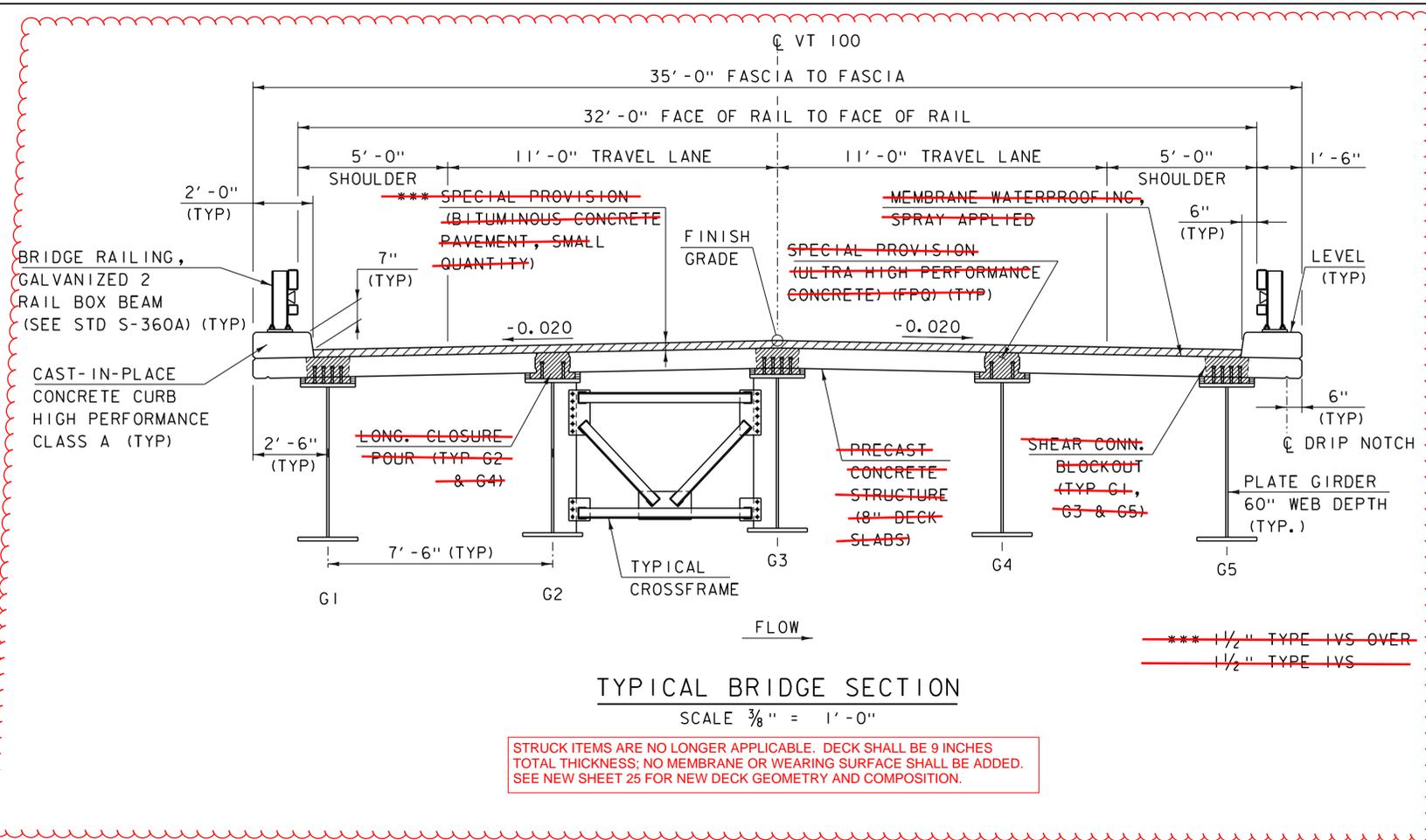
REV	DATE	DESCRIPTION
	10/13/2015	NOTE REVISIONS
	10/13/2015	NOTE ADDED



PROJECT NAME: WAITSFIELD	PLOT DATE: 10/13/2015
PROJECT NUMBER: BRF 013-4(39)	DRAWN BY: S.MERKWAN
FILE NAME: z12bl36frm.dgn	CHECKED BY: T.KENDRICK
PROJECT LEADER: R.YOUNG	SHEET 4 OF 69
DESIGNED BY: D.KULL	
PROJECT NOTES (2 OF 2)	

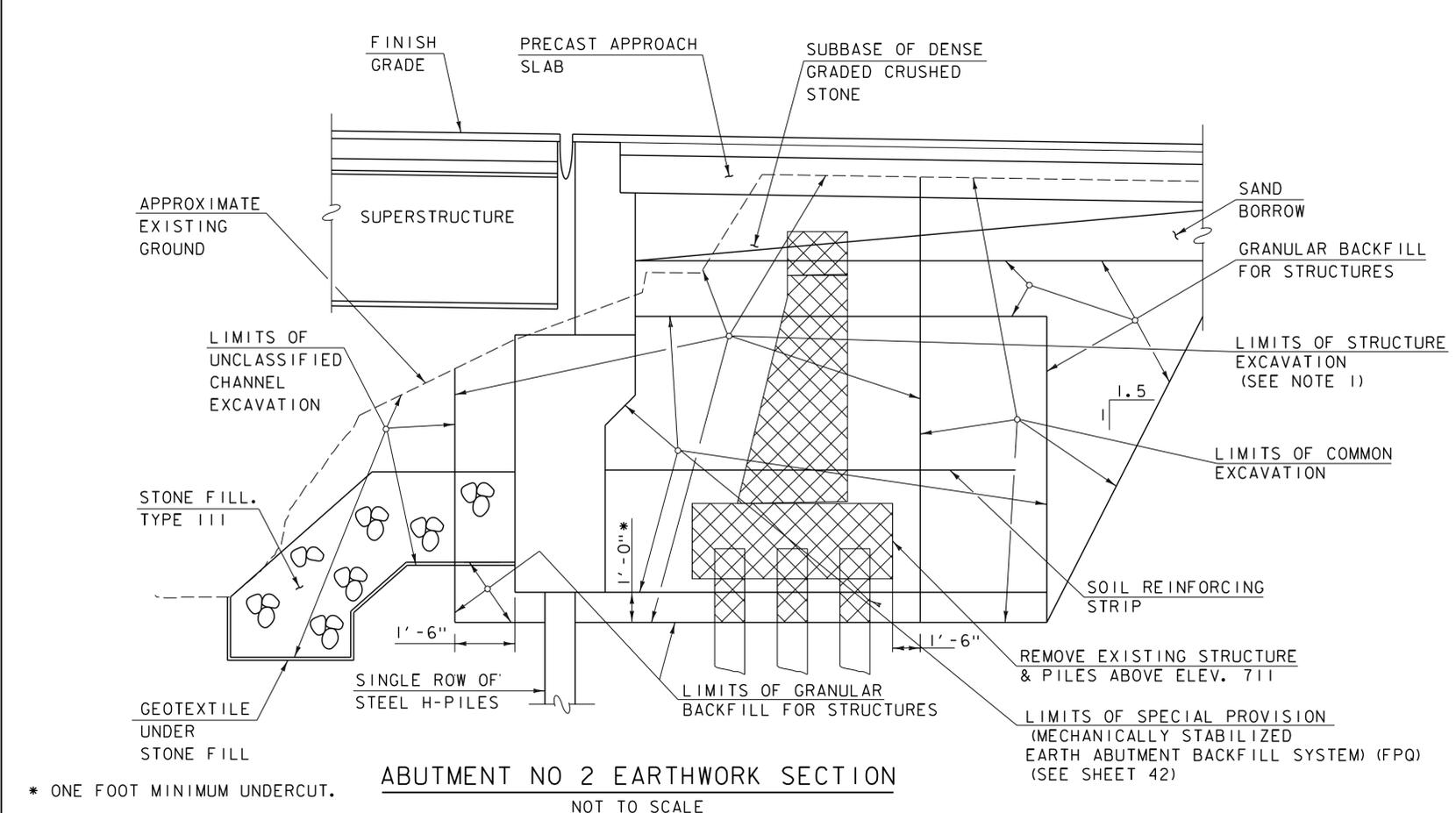


ABUTMENT NO 1 EARTHWORK SECTION
NOT TO SCALE



TYPICAL BRIDGE SECTION
SCALE 3/8" = 1'-0"

STRUCK ITEMS ARE NO LONGER APPLICABLE. DECK SHALL BE 9 INCHES TOTAL THICKNESS; NO MEMBRANE OR WEARING SURFACE SHALL BE ADDED. SEE NEW SHEET 25 FOR NEW DECK GEOMETRY AND COMPOSITION.



ABUTMENT NO 2 EARTHWORK SECTION
NOT TO SCALE

* ONE FOOT MINIMUM UNDERCUT.

EARTHWORK SECTION NOTES

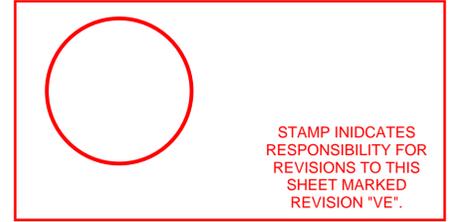
- ACTUAL LIMITS OF STRUCTURE EXCAVATIONS SHALL BE DETERMINED BY THE CONTRACTOR. HOWEVER, ONLY THE STRUCTURE EXCAVATION BETWEEN THE LIMITS SHOWN WILL BE PAID FOR UNDER ITEM 204.25 "STRUCTURE EXCAVATION". STRUCTURE EXCAVATION BY THE CONTRACTOR OUTSIDE OF THESE LIMITS WILL BE AT THE EXPENSE OF THE CONTRACTOR.

LEGEND

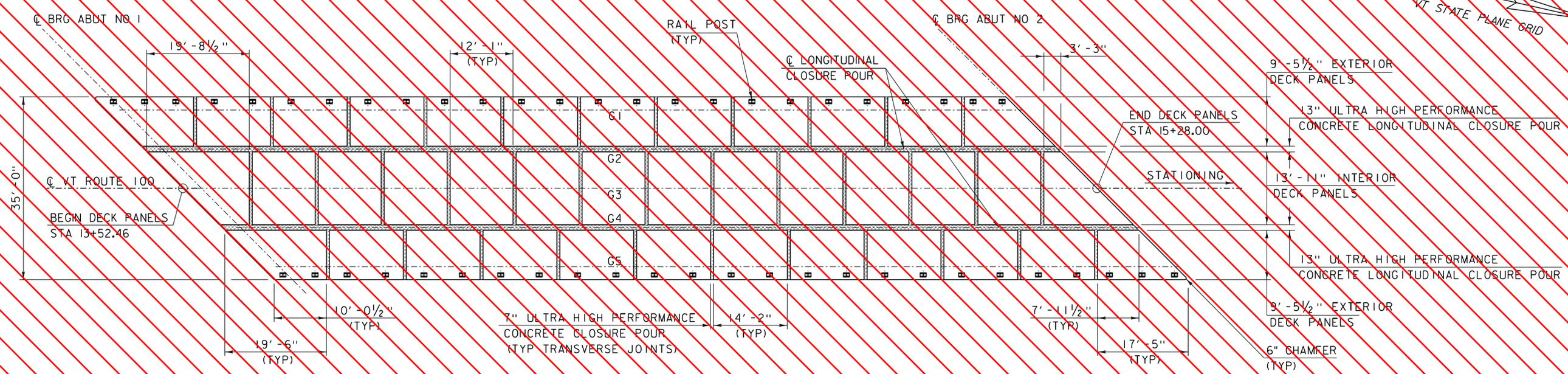
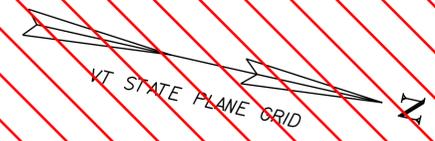
EXISTING ABUTMENT REMOVAL LIMITS

REV	DATE	DESCRIPTION
VE		MODIFICATIONS FOR CHANGED DECK TYPE

REV	DATE	DESCRIPTION
△	10/13/2015	SUBFOOTING REVISION
△	10/13/2015	DRILLING AND BLASTING NOTE REMOVED

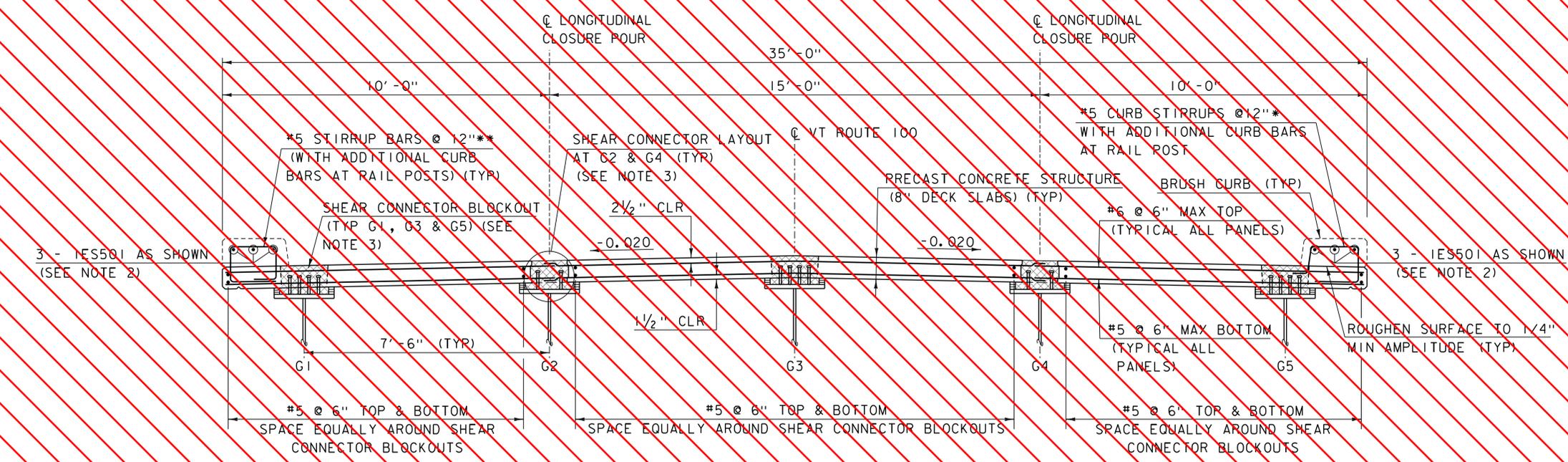


PROJECT NAME:	WAITSFIELD	PLOT DATE:	10/13/2015
PROJECT NUMBER:	BRF 013-4(39)	DRAWN BY:	S.MERKWAN
FILE NAME:	z12b136typ.dgn	DESIGNED BY:	D. KULL
PROJECT LEADER:	R. YOUNG	CHECKED BY:	T. KENDRICK
TYPICAL SECTIONS SHEET 1		SHEET	9 OF 69



PRECAST DECK PANEL LAYOUT

(NOTE: SHEAR CONNECTOR BLOCKOUTS AND BRUSHCURB NOT SHOWN FOR CLARITY)
SCALE: 3/32" = 1'-0"



BRIDGE TYPICAL SECTION

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

NOTES

1. ALL DECK PANEL DIMENSIONS ARE APPROXIMATE AND MAY BE REVISED BY THE CONTRACTOR.
2. SEE CONCRETE CURB JOINT NOTES ON STANDARD SHEET SD-502. MINIMUM LAP SHALL BE 2'-2". CUT BARS IN FIELD AS REQUIRED.
3. FOR ADDITIONAL SHEAR CONNECTOR LAYOUT INFORMATION SEE SHEETS 26 & 28.
4. IN ORDER TO REDUCE THE NUMBER OF COLD JOINTS IN THE UHPC CLOSURE JOINTS, IT IS PROPOSED TO PLACE UHPC IN THE END SPAN PORTIONS THE FIRST DAY TO APPROXIMATELY THE 1/3 POINT FROM EITHER END. IN THIS BATCHING AND CASTING, ALL TRANSVERSE JOINTS, LONGITUDINAL JOINTS AND SHEAR POCKETS WILL BE MONOLITHIC. ONLY FOUR JOINTS WILL EXIST AND THOSE WILL BE IN THE LONGITUDINAL HAUNCHES OVER GIRDERS 2 & 4.

LEGEND

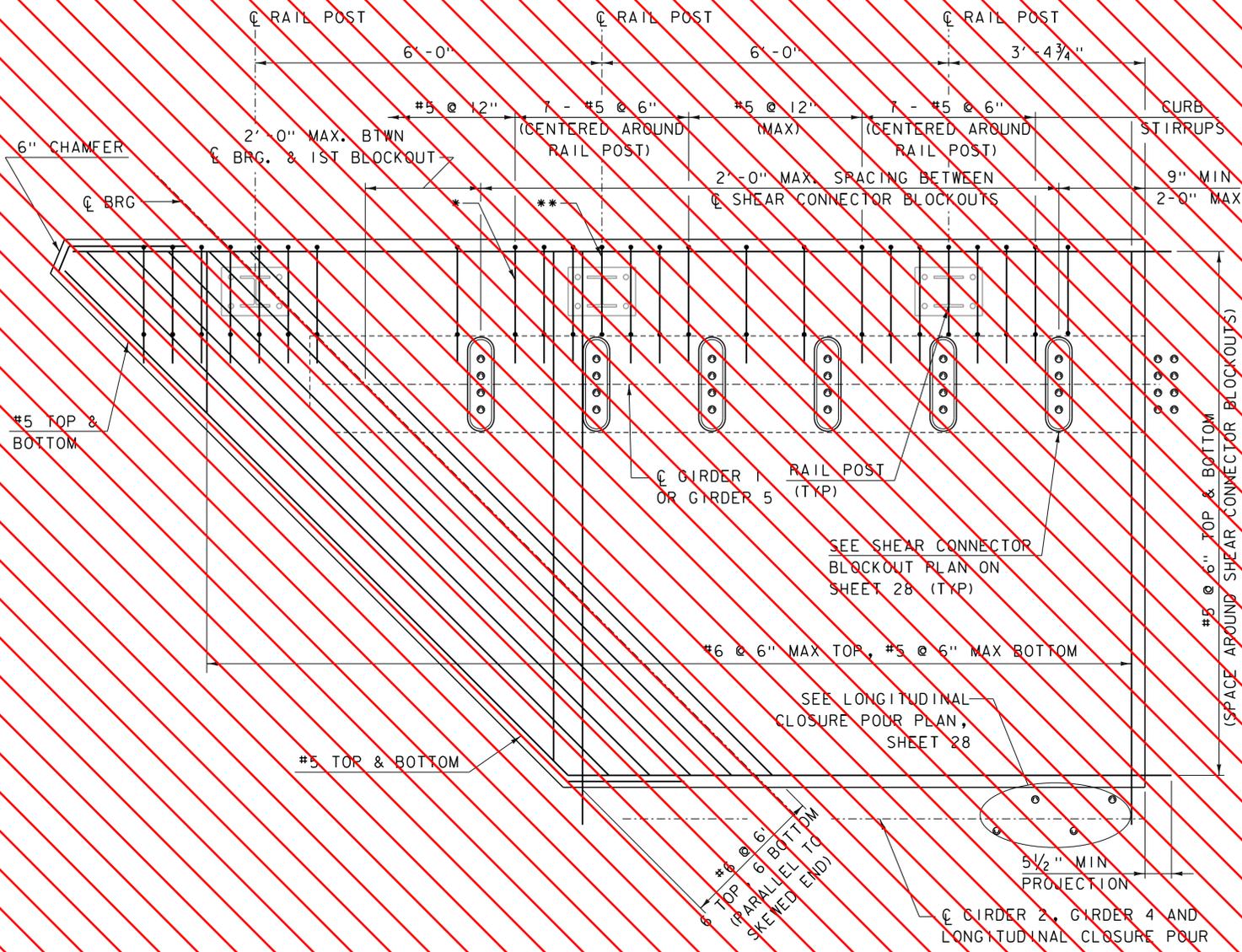
SPECIAL PROVISION (ULTRA HIGH PERFORMANCE CONCRETE) (FPO)

- * PROJECT STIRRUP LEGS INTO DECK OUTSIDE OF SHEAR CONNECTOR BLOCKOUTS AS SHOWN
- ** PROJECT STIRRUP LEGS INTO CURB AT SHEAR CONNECTOR BLOCKOUTS AS SHOWN

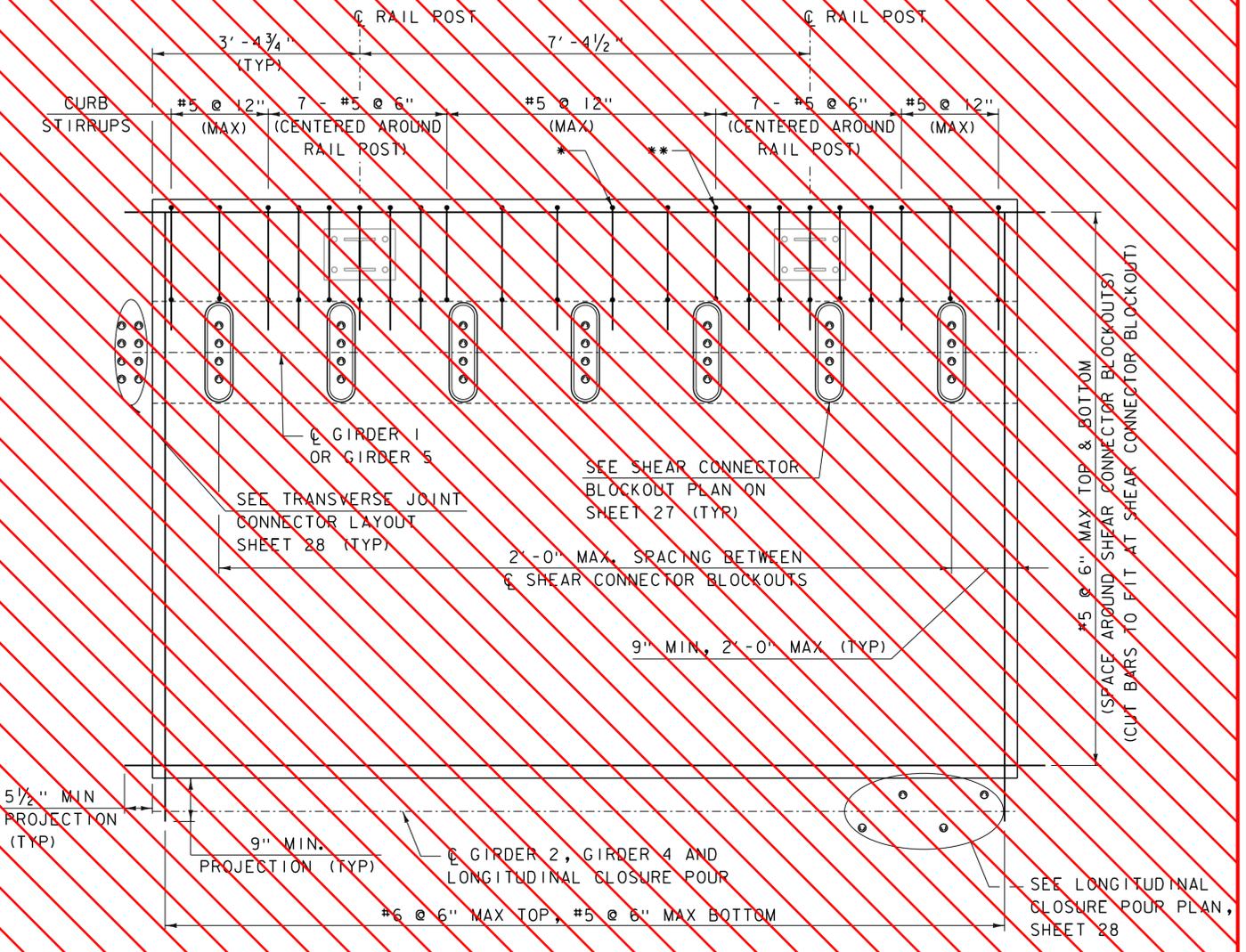
SEE REVISED SHEET 25 BY T.Y. LIN INTERNATIONAL



PROJECT NAME:	WAITSFIELD	PLOT DATE:	8/24/2015
PROJECT NUMBER:	BRF 013-4(39)	DRAWN BY:	S.MERKWAN
FILE NAME:	z12b136sup_plan.dgn	DESIGNED BY:	D.KULL
PROJECT LEADER:	R.YOUNG	CHECKED BY:	T.KENDRICK
PRECAST DECK PANEL LAYOUT		SHEET	25 OF 69



TYPICAL EXTERIOR END PANEL REINFORCEMENT PLAN
 ACUTE FASCIA PANEL SHOWN, OBTUSE INTERIOR PANEL SIMILAR
 SCALE: 3/4" = 1'-0"



TYPICAL EXTERIOR PANEL REINFORCEMENT PLAN
 (FASCIA PANEL SHOWN, INTERIOR PANEL SIMILAR)
 SCALE: 3/4" = 1'-0"

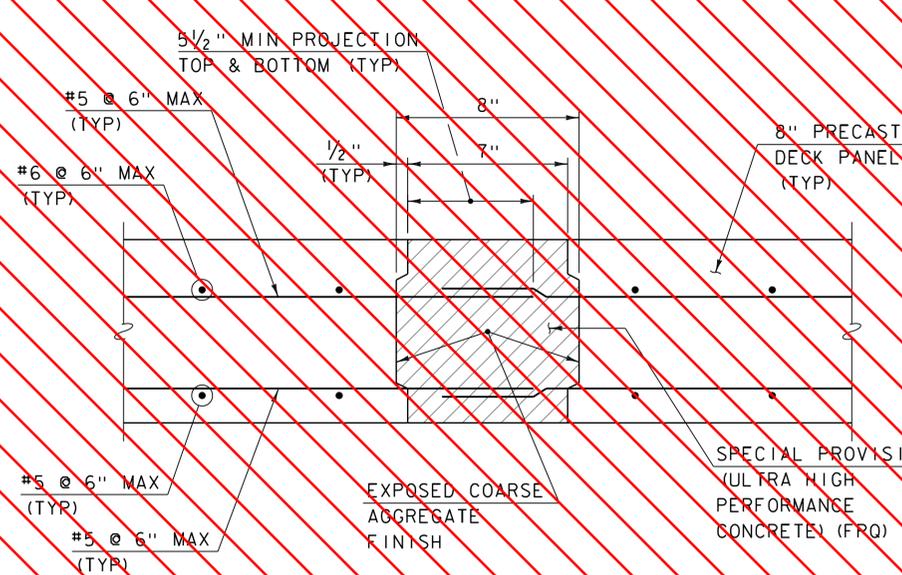
- * PROJECT STIRRUP LEGS AS SHOWN OUTSIDE OF SHEAR CONNECTOR BLOCKOUT (TYP)
- ** PROJECT STIRRUP LEGS INTO CURB AT SHEAR CONNECTOR BLOCKOUT (TYP)

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.

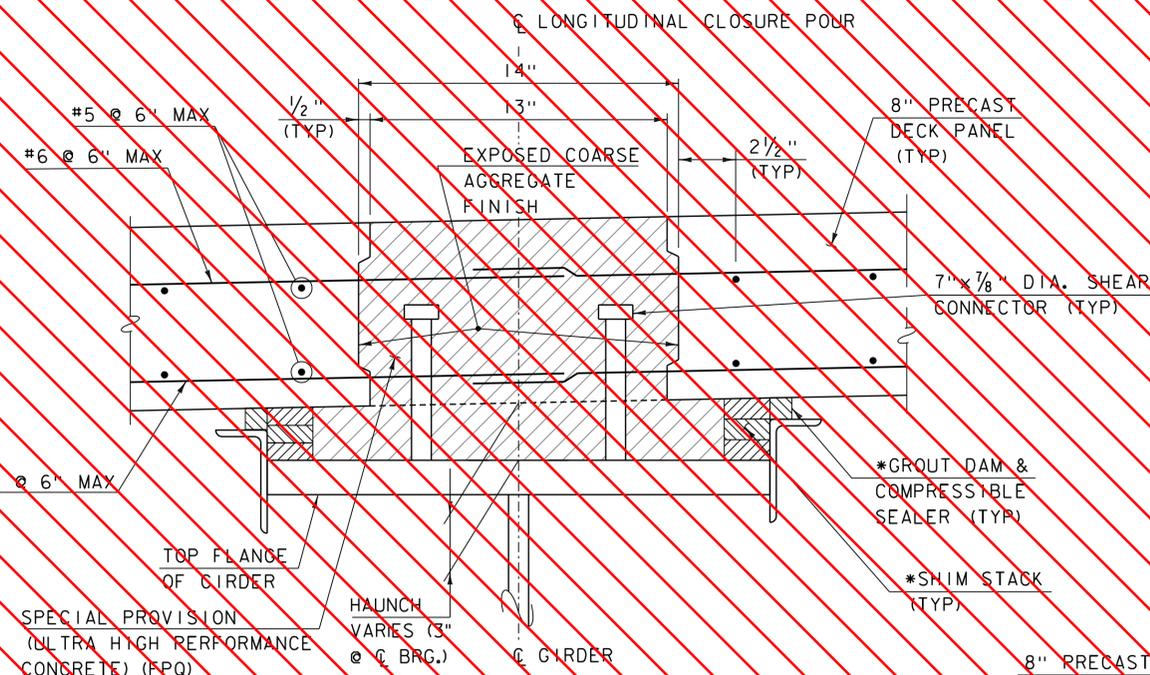
SEE REVISED SHEET 26 BY T.Y. LIN INTERNATIONAL



PROJECT NAME:	WAITSFIELD
PROJECT NUMBER:	BRF 013-4(39)
FILE NAME:	z12b136sup_panel.dgn
PROJECT LEADER:	R.YOUNG
DESIGNED BY:	D.KULL
PRECAST DECK DETAILS	
PLOT DATE:	8/24/2015
DRAWN BY:	S.MERKWAN
CHECKED BY:	T.KENDRICK
SHEET	26 OF 69

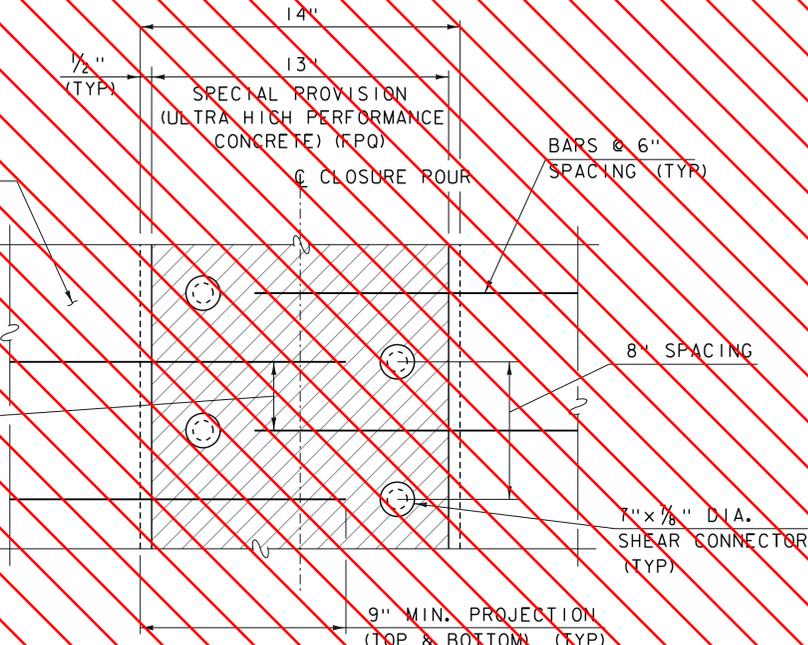


TRANSVERSE JOINT SECTION
(BETWEEN PANELS)
SCALE: 3" = 1'-0"

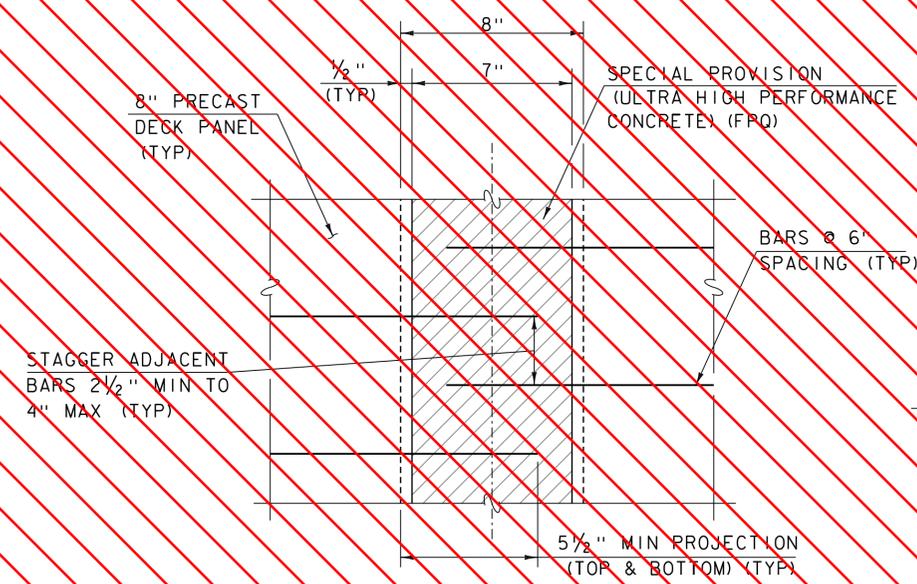


LONGITUDINAL CLOSURE POUR SECTION
(OVER GIRDERS 2 & 4)
SCALE: 3" = 1'-0"

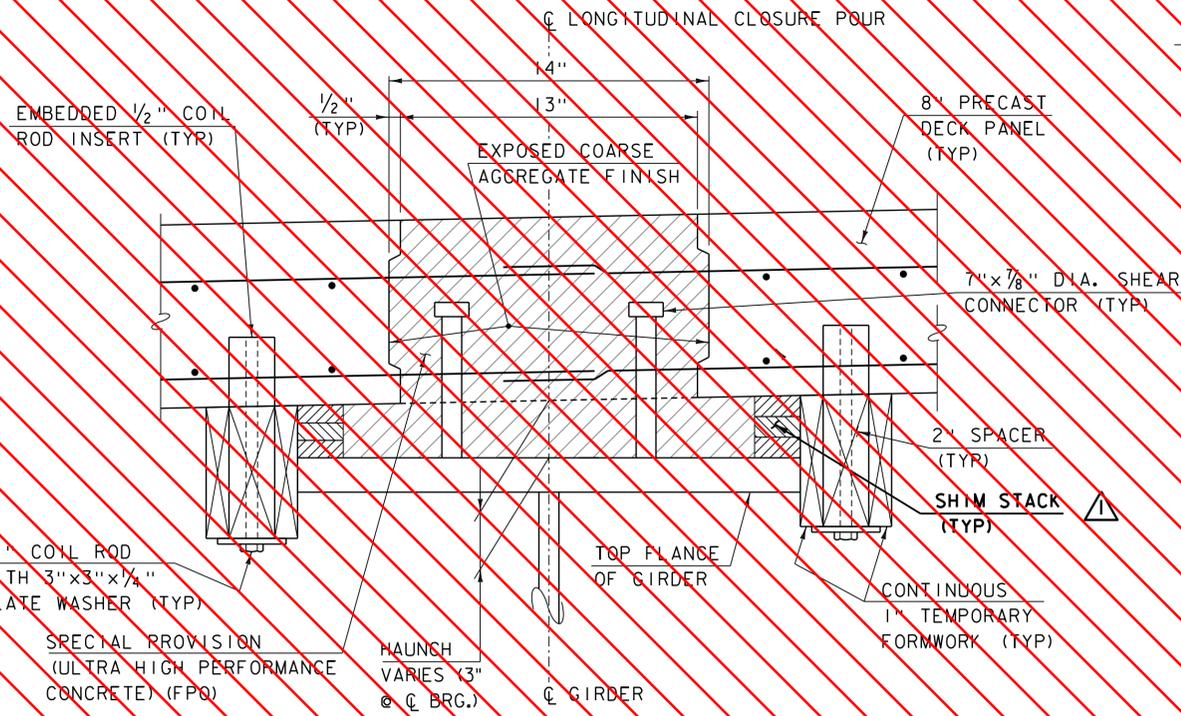
*THE SHIM STACK DECK SUPPORT SYSTEM & TEMPORARY GROUT DAM SHOWN IS CONCEPTUAL. THE CONTRACTOR'S PROPOSED SYSTEM SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW PER SECTION 540. OF THE STANDARD SPECIFICATIONS



LONGITUDINAL CLOSURE POUR PLAN
(OVER GIRDERS 2 & 4)
SCALE: 3" = 1'-0"



TRANSVERSE CLOSURE POUR PLAN
SCALE: 3" = 1'-0"



ALTERNATE LONGITUDINAL CLOSURE POUR SECTION
(OVER GIRDERS 2 & 4)

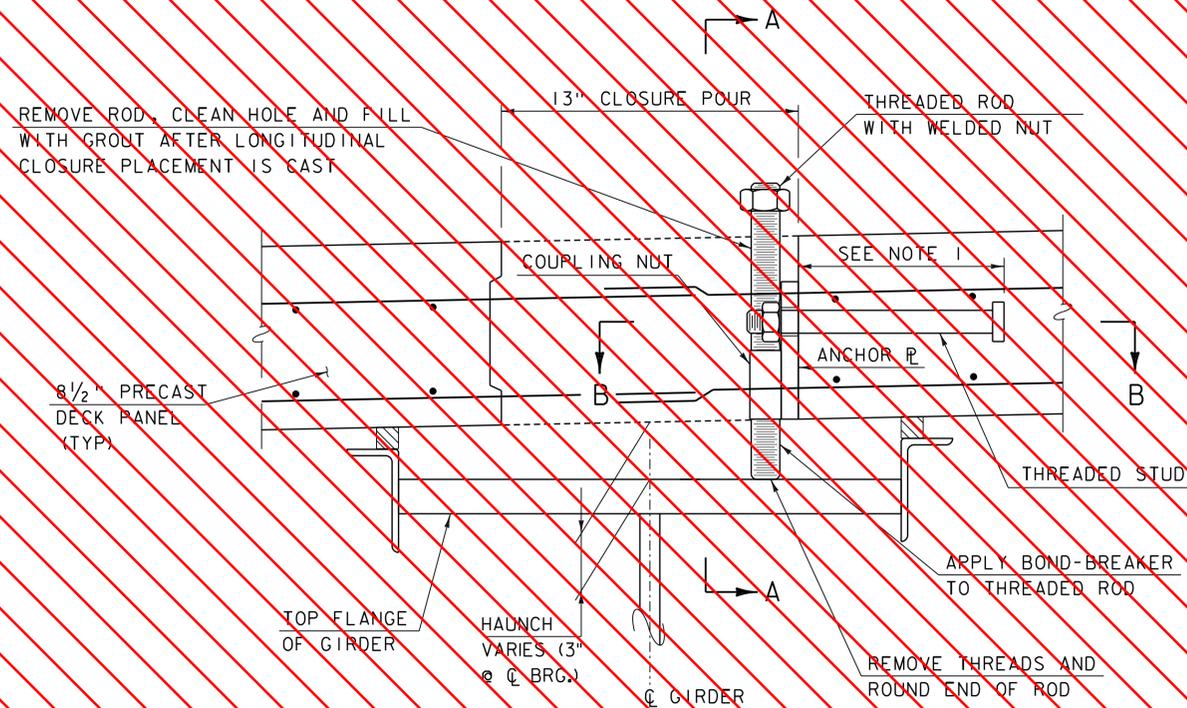
- NOTE**
- ALTERNATE BLOCKOUT CONFIGURATIONS MAY BE PRESENTED TO THE ENGINEER FOR REVIEW AND APPROVAL USED AS LONG AS THE NUMBER OF SHEAR CONNECTORS PER GIRDER MEETS OR EXCEEDS THE AMOUNT SPECIFIED ON SHEET 31.
 - NOTE, TOP AND BOTTOM FORMS NOT SHOWN FOR CLARITY. THE CONTRACTOR SHALL SUBMIT FOR REVIEW AND APPROVAL, DETAILS, MATERIALS, AND METHODS FOR INSTALLING FORMS THAT PREVENT LEAKAGE AND THAT RESIST THE HYDRAULIC HEAD PRESSURES THAT RESULTS WHEN PLACING UHPC. THE HEAD PRESSURE IS EQUAL TO ONE PSI PER VERTICAL FOOT OF JOINT. CONSULT WITH THE MANUFACTURERS RECOMMENDATIONS.
 - CHIMNEYS CONSISTING OF 5 GALLON PLASTIC PAILS SHALL BE PLACED AND SPACED ALONG THE JOINTS TO ADD HYDRAULIC PRESSURE TO PURGE ANY AIR POCKETS THAT MAY FORM WHILE CASTING THE UHPC. THIS SHALL BE IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS.

SHEET NOT USED

REV	DATE	DESCRIPTION
1	10/13/2015	SHIM STACK NOTE REVISION

PROJECT NAME:	WAITSFIELD
PROJECT NUMBER:	BRF 013-4(39)
FILE NAME:	z12b136sup.dtlis.dgn
PROJECT LEADER:	R.YOUNG
DESIGNED BY:	D.KULL
MISCELLANEOUS DECK DETAILS I	
PLOT DATE:	10/13/2015
DRAWN BY:	S.MERKWAN
CHECKED BY:	T.KENDRICK
SHEET	27 OF 69

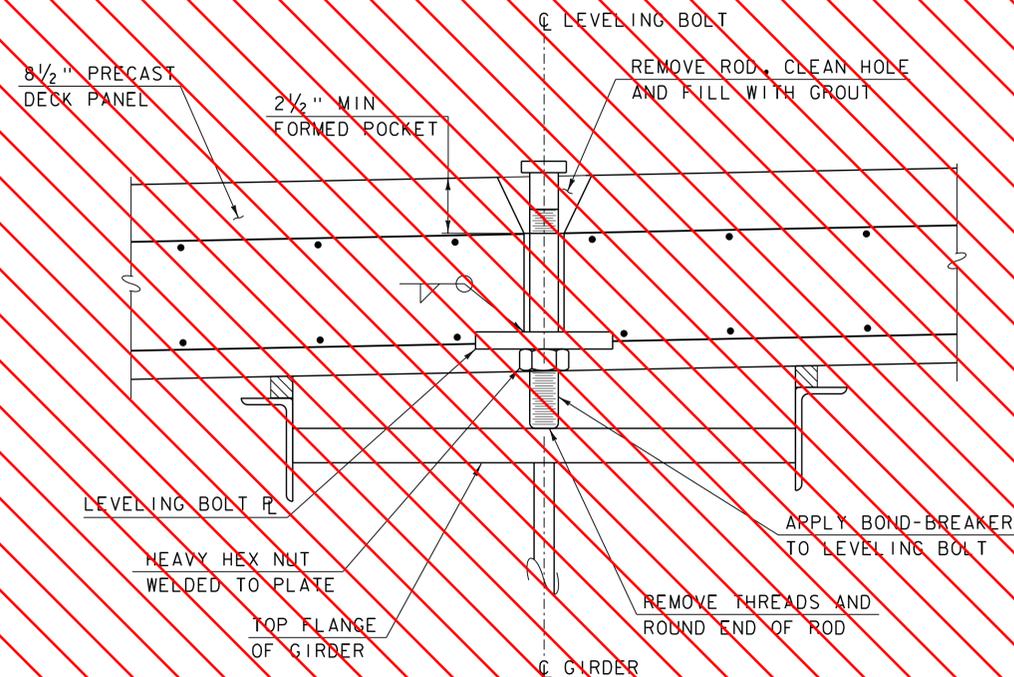




ALTERNATE LONGITUDINAL CLOSURE POUR SECTION

(OVER GIRDERS 2 & 4)
SCALE: 3" = 1'-0"

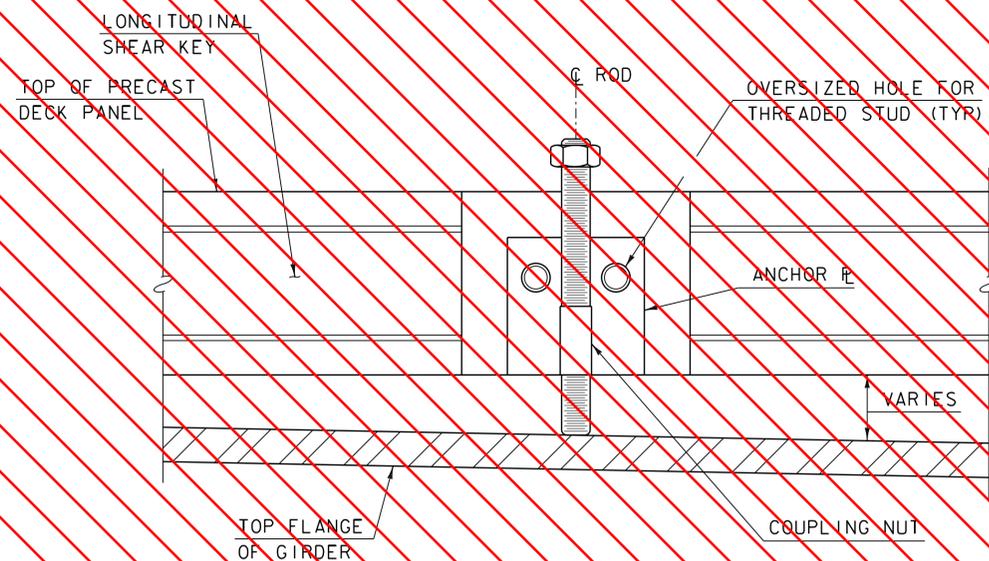
NOTE: UHPC NOT SHOWN FOR CLARITY



ALTERNATE INTERIOR VERTICAL ADJUSTMENT ASSEMBLY DETAIL

(OVER GIRDERS 1, 3 & 5)
SCALE: 3" = 1'-0"

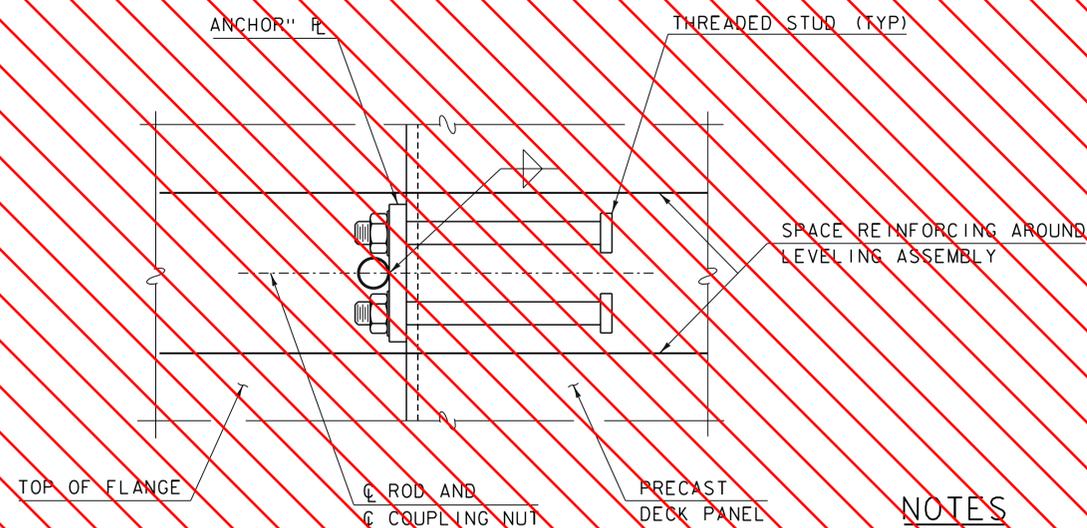
NOTE: UHPC NOT SHOWN FOR CLARITY



SECTION A-A

SCALE: 3" = 1'-0"

NOTE: UHPC NOT SHOWN FOR CLARITY



SECTION B-B

SCALE: 3" = 1'-0"

NOTE: UHPC NOT SHOWN FOR CLARITY

NOTES

- LEVELING BOLT DETAIL SHOWN IS CONCEPTUAL. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND DETAILING OF THE LEVELING DEVICE BASED ON THE WEIGHT OF THE PRECAST UNIT AND THE NUMBER OF DEVICES.

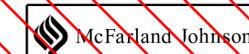
REV	DATE	DESCRIPTION
1	10/13/2015	ALTERNATE CLOSURE POUR ADDITION
2	10/13/2015	SHEET ADDITION

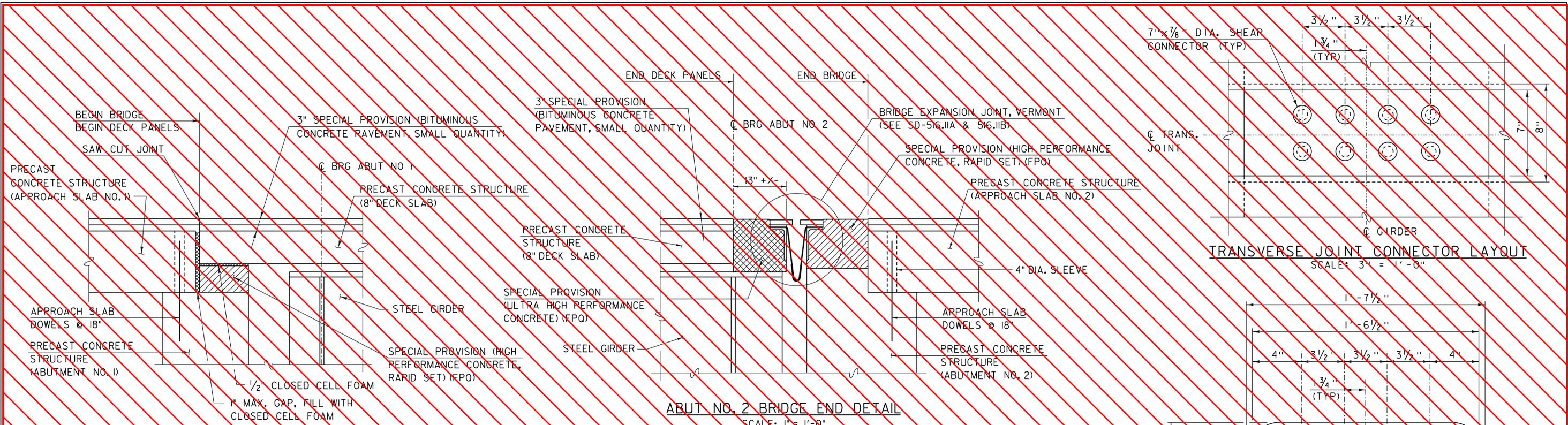
PROJECT NAME: WAITSFIELD
PROJECT NUMBER: BRP 013-4(39)

FILE NAME: z12b136sup.dtlis.dgn
PROJECT LEADER: R.YOUNG
DESIGNED BY: D.KULL
MISCELLANEOUS DECK DETAILS 2

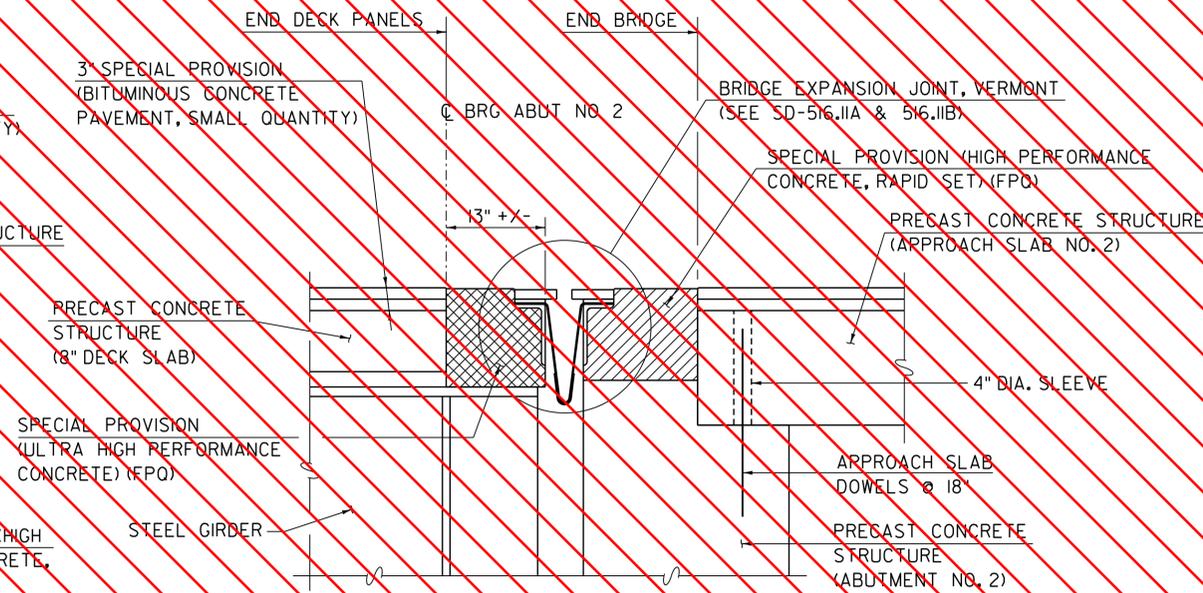
PLOT DATE: 10/13/2015
DRAWN BY: S.MERKWAN
CHECKED BY: T.KENDRICK
SHEET 28 OF 69

SHEET NOT USED

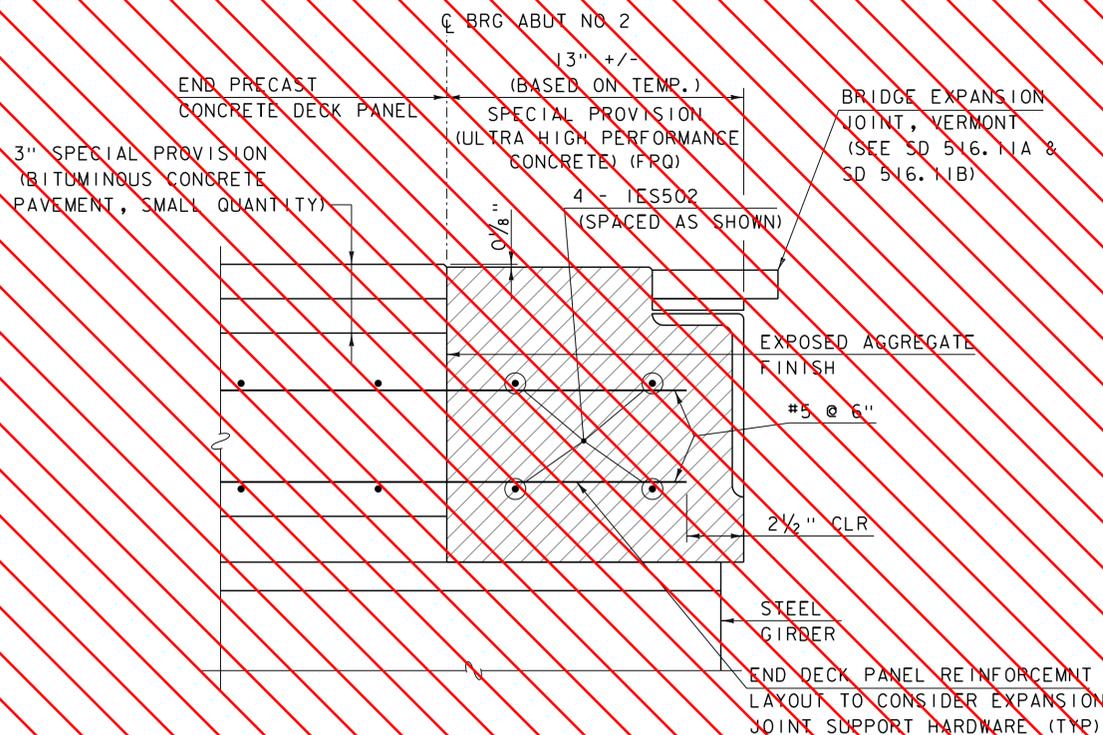




ABUT NO. 1 BRIDGE END DETAIL
SCALE: 1" = 1'-0"

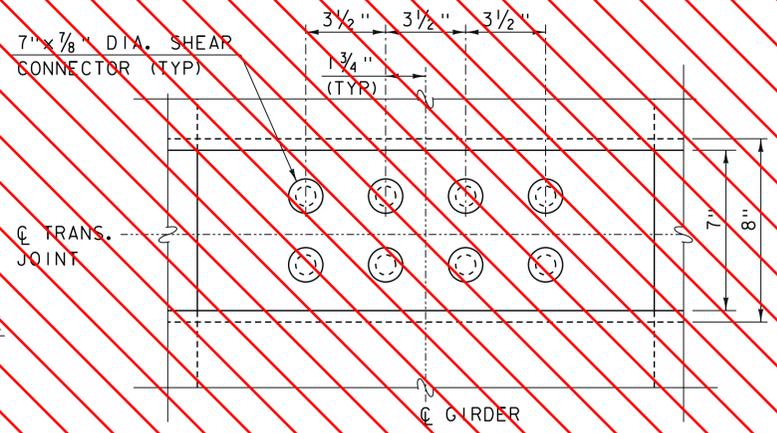


ABUT NO. 2 BRIDGE END DETAIL
SCALE: 1" = 1'-0"
(VT JOINT HARDWARE NOT SHOWN FOR CLARITY)

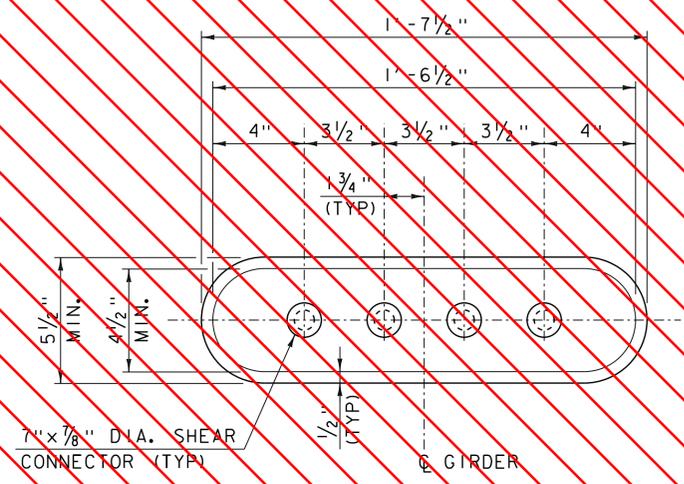


ABUTMENT NO. 2 DECK END SECTION
SCALE: 3" = 1'-0"

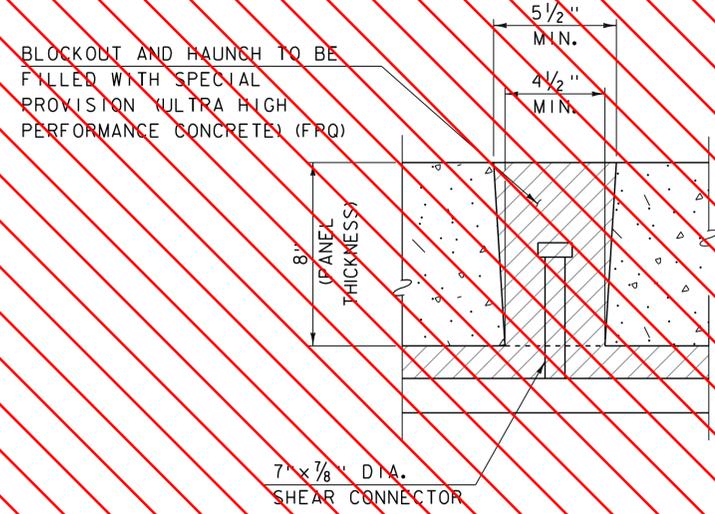
NOTE: VERMONT EXPANSION JOINT
HARDWARE NOT SHOWN FOR CLARITY



TRANSVERSE JOINT CONNECTOR LAYOUT
SCALE: 3" = 1'-0"



SHEAR CONNECTOR BLOCKOUT PLAN
SCALE: 3" = 1'-0"



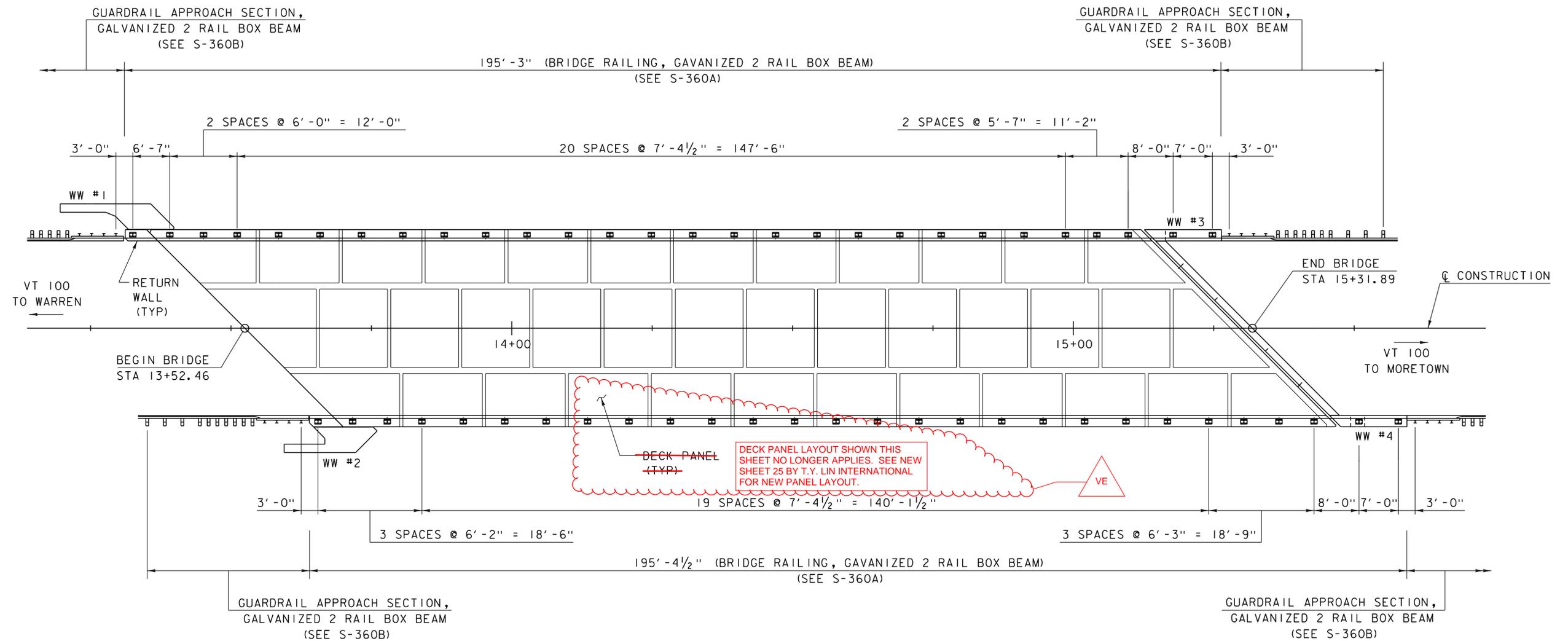
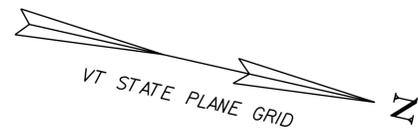
SHEAR CONNECTOR BLOCKOUT SECTION
SCALE: 3" = 1'-0"

REV	DATE	DESCRIPTION
1	10/13/2015	SHEET NUMBER REVISION

PROJECT NAME:	WAITSFIELD
PROJECT NUMBER:	BRF 013-4(39)
FILE NAME:	z12b136sup.dwtis.dgn
PROJECT LEADER:	R.YOUNG
DESIGNED BY:	D.KULL
MISCELLANEOUS DECK DETAILS:	3
PLOT DATE:	10/13/2015
DRAWN BY:	S.MERKWAN
CHECKED BY:	T.KENDRICK
SHEET:	28A OF 69

SHEET NOT USED

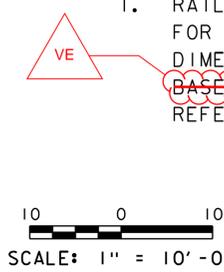




BRIDGE RAIL LAYOUT
SCALE: 1" = 10'-0"

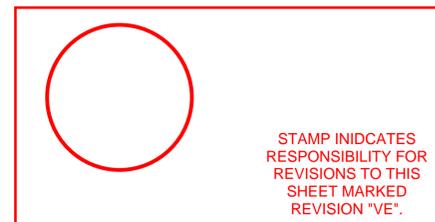
NOTE

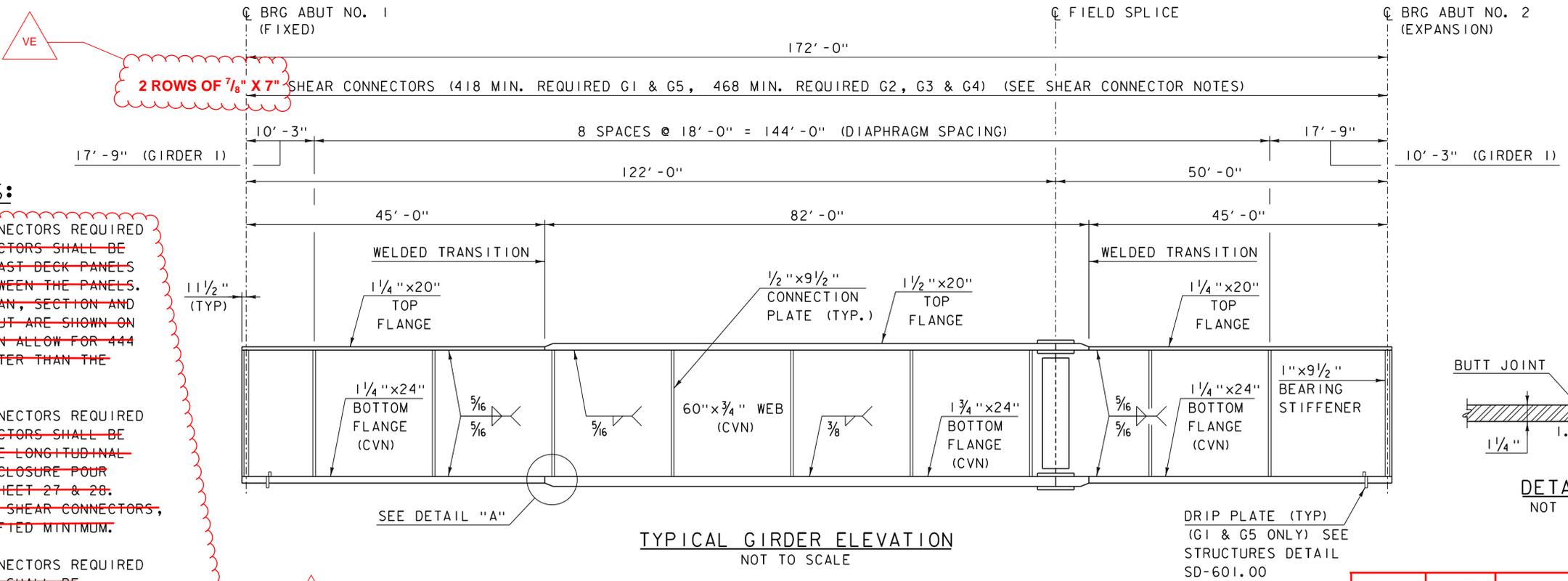
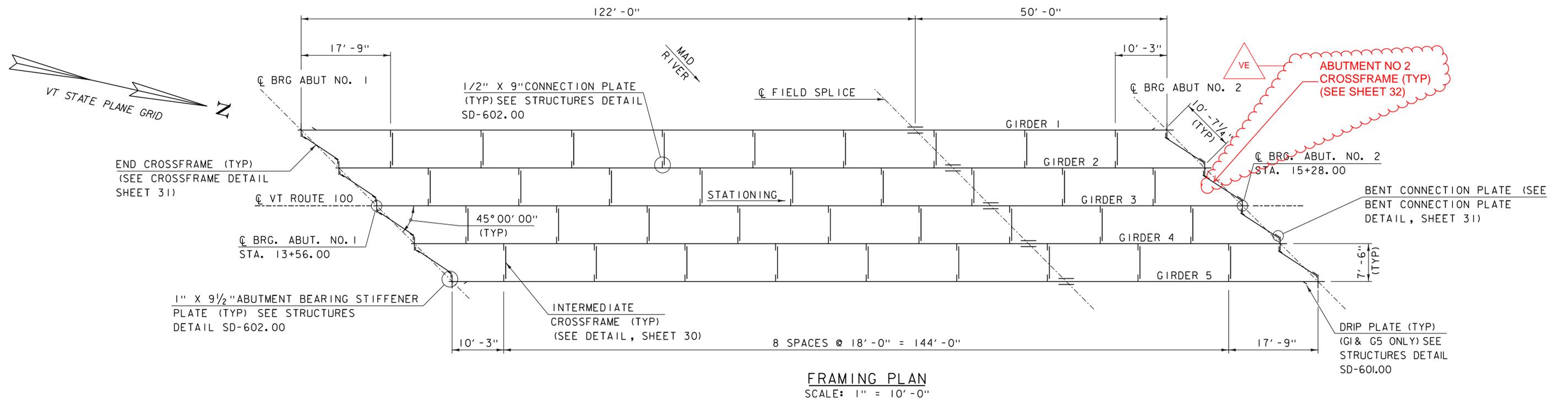
1. RAIL DIMENSIONS HAVE BEEN PROVIDED FOR INFORMATION ONLY. ACTUAL RAIL DIMENSIONS MAY BE REVISED BY CONTRACTOR BASED ON FINAL DIMENSIONS OF DECK PANELS. REFER TO S-360A FOR DETAILS.



PROJECT NAME: WAITSFIELD	
PROJECT NUMBER: BRF 013-4(39)	
FILE NAME: z12b136bdr_r0110y.dgn	PLOT DATE: 8/24/2015
PROJECT LEADER: R. YOUNG	DRAWN BY: S.MERKWAN
DESIGNED BY: D. KULL	CHECKED BY: T. KENDRICK
BRIDGE RAIL LAYOUT SHEET	SHEET 29 OF 69

REV	DATE	DESCRIPTION
VE		MODIFICATIONS FOR CHANGED DECK TYPE

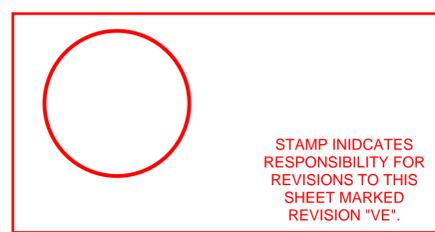
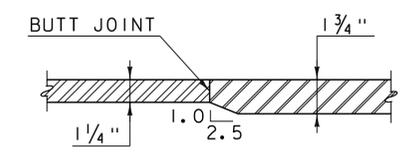




SHEAR CONNECTOR NOTES:

1. THE MINIMUM NUMBER OF SHEAR CONNECTORS REQUIRED FOR G1 & G5 IS 418. SHEAR CONNECTORS SHALL BE PLACED IN BLOCKOUTS IN THE PRECAST DECK PANELS AND IN THE TRANSVERSE JOINT BETWEEN THE PANELS. THE SHEAR CONNECTOR BLOCKOUT PLAN, SECTION AND TRANSVERSE JOINT CONNECTOR LAYOUT ARE SHOWN ON SHEET 27 & 28. THE DETAILS SHOWN ALLOW FOR 444 SHEAR CONNECTORS, WHICH IS GREATER THAN THE SPECIFIED MINIMUM.
2. THE MINIMUM NUMBER OF SHEAR CONNECTORS REQUIRED FOR G2 & G4 IS 468. SHEAR CONNECTORS SHALL BE PLACED BETWEEN THE PANELS IN THE LONGITUDINAL CLOSURE POUR. THE LONGITUDINAL CLOSURE POUR PLAN AND SECTION ARE SHOWN ON SHEET 27 & 28. THE DETAILS SHOWN ALLOW FOR 517 SHEAR CONNECTORS, WHICH IS GREATER THAN THE SPECIFIED MINIMUM.
3. THE MINIMUM NUMBER OF SHEAR CONNECTORS REQUIRED FOR G3 IS 468. SHEAR CONNECTORS SHALL BE PLACED IN BLOCKOUTS IN THE PRECAST DECK PANELS AND IN THE TRANSVERSE JOINT BETWEEN THE PANELS. THE SHEAR CONNECTOR BLOCKOUT PLAN, SECTION AND TRANSVERSE JOINT CONNECTOR LAYOUT ARE SHOWN ON SHEET 27. THE DETAILS SHOWN ALLOW FOR 454 SHEAR CONNECTORS, WHICH IS GREATER THAN THE SPECIFIED MINIMUM.
4. SHEAR CONNECTORS SHALL BE EVENLY SPACED OVER THE ENTIRE LENGTH OF THE BRIDGE, BETWEEN CENTERLINE BEARING LOCATIONS.

2 ROWS OF 7/8" X 7" SHEAR CONNECTORS (418 MIN. REQUIRED G1 & G5, 468 MIN. REQUIRED G2, G3 & G4) (SEE SHEAR CONNECTOR NOTES)

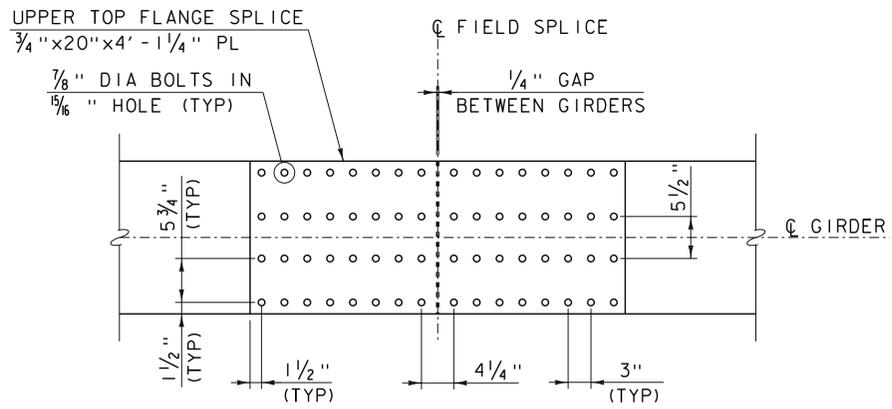


REV	DATE	DESCRIPTION
VE		MODIFICATIONS FOR CHANGED DECK TYPE

CVN = CHARPY V-NOTCH TEST IN ACCORDANCE WITH SUBSECTION 714.01

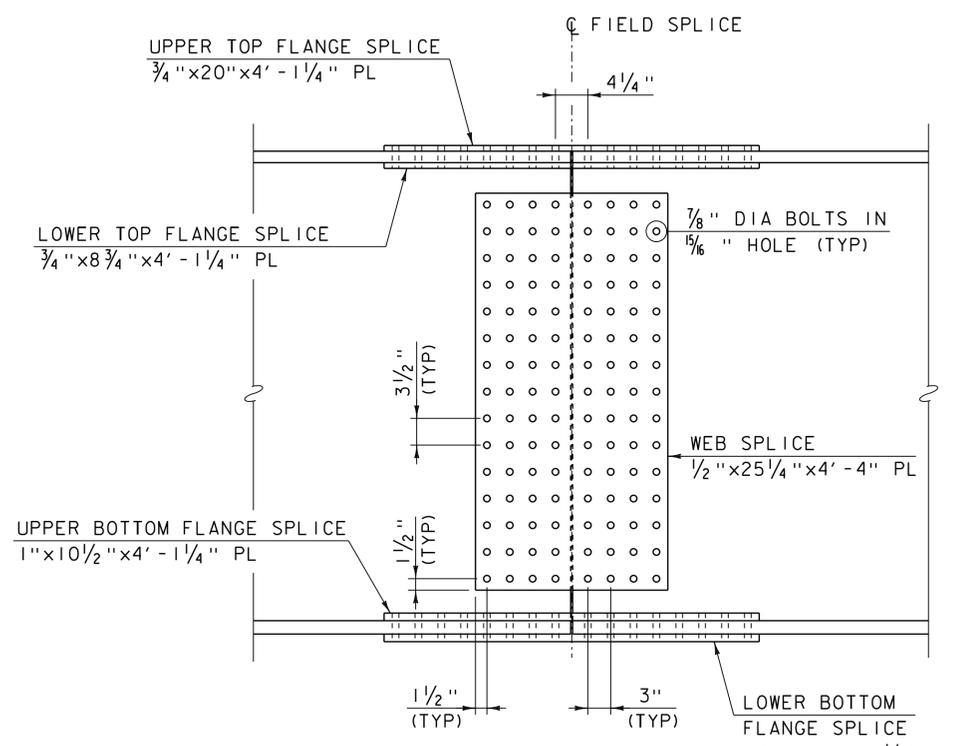


PROJECT NAME: WAITSFIELD	PLOT DATE: 8/24/2015
PROJECT NUMBER: BRF 013-4(39)	DRAWN BY: S.MERKWAN
FILE NAME: I2bi36sup_fr.am.dgn	CHECKED BY: T.KENDRICK
PROJECT LEADER: R. YOUNG	SHEET 30 OF 69
DESIGNED BY: D. KULL	
FRAMING PLAN AND GIRDER ELEVATION	

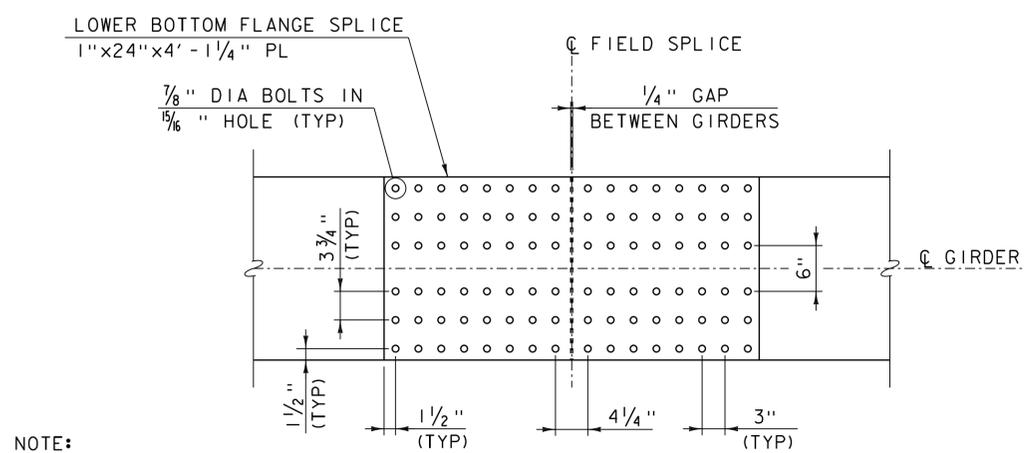


NOTE:
LOWER TOP FLANGE SPLICE
SHALL BE SIMILAR

UPPER TOP FLANGE SPLICE
SCALE: 1" = 1'-0"

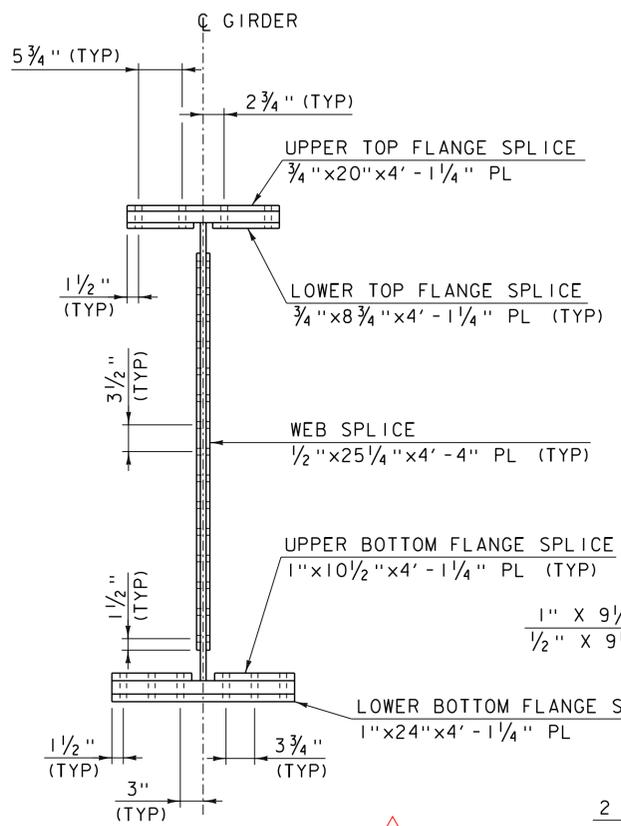


SPlice Elevation
SCALE: 1" = 1'-0"

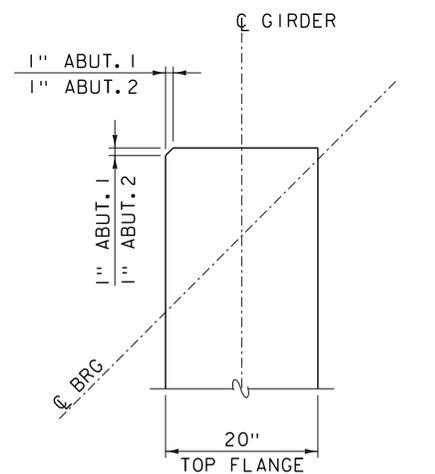


NOTE:
UPPER BOTTOM FLANGE SPLICE
SHALL BE SIMILAR

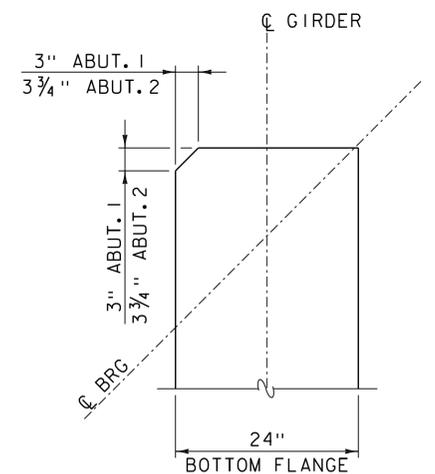
LOWER BOTTOM FLANGE SPLICE
SCALE: 1" = 1'-0"



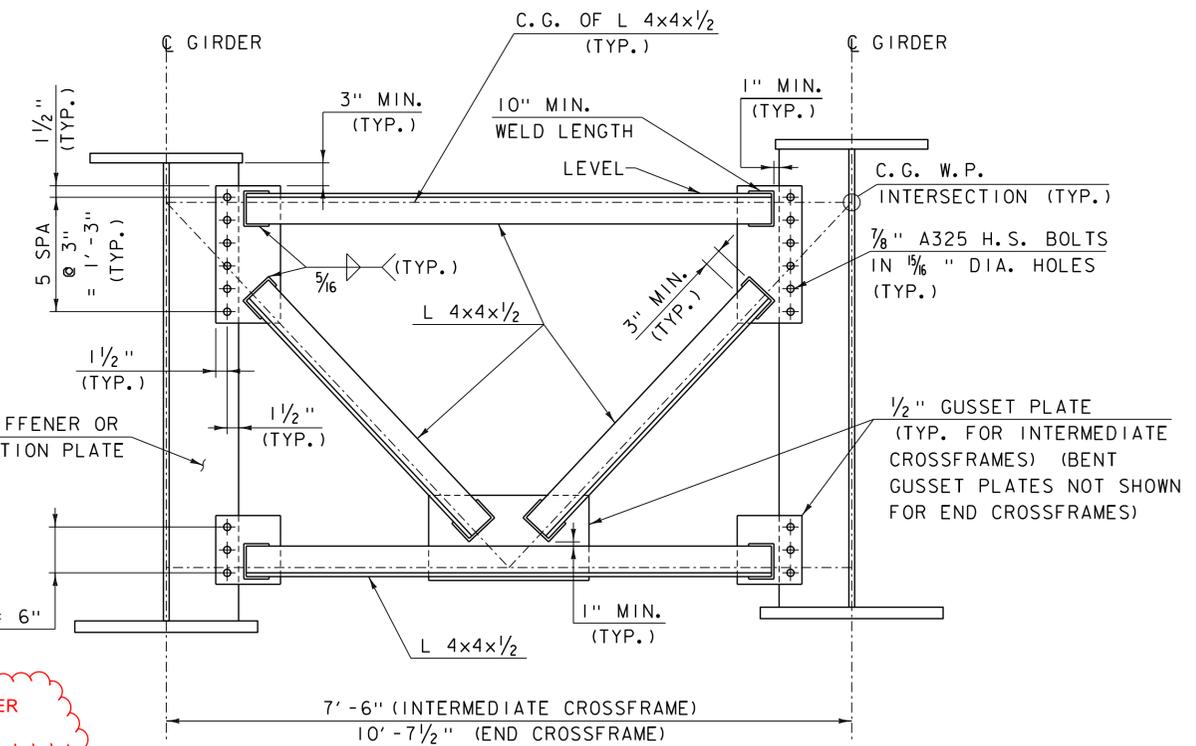
SPlice Section
SCALE: 1" = 1'-0"



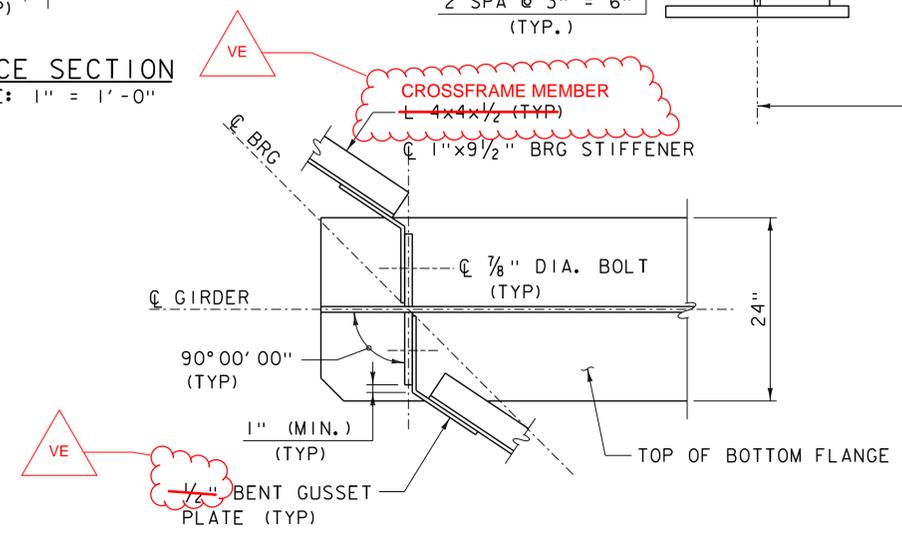
TOP FLANGE CLIP DETAIL
SCALE: 1" = 1'-0"



BOTTOM FLANGE CLIP DETAIL
SCALE: 1" = 1'-0"



CROSSFRAME DETAIL
(INTERMEDIATE CROSSFRAME SHOWN)
SCALE: 1" = 1'-0"



BENT CONNECTION PLATE DETAIL
SCALE: 1" = 1'-0"

STAMP INDICATES
RESPONSIBILITY FOR
REVISIONS TO THIS
SHEET MARKED
REVISION "VE".

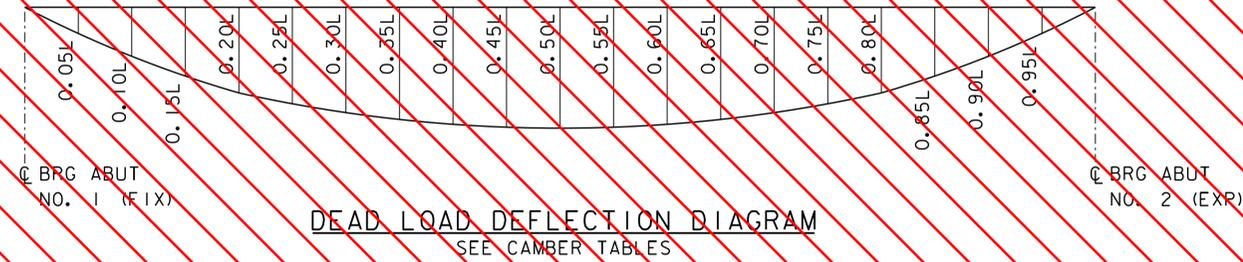
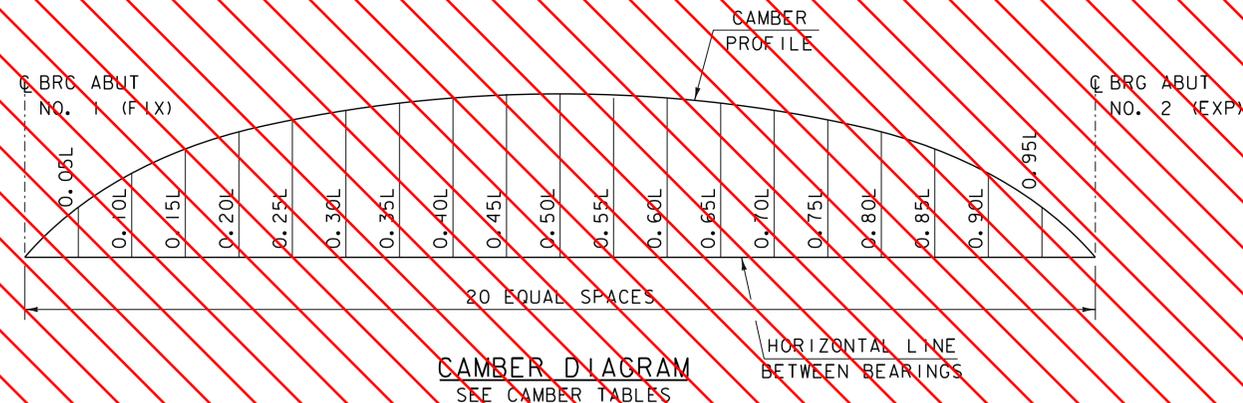
REV	DATE	DESCRIPTION
VE		MODIFICATIONS FOR CHANGED CROSSFRAME AT ABUT 2

PROJECT NAME:	WAITSFIELD
PROJECT NUMBER:	BRF 013-4(39)
FILE NAME:	z12b136sup_gir.dgn
PROJECT LEADER:	R.YOUNG
DESIGNED BY:	D.KULL
MISCELLANEOUS GIRDER DETAILS	
PLOT DATE:	8/24/2015
DRAWN BY:	S.MERKWAN
CHECKED BY:	T.KENDRICK
SHEET	31 OF 69



CAMBER TABLE - GIRDERS 1 & 5 (INCHES)																					
POINT ON GIRDER	CL BRG ABUT 1	0.05 L	0.10 L	0.15 L	0.20 L	0.25 L	0.30 L	0.35 L	0.40 L	0.45 L	0.50 L	0.55 L	0.60 L	0.65 L	0.70 L	0.75 L	0.80 L	0.85 L	0.90 L	0.95 L	CL BRG ABUT 2
STEEL DL	0.00	0.57	1.11	1.62	2.09	2.48	2.82	3.08	3.27	3.39	3.43	3.39	3.27	3.08	2.82	2.49	2.09	1.62	1.11	0.57	0.00
CONCRETE SLAB	0.00	1.07	2.11	3.08	3.96	4.72	5.34	5.84	6.21	6.43	6.51	6.43	6.21	5.84	5.34	4.72	3.96	3.08	2.11	1.07	0.00
SUPERIMPOSED DL	0.00	0.31	0.61	0.89	1.15	1.37	1.55	1.70	1.81	1.87	1.90	1.87	1.81	1.70	1.55	1.37	1.15	0.89	0.61	0.31	0.00
TOTAL DEFLECTION	0.00	1.95	3.83	5.60	7.19	8.57	9.71	10.62	11.29	11.69	11.83	11.69	11.29	10.62	9.71	8.57	7.19	5.60	3.83	1.95	0.00
VERTICAL ORDINATE	0.00	1.41	2.67	3.79	4.75	5.57	6.24	6.76	7.13	7.35	7.43	7.35	7.13	6.76	6.24	5.57	4.75	3.79	2.67	1.41	0.00
TOTAL CAMBER	0.00	3.36	6.51	9.39	11.95	14.14	15.95	17.38	18.42	19.05	19.28	19.05	18.42	17.38	15.95	14.14	11.95	9.39	6.51	3.36	0.00

CAMBER TABLE - GIRDERS 2, 3 & 4 (INCHES)																					
POINT ON GIRDER	CL BRG ABUT 1	0.05 L	0.10 L	0.15 L	0.20 L	0.25 L	0.30 L	0.35 L	0.40 L	0.45 L	0.50 L	0.55 L	0.60 L	0.65 L	0.70 L	0.75 L	0.80 L	0.85 L	0.90 L	0.95 L	CL BRG ABUT 2
STEEL DL	0.00	0.60	1.18	1.72	2.20	2.63	2.97	3.25	3.46	3.58	3.62	3.58	3.46	3.25	2.97	2.63	2.20	1.72	1.18	0.60	0.00
CONCRETE SLAB	0.00	1.23	2.42	3.53	4.54	5.40	6.12	6.70	7.12	7.37	7.46	7.37	7.12	6.70	6.12	5.40	4.54	3.53	2.42	1.23	0.00
SUPERIMPOSED DL	0.00	0.30	0.59	0.86	1.10	1.31	1.49	1.63	1.73	1.79	1.81	1.79	1.73	1.63	1.49	1.31	1.10	0.86	0.59	0.30	0.00
TOTAL DEFLECTION	0.00	2.12	4.18	6.10	7.84	9.34	10.58	11.68	12.30	12.74	12.89	12.74	12.30	11.58	10.58	9.34	7.84	6.10	4.18	2.12	0.00
VERTICAL ORDINATE	0.00	1.41	2.67	3.79	4.75	5.57	6.24	6.76	7.13	7.35	7.43	7.35	7.13	6.76	6.24	5.57	4.75	3.79	2.67	1.41	0.00
TOTAL CAMBER	0.00	3.53	6.85	9.89	12.59	14.91	16.82	18.34	19.43	20.10	20.32	20.10	19.43	18.34	16.82	14.91	12.59	9.89	6.85	3.53	0.00



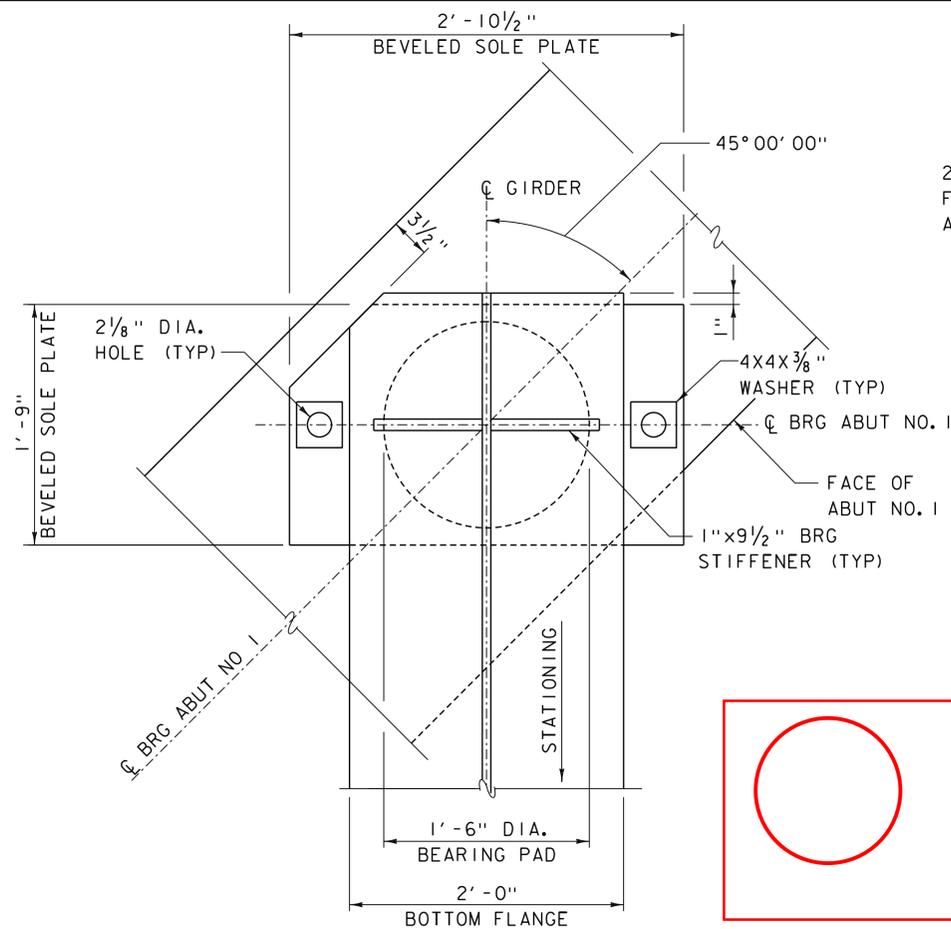
SEE REVISED SHEET 32 BY T.Y. LIN INTERNATIONAL



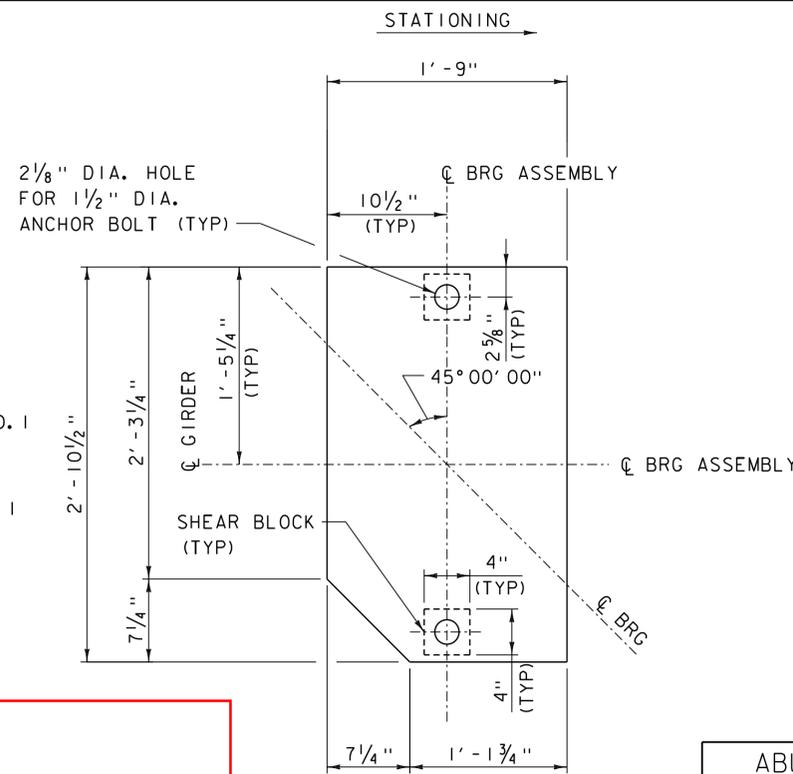
PROJECT NAME:	WAITSFIELD	PLOT DATE:	8/24/2015
PROJECT NUMBER:	BRF 013-4(39)	DRAWN BY:	S.MERKWAN
FILE NAME:	I2b36sup Fram.dgn	DESIGNED BY:	D. KULL
PROJECT LEADER:	R. YOUNG	CHECKED BY:	T. KENDRICK
CAMBER DETAILS		SHEET	32 OF 69

BEARING NOTES:

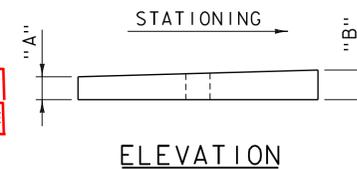
1. BEARINGS SHALL CONFORM TO THE APPLICABLE SUBSECTIONS OF SECTIONS 531 AND 731.
2. ALL REINFORCEMENT BETWEEN LAYERS OF ELASTOMER SHALL BE STEEL MEETING THE REQUIREMENTS OF SUBSECTION 714.02. ALL INTERNAL STEEL SHEETS SHALL BE SAND BLASTED AND FREE OF COATINGS, RUST, AND MILL SCALE. THE PLATES SHALL 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. DESIGN CRITERIA (AASHTO METHOD A):
 DESIGN SHEAR MODULUS: 130 PSI TO 200 PSI
 MAXIMUM BEARING STRESS: ~~1100 PSI~~ **1135 PSI**
 DESIGN DEAD LOAD (UNFACTORED): ~~140 KIPS~~ **148 KIPS**
 DESIGN LIVE LOAD (UNFACTORED): 140 KIPS
 DESIGN LONGITUDINAL MOVEMENT: 1.57 IN (ABUTMENT 2)



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



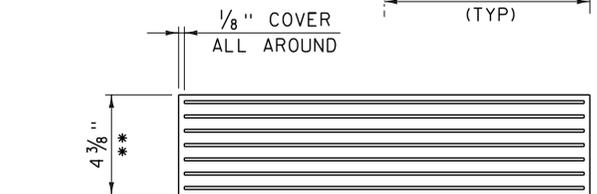
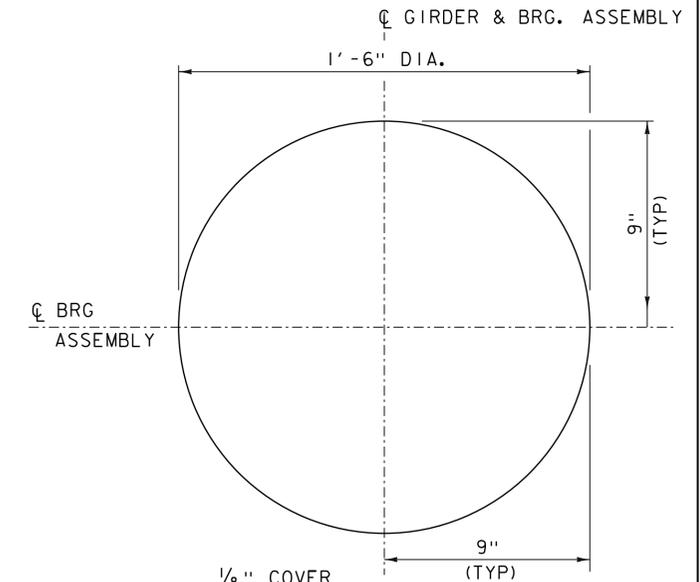
PLAN



ELEVATION

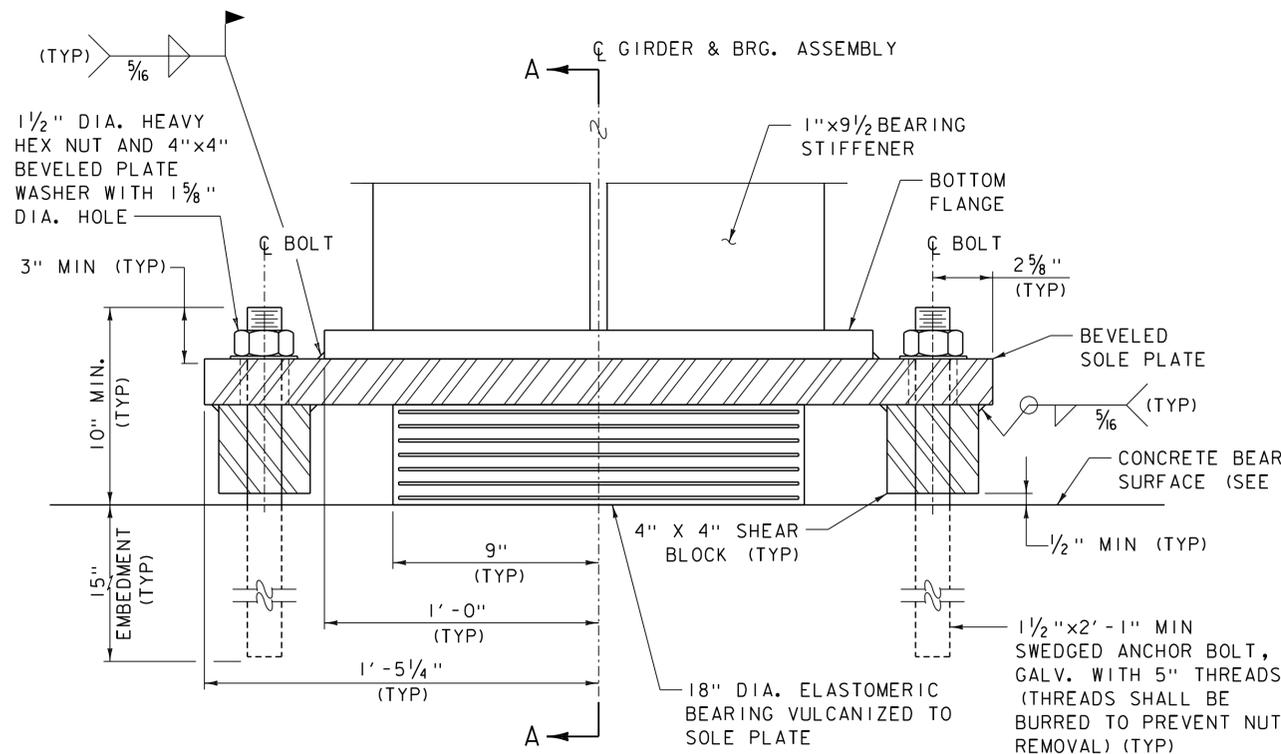
ABUTMENT NO. 1 BEVELED SOLE PLATE THICKNESS TABLE		
	"A"	"B"
G1	1 13/16"	2 3/16"
G2	2 3/16"	2 9/16"
G3	2 3/8"	2 5/8"
G4	1 7/8"	2 1/8"
G5	2 1/8"	2 3/8"

BEVELED SOLE PLATE
SCALE: 1 1/2" = 1'-0"

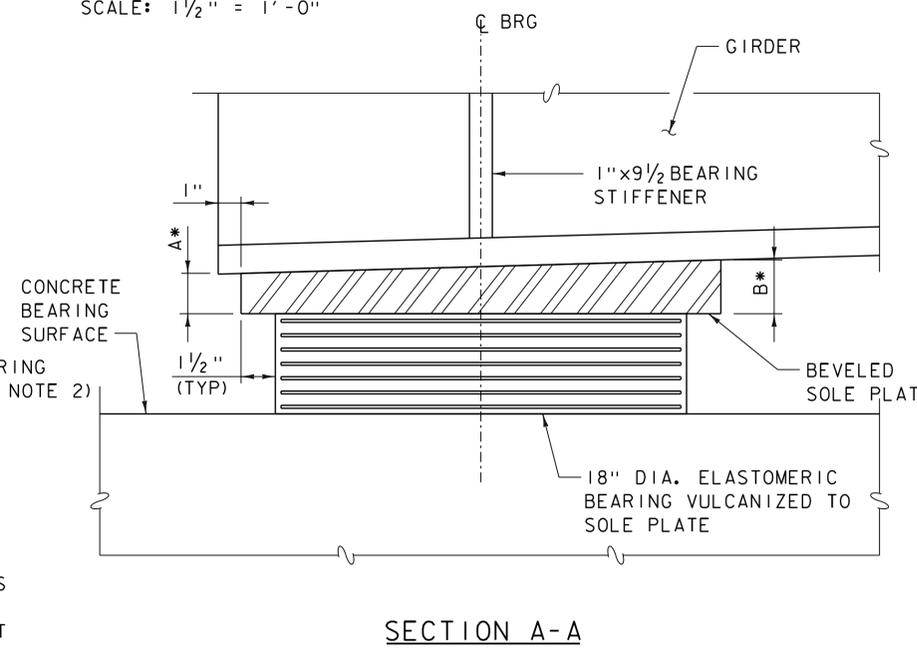


** 2 - 1/4" EXTERIOR ELASTOMER LAYERS
 6 - 1/2" INTERIOR ELASTOMER LAYERS
 7 - 1/8" STEEL REINFORCING PLATES

**ELASTOMERIC BEARING PAD DETAIL
(FIXED AND EXPANSION)**
SCALE: 3" = 1'-0"



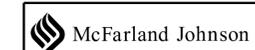
FRONT ELEVATION



SECTION A-A

ABUTMENT NO 1 - FIXED BEARING DETAILS
SCALE: 3" = 1'-0"

* SEE ABUTMENT NO. 1
 BEVELED SOLE PLATE
 DIMENSIONS TABLE

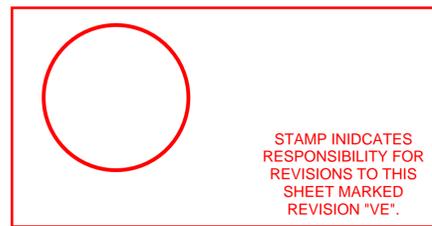


PROJECT NAME: WAITSFIELD
 PROJECT NUMBER: BRF 013-4(39)

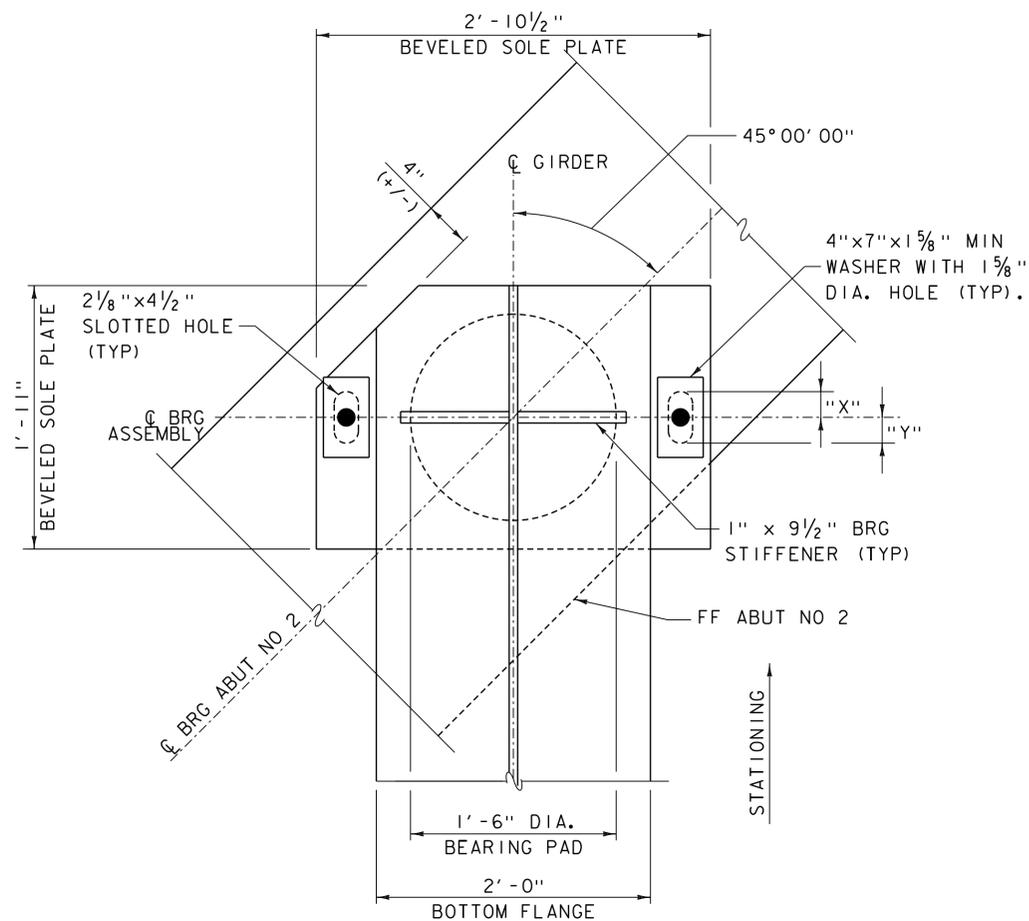
FILE NAME: z12b136brg.dgn
 PROJECT LEADER: R.YOUNG
 DESIGNED BY: D.KULL
 BEARING DETAILS (1 OF 2)

PLOT DATE: 8/24/2015
 DRAWN BY: S.MERKWAN
 CHECKED BY: T.KENDRICK
 SHEET 33 OF 69

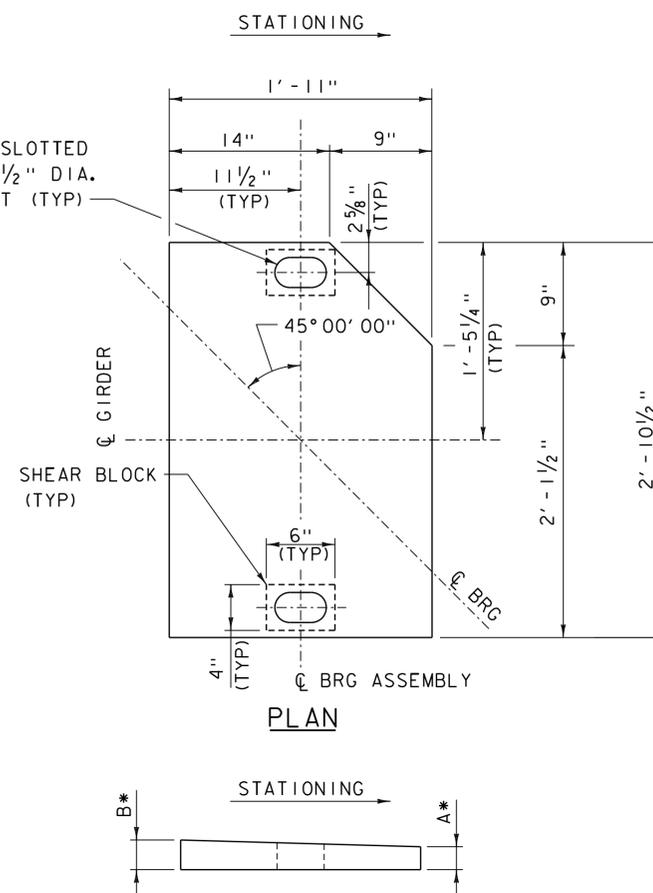
REV	DATE	DESCRIPTION
VE		MODIFICATIONS FOR CHANGED DECK TYPE



STAMP INDICATES
 RESPONSIBILITY FOR
 REVISIONS TO THIS
 SHEET MARKED
 REVISION "VE".



2 1/8" x 4 1/2" SLOTTED HOLE FOR 1 1/2" DIA. ANCHOR BOLT (TYP)

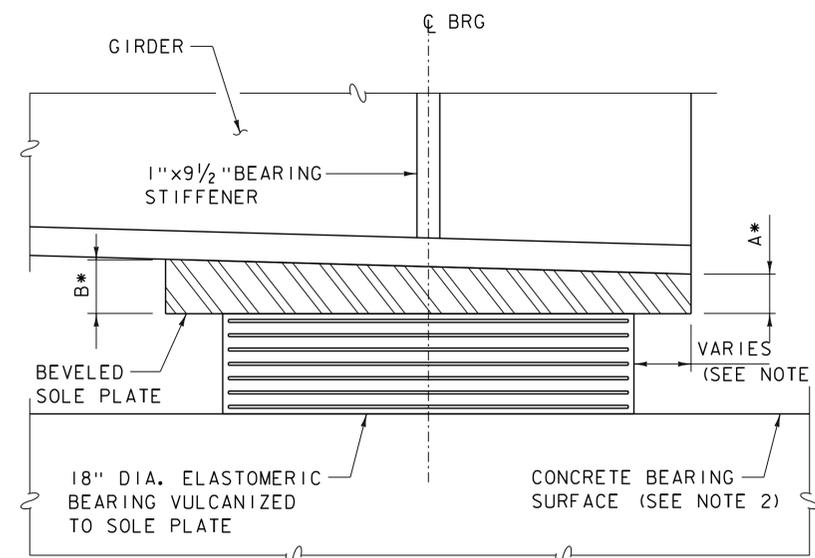
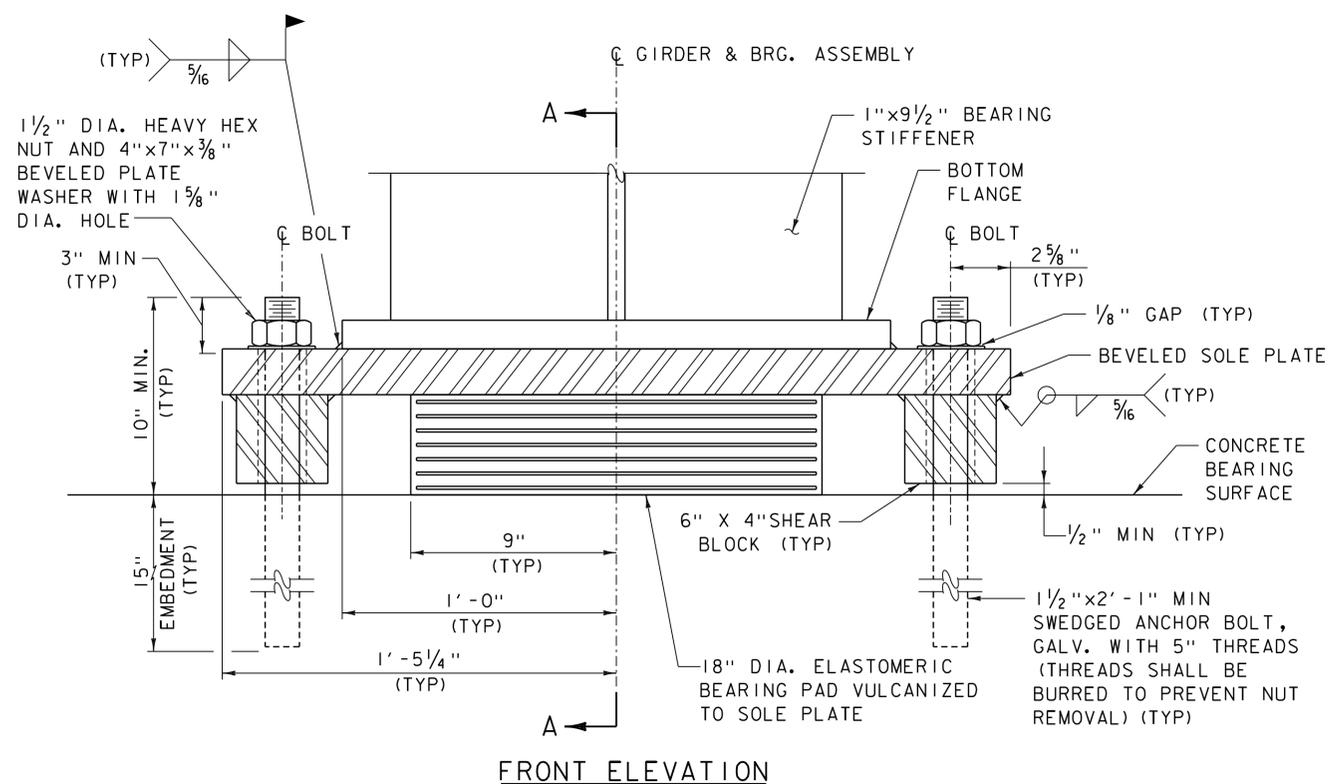


TEMPERATURE ADJUSTMENT TABLE

TEMP.	"X"	"Y"
0° F	2 7/8"	1 5/8"
15° F	2 5/8"	1 7/8"
30° F	2 1/2"	2"
45° F	2 1/4"	2 1/4"
60° F	2"	2 1/2"
75° F	1 7/8"	2 5/8"
90° F	1 5/8"	2 7/8"
105° F	1 1/2"	3"

ABUTMENT NO. 2 BEVELED SOLE PLATE THICKNESS TABLE

	"A"	"B"
G1	1 3/4"	2"
G2	2 1/4"	2 1/2"
G3	1 5/8"	2 5/8"
G4	1 13/16"	2 3/8"
G5	1 1/8"	2 1/8"



BEARING NOTES:

- FOR BEARING NOTES AND DESIGN CRITERIA, SEE BEARING DETAILS SHEET 1.
- THE CONTRACTOR SHALL INCLUDE THE BEARING INSTALLATION PROCEDURE WITH THE FABRICATION DRAWING PACKAGE REQUIRED UNDER SUBSECTION 531.03. PROCEDURE SHALL INCLUDE BEARING ADJUSTMENT SETTING DEPENDING UPON TEMPERATURE AT TIME OF ERECTION.

ABUTMENT NO 2 - EXPANSION BEARING DETAILS

SCALE: 3" = 1' - 0"

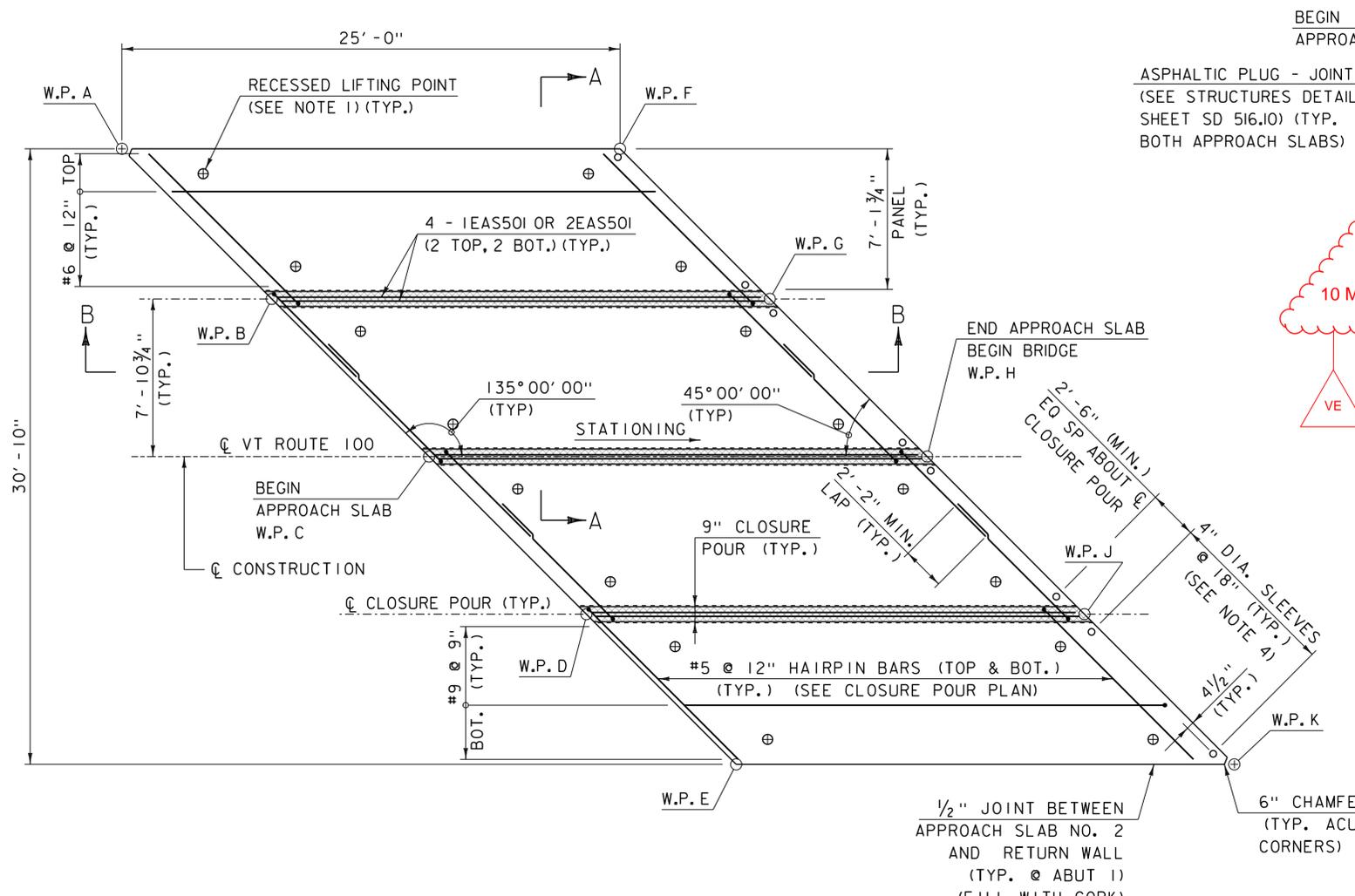
* SEE ABUTMENT NO. 2 BEVELED SOLE PLATE THICKNESS TABLE



PROJECT NAME: WAITSFIELD
PROJECT NUMBER: BRF 013-4(39)

FILE NAME: z12b136brg.dgn
PROJECT LEADER: R.YOUNG
DESIGNED BY: D.KULL
BEARING DETAILS (2 OF 2)

PLOT DATE: 8/24/2015
DRAWN BY: S.MERKWAN
CHECKED BY: T.KENDRICK
SHEET 34 OF 69



APPROACH SLAB NO. 1 PLAN
 (APPROACH SLAB NO 1 SHOWN, APPROACH SLAB NO 2 SIMILAR)
 SCALE: 1/4" = 1'-0"

LEGEND

SPECIAL PROVISION
 HIGH PERFORMANCE CONCRETE,
 RAPID SET (FPQ)
 (ULTRA HIGH PERFORMANCE CONCRETE) (FPQ)

REV	DATE	DESCRIPTION
VE		MODIFIED CLOSURE POUR CONCRETE TYPE

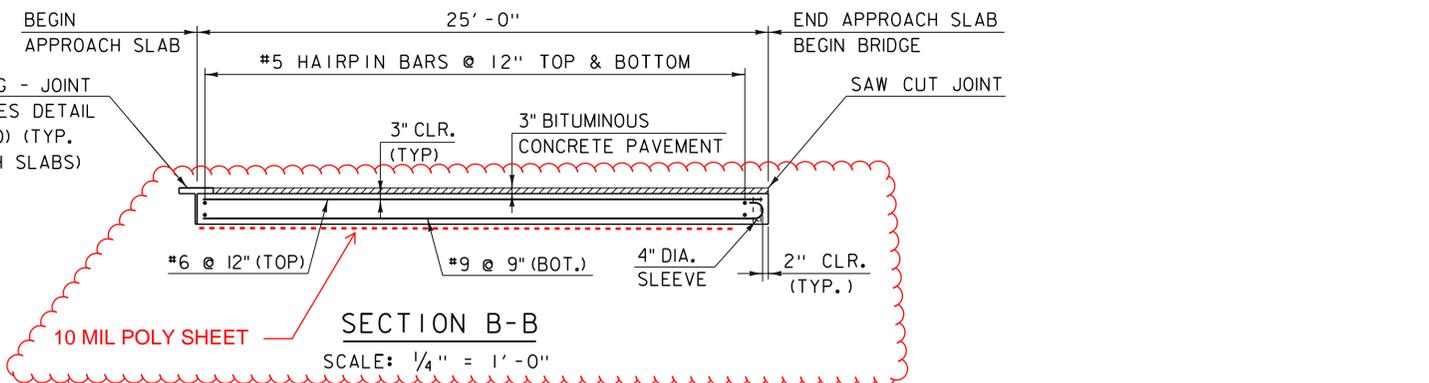
WORKING POINT	APPROACH SLAB NO. 1			APPROACH SLAB NO. 2		
	STATION	OFFSET	ELEVATION	STATION	OFFSET	ELEVATION
A	13+12.05	15.42' LT.	727.83	15+16.47	15.42' LT.	728.84
B	13+19.57	7.90' LT.	728.15	15+23.99	7.90' LT.	728.90
C	13+27.46	CL	728.46	15+31.89	CL	728.94
D	13+35.36	7.90' RT.	728.45	15+39.78	7.90' RT.	728.66
E	13+42.88	15.42' RT.	728.43	15+47.31	15.42' RT.	728.39
F	13+37.05	15.42' LT.	728.33	15+41.47	15.42' LT.	728.48
G	13+44.57	7.90' LT.	728.61	15+48.99	7.90' LT.	728.51
H	13.52.46	CL	728.90	15+56.89	CL	728.52
J	13+60.36	7.90' RT.	728.85	15+64.78	7.90' RT.	728.21
K	13+67.88	15.42' RT.	728.80	15+72.31	15.42' RT.	727.90

ALL ELEVATIONS ARE AT TOP OF APPROACH SLAB

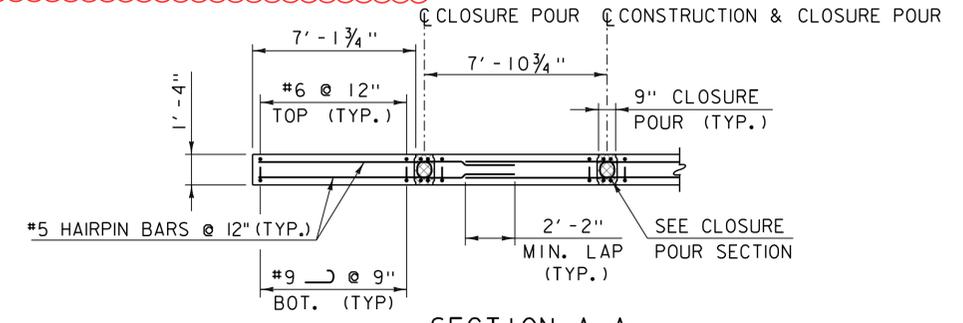
STAMP INDICATES RESPONSIBILITY FOR REVISIONS TO THIS SHEET MARKED REVISION 'VE'.

NOTE:

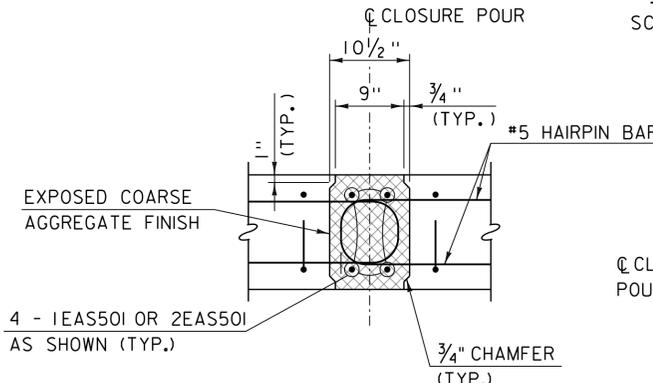
▲ = CUT TO FIT IN FIELD
 3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
 2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.



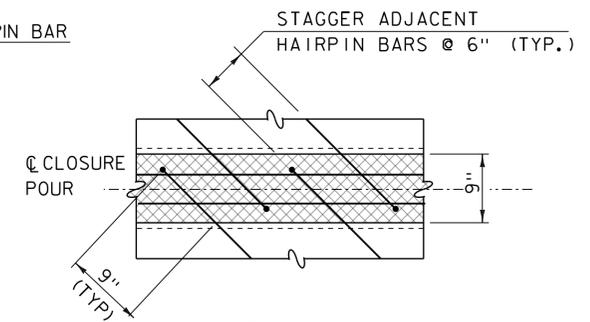
SECTION B-B
 SCALE: 1/4" = 1'-0"



SECTION A-A
 SCALE: 1/4" = 1'-0"



CLOSURE POUR SECTION
 SCALE: 1" = 1'-0"

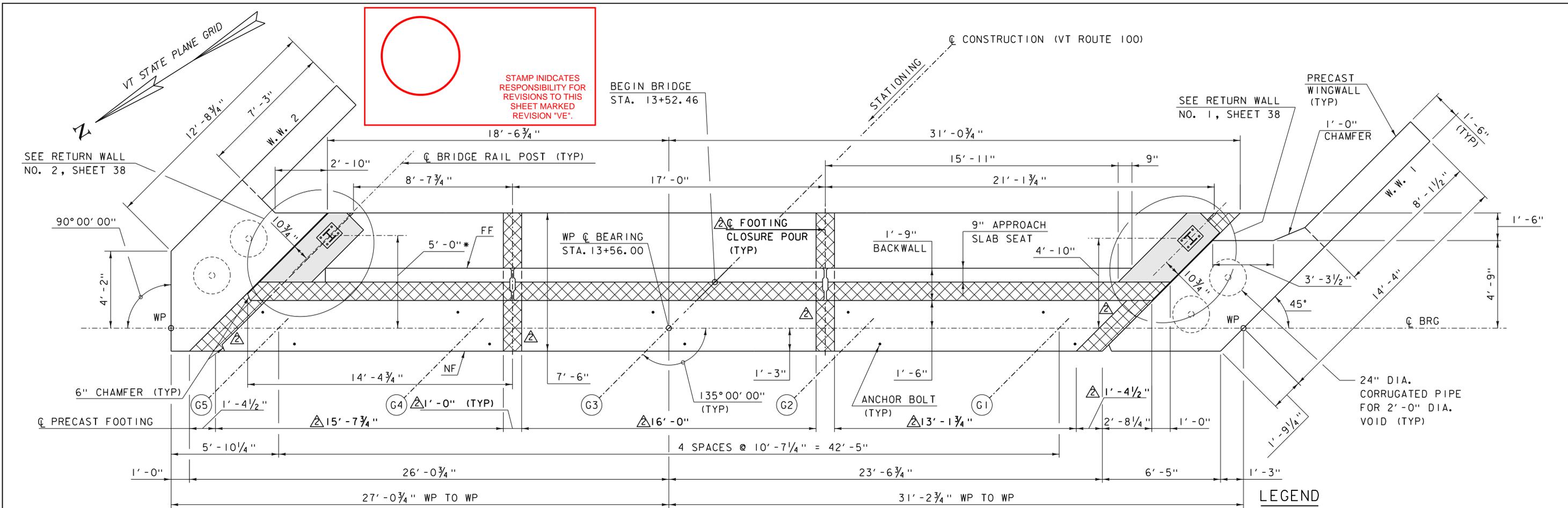


CLOSURE POUR PLAN
 SCALE: 1" = 1'-0"

NOTES

- LIFTING POINTS ARE SHOWN FOR ILLUSTRATIVE PURPOSES ONLY. ACTUAL LIFTING LOCATIONS SHALL BE DETERMINED BY THE FABRICATOR AND INDICATED ON THE FABRICATION DRAWINGS WITH CALCULATIONS.
- THE TOP SURFACE OF THE PRECAST APPROACH SLAB PANELS SHALL HAVE A BROOM FINISH PARALLEL TO THE CENTERLINE OF CONSTRUCTION.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING UNIFORM CONTACT BETWEEN THE APPROACH SLAB AND THE SUBBASE MATERIAL TO THE SATISFACTION OF THE ENGINEER. THE FABRICATION DRAWINGS SHALL INDICATE THE MEANS AND METHODS NECESSARY TO INSTALL THE APPROACH SLABS TO THE ELEVATIONS SPECIFIED.
- SLEEVE LOCATIONS TO BE COORDINATED WITH CONSTRUCTION JOINTS AND DOWELS IN PRECAST BACKWALL.

5. CHIMNEYS CONSISTING OF 5 GALLON PLASTIC PAILS SHALL BE PLACED AND SPACED ALONG THE JOINTS TO ADD HYDRAULIC PRESSURE TO PURGE ANY AIR POCKETS THAT MAY FORM WHILE CASTING THE UHPC. THIS SHALL BE IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS.

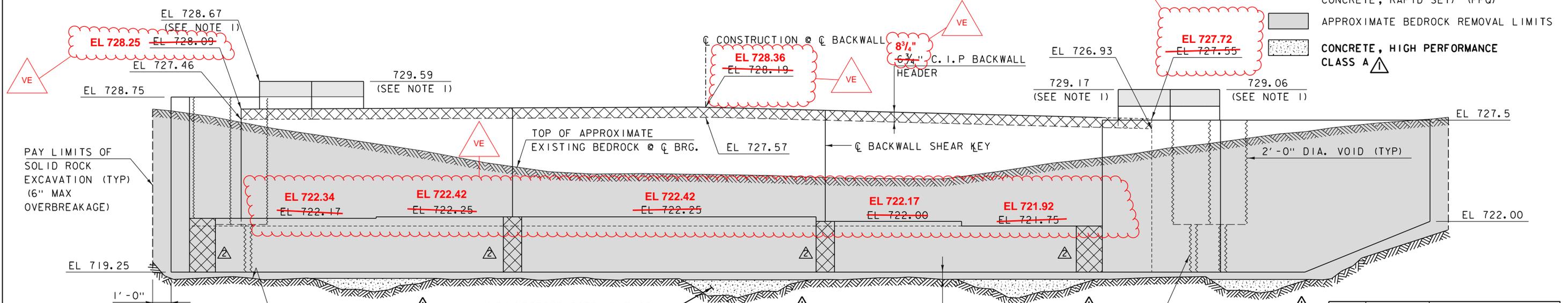


* DIMENSIONS TO ϕ OF BRIDGE RAIL POST HAVE BEEN PROVIDED FOR INFORMATIONAL PURPOSES ONLY. ACTUAL LOCATION SHALL BE DETERMINED BY THE CONTRACTOR. SEE S-360A AND BRIDGE RAIL LAYOUT.

ABUTMENT NO. 1 PLAN
SCALE: $\frac{3}{8}'' = 1'-0''$

LEGEND

	CONCRETE, HIGH PERFORMANCE, CLASS A
	SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET) (FPQ)
	APPROXIMATE BEDROCK REMOVAL LIMITS
	CONCRETE, HIGH PERFORMANCE CLASS A



KEY:
 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.

NOTES

- TOP OF RETURN WALL ELEVATIONS ARE THEORETICAL AND SHALL MATCH TOP OF CAST-IN-PLACE CURB ELEVATIONS ON DECK.
- BACKWALL ELEVATIONS GIVEN AT CENTERLINE OF BACKWALL.
- TOP OF PROPOSED BEDROCK PROFILE SHOWN IS CONCEPTUAL.

ABUTMENT NO. 1 ELEVATION
SCALE: $\frac{3}{8}'' = 1'-0''$

REV	DATE	DESCRIPTION
VE		REVISED ELEVATIONS FOR DECK CHANGE

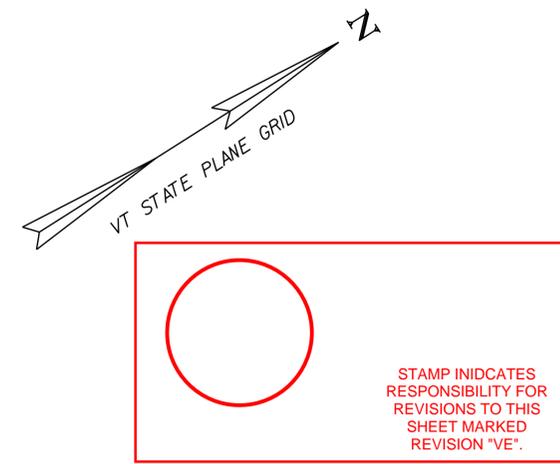
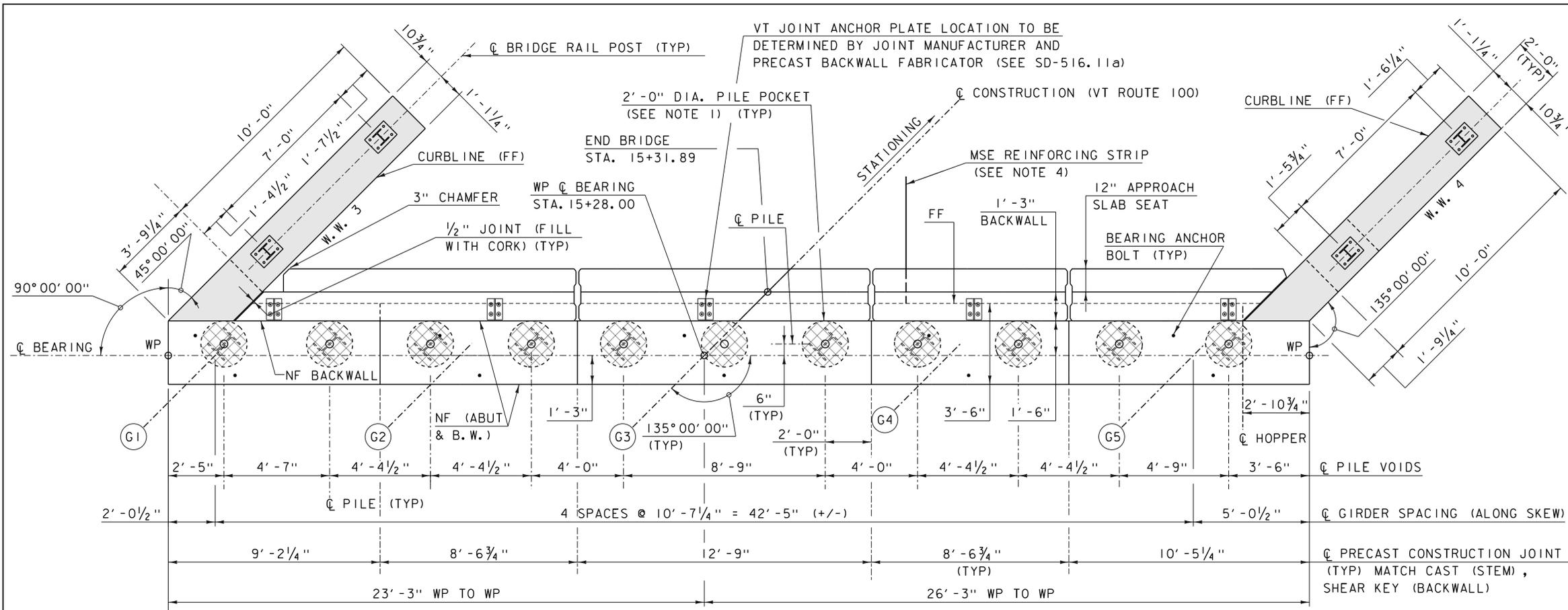
REV	DATE	DESCRIPTION
▲	10/13/2015	SUBFOOTING REVISION
▲	10/13/2015	FOOTING CLOSURE POUR & ELIMINATE POST TENSIONING

PROJECT NAME: WAITSFIELD
 PROJECT NUMBER: BRF 013-4(39)
 FILE NAME: z12bl36abut.dgn
 PROJECT LEADER: R.YOUNG
 DESIGNED BY: D.KULL
 ABUTMENT NO. 1 PLAN AND ELEVATION

PLOT DATE: 10/13/2015
 DRAWN BY: S.MERKMAN
 CHECKED BY: T.KENDRICK
 SHEET 36 OF 69

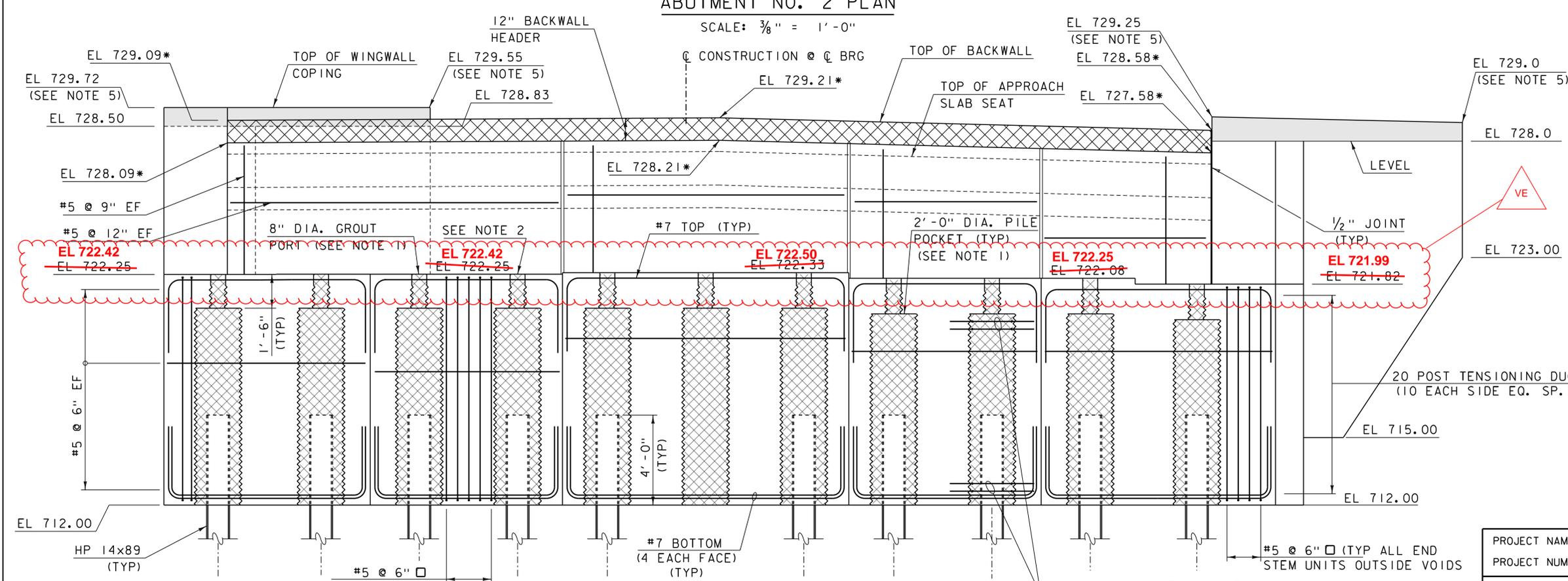


REV	DATE	DESCRIPTION
△VE		REVISED ELEVATIONS FOR DECK CHANGE



ABUTMENT NO. 2 PLAN

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



ABUTMENT NO. 2 ELEVATION

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

NOTES

1. USE GALVANIZED CORRUGATED STEEL PIPE THAT CONFORMS TO SUBSECTION 711.01 FOR PILE POCKETS, STEM VOIDS AND GROUT PORTS.
2. FORM TOP 6" WITH REMOVABLE FORM TO ELIMINATE EXPOSED CORRUGATED STEEL ON THE TOP OF THE BRIDGE SEAT.
3. SET PILES PARALLEL TO THE CENTERLINE OF GIRDERS AS SHOWN.
4. FOR MSE REINFORCING STRIP DETAILS, SEE SHEET 44.
5. ELEVATION IS THEORETICAL AND SHALL MATCH TOP OF C.I.P. BRIDGE CURB.

LEGEND

- CONCRETE, HIGH PERFORMANCE, CLASS A
- SPECIAL PROVISION (HIGH PERFORMANCE CONCRETE, RAPID SET) (FPQ)

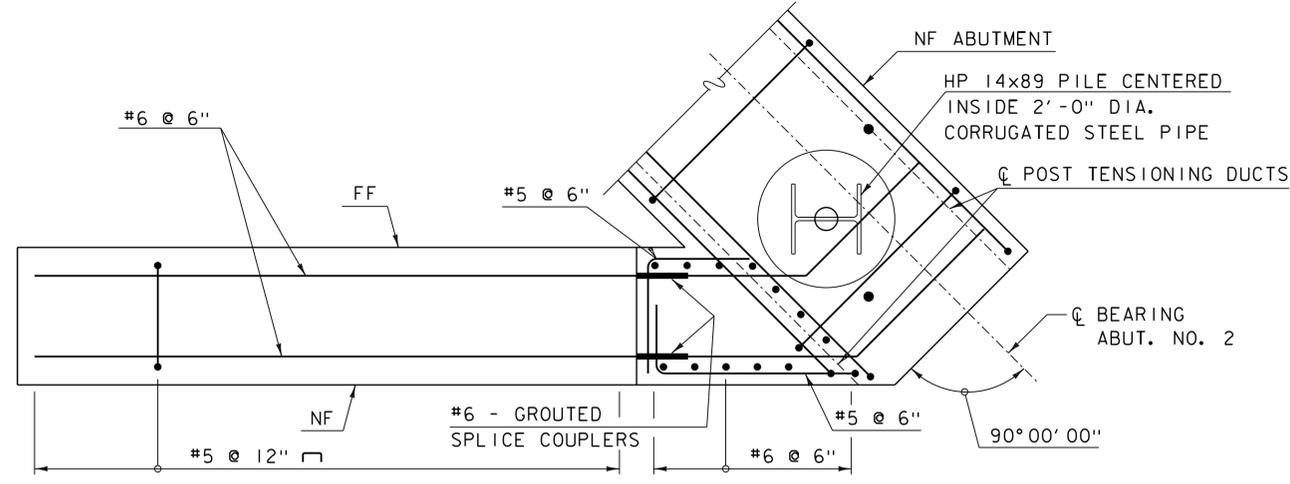
KEY:

- 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.

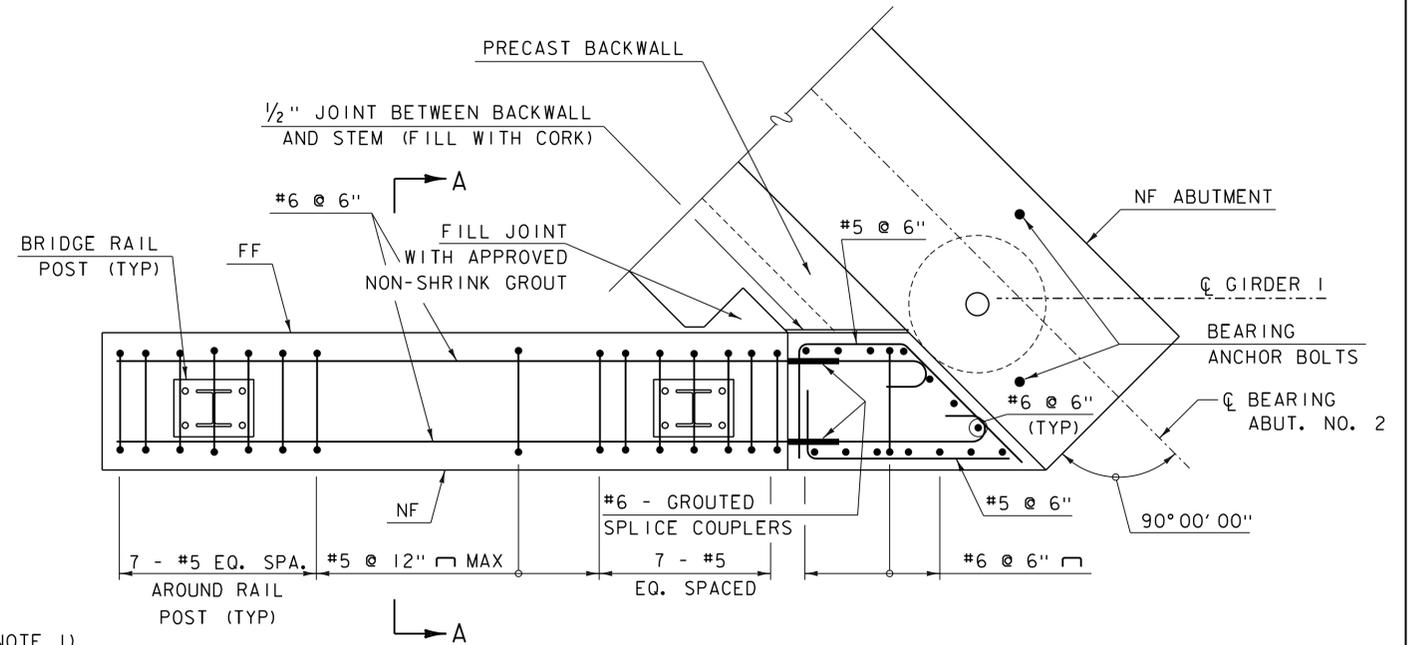
PROJECT NAME:	WAITSFIELD	PLOT DATE:	8/24/2015
PROJECT NUMBER:	BRF 013-4(39)	PROJECT LEADER:	R.YOUNG
FILE NAME:	z12b136abut.dgn	DESIGNED BY:	D.KULL
ABUTMENT NO. 2 PLAN AND ELEVATION		CHECKED BY:	T.KENDRICK
			SHEET 42 OF 69



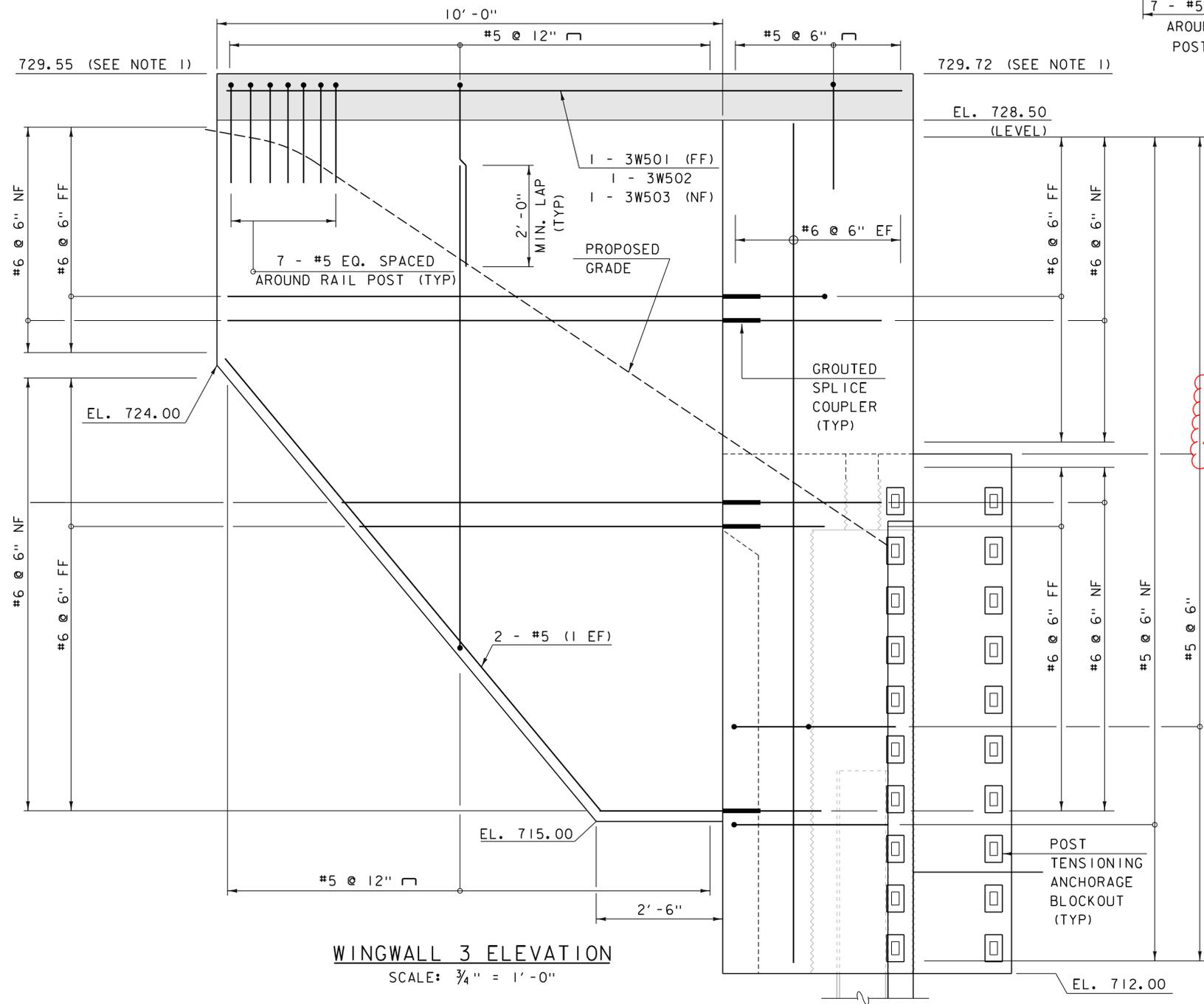
* BACKWALL ELEVATIONS GIVEN AT CENTERLINE OF BACKWALL.



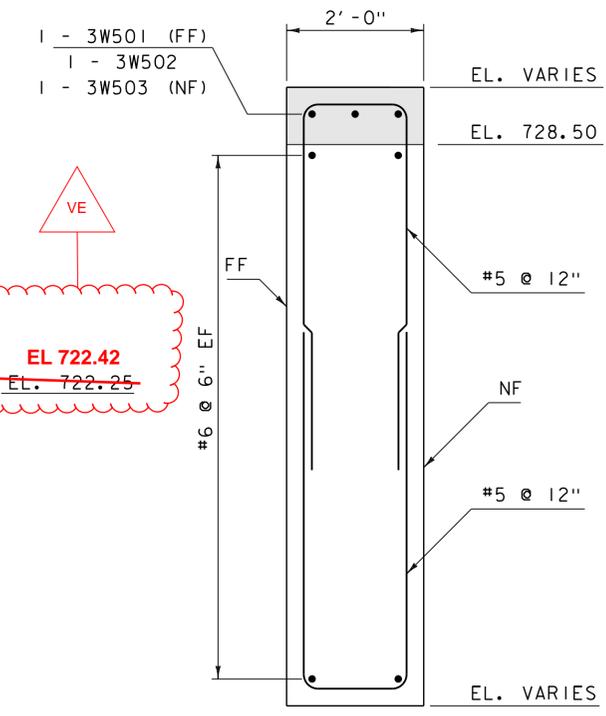
WINGWALL 3 PLAN BELOW BRIDGE SEAT
SCALE: 3/4" = 1'-0"



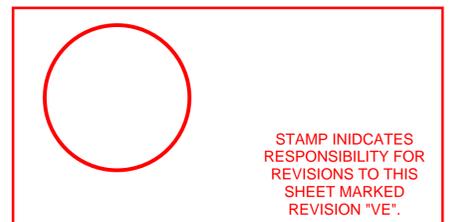
WINGWALL 3 PLAN ABOVE BRIDGE SEAT
SCALE: 3/4" = 1'-0"



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



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



REV	DATE	DESCRIPTION
VE		REVISED ELEVATIONS FOR DECK CHANGE

NOTES

- TOP OF WINGWALL CURB ELEVATIONS ARE THEORETICAL AND SHALL MATCH CAST-IN-PLACE CURB ELEVATIONS ON DECK.

KEY:

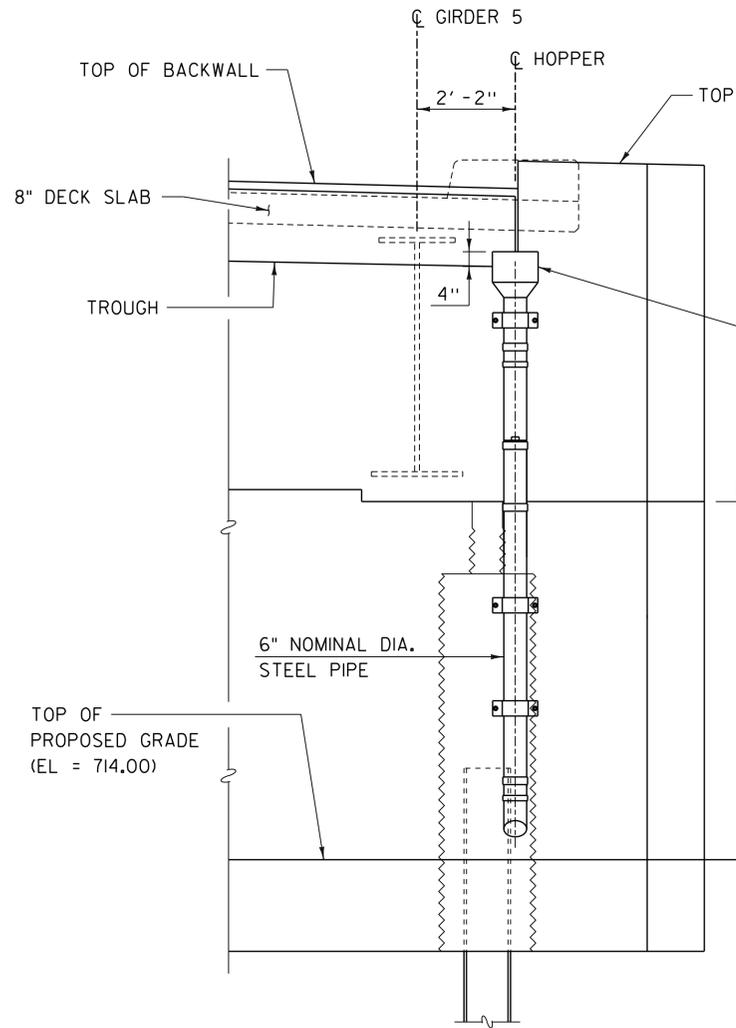
- NF = NEAR FACE
- FF = FAR FACE
- EF = EACH FACE
- ▲ = CUT TO FIT IN FIELD 3" CLEAR, UNLESS OTHERWISE SPECIFIED ON THE PLANS.
- 2'-2" BAR LAP UNLESS OTHERWISE SPECIFIED ON THE PLANS.

LEGEND

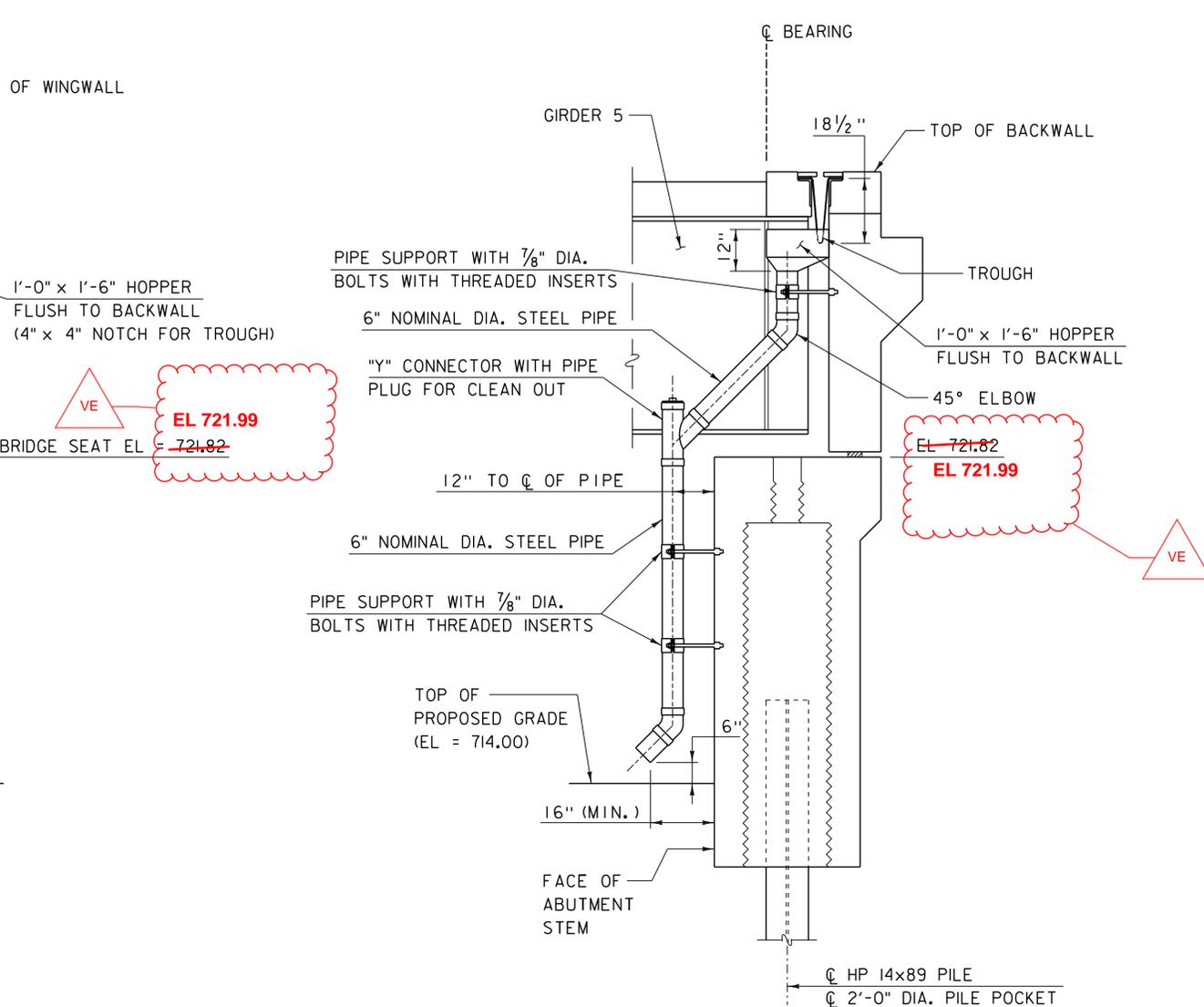
CONCRETE, HIGH PERFORMANCE, CLASS A



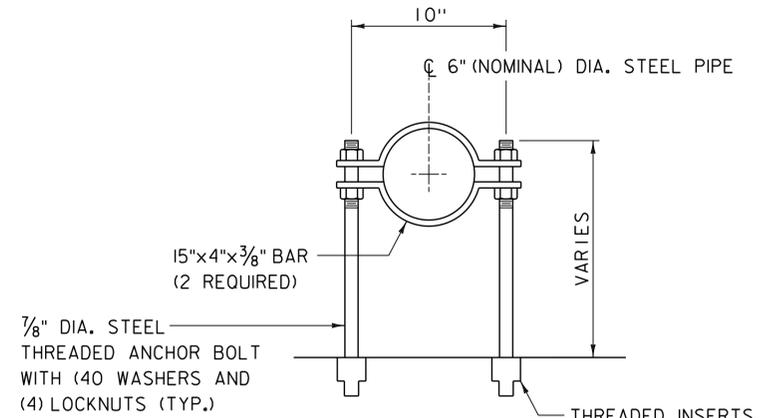
PROJECT NAME: WAITSFIELD	PLOT DATE: 8/24/2015
PROJECT NUMBER: BRF 013-4(39)	DRAWN BY: S.MERKWAN
FILE NAME: z12b136wingd1s.dgn	CHECKED BY: T. KENDRICK
PROJECT LEADER: R. YOUNG	DESIGNED BY: D. KULL
ABUTMENT NO 2 WINGWALL DETAILS (1 OF 2) SHEET 46 OF 69	



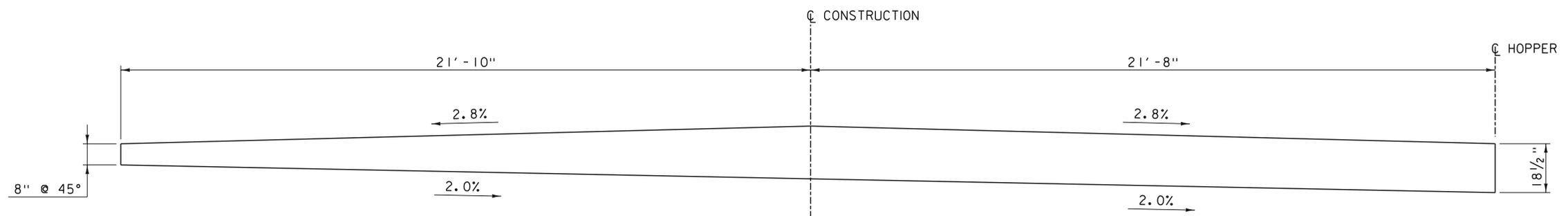
DOWNSPOUT ELEVATION
SCALE: 1/2" = 1'-0"



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



**PIPE SUPPORT
EXTENDED ATTACHMENT**
SCALE: 2" = 1'-0"



FABRIC DRAIN TROUGH PROFILE
SCALE: 1/2" = 1'-0"

STAMP INDICATES RESPONSIBILITY FOR REVISIONS TO THIS SHEET MARKED REVISION "VE".

REV	DATE	DESCRIPTION
VE		REVISED ELEVATIONS FOR DECK CHANGE

PROJECT NAME:	WAITSFIELD
PROJECT NUMBER:	BRF 013-4(39)
FILE NAME:	z12b136abutd1s.dgn
PROJECT LEADER:	R.YOUNG
DESIGNED BY:	D.KULL
ABUTMENT NO. 2 HOPPER DETAILS	
PLOT DATE:	8/24/2015
DRAWN BY:	S.MERKWAN
CHECKED BY:	T.KENDRICK
SHEET	48 OF 69



REINFORCING STEEL SCHEDULE

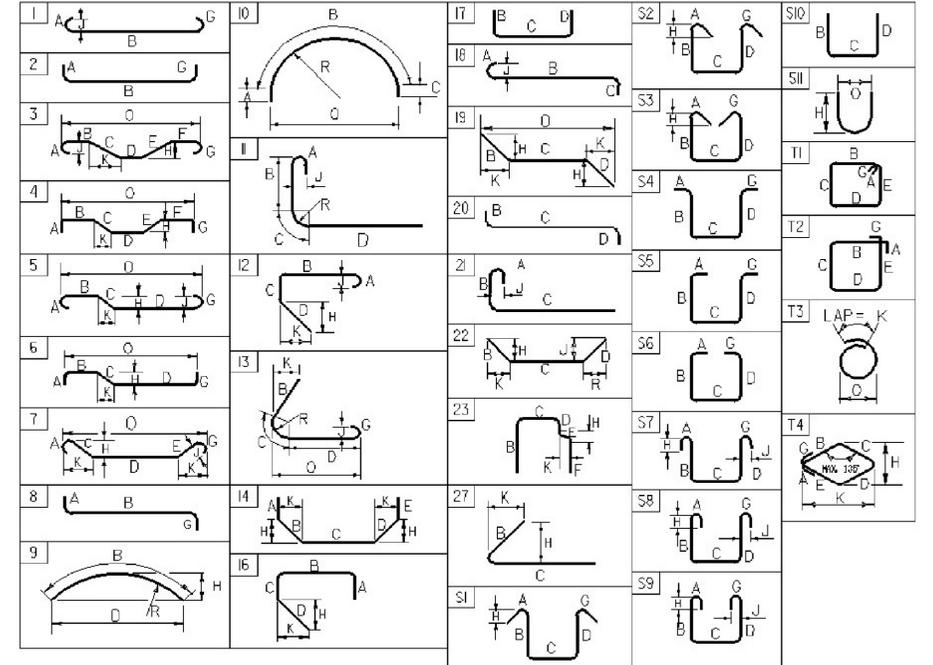
ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O	ITEM	EACH	SIZE	LENGTH	MARK	TYPE	A	B	C	D	E	F	G	H	J	K	R	O		
SPAN 1																																					
*	30	6	33'-8"	1ES501	STR																																
*	9	5	25'-6"	1ES502	STR																																
APPROACH SLAB 1																																					
*	13	5	24'-3"	1EAS501	STR																																
APPROACH SLAB 2																																					
*	13	5	24'-8"	2EAS501	STR																																
ABUTMENT NO. 1																																					
*	5	5	25'-8"	1A501	STR																																
	2	5	3'-6"	1A502	STR																																
	2	5	4'-1"	1A503	STR																																
	2	5	4'-9"	1A504	STR																																
	8	5	7'-0"	1A505	STR																																
	8	5	10'-0"	1A506	STR																																
ABUTMENT NO. 2																																					
*	9	5	22'-9"	2A501	STR																																
WINGWALL 3																																					
*	2	5	11'-2"	3W501	STR																																
	1	5	12'-1"	3W502	STR																																
	1	5	13'-0"	3W503	STR																																
WINGWALL 4																																					
*	2	5	13'-0"	4W501	STR																																
	1	5	12'-1"	4W502	STR																																
	1	5	11'-2"	4W503	STR																																

SEE NEW "REINFORCING STEEL SCHEDULE 2" SHEET

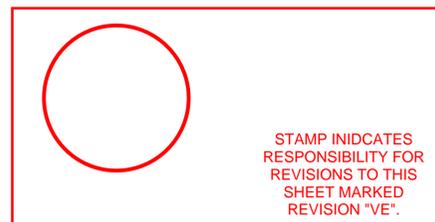


~ NOTES ~

- 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-S1). ALL BARS SHALL BE GRADE 60, UNLESS OTHERWISE DESIGNATED.
- 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".
- BARS WHICH REQUIRE MORE ACCURATE BENDING THAN STANDARD PRACTICES SHOULD HAVE LIMITS INDICATED.
- ALL DIMENSIONS ARE OUT TO OUT OF BAR EXCEPT "A" AND "G" ON STANDARD 180 DEGREE AND 135 DEGREE HOOKS.
- "J" DIMENSION ON 180 DEGREE HOOKS TO BE SHOWN ONLY WHERE NECESSARY TO RESTRICT HOOK SIZE. OTHERWISE, STANDARD HOOKS ARE TO BE USED.
- "H" DIMENSION ON STIRRUPS TO BE SHOWN ONLY WHEN NECESSARY TO MAINTAIN CLEARANCES.
- WHERE SLOPE DIFFERS FROM 45 DEGREES, DIMENSIONS "H" AND "K" MUST BE SHOWN.
- ▲ DENOTES BARS TO BE CUT IN FIELD.
- * DENOTES ONE EXTRA BAR ADDED FOR TESTING PURPOSES.
- △ DENOTES TWO EXTRA BARS ADDED FOR TESTING PURPOSES.
- E IN BAR MARK PREFIX DENOTES EPOXY COATED REINFORCING STEEL.
- ⬡ DENOTES 10/13/2015 REVISION HISTORY



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



REV	DATE	DESCRIPTION
VE		NEW DECK DESIGN, BARS CHANGED

PROJECT NAME: **WAITSFIELD**
 PROJECT NUMBER: **BRF 013-4(39)**

FILE NAME: z12b136reinf.xls
 PROJECT MANAGER: **R. YOUNG**
 DESIGNED BY: **D. KULL**
REINFORCING STEEL SCHEDULE

PLOT DATE: **10/12/2015**
 DRAWN BY: **S. MERKWAN**
 CHECKED BY: **T. KENDRICK**
 SHEET **50** OF **69**