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October 31, 1996

TO: All Architectural Reps. & Fabral Salesmen
FROM: M. W. Croucher
SUBJECT: US Army Corps of Engineers Stand'N Seam Approval & Competitive Listing

Attached is a copy of our Corps of Engineers approval of Stand'N Seam and the final, updated list of all the approved systems from the Corps of Engineers. This is the final list because the Corps of Engineers is no longer reviewing and approving the test reports. This change was made because they now specify a "standard" ASTM test procedure, ASTM E 1592, instead of their own test procedure. These tests are virtually identical since they were both based on the same ASTM committee work. Also included is a summary of Fabral's ASTM E 1592 tests including our latest test of .040" aluminum, 16" wide Stand'N Seam.

Note that there now are several aluminum approvals, but all of them are for .040" aluminum, except for our .032" Stand'N Seam 16" wide. This obviously makes aluminum Stand'N Seam very cost competitive. To summarize the aluminum approvals are:

<u>company</u>	<u>profile</u>	<u>width</u>	<u>thickness</u>	<u>load @ 5'</u>	<u>load @ 2'-6"</u>
Fabral	Stand'N Seam	16"	.032	48.48	66.67
Fabral	Stand'N Seam	16"	.040	66.67	82.42
M&E	Zip Rib	12"	.040	66.7	115.2
Atas	MRD110	11"	.040	44.12	63.03
Morin Corp.	SSR-16	16"	.040	57.6	93.9

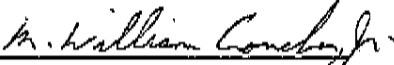
Our .040" aluminum test is not part of the Corps summary because it was tested after they stopped reviewing test reports in Washington. The full test report is available from the Engineering Department. The design value for the 2'-6" test is a conservatively low number because we were not able to fail the panels during this test. The panels got up to 136 psf load without failing and we couldn't get the air pressure any higher due to the plastic membrane ripping.

Our 24 gage, 16" wide steel Stand'N Seam panel remains the strongest panel in the listing when comparing similar gage and width panels of our competition. Of the aluminum competitors above, only Morin has a steel panel tested and their allowable design loads are much less than ours. A comparison of some of the other 16" wide, 24 gage panels is as follows:

<u>company</u>	<u>profile</u>	<u>width</u>	<u>gage</u>	<u>load @ 5'</u>	<u>load @ 2'-6"</u>
Fabral	Stand'N Seam	16"	24	69.70	95.76
Morin Corp.	SSR-16	16"	24	27.3	51.5
CECO	CRP-16	16"	24	38.8	66.8
MBCI	BattenLok	16	24	31.0	43.3-70.1*
NCI	SS216(MBCD)	16	24	31.00	43.3-70.1*
Steelex	264FL	16	24	40.3	69.3
AEP-Span	Span-Lok	16	24	44.90	72.64
Berridge	Zee Lock	16	24	55.20	69.70*

Note: "*" means the panels were reinforced after failure and the test continued.

As you can see, Stand'N Seam is the strongest panel available!


M. William Croucher, Jr. P.E.

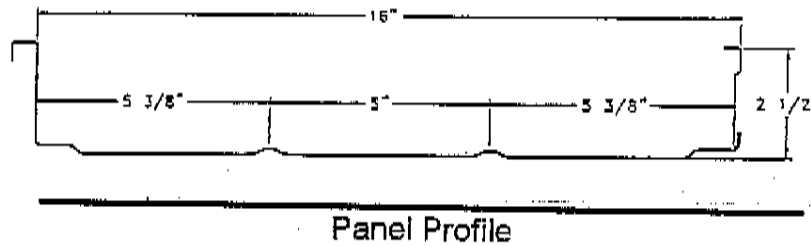
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CC: E. Erb
G. Gambla
L. Reese
D. Keener

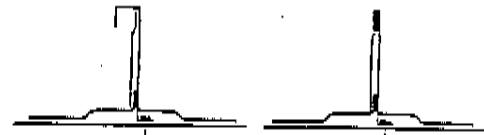
FABRAL

Stand'N Seam Roof System

ASTM E 1592 & CEGS-07416 Test Summary



1-Piece UL 90 Clip
 3" long 18 ga. Stainless Steel
 Use 2 - #12 SDST low profile screws



Seams (before and after seaming)

TEST RESULTS SUMMARY

panel span	panel width	panel thickness and material	ultimate load at failure	Wind Uplift Design Loads (psf) (Based on CEGS-07416)	
				deformation (1.30 safety factor)	failure (1.65 safety factor)
5'-0" 2'-6"	16"	24 ga. steel	115 psf	88.46 psf	69.70 psf
			158 psf	121.53 psf	95.76 psf
5'-0"	16"	22 ga. steel	145 psf	111.54 psf	87.88 psf
5'-0" 2'-6"	16"	0.032" aluminum	80 psf	61.54 psf	48.48 psf
			110 psf	84.62 psf	66.67 psf
5'-0" 2'-6"	16"	0.040" aluminum	110 psf	84.62 psf	66.67 psf
			>136 psf	104.62 psf	82.42 psf

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A-074



DEPARTMENT OF THE ARMY

U.S. Army Corps of Engineers
WASHINGTON, D.C. 20314-1000REPLY TO
ATTENTION OF:

CEMP-ET (1110)

12 January 1994

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Certification of FABRAL Stand'N Seam Roof System for
Use on Military Construction Projects

1. Reference CECS-07416, Standing Seam Metal Roof System (October 1991).
2. As required in the referenced specification, each standing seam metal roof system to be used on a military construction project must be tested in accordance with specified requirements and test procedures and results submitted for acceptance. Once a system has been approved, it is qualified for use on other projects as long as the system remains unchanged.
3. FABRAL-Alcan Building Products, has completed the test on Stand'N Seam Roof System and submitted it for acceptance. The test was witnessed and certified by an independent professional engineer. The Stand'N Seam Roof System has met all the requirements of the test and is approved for use on military construction, provided that it also meets the project requirements. The results of the test are enclosed for your use and information (encl 1). A complete report of the test is on file at HQUSACE, CEMP-ET, and is available upon request.
4. You will be notified of the status as other standing seam metal roof manufacturers complete the test and submit their results for approval. A list of approved SSMR systems is also enclosed (encl 2).
5. Point of contact for this action is Daniel T. Chen, P.E., 202-504-4912.

2 Encls

Richard C. Armstrong
RICHARD C. ARMSTRONG, P.E.
Chief, Engineering Division
Directorate of Military Programs

DISTRIBUTION:
(See Page 2)

FAX HEADER SHEET



HEADQUARTERS
US Army Corps of Engineers
Military Programs Directorate
Engineering Division
Technical Engineering Branch



DATE: June 7, 1995

NO. OF PAGES
(INCLUDES HEADER): 10

FAX NUMBER: 202-761-4139

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FROM: Daniel Chen

OFFICE SYMBOL: CEMP-ET

VOICE PHONE: 202-761-4912

SUBJECT: Certification of FABRAL's Stand'N Seam Aluminum Panel System

REMARKS:

Mr. Croucher:

I am enclosing a copy of the certification letter along with a copy of the list of approved SSMR systems. Thank you for your interest in the Corps projects.

Daniel Chen

5 June 1995.
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U.S. ARMY CORPS OF ENGINEERS
LIST OF APPROVED STANDING SEAM METAL ROOF SYSTEMS
(IAW CECS-07416)

System Name	Panel Span	Width	Gage No.	Design Load Based on Deformation ¹ (psf)	Design Load Based on Failure ² (psf)	Manufacturer	Date of Approval
NR-24	5'- 1"	24"	24-22	34.6- 64.4*	33.8- 64.1*	Butler Co.	02-13-92
	2'- 6 1/2"		24-22	53.8-127.3*	59.0-110.1*		
VSR	5'- 1"	16"	24	36.4	39.2	Butler Co.	07-22-92
	2'- 6 1/2"		24	65.9	66.2		
CRP-16	5'- 1"	16"	24	42.0	38.8	CECO	10-01-92
	2'- 6 1/2"		24	76.8	66.8		
SEAM-LOC 24	5'- 0"	24"	24	32.1	32.2	Metal Sales Manuf. Co.	11-23-92
	2'- 6"		24	46.8	47.6		
BattenLok	5'- 0"	16"	24	38.4	31.0	MBCI	12-14-92
	2'- 6"		24	43.9- 58.8*	43.3- 70.1*		
StarShield	5'- 0"	24"	24	48.0	44.1	Star Bldg Systems	02-05-93
	2'- 6"		24	72.0	56.7		
Shur-Lok	5'- 0"	24"	24	--	42.8	Gulf States Manuf. Co.	06-16-93
	4'- 0"	24"	24	--	50.3		
	2'- 6"	24"	24	--	80.0		
	1'- 8"	24"	24	--	84.9		
VP SSR	5'- 0"	24"	24-22	44.0- 68.0*	41.0- 54.0*	Varco-Pruden Buildings	06-28-93
	2'- 6"	24"	24-22	72.0- 96.0*	65.0- 85.0*		
	1'- 8"	24"	24-22	160.0	126.0		
264FL	5'- 0"	16"	24	51.2	40.3	Steelox Roofing Sys.	07-01-93
	2'- 6"	16"	24	88.0	69.3		
REMARKS				* See test results.			

Notes: ¹ Test load with safety factor of 1.3 applied.

² Test load with safety factor of 1.65 applied.

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System Name	Panel Span	Width	Gage No.	Design Load Based on Deformation ¹ (psf)	Design Load Based on Failure ² (psf)	Manufacturer	Date of Approval
U/R/S-16	5' - 0"	16"	24	55.53	43.70	Ultra Roof Inc.	08-04-93
	2' - 6"			103.15	81.27		
Double-Lok	5' - 0"	24"	24	43.50	34.27	MBCI	08-12-93
	2' - 6"	24"	24	64.30	50.66		
	5' - 0"	18"	24	55.10	43.41		
	2' - 6"	18"	24	77.10	60.74		
	5' - 0"	12"	24	69.24	65.27		
	2' - 6"	12"	24	97.24	87.64		
Span-Lok	5' - 0"	16"	24	58.90	44.90	AEP-SPAN	10-01-93
	2' - 6"	16"	24	92.20	72.64		
	5' - 0"	18"	24	35.40	27.89		
	2' - 6"	18"	24	75.00	59.09		
Loc-Seam	5' - 0"	16"	24	41.2 - 43.2*	34.0-36.9*	Amer Bldg Co	10-22-93
	2' - 6"	16"	24	63.2-120.0*	56.1-94.5*		
KPI RoofLok	5' - 0"	16"	24	36.60	28.83	KOVACH	10-26-93
	2' - 6"	16"	24	100.52	79.20		
Stand'H Seam	5' - 0"	16"	24	88.46	69.70	FABRAL/Alcan Bldg Product	01/12/94
	2' - 6"	16"	24	121.53	95.76		
REMARKS				* See test results.			

Notes: ¹ Test load with safety factor of 1.3 applied.² Test load with safety factor of 1.65 applied.

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System Name	Panel Span	Width	Gage No.	Design Load Based on Deformation ¹ (psf)	Design Load Based on Failure ² (psf)	Manufacturer	Date of Approval
SA 16 x 2	5' - 0"	16"	24	---	31.1	Carlisle Engineered Metals, Inc.	03-10-94
	2' - 6"	16"	24	---	63.2		
	5' - 0"	16"	22	---	46.7		
	2' - 6"	16"	22	---	70.4		
AP 12x1.75	5' - 0"	12"	24	---	61.9		03-10-94
	2' - 6"	12"	24	---	86.6		
	5' - 0"	12"	22	---	76.8		
	2' - 6"	12"	22	---	115.9		
VERSALOK	5' - 0"	24"	24	---	30.4		03-10-94
	2' - 6"	24"	24	---	39.8		
	5' - 0"	24"	22	---	44.4		
	2' - 6"	24"	22	---	58.9		
SSP 200	5' - 0"	36"	24/26	---	59.5		03-10-94
	2' - 6"	36"	24/26	---	84.1		
ZIP RIB (Aluminum)	5' - 0"	12"	0.040"	---	66.7	Merchant & Evans, Inc.	03-31-94
	2' - 6"	12"	0.040"	---	115.2		
SRS-1.5	5' - 0"	18"	22	69.0	55.0	Smith Steelite	04-25-94
	2' - 6"	18"	22	104.0	92.0		
VICLOC 324	5' - 1"	24"	24	44.0 - 62.0*	34.7 - 48.9*	VicWest Steel	07-21-94
	2' - 6 1/2"	24"	24	56.0 - 100.0*	44.1 - 78.8*		
	2' - 6 1/2"	24"	22	98.4 - 110.4*	77.5 - 87.0*		
REMARKS				* See test results.			

Notes: ¹ Test load with safety factor of 1.3 applied.
² Test load with safety factor of 1.65 applied.

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System Name	Panel Span	Width	Gage No.	Design Load Based on Deformation ¹ (psf)	Design Load Based on Failure ² (psf)	Manufacturer	Date of Approval
Ultra Seam US-200S	5' - 0"	12"	.04" Alum.	44.0	34.67	Architectural Metal Products, Inc.	08-03-94
	2' - 6"	12"	.04" Alum.	80.0	63.03		
	5' - 0"	16"	24	43.3	34.13		
	2' - 6"	16"	24	69.0	56.19		
Design Span 12"	5' - 0"	12"	24	47.3	37.28	BHP Steel Products U.S.A., Inc.	11-28-94
	2' - 6"	12"	24	56.5	44.53		
BR - 24	4' - 0"	16"	24	50.00	39.40	Berbice Corp.	01-05-95
	2' - 6 1/2"	16"	24	64.00	50.40		
Span-Lok	5' - 0"	16"	22	61.53	48.48	AEP-SPAN	02-06-95
	2' - 6"	16"	22	123.07	96.90		
	5' - 0"	18"	22	42.67	33.62		
	2' - 6"	18"	22	109.07	85.93		
Double-Lok	5' - 0"	24"	22	45.26	46.06	MBCI	02-08-95
	2' - 6"	24"	22	81.26	64.03		
	5' - 0"	18"	22	69.66	54.89		
	2' - 6"	18"	22	94.06	96.16		
	5' - 0"	12"	22	81.40	77.36		
	2' - 6"	12"	22	113.40	117.70		
Zee Lock	4' - 0"	16"	24	70.00	55.20	Berridge Manuf. Co.	02-14-95
	2' - 0"	16"	24	88.00*	69.70*		
REMARKS				* See test results.			

Notes: ¹ Test load with safety factor of 1.3 applied.
² Test load with safety factor of 1.55 applied.

**U.S. ARMY CORPS OF ENGINEERS
LIST OF APPROVED STANDING SEAM METAL ROOF SYSTEMS
(IAW CECS-07416)**

System Name	Panel Span	Width	Gage No.	Design Load Based on Deformation ¹ (psf)	Design Load Based on Failure ² (psf)	Manufacturer	Date of Approval
Lock-Seam	5' - 0"	16"	24	36.00	31.50*	American Bldg. Co.	03/07/95
	2' - 6"	16"	24	84.00	88.00*		
Stand'N Seam (Aluminum)	5' - 0"	16"	0.032"	61.54	48.48	FABRAL	06/05/95
	2' - 6"	16"	0.032"	84.62	66.67		
MRD110 (Aluminum)	4' - 0"	11"	0.040"	56.00	44.12	ATAS Alum. Corp.	06/08/95
	2' - 6"	11"	0.040"	80.00	63.03		
Span-Lok SL-216	5' - 0"	16"	24	34.12	26.88	AEP-SPAN, United Dominion Co.	11/30/95
	2' - 6"	16"	24	97.00	76.42		
	5' - 0"	16"	22	54.60	43.01		
	2' - 6"	16"	22	133.00	104.80		
Mark 16 Roof	5' - 1"	16"	22	60.0 - 80.0*	47.27-63.03*	HCI Steel Products Co.	11/30/95
	2' - 6 1/2"	16"	22	60.0-112.0*	47.27-88.24*		
VicLoc 216	5' - 1"	16"	22	48.00	37.82	VicWest Steel	11/30/95
	2' - 6 1/2"	16"	22	64.00	50.42		
Master Span Roof	5' - 1"	16"	24	36.0 - 50.0*	28.36-39.40*	Metal Sales Manuf. Co.	11/30/95
	2' - 6 1/2"	16"	24	40.0 - 88.0*	31.52-69.34*		
SSR-16	5' - 0"	16"	0.040"AL	--	57.6	Morin Corp.	11/30/95
	2' - 6"	16"	0.040"AL	--	93.9		
	5' - 0"	16"	24	--	27.3		
	2' - 6"	16"	24	--	51.5		
	5' - 0"	16"	22	--	63.6		
	2' - 6"	16"	22	--	96.9		
REMARKS				* See test results.			

Notes: ¹ Test load with safety factor of 1.1 applied.
² Test load with safety factor of 1.65 applied.

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System Name	Panel Span	Width	Gage No.	Design Load Based on Deformation ¹ (psf)	Design Load Based on Failure ² (psf)	Manufacturer	Date of Approval
Kirbylok 2000-MS**	5' - 0"	24"	24-22	43.50- 45.26'	34.27- 46.06'	Kirby Bldg Sys	11/30/95
	2' - 6"	24"	24-22	64.30- 81.26'	50.66- 64.03'		
Weather Roof III**	5' - 0"	18"	24-22	55.10- 69.66'	43.41- 54.89'	NCI Bldg Sys LP	
	2' - 6"	18"	24-22	77.10- 94.06'	60.74- 96.16'		
	5' - 0"	12"	24-22	69.24- 81.40'	65.27- 77.36'		
	2' - 6"	12"	24-22	97.24-113.40'	87.64-117.70'		
SS216**	5' - 0"	16"	24	38.40	31.00	NCI	11/30/95
	2' - 6"	16"	24	43.90-58.80*	43.30-70.10*		
REMARKS	** licensed with MBCI			* See test results.			

Notes: ¹ Test load with safety factor of 1.3 applied.
² Test load with safety factor of 1.65 applied.