

RENAUD BROS., INC.

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Wardsboro BRF 013-1 (15)

Conceptual Value Engineering Proposal

General Description

This CVEP is to use built-up welded plate girders in lieu of the W40 x 149 Rolled Beams. We will utilize 1/2" webs, 7/8" flanges and 5/16" fillet welds as shown on the revised contract sheet 26.

Advantages and Disadvantages

The W40 x 149's have a higher cost per pound for raw material as well as a higher cost per pound shop labor to induce the camber. Plate girders can have the camber burned right into the web which will produce a much better end product.

The first suggested CVEP utilized a 3/4" web and 7/8" flanges this produced an eight thousand eight hundred dollar savings. This savings is the labor and material for the switch from rolled beams to plate girders. From here any changes in plate sizes would only be a material cost change because the labor cost to perform the work is the same to cut the plate regardless of the size. The same is said for the setting of the steel there is no difference between the rolled beams or the plate girders.

Impacts to Permits and/or Third Party Agreements

There are no impacts to permits or third party agreements for this proposal.

Identification of Prior Similar CVEP's

The switch from Rolled Beams to Plate Girders has been done before successfully before.

Known Use or Testing

The use of plate girders for bridge structures has been used throughout Vermont.

Estimate of Net Savings

After the plate girder cost and additional engineering has been removed from the rolled beam cost, there is a ten thousand seven hundred dollar net savings to split. This option adds one thousand nine hundred dollars to the savings.

Estimate of Development Costs

The additional VTRANS engineering is the only development cost for this proposal.

Schedule Impacts

At this time there is no negative impact of delivery schedule using the plate girder option. The price of steel is expected to rise in the new year.

Wardsboro BRF 013-1 (15)
Estimate of Development Costs

Item Number	Item Description	VE Quantity	Original Quantity	Units	Original Cost	Proposed Cost	Cost
Removed							
506.50	Structural Steel - Rolled Beams	-48,320	48,320	LBS	\$2.50	-	-\$120,800.00
							-\$120,800.00
New							
506.55	Structural Steel - Plate Girder (FPQ)	44,228	0	LBS	-	\$2.46	\$108,800.88
	VAOT Engineering	1		EA	-	\$1,300.00	\$1,300.00
							\$110,100.88
Savings to Split							-\$10,699.12

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FINAL HYDRAULIC REPORT

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51	ROW LAYOUT 1 SHEET 1 OF 1

STANDARDS LIST

D-15	PRECAST REINF CONC. MH-GRATES, CAST IRON GRATE WITH FRAME, TYPE D & E	06-01-1994
E-121	STANDARD SIGN PLACEMENT - CONVENTIONAL ROAD	08-08-1995
E-141	REGULATORY SIGN DETAILS	09-20-1995
E-142	REGULATORY SIGN DETAILS	09-20-1995
E-160	FLANGED CHANNEL STEEL SIGN POST	05-20-1999
E-161	W-SHAPED STEEL SIGN POST	08-18-1995
E-162	TUBULAR ALUMINUM SIGN POST	05-20-1999
E-163	TUBULAR STEEL SIGN POST	05-20-1999
E-191	PAVEMENT MARKING DETAILS	02-01-1999
E-192	PAVEMENT MARKING DETAILS	10-12-2000
E-193	PAVEMENT MARKING DETAILS	08-18-1995
G-1BM	BOX BEAM GUARD RAIL	06-13-1997
S-364A	BRIDGE RAILING, GALVANIZED 3 RAIL BOX BEAM	
S-364B	GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM	02-10-2014
S-364C	GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM	02-10-2014
S-364D	GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM	04-23-2012
T-1	TRAFFIC CONTROL GENERAL NOTES	08-06-2012
T-10	CONVENTIONAL ROADS CONSTRUCTION APPROACH SIGNING	08-06-2012
T-28	CONSTRUCTION SIGN DETAILS	08-06-2012
T-35	CONSTRUCTION ZONE LONGITUDINAL DROP-OFFS	08-06-2012
T-42	BRIDGE NUMBER PLAQUE	04-09-2014
T-45	SQUARE TUBE SIGN POST AND ANCHOR	01-02-2013

STRUCTURES DETAIL SHEETS

SD-501.00	CONCRETE DETAILS AND NOTES	02-09-2012
SD-502.00	CONCRETE DETAILS AND NOTES	10-10-2012
SD-516.10	BRIDGE JOINT ASPHALTIC PLUG	08-29-2011
SD-601.00	STRUCTURAL STEEL DETAILS AND NOTES	06-04-2010
SD-602.00	STRUCTURAL STEEL PLATE GIRDER DETAILS AND NOTES	05-02-2011

HYDROLOGIC DATA

Date: Nov. 2012

DRAINAGE AREA : 9.4 sq. mi.
 CHARACTER OF TERRAIN : Hilly to mountainous, mostly forested.
 STREAM CHARACTERISTICS : Sinuous, semi-alluvial and probably incised.
 NATURE OF STREAMBED : Mostly cobbles and boulders with some gravel.

PEAK FLOW DATA

Q 2.33 =	900 cfs	Q 50 =	3550 cfs
Q 10 =	1900 cfs	Q 100 =	4300 cfs
Q 25 =	2800 cfs	Q 500 =	5800 cfs

DATE OF FLOOD OF RECORD : Unknown
 ESTIMATED DISCHARGE : Unknown
 WATER SURFACE ELEV. : Unknown
 NATURAL STREAM VELOCITY : @ Q50 = 14.2 fps
 ICE CONDITIONS : Moderate
 DEBRIS : Moderate
 DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? : Yes
 IS ORDINARY RISE RAPID? : Yes
 IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? : No
 IF YES, DESCRIBE :

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

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE : Single span steel beam bridge with concrete deck.
 YEAR BUILT : 1929
 CLEAR SPAN(NORMAL TO STREAM): 59'
 VERTICAL CLEARANCE ABOVE STREAMBED: 14'
 WATERWAY OF FULL OPENING: 570 sq. ft.
 DISPOSITION OF STRUCTURE: Remove
 TYPE OF MATERIAL UNDER SUBSTRUCTURE: See boring logs.

WATER SURFACE ELEVATIONS AT:

Q2.33 =	1408.6'	VELOCITY =	9.9 fps
Q10 =	1410.8'	"	12.2 fps
Q25 =	1412.5'	"	13.6 fps
Q50 =	1413.7'	"	14.4 fps
Q100 =	1414.7'	"	15.1 fps

LONG TERM STREAMBED CHANGES: Comparing current survey to record plans and the flood insurance study, it appears there may have been some degradation in the past.

IS THE ROADWAY OVERTOPPED BELOW Q100: No
 FREQUENCY: Above Q100
 RELIEF ELEVATION: 1418.6'
 DISCHARGE OVER ROAD @Q100: N/A

UPSTREAM STRUCTURE

TOWN: Wardsboro DISTANCE: 3000'
 HIGHWAY #: TH 29 STRUCTURE #: 26
 CLEAR SPAN: 69' CLEAR HEIGHT: 7.5'
 YEAR BUILT: 1939 FULL WATERWAY: N/A
 STRUCTURE TYPE: Single span steel beam bridge with timber deck.

DOWNSTREAM STRUCTURE

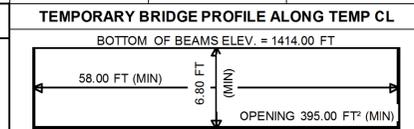
TOWN: Wardsboro DISTANCE: 8000'
 HIGHWAY #: TH 6 STRUCTURE #: 27
 CLEAR SPAN: 96' CLEAR HEIGHT: 19'
 YEAR BUILT: 1978 FULL WATERWAY: N/A
 STRUCTURE TYPE: Single span steel beam bridge.

LRFR LOAD RATING FACTORS

LOADING LEVELS	TRUCK						
	H-20	HL-93	3S2	6 AXLE	3A. STR.	4A. STR.	5A. SEM
TONNAGE	20	36	36	66	30	34.5	38
INVENTORY Δ	2.46	1.26					
POSTING							
OPERATING Δ	3.19	1.63	2.63	1.74	2.26	2.03	2.22
COMMENTS:							

KEY	DATE	BY	REVISION
Δ	10/05/2015	VAOT	MODIFIED LRFR LOAD RATING FACTORS.

AS BUILT "REBAR" DETAIL		
LEVEL I	LEVEL II	LEVEL III
TYPE:	TYPE:	TYPE:
GRADE:	GRADE:	GRADE:



PILE DRIVING AND TESTING REQUIREMENTS

- NOMINAL PILE DRIVING CAPACITY F_{dr} : 346.00 KIP
- PILE TEST RESISTANCE FACTOR ϕ : 0.65
- MINIMUM PILE TIP ELEVATION: 1377.00 FT
- ONE DYNAMIC PILE LOAD TEST REQUIRED PER ABUTMENT.

PROPOSED STRUCTURE

STRUCTURE TYPE: Single span steel beam bridge with concrete deck.

CLEAR SPAN(NORMAL TO STREAM): 65'
 VERTICAL CLEARANCE ABOVE STREAMBED: 14'
 WATERWAY OF FULL OPENING: 590 sq. ft.

WATER SURFACE ELEVATIONS AT:

Q2.33 =	1408.6'	VELOCITY=	9.9 fps
Q10 =	1410.8'	"	12.2 fps
Q25 =	1412.5'	"	13.6 fps
Q50 =	1413.7'	"	14.4 fps
Q100 =	1414.7'	"	15.1 fps

IS THE ROADWAY OVERTOPPED BELOW Q100: No
 FREQUENCY: Above Q100
 RELIEF ELEVATION: 1418.6'
 DISCHARGE OVER ROAD @Q100: N/A

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 1416.2'
 VERTICAL CLEARANCE: @ Q50 = 2.5'

SCOUR: Total long term degradation and contraction scour = 2' at Q100 and 4' at Q500.

REQUIRED CHANNEL PROTECTION: Stone Fill, Type IV

PERMIT INFORMATION

AVERAGE DAILY FLOW: 20 cfs DEPTH OR ELEVATION:
 ORDINARY LOW WATER: 10 cfs Depth = 0.5'
 ORDINARY HIGH WATER: 390 cfs Depth = 3.0'

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: Single span bridge
 CLEAR SPAN (NORMAL TO STREAM): 58' minimum
 VERTICAL CLEARANCE ABOVE STREAMBED: Elev. 1414.0' minimum
 WATERWAY AREA OF FULL OPENING: 395 sq. ft. minimum

ADDITIONAL INFORMATION

TRAFFIC MAINTENANCE NOTES

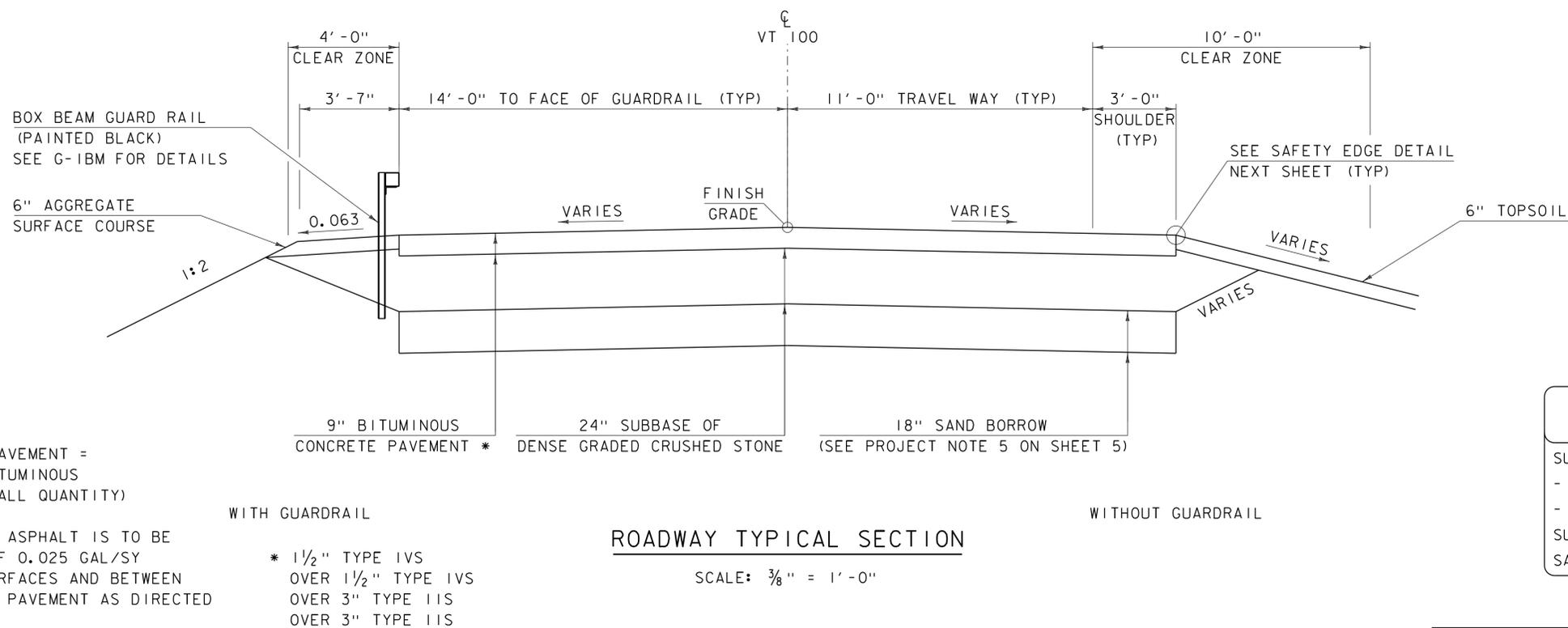
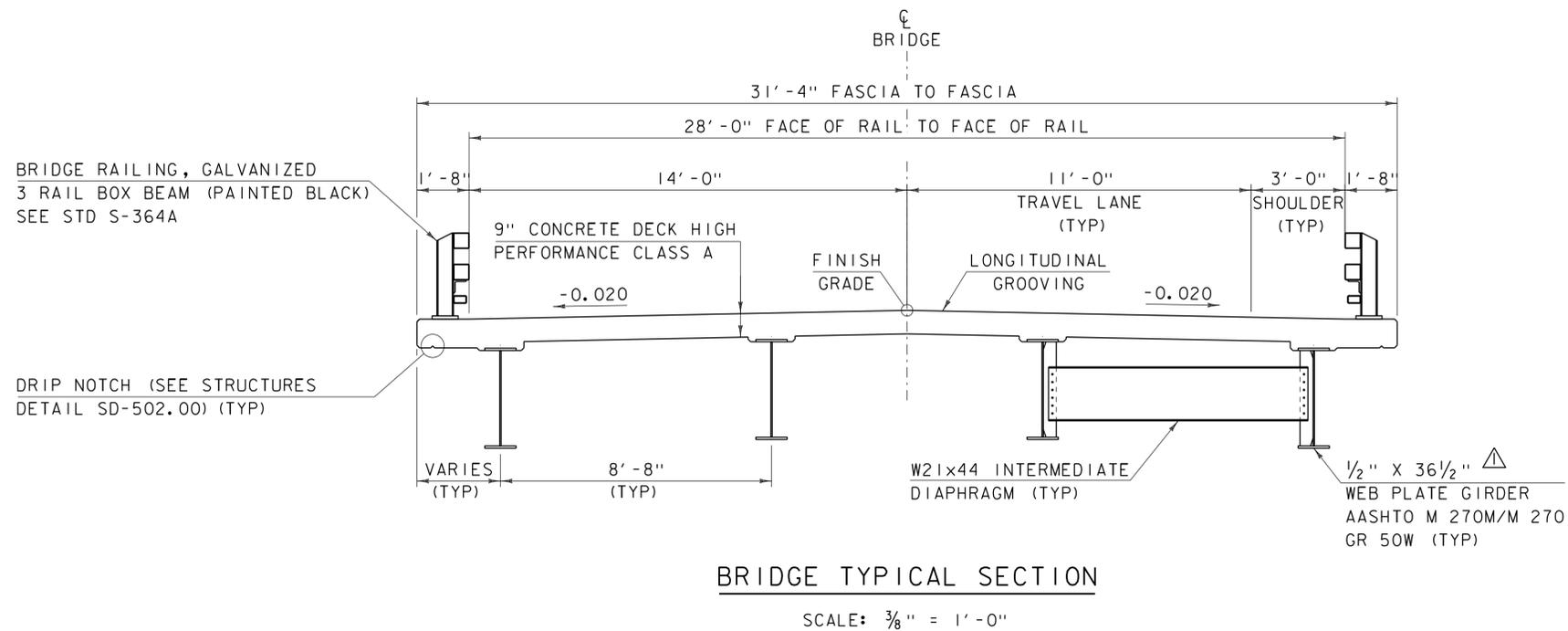
- MAINTAIN TWO-WAY TRAFFIC ON A TEMPORARY BRIDGE.
- TRAFFIC SIGNALS ARE NOT NECESSARY.
- SIDEWALKS ARE NOT NECESSARY
- THE APPROACHES FOR THE TEMPORARY BRIDGE SHALL BE PAVED.

DESIGN VALUES

1. DESIGN LIVE LOAD	HL-93
2. FUTURE PAVEMENT	d_p : 2.5 INCH
3. DESIGN SPAN	L : 68.00 FT
4. MIN. MID-SPAN POS. CAMBER @ RELEASE (PRESTRESSED UNITS)	Δ : ---
5. PRESTRESSING STRAND	f_y : ---
6. PRESTRESSED CONCRETE STRENGTH	f'_c : ---
7. PRESTRESSED CONCRETE RELEASE STRENGTH	f'_{cr} : ---
8. CONCRETE, HIGH PERFORMANCE CLASS AA	f'_c : ---
9. CONCRETE, HIGH PERFORMANCE CLASS A	f'_c : 4.0 KSI
10. CONCRETE, HIGH PERFORMANCE CLASS B	f'_c : 3.5 KSI
11. CONCRETE, CLASS C	f'_c : ---
12. REINFORCING STEEL	f_y : 60 KSI
13. STRUCTURAL STEEL AASHTO M270 (WEATHERING)	f_y : 50 KSI
14. SOIL UNIT WEIGHT	γ : 0.140 KCF
15. NOMINAL BEARING RESISTANCE OF SOIL	q_n : 4.0 KSF
16. SOIL BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	ϕ : ---
17. NOMINAL BEARING RESISTANCE OF ROCK	q_n : 10.0 KSF
18. ROCK BEARING RESISTANCE FACTOR (REFER TO AASHTO LRFD)	ϕ : ---
19. NOMINAL AXIAL PILE RESISTANCE	q_p : 346.0 KIPS
20. PILE YIELD STRENGTH ASTM A572	f_y : 50 KSI
21. PILE SIZE	HP 12X74
22. EST. PILE LENGTH	L_p : 77 FT
23. PILE RESISTANCE FACTOR	ϕ : 0.65
24. LATERAL PILE DEFLECTION	Δ : 0.37 INCH
25. BASIC WIND SPEED	V_{3s} : ---
26. MINIMUM GROUND SNOW LOAD	p_g : ---
27. SEISMIC DATA	PGA: --- S_s : --- S_1 : ---

PROJECT NAME: WARDSBORO
 PROJECT NUMBER: BRF 013-1(15)

FILE NAME: s92b283pi.xls PLOT DATE: 10/5/2015
 PROJECT LEADER: C. CARLSON DRAWN BY: R. PELLETT
 DESIGNED BY: D. PETERSON CHECKED BY: D. PETERSON
 PRELIMINARY INFORMATION SHEET SHEET 2 OF 51



BITUMINOUS CONCRETE PAVEMENT = SPECIAL PROVISION (BITUMINOUS CONCRETE PAVEMENT, SMALL QUANTITY)

TACK COAT: EMULSIFIED ASPHALT IS TO BE APPLIED AT THE RATE OF 0.025 GAL/SY ON ALL COLD PLANED SURFACES AND BETWEEN SUCCESSIVE COURSES OF PAVEMENT AS DIRECTED BY THE ENGINEER.

WITH GUARDRAIL

* 1 1/2" TYPE IVS
OVER 1 1/2" TYPE IVS
OVER 3" TYPE IIS
OVER 3" TYPE IIS

ROADWAY TYPICAL SECTION

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

MATERIAL TOLERANCES (IF USED ON PROJECT)	
SURFACE	
- PAVEMENT (TOTAL THICKNESS)	+/- 1/4"
- AGGREGATE SURFACE COURSE	+/- 1/2"
SUBBASE	+/- 1"
SAND BORROW	+/- 1"

PROJECT NAME: WARDSBORO
PROJECT NUMBER: BR 013-1(15)

FILE NAME: s92b283typ.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: D. PETERSON
TYPICAL SECTIONS 1

PLOT DATE: 06-OCT-2015
DRAWN BY: R. PELLETT
CHECKED BY: D. PETERSON
SHEET 3 OF 51

KEY	DATE	BY	REVISION
△	10/05/2015	VAOT	MODIFIED ROLLED BEAM TO PLATE GIRDER.

QUANTITY SHEET 1

SUMMARY OF ESTIMATED QUANTITIES										TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES			
							ROADWAY	EROSION CONTROL	BRIDGE	FULL C.E. ITEMS	GRAND TOTAL	FINAL	UNIT	ITEMS	ITEM NUMBER	ROUND	QUANTITIES	UNIT	ITEMS
							1				1		LS	CLEARING AND GRUBBING, INCLUDING INDIVIDUAL TREES AND STUMPS	201.10				* N.A.B.I. - NOT A BID ITEM
							1860				1860		CY	COMMON EXCAVATION	203.15				
							780				780		CY	UNCLASSIFIED CHANNEL EXCAVATION	203.27				
							350				350		CY	SAND BORROW	203.31				
							484				484		CY	TRENCH EXCAVATION OF EARTH	204.20				
							28				28		CY	TRENCH EXCAVATION OF ROCK	204.21				
							1				1		CY	TRENCH EXCAVATION OF EARTH, EXPLORATORY (N.A.B.I.)	204.22				
									410		410		CY	STRUCTURE EXCAVATION	204.25				
							290		205		495		CY	GRANULAR BACKFILL FOR STRUCTURES	204.30				
							470				470		SY	COLD PLANING, BITUMINOUS PAVEMENT	210.10				
							960				960		CY	SUBBASE OF DENSE GRADED CRUSHED STONE	301.35				
							15				15		CY	AGGREGATE SURFACE COURSE	401.10				
							17				17		CWT	EMULSIFIED ASPHALT	404.65				
							1				1		LU	PRICE ADJUSTMENT, ASPHALT CEMENT (N.A.B.I.)	406.50				
									121		121		CY	CONCRETE, HIGH PERFORMANCE CLASS A	501.33				
									135		135		CY	CONCRETE, HIGH PERFORMANCE CLASS B	501.34				
									1		1		LS	FURNISHING EQUIPMENT FOR DRIVING PILING	504.10				
									770		770		LF	STEEL PILING, HP 12 X 74	505.16				
									2		2		EACH	DYNAMIC PILE LOADING TEST	505.45				
									44026		44026		LB	STRUCTURAL STEEL, PLATE GIRDER	506.55				
									6065		6065		LB	REINFORCING STEEL, LEVEL I	507.11				
									33364		33364		LB	REINFORCING STEEL, LEVEL II	507.12				
									1		1		LS	SHEAR CONNECTORS (824 - 7/8" x 7")	508.15				
									217		217		SY	LONGITUDINAL DECK GROOVING	509.10				
									10		10		GAL	WATER REPELLENT, SILANE	514.10				
									63		63		LF	BRIDGE EXPANSION JOINT, ASPHALTIC PLUG	516.10				
									63		63		LF	JOINT SEALER, HOT POURED	524.11				
									146		146		LF	BRIDGE RAILING, GALVANIZED 3 RAIL BOX BEAM (PAINTED BLACK)	525.335				
							1				1		LS	TWO-WAY TEMPORARY BRIDGE (1630 SF)	528.11				
							1				1		EACH	REMOVAL OF STRUCTURE (2112 SF - EST.)	529.15				
									8		8		EACH	BEARING DEVICE ASSEMBLY, STEEL REINFORCED ELASTOMERIC PAD	531.17				
														BEGIN OPTION AA					
							245				245		LF	18" CAAP .105 (2-2/3 X 1/2)	601.0217				
							245				245		LF	18" PCCSP .064 (2-2/3 X 1/2)	601.0415				
							245				245		LF	18" CPEP	601.0915				
														END OPTION AA					
							3				3		EACH	PRECAST REINFORCED CONCRETE DROP INLET WITH CAST IRON GRATE	604.18				
							850				850		CY	STONE FILL, TYPE IV	613.13				
							20				20		LF	BOX BEAM GUARDRAIL (PAINTED BLACK)	621.30				
							4				4		EACH	GUARDRAIL APPROACH SECTION, GALVANIZED 3 RAIL BOX BEAM (PAINTED BLACK)	621.725				

PROJECT NAME: WARDSBORO
 PROJECT NUMBER: BRF 013-1(15)
 FILE NAME: s92b283qs.dgn
 PROJECT LEADER: C. CARLSON
 DESIGNED BY: D. PETERSON
 QUANTITY SHEET 1
 PLOT DATE: 06-OCT-2015
 DRAWN BY: D. KARABEGOVIC
 CHECKED BY: D. PETERSON
 SHEET 6 OF 51

KEY	DATE	BY	REVISION
△	10/05/2015	VAOT	MODIFIED PAY ITEM NO AND QUANTITY.

BRIDGE QUANTITY SHEET 1

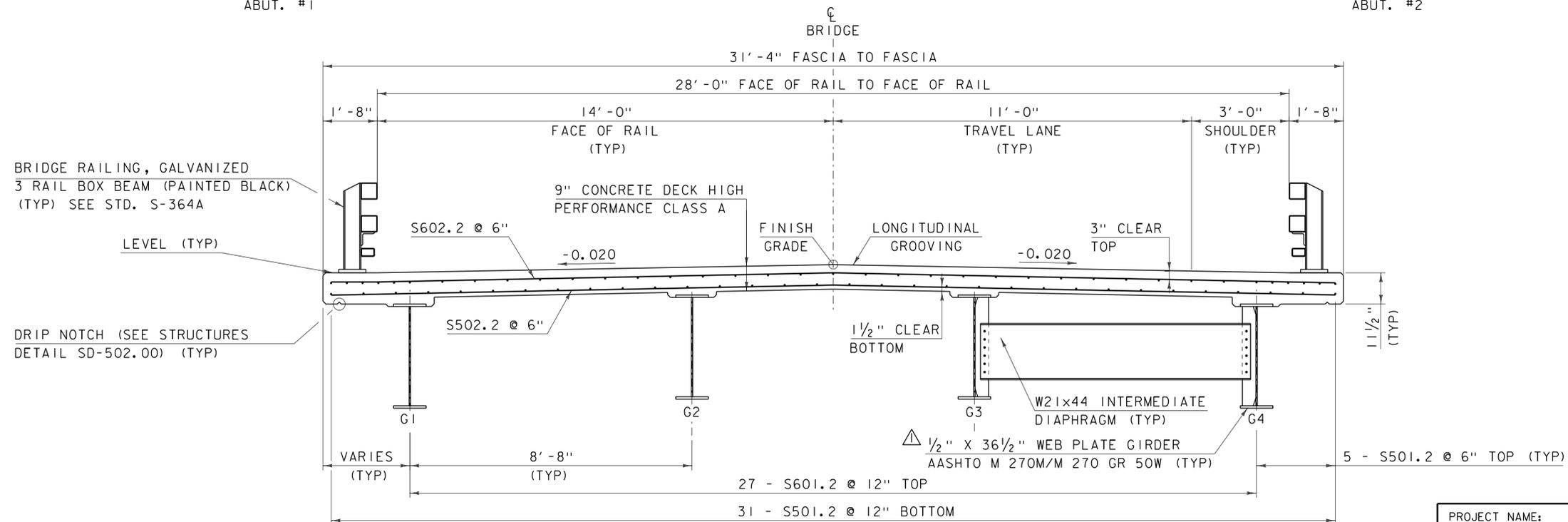
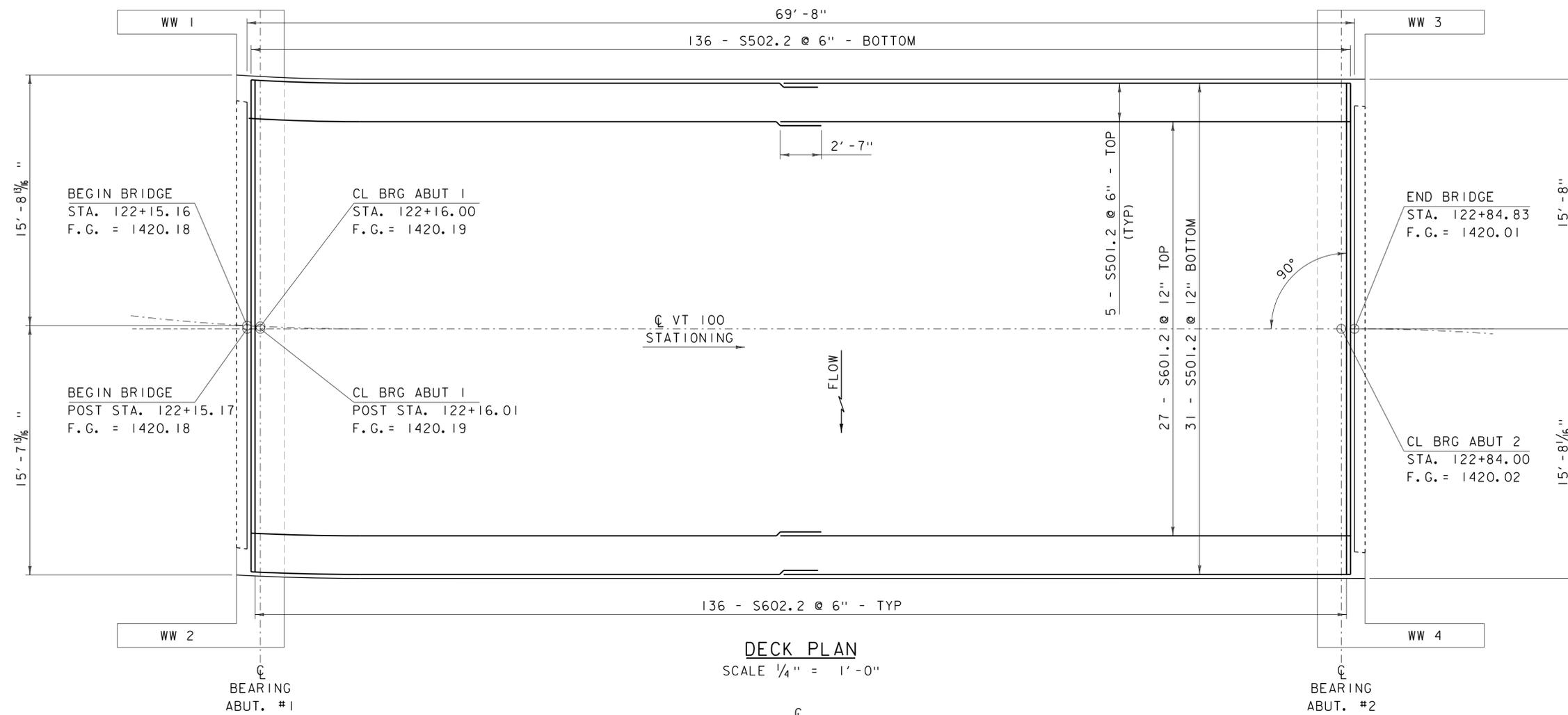
SUMMARY OF BRIDGE QUANTITIES										TOTALS		DESCRIPTIONS				DETAILED SUMMARY OF QUANTITIES			
					APPROACH SLAB #1	APPROACH SLAB #2	SUPERSTRUCTURE	ABUTMENT #1	ABUTMENT #2		BRIDGE TOTAL		UNIT	ITEMS	ITEM NUMBER		QUANTITIES	UNIT	ITEMS
								200	210		410		CY	STRUCTURE EXCAVATION	204.25				
								100	105		205		CY	GRANULAR BACKFILL FOR STRUCTURES	204.30				
							77	22	22		121		CY	CONCRETE, HIGH PERFORMANCE CLASS A	501.33				
					26	26		42	41		135		CY	CONCRETE, HIGH PERFORMANCE CLASS B	501.34				
								0.5	0.5		1		LS	FURNISHING EQUIPMENT FOR DRIVING PILING	504.10				
								385	385		770		LF	STEEL PILING, HP 12 X 74	505.16				
								1	1		2		EACH	DYNAMIC PILE LOADING TEST	505.45				
							44026				44026		LB	STRUCTURAL STEEL, PLATE GIRDER	506.55				
					3075	2990					6065		LB	REINFORCING STEEL, LEVEL I	507.11				
							16889	8270	8205		33364		LB	REINFORCING STEEL, LEVEL II	507.12				
							1				1		LS	SHEAR CONNECTORS (824 - 7/8" x 7")	508.15				
							217				217		SY	LONGITUDINAL DECK GROOVING	509.10				
							5	2.5	2.5		10		GAL	WATER REPELLENT, SILANE	514.10				
							63				63		LF	BRIDGE EXPANSION JOINT, ASPHALTIC PLUG	516.10				
							63				63		LF	JOINT SEALER, HOT POURED	524.11				
							146				146		LF	BRIDGE RAILING, GALVANIZED 3 RAIL BOX BEAM (PAINTED BLACK)	525.335				
								4	4		8		EACH	BEARING DEVICE ASSEMBLY, STEEL REINFORCED ELASTOMERIC PAD	531.17				

PROJECT NAME: WARDSBORO
PROJECT NUMBER: BRF 013-1(15)

FILE NAME: s92b283qs.dgn
PROJECT LEADER: C. CARLSON
DESIGNED BY: D. PETERSON
BRIDGE QUANTITY SHEET

PLOT DATE: 06-OCT-2015
DRAWN BY: D. KARABEGOVIC
CHECKED BY: D. PETERSON
SHEET 9 OF 51

KEY	DATE	BY	REVISION
△	10/05/2015	VAOT	MODIFIED PAY ITEM NO AND QUANTITY.



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.

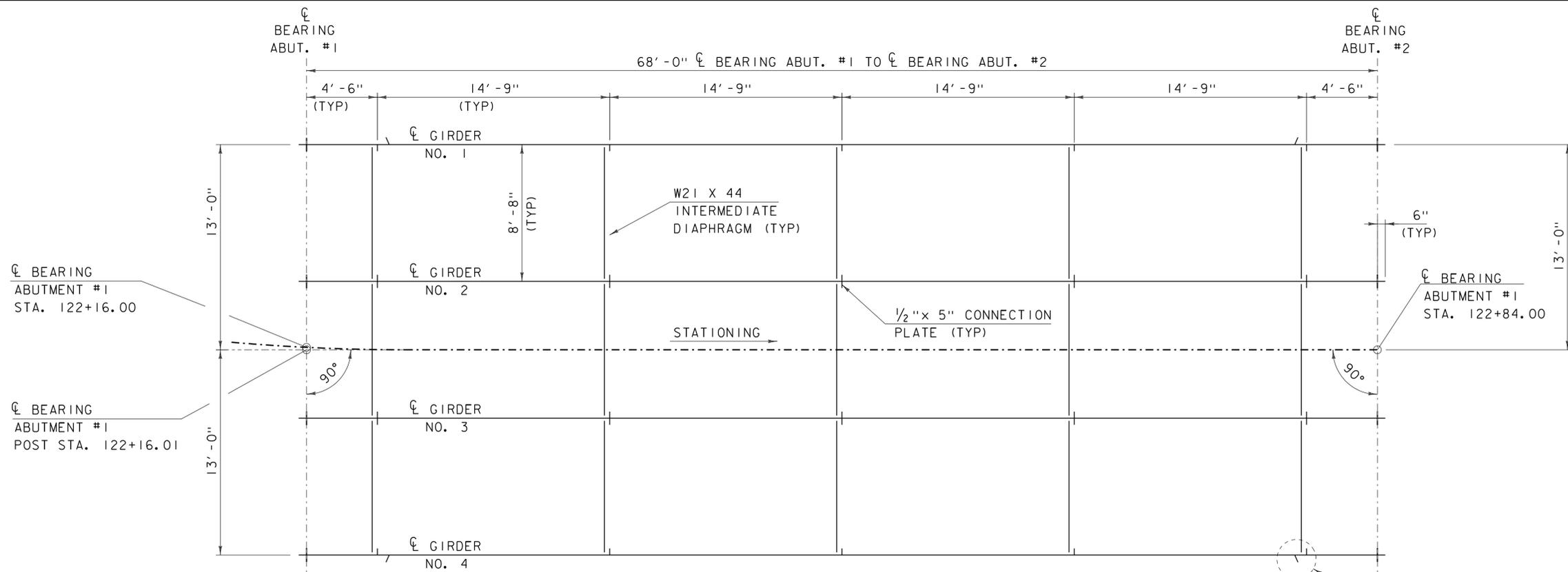
DECK TYPICAL
 SCALE 1/2" = 1'-0"

KEY	DATE	BY	REVISION
▲	10/05/2015	VAOT	MODIFIED ROLLED BEAM TO PLATE GIRDER.

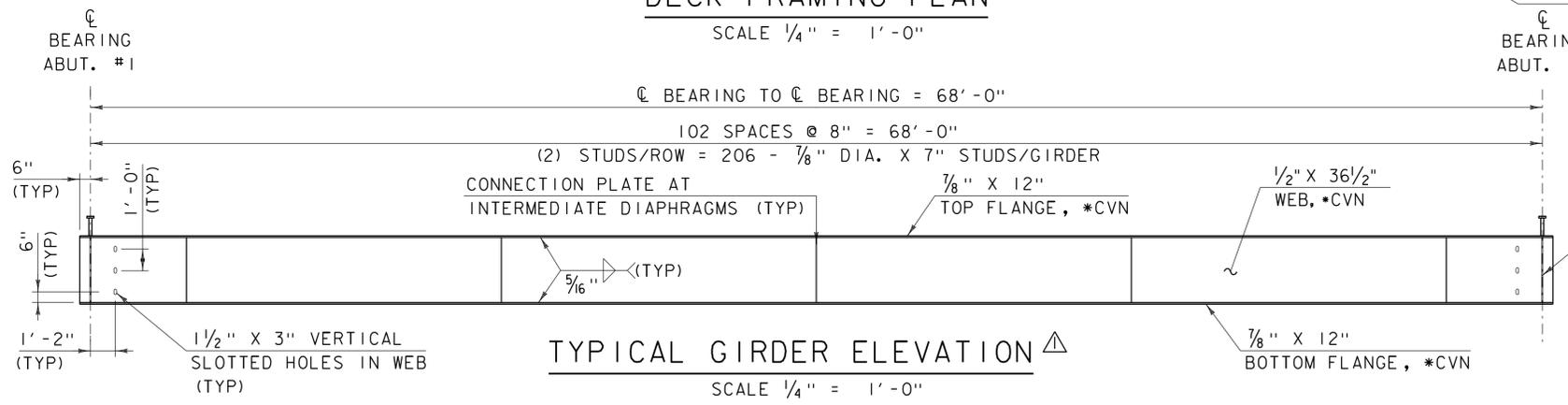
PROJECT NAME: WARDSBORO
 PROJECT NUMBER: BRF 013-1(15)

FILE NAME: s92b283sup.dgn
 PROJECT LEADER: C. CARLSON
 DESIGNED BY: D. PETERSON
 DECK REINFORCING PLAN & TYPICAL

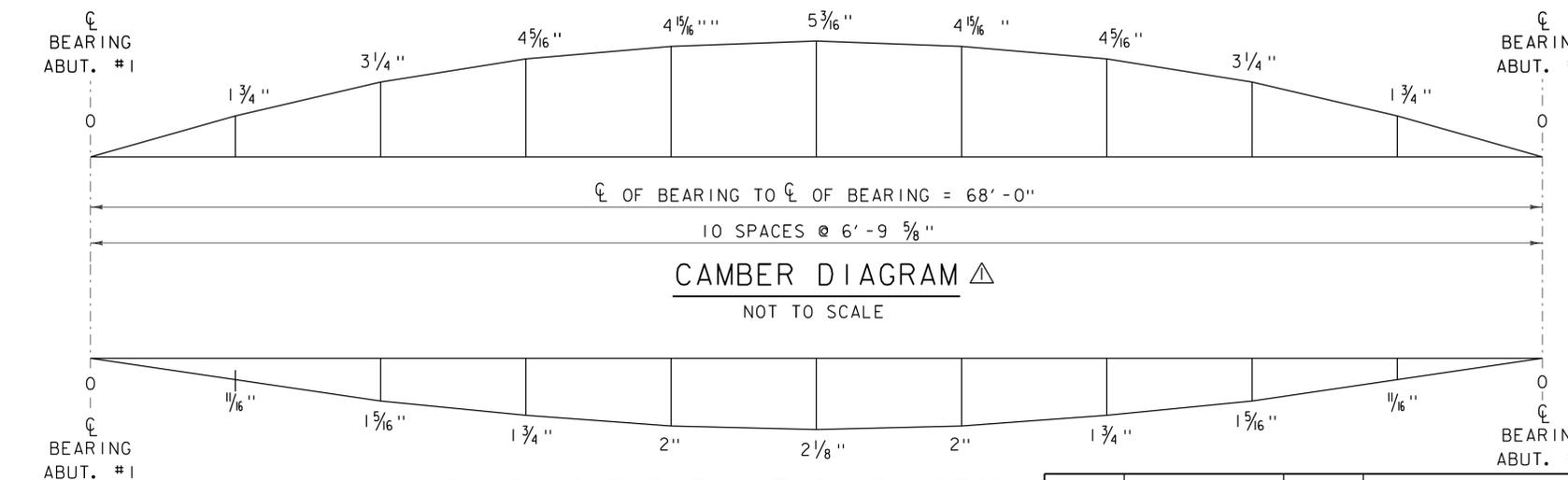
PLOT DATE: 06-OCT-2015
 DRAWN BY: R. PELLETT
 CHECKED BY: D. PETERSON
 SHEET 25 OF 51



DECK FRAMING PLAN △
SCALE 1/4" = 1'-0"



TYPICAL GIRDER ELEVATION △
SCALE 1/4" = 1'-0"



DEAD LOAD DEFLECTION DIAGRAM
NOT TO SCALE

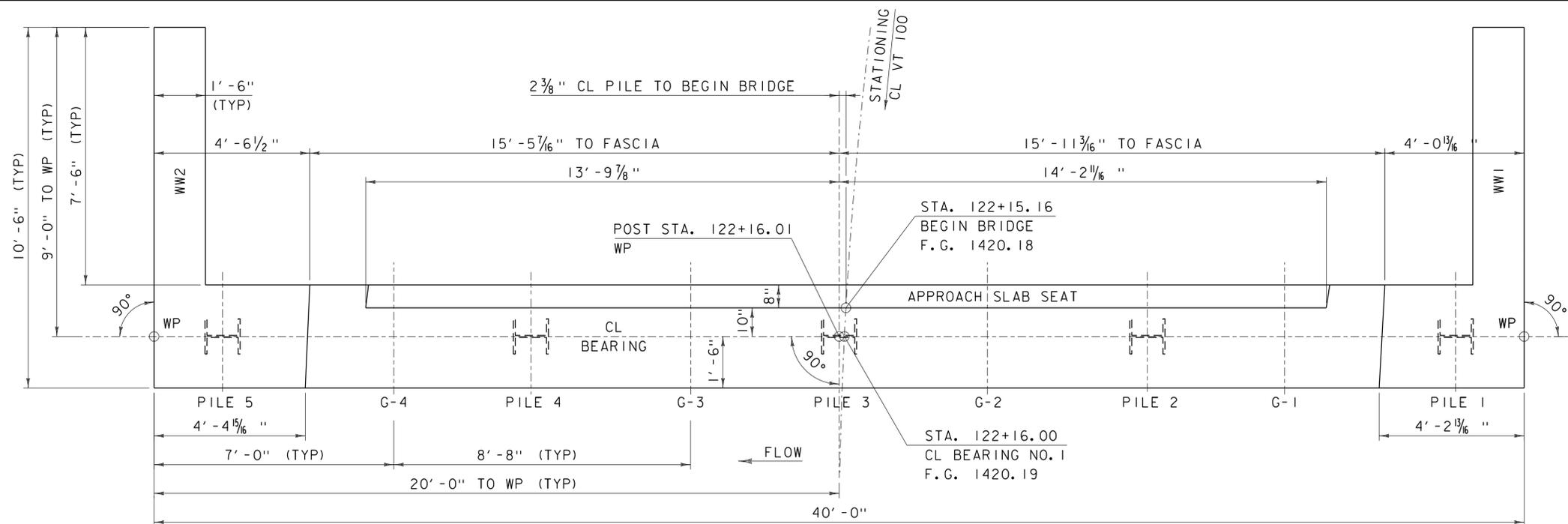
6" DRIP PLATE (TYP)
ALL FOUR CORNERS
SEE SD-601.00

BEARING STIFFENER
3/4" x 5" PLATE EACH
SIDE OF GIRDER
AT CL OF BEARING (TYP)
SEE SD-602.00 FOR
CONNECTION DETAILS

△ NOTE:
*CVN - SHALL MEET CHARPY V-NOTCH REQUIREMENTS
FOR MAIN MEMBERS AS INDICATED IN SECTION 714
OF THE STANDARD SPECIFICATION.
DEAD LOAD DEFLECTION INCLUDES: GIRDER, DIAPHRAGMS,
DECK & BRIDGE RAIL.

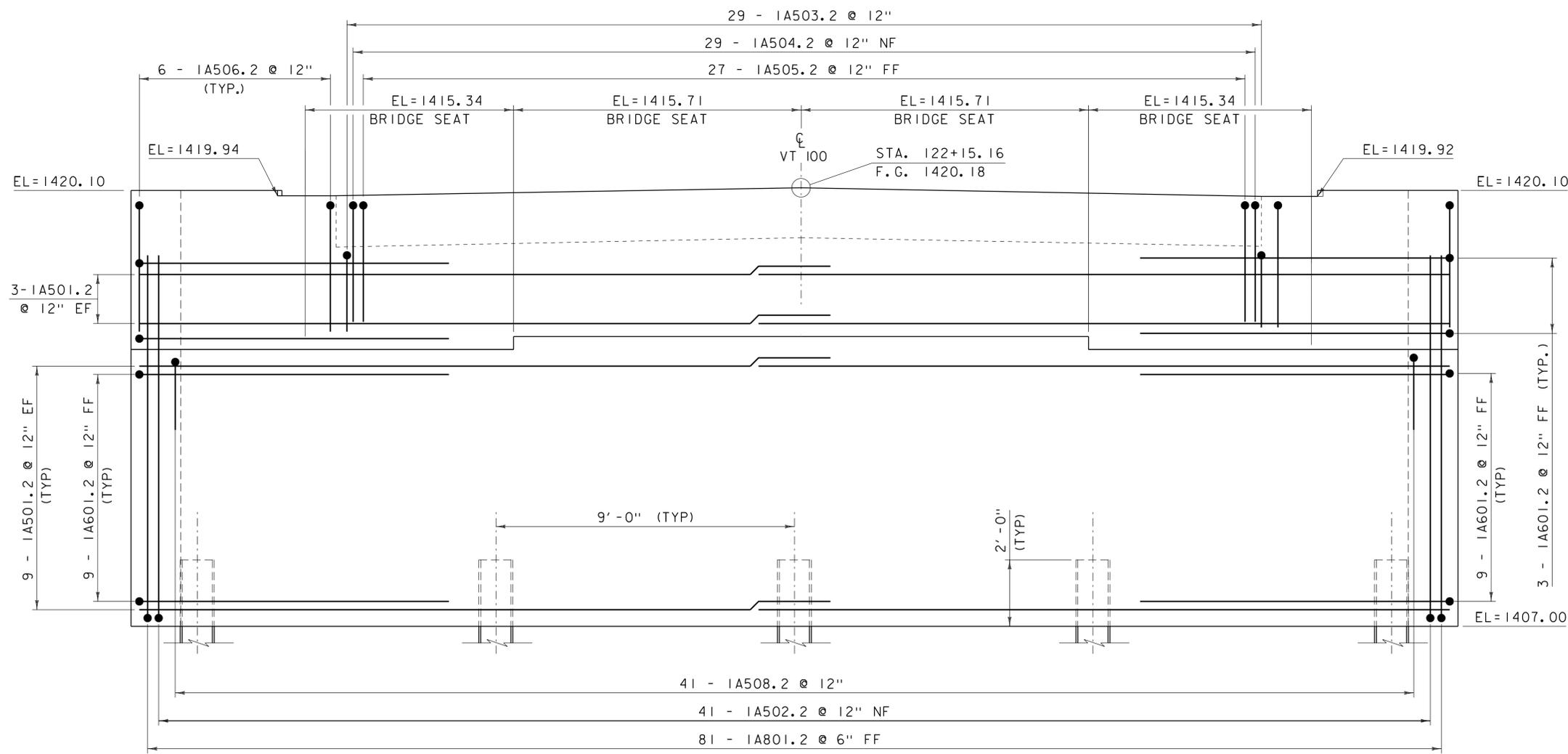
KEY	DATE	BY	REVISION
△	10/05/2015	VAOT	MODIFIED ROLLED BEAM TO PLATE GIRDER.

PROJECT NAME: WARDSBORO	PLOT DATE: 08-OCT-2015
PROJECT NUMBER: BRF 013-1(15)	DRAWN BY: D. KARABEGOVIC
FILE NAME: s92b283sup.dgn	CHECKED BY: D. PETERSON
PROJECT LEADER: C. CARLSON	SHEET 26 OF 51
DESIGNED BY: D. PETERSON	



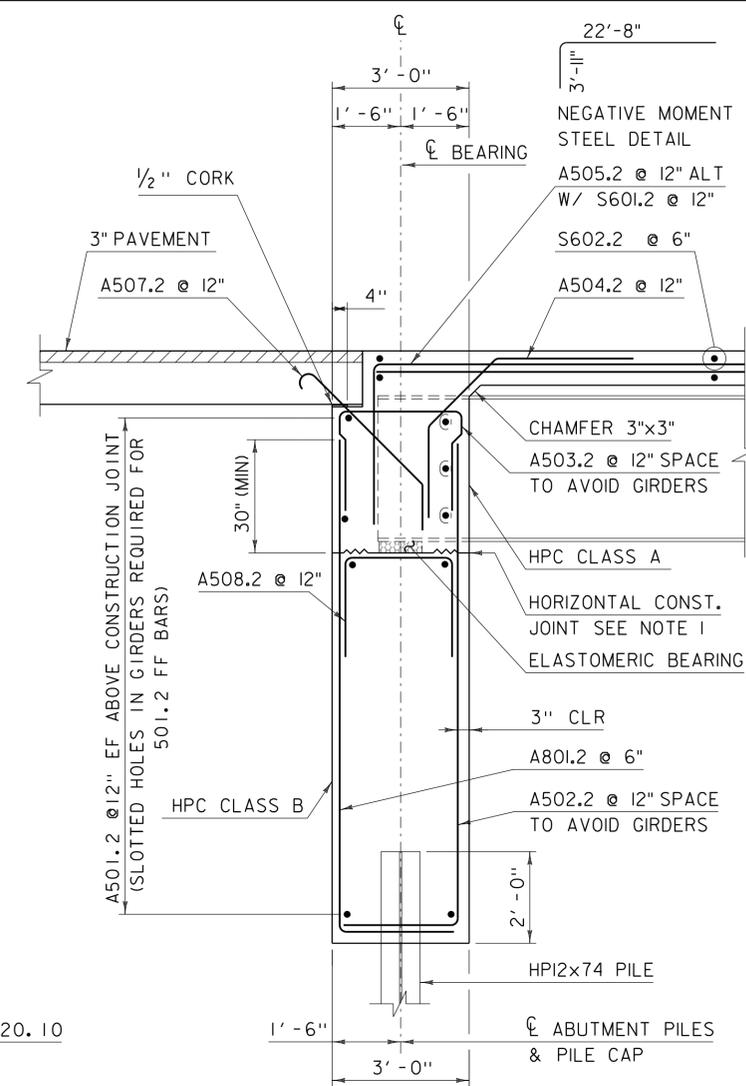
INTEGRAL ABUTMENT NO. 1 PLAN

SCALE 1/2" = 1'-0"



INTEGRAL ABUTMENT NO. 1 ELEVATION

SCALE 1/2" = 1'-0"



ABUTMENT 1 & 2 TYPICAL

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

- HORIZONTAL CONSTRUCTION JOINT SHALL BE ROUGHENED AS SHOWN IN STRUCTURES DETAIL SHEET SD-501.00. SURFACE SHALL BE ROUGHENED TO WITHIN 3" OF EACH FACE OF CONCRETE AND WITHIN 3" OF ELASTOMERIC BEARING PADS. SURFACE UNDER EACH BEARING PAD SHALL REMAIN SMOOTH.
- SEE STRUCTURES DETAIL SHEET SD-502.00 FOR BRIDGE PLAQUE DETAILS.

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.

KEY	DATE	BY	REVISION
▲	10/05/2015	VAOT	MODIFIED ROLLED BEAM TO PLATE GIRDER.

PROJECT NAME:	WARDSBORO	FILE NAME:	s92b283sub.dgn	PLOT DATE:	06-OCT-2015
PROJECT NUMBER:	BRF 013-1(15)	PROJECT LEADER:	C. CARLSON	DRAWN BY:	R. PELLETT
		DESIGNED BY:	D. PETERSON	CHECKED BY:	D. PETERSON
		ABUTMENT #1 PLAN & ELEVATION		SHEET	28 OF 51

