



REVIEW NOTES

ROCHESTER ER BRF 0162(18) – BRIDGE NO. 19

STAY-IN-PLACE DECK FORM SUBMITTAL

April 8, 2014

RE: Stay-in-Place Deck Form Submittal received from Schultz Construction on 4/7/2014.

VHB Project No.: 57517.00

These notes accompany the review of the Stay-in-Place Deck Form Submittal reviewed by VHB on 4/8/2014.

General Notes:

1. No additional comments on Stay-in-Place Deck Form Submittal.

SUBMITTAL REVIEW	
<input checked="" type="checkbox"/>	Reviewed and approved but only for conformance to the Construction Contract Documents.
<input type="checkbox"/>	Revise and Resubmit
<p>Corrections or comments made during this review do not relieve the Contractor or his Designer from compliance with professional requirements or for responsibility for the adequacy of the submittal information. This check is only for review of general conformance with industry standards and general compliance with the information given in the Contract Documents. VHB has not conducted a detailed review of the submittal and has not performed calculations or assessed the adequacy of loads, design criteria, quantities, dimensions, etc. Approval of the submittal does not constitute VHB's approval of any construction means, methods or techniques. These remain the responsibility of the Contractor.</p>	
	<p>Vanasse Hangen Brustlin, Inc. 7056 US Route 7 • Post Office Box 120 North Ferrisburgh, VT 05473 802.425.7788</p>
	<p>Job Number: <u>57517.00</u> Reviewed By: <u>E.A. Fiala</u> Date: <u>April 8, 2014</u></p>

This review is for sheets 1 through 4 of the attached submittal from Schultz Construction on 4/7/2014.

Vermont Agency of Transportation

RECEIVED

ON: **April 7, 2014**

and Checked for

CONFORMANCE

BY: Jennifer Fitch DATE: 04/08/2014

BRIDGE DECK DESIGN CALCULATIONS

Date: 4/2/2014

TERMS:

d= Dead-load deflection, inches.
 E= 29,500,000 psi
 Fs= Form stress, psi
 I = Moment of inertia, in⁴ / ft of width
 L = Design span ft.
 S = Section modulus, in³ / ft of width
 W = Total uniform load, psf
 Wd= Total uniform load - 55 psf construction load
 Max. Fs= 36,000 psi Grade 50&80 Steel; 29,000 psi Grade 40 Steel
 Max. d= L/180 or 1/2" which ever is less

LOADING:

Weight of Slab = Design Slab x 12.5#/inch of slab
 Extra Concrete Valleys = xtra inches x 12#/inch of slab
 Construction load = 50 psf
 Form Weight = per form chosen

DESIGN SPAN:

Girder spacing - flange width - 2"

PROJECT:

Contractor: Schultz
 Structure: Bridge No. 19

State: VT
 County: Windsor

DESIGN INFO:

Design Slab (in.): 9.00 C/C Girders (in.): 83.00 Flange Width (in.): 16.00

	C/C	Flange	2"	Design Span
Design Span:	83.00	16.00	2"	65.00

	Slab	12.5	55	Weight	Stress Load (W)	Deflection Load (Wd)
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Loading: 9.00 12.5 55 1.89

Extra (in.)	12
0.00	12

169.39 114.39

Supplier	Grade	Type	Gage/Thk	S	I	Design Span (in.)	L	Weight	Extra (in.)
SIP	80	2x8.5	22	0.260	0.319	65.00	5.42	1.89	0.00

Stress Calculation:

$$F_s = (1.5)(W)(L^2) / S$$

Fs	1.5	W	L ²	S
28672.79	1.5	169.39	29.34	0.260

Deflection Calculation:

$$d = [(5)(Wd)(L^4) / 384 / E / I] * 1728$$

$$\text{Max. } d = L/180 \text{ or } \leq 1/2"$$

L/180

0.361

d	5	Wd	L ⁴	384	1728	E	I
0.235	5	114.39	860.85	384	1728	29500000	0.319

Weld Calculation:

Terms:

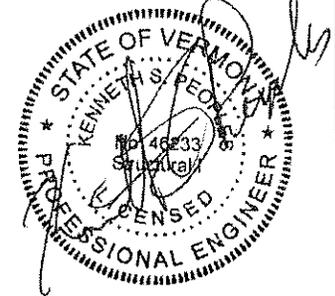
Fu = 55,000 psi Weld Yield
 Fv = .27 x 55,000 psi Allowable
 t = 1/8" Standard Weld Thickness
 L1 = 2" Weld Length (1 1/2" min. AASHTO)
 s = 15" Weld Spacing
 $R = [(W)(s) / 12] * (L / 2)$

14850
0.125
2
15
573.46

$$L1 \text{ (min.)} = (\text{Sq. Root } [(R^2) + (2R)^2]) / (.707)(t)(Fv)$$

0.98

Kenneth S. Peoples



Date: April 3, 2014

VT PROFESSIONAL ENGINEER
 NO. 46233



Lehigh Valley Technical Associates, Inc.

Consulting Engineering and Drafting Services
 1584 Weaversville Road
 Northampton, PA 18067-9039
 www.LVTA.net

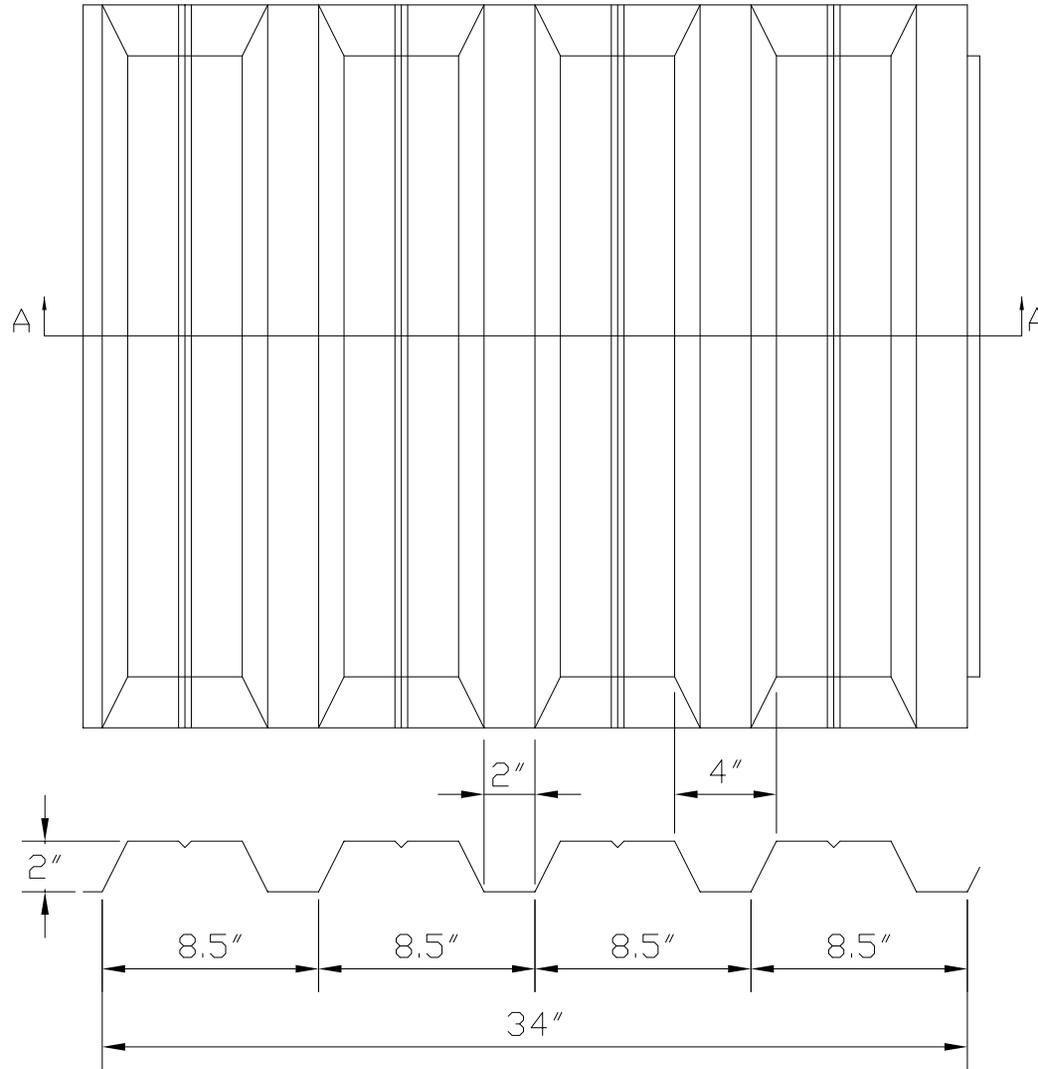
Phone: 610-262-6345
 Fax: 610-262-8188
 email: info@lvtwa.net

SUPPORT ANGLE DESIGN: (Grade 40 Steel)

Yield Strength (Fy):	40,000 psi			
Working Stress (0.725*Fy):	29,000 psi			
Gage:	12			
Material Thickness (Ta):	0.1003			
<hr/>				
Moment Arm (e):	1" Min. Brg. - Material Thickness (Ta)			
	e:	0.8997		
<hr/>				
Design Length (D):	C/C - Flange - 2(Ta)			
	D:	83.00	16.000	0.2006 66.7994
<hr/>				
Load (P):	(Ws)(D / 12 / 2)			
	P:	169.39	2.78	471.46
<hr/>				
Moment (M):	(P)(e)			
	M:	471.46	0.8997	424.18
<hr/>				
Section Modulus (S):	(12)(Ta^2) / 6			
	S:	12	0.01006	6 0.02012018
<hr/>				
Actual Stress (As):	M / S			
	As:	424.18	0.02012	21,082.15

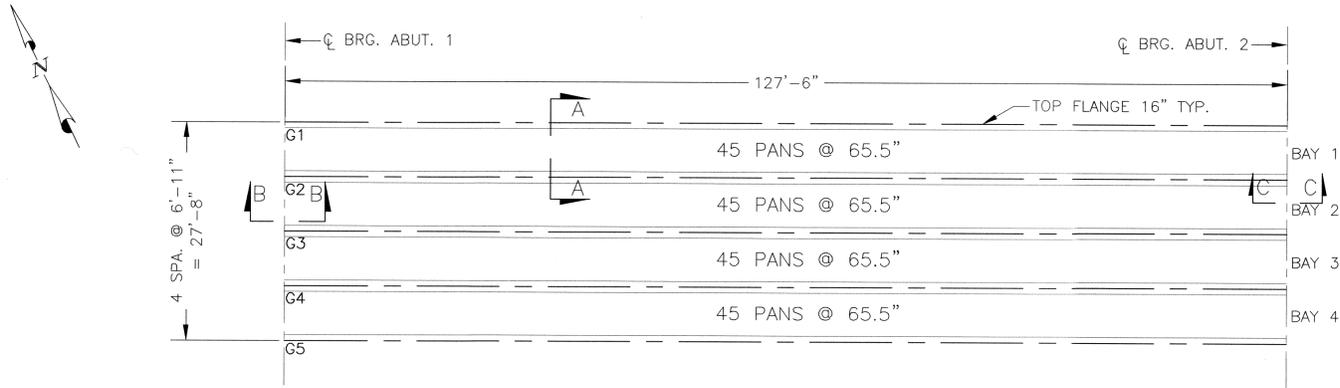
S.I.P., INC. OF DELAWARE
 2204 CHESTNUT ST.,
 GADSDEN, AL 35904
 (256) 546-5858 FAX(256) 546-5859

FORM SIZE 2" X 8.5"
 GALV. COATING : G-165



METAL THICKNESS IN INCHES	STRUCTURAL PROPERTIES I=IN ⁴ S-IN ³	WEIGHT P.S.F.
22GA.	S= .260 I= .319	1.89
20GA.	S= .308 I= .385	2.22
.0359	S= .317 I= .396	2.31
.040	S= .357 I= .442	2.45
.045	S= .405 I= .498	2.77
.050	S= .450 I= .553	3.05
.055	S= .495 I= .609	3.31
.060	S= .539 I= .665	3.60
.065	S= .583 I= .721	3.89

SECTION "A-A"



BRIDGE DECK PLAN

SCALE 3/32" = 1'-0"

WARNING:
EACH BRIDGE DECK FORM SHEET MUST BE FASTENED IMMEDIATELY UPON PLACEMENT TO AVOID HAZARD THAT CAN RESULT FROM LATERAL MOVEMENT OR SUDDEN UPLIFT.

DESIGN NOTES:

- MATERIAL IS PRODUCED BY: S.I.P., INC. OF DELAWARE, 2204 CHESTNUT ST., GADSDEN, AL 35904, PHONE (256) 546-5858.
- BRIDGE DECK FORM AND ACCESSORIES SHALL CONFORM TO ASTM A653/A653M WITH COATING DESIGNATION G185, AND GRADES LISTED:
DECK FORMS GA 22 = GRADE 80
ALL ACCESSORIES = GRADE 40
- FABRICATION SHALL BE IN CONFORMANCE WITH ASTM A924/A924M.
CALVANIZED COATING CONFORMS TO LATEST REVISION OF ASTM SPECIFICATION A924M COATING CLASS G165.
- ALL FASTENERS TO BE .0005 CADMIUM PLATED COATINGS.
- ALL FORMS AND THEIR SUPPORTS HAVE BEEN DESIGNED TO CARRY THE DECK CONCRETE PLUS 55psf FOR CONSTRUCTION LOADS.
- ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2011 EDITION OF THE VERMONT AGENCY OF TRANSPORTATION SPECIFICATIONS

ERECTION NOTES:

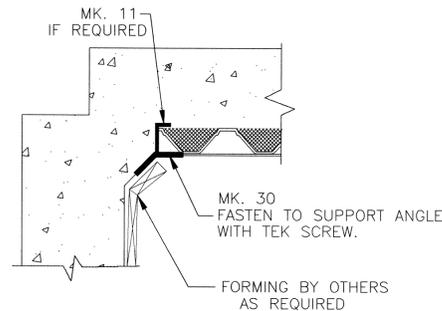
- BRIDGE DECK FORM AND ACCESSORY MATERIALS NOT PROMPTLY ERECTED SHALL BE STORED OFF THE GROUND WITH ONE END ELEVATED FOR DRAINAGE.
- GENERAL CONTRACTOR SHALL TAKE GRADES ON BOTH SIDES OF BEAMS AT A MAXIMUM OF 12'-0" INTERVALS SO THAT DECK ERECTOR CAN ADJUST ELEVATION OF SUPPORTS TO FOLLOW FINISHED ROADWAY PROFILE (PLUS OR MINUS 1/4").
- PRIOR TO PLACEMENT OF FORMS, THE ENGINEER OR CONTRACTOR SHALL ADVISE ERECTOR OF DIRECTION OF POUR. ERECTOR WILL PLACE FORM SHEETS IN OPPOSITE DIRECTION TO MINIMIZE DIFFERENTIAL DEFLECTION.
- SHEETS SHALL BEAR A MINIMUM OF 1" ON SUPPORTS.
- EACH SHEET MUST BE FASTENED TO SUPPORTS IMMEDIATELY UPON PLACEMENT TO AVOID HAZARD THAT COULD RESULT FROM HORIZONTAL MOVEMENT OR SUDDEN UPLIFT.
- ALL CUTTING OF FORM SHEETS AND ACCESSORY ITEMS SHALL BE DONE BY SAW, SHEAR OR OTHER APPROVED METHODS.
- CAULKING OR TAPING, IF REQUIRED, IS TO BE BY OTHERS.
- CLOSURE/END DAM MATERIALS ARE NOT SELF-SUPPORTING. ANY ADDITIONAL SUPPORT IS TO BE BY OTHERS.
- ALL CUTTING, FORMING AND SHORING OF DECK PANS AT SCUPPERS/DRAIN PIPES IS TO BE BY OTHERS.

MISCELLANEOUS NOTES:

- THE GENERAL CONTRACTOR SHALL VERIFY ALL DIMENSIONS.
- CARE SHALL BE TAKEN TO AVOID DAMAGING THE INSTALLED FORM FROM EITHER STACKING OF MATERIALS, DROPPING EQUIPMENT OR HEAVY CONSTRUCTION TRAFFIC. DAMAGED FORMS TO BE REPLACED BY GENERAL CONTRACTOR, AS DIRECTED BY ENGINEER AT NO ADDITIONAL COST TO CITY/STATE.
- ANY ADDITIONAL CONCRETE REQUIRED DUE TO USE OF FORMS SHALL BE AT THE GENERAL CONTRACTOR'S EXPENSE.
- CALCIUM CHLORIDE (OR ANY ADMIXTURE CONTAINING SALTS) SHALL NOT BE USED IN THE CONCRETE PLACED ON THE FORMS.
- ERECTION OF FORMS SHALL BE DONE UNDER DIRECT SUPERVISION OF A FOREMAN SPECIALLY TRAINED FOR THIS TYPE OF WORK.
- DO NOT DROP CONCRETE FROM A HEIGHT GREATER THAN 10" ABOVE THE FORMS.

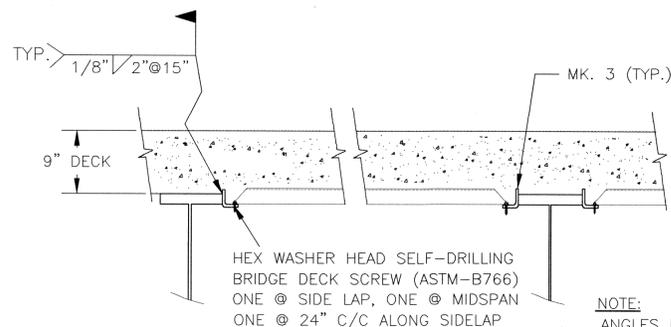
BRIDGE DECK MATERIAL LIST				
TYPE	GAGE	QTY.	LENGTH (IN.)	SQUARE
2" X 8.5"	22	180	65.5	27.84

SHEAR STUDS		
QTY.	DIAMETER	LENGTH
1030	7/8"	7"
1030	TOTAL STUDS	



SECTION B-B

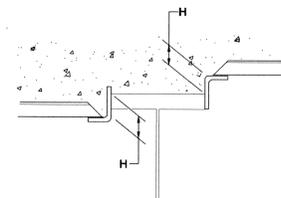
DETAIL AT ABUTMENT 1
NO SCALE



SECTION A-A

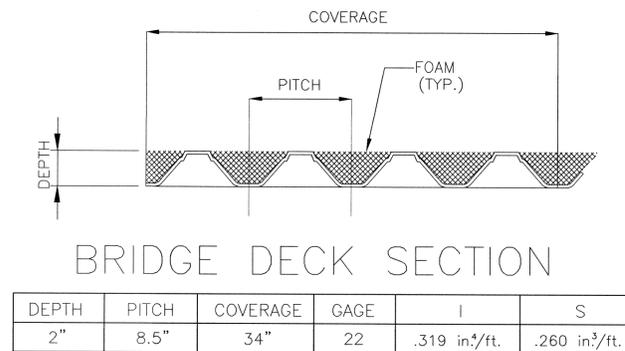
CONNECTION DETAIL
NO SCALE

NOTE:
ANGLES MAY BE USED IN THE "L" OR "7" POSITION AS REQUIRED.



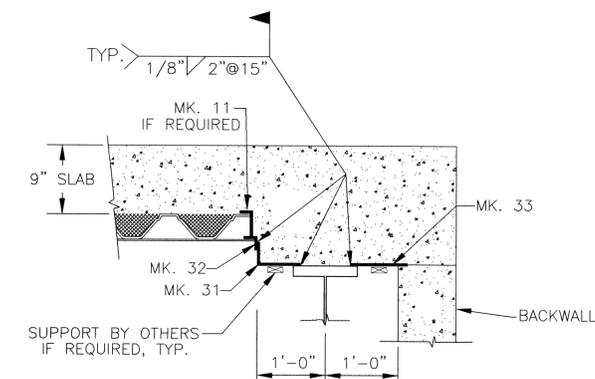
CONTRACTOR SHALL SURVEY HAUNCH 'H' FROM TOP OF STRINGER FLANGE TO TOP OF ANGLE SEAT. THIS DISTANCE SHALL BE MARKED ON THE TOP FLANGE @ 12' INTERVALS ON EACH EDGE OF BEAM.

NO SCALE



BRIDGE DECK SECTION

DEPTH	PITCH	COVERAGE	GAGE	I	S
2"	8.5"	34"	22	.319 in ³ /ft.	.260 in ³ /ft.



SECTION C-C

DETAIL AT ABUTMENT 2
NO SCALE

TRANSMITTAL RECORD		
NO.	DATE	SENT FOR
1	4/3/14	APPROVAL

BRIDGEDECK ACCESSORIES							
ACCESSORY QUANTITIES BASED ON LIN. FTG. REQUIRED. CUT-OFFS MUST BE UTILIZED.							
1,300 HEX WASHER HEAD SELF-DRILLING BRIDGE DECK SCREW (ASTM-B766)							
QTY.	GIRTH	LGTH.	MARK	DESCRIPTION	ANGLE	GAGE	
88	5"	144"	3	3" X 2" SUPPORT ANGLE	90	12	
4	3"	120"	11	2" X 1" CLOSURE ANGLE	90	20	
4	6"	120"	30	3" X 3" END DAM	135	14	
4	14"	120"	31	8" X 6" END DAM	90	14	
4	7"	120"	32	4" X 3" END DAM	90	14	
4	10"	120"	33	10" FLAT END DAM	---	14	

Kenneth S. Peoples

 Date: April 3, 2014
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 Phone: 610-282-2345
 Fax: 610-282-0188
 email: ksp@lvt.net

RECORD OF REVISIONS		
REV.	DATE	DESCRIPTION

OWNER: STATE OF VERMONT
AGENCY OF TRANSPORTATION

CONTRACTOR: SCHULTZ CONSTRUCTION, INC.

PROJECT: VT ROUTE 73
(RURAL MAJOR COLLECTOR)
BRIDGE NO. 19

LOCATION: ROCHESTER, WINDSOR CO., VT

J&B WELDING, INC.
 409 HERCULES DRIVE STOCKERTOWN, PA. 18083
 (610) 813-2577 FAX. (610) 813-2578

DATE: 4/1/14 APPROVED BY: JJJ CHECKED BY: JJJ DRAWN BY: CML

SCALE: 3/32" = 1' J&B JOB No: 1384

PG. 1 OF 1 PROJECT No: ER BRF 0162(18)