

# MILLER CONSTRUCTION, INC.

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## TRANSMITTAL

TO: Jennifer Fitch, PE Project Manager Vermont Agency of Transportation	DATE	PROJECT NO.
	9/26/2014	Brookfield BRF FLBR (2)

XX WE ENCLOSE THE FOLLOWING:

\_\_\_\_\_ UNDER SEPARATE COVER WE ARE SENDING THE FOLLOWING

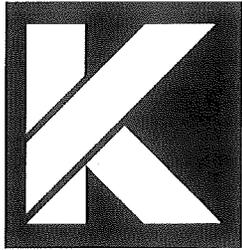
COPIES	NUMBER	DESCRIPTION	CODE
1		FRP Fabrication NCR 11 - Pontoon 7 - Stiffener Plates	H

CODE:

- A FOR INITIAL APPROVAL
- B FOR FINAL APPROVAL
- C APPROVED AS NOTED-RESUBMISSION REQUIRED
- D APPROVED AS NOTED-RESUBMISSION NOT REQUIRED
- E DISAPPROVED-RESUBMIT
- F QUOTATION REQUESTED
- G APPROVED

- H FOR APPROVAL
- I AS REQUESTED OR REQUIRED
- J FOR USE IN ERECTION
- K LETTER FOLLOWS
- L FOR FIELD CHECK
- M FOR YOUR USE

BY: 



**KENWAY  
CORPORATION**

September 22, 2014

Mr. Paul Holloway  
Miller Construction, Inc  
PO Box 86  
Windsor, VT 05089

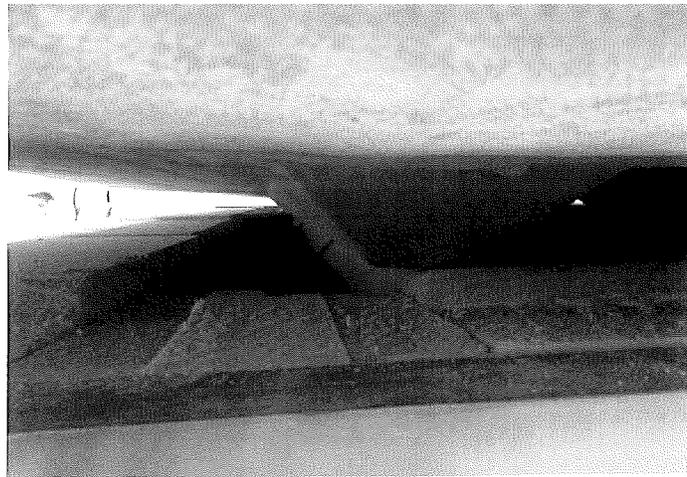
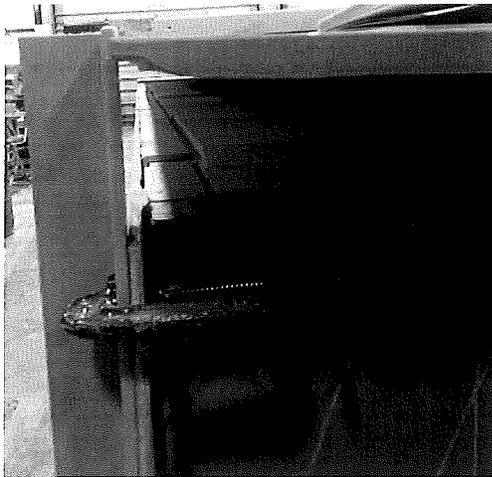
**Brookfield BRF FLBR (2)**

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Dear Mr. Holloway:

Background

On September 26, Kenway identified an error in the stiffener location of top plate 7b. The technician placing the stiffener performs measured from the wrong side of the panel resulting in the stiffeners being shifted 6 in. from the intended location.



The figure on the left shows the top panel lined up with the outside surface of the vertical wall. The figure on the right shows the center of the stiffener landing on the edge of the beveled foam blocks. The length, width, and height of each stiffener is correct.

Summary

Kenway plans to cut 6 in. off the edge of the foam blocks that interfere with the stiffener at the same 45 degree bevel. These pieces will be placed on the opposite side of the recess to restore the gap in the foam to the intended width.

Shown below are two sets of calculations. The first set presents the original buckling calculation for the top plate with an unsupported width,  $b$ , of 30.25 in. The second set shows the same calculation with the value for  $b$  increased by 6 in. for a total of 36.55 in. The buckling resistance is still satisfied even with the shifted stiffeners.

Top Plate Buckling (evaluated as a plate in compression - Strength V)

$$N_u^c \leq \lambda \phi_c N_n^c \quad N_n^c = F^{cr} t \quad F^{cr} = \left(\frac{t}{b}\right)^2 \frac{\pi^2}{6} \left( (4k_{cr} - 3) \sqrt{E_L E_T} + k_{cr} E_T \nu_{LT} + 2k_{cr} G_{LT} \right)$$

$M_u =$	699	kip-ft	(Sheet 37)	$y =$	15.10	in	(dist. from N.A.)
$\sigma =$	1.21	psi	(ave. stress)	$I =$	104,251	in <sup>4</sup>	
$F^{cr} =$	2.82	ksi		$E_L = E_T =$	3.18	Msi	
$t =$	0.492	in		$G_{LT} =$	0.60	Msi	
$\lambda =$	0.90			$\nu_{LT} =$	0.20		
$\phi =$	0.70			$N_u = \sigma t$	$b = 30.25$	in	(unsupported width)
				$k_{cr} =$	1.1		(1.0 (pin) -1.3 (fixed))
$\lambda \phi_c N_n =$	0.87	kip/in	>	$N_u =$	0.60	kip/in	

Top Plate Buckling (evaluated as a plate in compression - Strength V)

$$N_u^c \leq \lambda \phi_c N_n^c \quad N_n^c = F^{cr} t \quad F^{cr} = \left(\frac{t}{b}\right)^2 \frac{\pi^2}{6} \left( (4k_{cr} - 3) \sqrt{E_L E_T} + k_{cr} E_T \nu_{LT} + 2k_{cr} G_{LT} \right)$$

$M_u =$	699	kip-ft	(Sheet 37)	$y =$	15.10	in	(dist. from N.A.)
$\sigma =$	1.21	psi	(ave. stress)	$I =$	104,251	in <sup>4</sup>	
$F^{cr} =$	1.96	ksi		$E_L = E_T =$	3.18	Msi	
$t =$	0.492	in		$G_{LT} =$	0.60	Msi	
$\lambda =$	0.90			$\nu_{LT} =$	0.20		
$\phi =$	0.70			$N_u = \sigma t$	$b = 36.25$	in	(unsupported width)
				$k_{cr} =$	1.1		(1.0 (pin) -1.3 (fixed))
$\lambda \phi_c N_n =$	0.61	kip/in	>	$N_u =$	0.60	kip/in	

Sincerely,

*Jacob Marquis*

Jacob Marquis, P.E.  
Senior Project Engineer