

Panel Shear and Stiffness Calculations Report

Prepared For:

Metroll
15435 Arrow Route
Fontana, CA 92335

Engineering Certified By:

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Panel Product Submitted for Calculation:

PBR 26ga - Metroll

Electronic Signature

Engineering Seal



SPECIAL NOTES

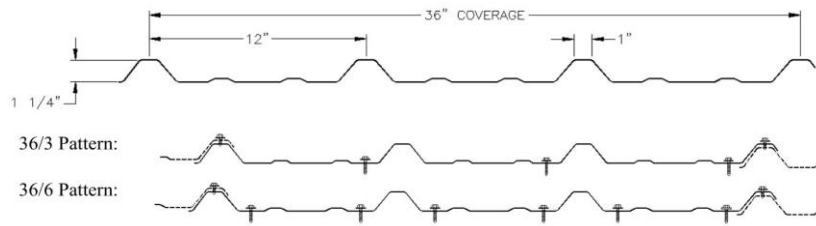
- 1) Strength tables are for typical panel configurations and connection types specified in construction documents.
- 2) Shear and Stiffness values specified in this report have been calculated in accordance with AISI Design Guide 2017 Edition & Based on AISI S310-16 Profiled Steel Diaphragm Panels. None of the data presented henceforth has been determined using any physical material testing.
- 3) Values represent shear strength and stiffness with no considerations made for panel uplift, presence of insulation, or any other external factor that could contribute to panel performance.
- 4) Calculated values are based off of metal panel yield strength of 80ksi and steel substrate yield strength 55ksi. Fastener values provided assumed 16ga 55ksi steel substrate, but other substrates may be used under supervision and approval of a qualified engineer.
- 5) Values provided represent calculated data for informational purposes only. The application of this information for engineering purposes must be done under the supervision and approval of a qualified engineering professional to ensure its appropriate use.
- 6) Panel shear zones must be clearly indicated on engineering building plans, and not include any framed openings or otherwise disruptions. A minimum of two full panel widths with typical fastening patterns is required for this information to be considered applicable.

Panel Diaphragm Shear & Stiffness

LOAD TABLES REPORT NOMINAL STRENGTHS (UNFACTORED). SEE REQUIRED LRFD & ASD COEFFICIENTS FOR ALLOWABLE STRENGTHS

Panel Information

PBR 26ga - Metroll



Panel Depth (in), D =	1.25	
Panel Thickness (in), t =	0.0190	(26 Ga)
Substrate Thickness (in), t =	0.0590	(16 Ga)
Support Fasteners (in), d =	0.2160	(#12 Screw)
Sidelap Fasteners (in), d =	0.2500	(#14 Screw)
Purlin Fastener Pattern =	36/3 Pattern	(Fastener Spacing at Interior Supports)
End Fastener Pattern =	36/6 Pattern	(Fastener Spacing at Panel Ends)

Panel Diaphragm Shear Tables

Table 1.0		2- Equal Spans		LRFD		ASD	
				Φ (EQ)= 0.65	Ω (EQ)= 2.5	Φ (Wind)= 0.70	Ω (Wind)= 2.35
Interior Supports: np =		1		Φ (Other)= 0.65		Ω (Other)= 2.5	
# of Sidelap Fasteners Between Supports	Nominal Shear Strength, PLF						
	Span, FT						
	3.0	4.0	5.0	5.5	6.0	7.0	8.0
0	432	331	268	244	225	193	169
1	526	407	331	303	278	240	211
2	611	480	392	359	331	286	252
3	689	548	451	414	382	331	292
4	759	611	507	467	432	375	331
5	821	670	561	517	480	418	370
6	876	725	611	565	525	459	407
7	925	775	659	611	569	499	444
8	968	821	703	654	611	538	479
Total Panel Length	6.0	8.0	10.0	11.0	12.0	14.0	16.0
ASSUMES 12" O.C. SIDELAP FASTENER							

Table 1.1		3- Equal Spans		LRFD		ASD	
				Φ (EQ)= 0.65	Ω (EQ)= 2.5	Φ (Wind)= 0.70	Ω (Wind)= 2.35
Interior Supports: np =		2		Φ (Other)= 0.65		Ω (Other)= 2.5	
# of Sidelap Fasteners Between Supports	Nominal Shear Strength, PLF						
	Span, FT						
	3.0	4.0	5.0	5.5	6.0	7.0	8.0
0	366	279	224	205	188	161	141
1	464	357	289	264	243	209	183
2	555	432	352	322	296	255	224
3	638	503	412	378	348	301	265
4	713	569	470	432	399	346	305
5	780	631	525	484	448	389	344
6	840	689	578	533	495	432	382
7	893	742	627	581	540	473	420
8	940	790	674	626	583	512	456
Total Panel Length	9.0	12.0	15.0	16.5	18.0	21.0	24.0
ASSUMES 12" O.C. SIDELAP FASTENER							

Table 1.2	4- Equal Spans						
	Interior Supports: np = 3						
# of Sidelap Fasteners Between Supports	Nominal Shear Strength, PLF						
	Span, FT						
	3.0	4.0	5.0	5.5	6.0	7.0	8.0
0	331	252	203	184	169	145	127
1	432	331	268	244	224	193	169
2	525	407	331	303	278	240	211
3	611	480	392	359	331	286	252
4	689	548	451	414	382	331	292
5	758	611	507	467	432	375	331
6	821	670	561	517	479	418	370
7	876	725	611	565	525	459	407
8	925	775	659	611	569	499	444
Total Panel Length	12.0	16.0	20.0	22.0	24.0	28.0	32.0
ASSUMES 12" O.C. SIDELAP FASTENER							

LRFD	ASD
Φ (EQ)= 0.65	Ω (EQ)= 2.5
Φ (Wind)= 0.70	Ω (Wind)= 2.35
Φ (Other)= 0.65	Ω (Other)= 2.5

Panel Diaphragm Stiffness Tables

Table 2.0	2- Equal Spans						
Interior Supports: np = 1							
# of Sidelap Fasteners Between Supports	Diaphragm Stiffness, G' Kips/in						
	Span, FT						
	3.0	4.0	5.0	5.5	6.0	7.0	8.0
0	24.5	26.4	27.0	26.9	26.7	26.1	25.2
1	25.1	27.3	28.2	28.3	28.2	27.7	27.0
2	25.6	28.1	29.2	29.4	29.4	29.1	28.5
3	26.0	28.7	30.1	30.4	30.5	30.3	29.8
4	26.3	29.3	30.8	31.2	31.4	31.4	31.0
5	26.6	29.7	31.4	31.9	32.2	32.3	32.0
6	26.8	30.1	32.0	32.5	32.9	33.1	33.0
7	27.0	30.5	32.5	33.1	33.5	33.9	33.8
8	27.2	30.8	32.9	33.6	34.1	34.6	34.6

Table 2.1	3- Equal Spans						
Interior Supports: np = 2							
# of Sidelap Fasteners Between Supports	Diaphragm Stiffness, G' Kips/in						
	Span, FT						
	3.0	4.0	5.0	5.5	6.0	7.0	8.0
0	28.5	28.3	27.2	26.4	25.7	24.1	22.6
1	30.0	30.4	29.6	28.9	28.2	26.8	25.3
2	31.2	32.0	31.5	31.0	30.4	29.1	27.7
3	32.2	33.3	33.1	32.7	32.2	31.0	29.7
4	32.9	34.5	34.5	34.2	33.8	32.7	31.5
5	33.6	35.4	35.7	35.5	35.2	34.3	33.1
6	34.1	36.2	36.7	36.6	36.4	35.6	34.6
7	34.6	36.9	37.6	37.6	37.5	36.8	35.8
8	35.0	37.5	38.4	38.5	38.4	37.9	37.0

Table 2.2	4- Equal Spans						
Interior Supports: np = 3							
# of Sidelap Fasteners Between Supports	Diaphragm Stiffness, G' Kips/in						
	Span, FT						
	3.0	4.0	5.0	5.5	6.0	7.0	8.0
0	29.1	27.6	25.6	24.5	23.6	21.7	20.1
1	31.5	30.5	28.8	27.9	26.9	25.1	23.4
2	33.3	32.9	31.5	30.6	29.7	27.9	26.2
3	34.8	34.8	33.6	32.9	32.1	30.4	28.7
4	35.9	36.3	35.5	34.8	34.1	32.5	30.9
5	36.9	37.7	37.1	36.5	35.8	34.4	32.8
6	37.7	38.8	38.4	38.0	37.4	36.0	34.6
7	38.4	39.7	39.6	39.2	38.7	37.5	36.1
8	38.9	40.6	40.6	40.4	39.9	38.8	37.5