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GRATING DEFLECTION TESTING
JULY 2014

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Introduction

Intrepid is introducing a new concept for the toeboard protection of holes in gratings. Our new products are called T5-L (locking bar) and T5-J (J-bolt). The purpose of this report was to study grating deflection when using:

- Banding
- GPC's
- T5-L's
- T5-J's

Although over 800 data points were generated, this study was never intended to study all possible cases. Intrepid does not have a testing machine. To do this testing, we purchased fabricated grating with holes. To apply loads, 39 lb boxes were placed in specific positions. To determine deflection, measurements were taken before and after loading. The "**Test Method**" section gives particulars on grating, loads, and load locations.

This report has been organized as follows:

GRATING DEFLECTION TEST
Summary
July 2014

Summary

Regarding grating deflection under load, banding, GPC's, T5-L's, and T5-J's perform similarly.

When a 234 lb (373 psf) load was applied, all deflections were less than 0.200".

The maximum deflection spread for banding, GPC's, T5-L's, and T5-J's was 0.066" (about 1/16").

When a 273 lb (436 psf) load was applied, all deflections were less than 0.220".

The maximum deflection spread for banding, GPC's, T5-L's, and T5-J's was 0.063" (about 1/16").

When loads of 468 lb, 546 lb, and 936 lb were applied, only then did the deflections exceed the 0.250" standard. It was exceeded in 2 out of 9 tests.

When uniform loads of 1,404 lb and 1,560 lb were applied, the 0.250" standard was exceeded once out of 4 tests.

When a load was centered (or slightly off center) on the cut bars, maximum deflection was produced.

When the load was on the side of the hole with no cut bars, minimal deflection was produced.

GRATING DEFLECTION TEST
Summary
July 2014

Test Method

Our testing was simple. The grating around the hole was measured before loading. Then a load (boxes containing steel hardware) was placed on the grating. The grating was measured again.

The test used split steel grating: 5' x 3' 1-1/4" Serrated.

1. Uncut grating --- no holes.
2. Centered 6" hole which was banded.
3. Centered 6" hole which was used for GPC, T5-L, and T5-J.
4. Offset 6" hole which was banded.
5. Offset 6" hole which was used for GPC, T5-L, and T5-J.
6. Centered 14" hole which was banded.
7. Centered 14" hole which was used for GPC, T5-L, and T5-J.
8. Offset 14" hole which was banded.
9. Offset 14" hole which was used for GPC, T5-L, and T5-J.

Box weight: 39 lbs.
Box area: 0.627 sq. ft.

Deflection Value At Load Point A:
- For 6” Hole, Average Of Points 4 & 5.
- For 14” Hole, Average Of Points 6 & 7.

Deflection Value At Load Point B:
- For 6” Hole, Average Of Points 3.

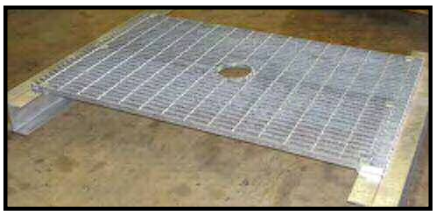
Deflection Value At Load Point C:
- For 6” Hole, Average Of Points 4.

Deflection Value At Load Point A’:
- For 6” Hole, Average Of Points 1 & 2.
- For 14” Hole, Average Of Points 1 & 2.

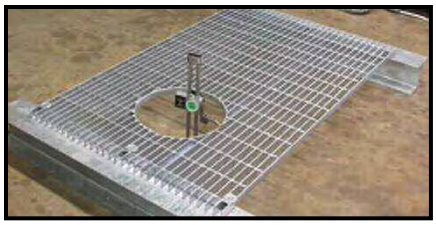
Deflection Value At Load Point B’:
- For 6” Hole, Average Of Points 6.

Deflection Value At Load Point C’:
- For 6” Hole, Average Of Points 1.

Deflection Value For Uniform Load:
- For Center Hole, Uncut Grating At Grating Point 3.
- For Offset 6” Hole, Uncut Grating At Grating Point 5.
- For Offset 14” Hole, Uncut Grating At Grating Points 4 & 5.
- For Banding, GPC, T5-L, & T5-J, Average Of All Points.

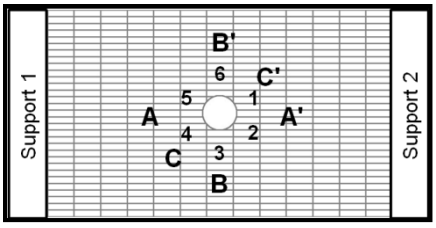


6” Hole, Centered

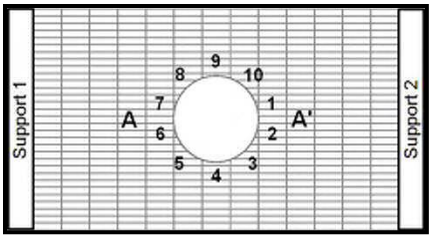


14” Hole, Offset

Steel Hardware Boxes



6” Hole Points

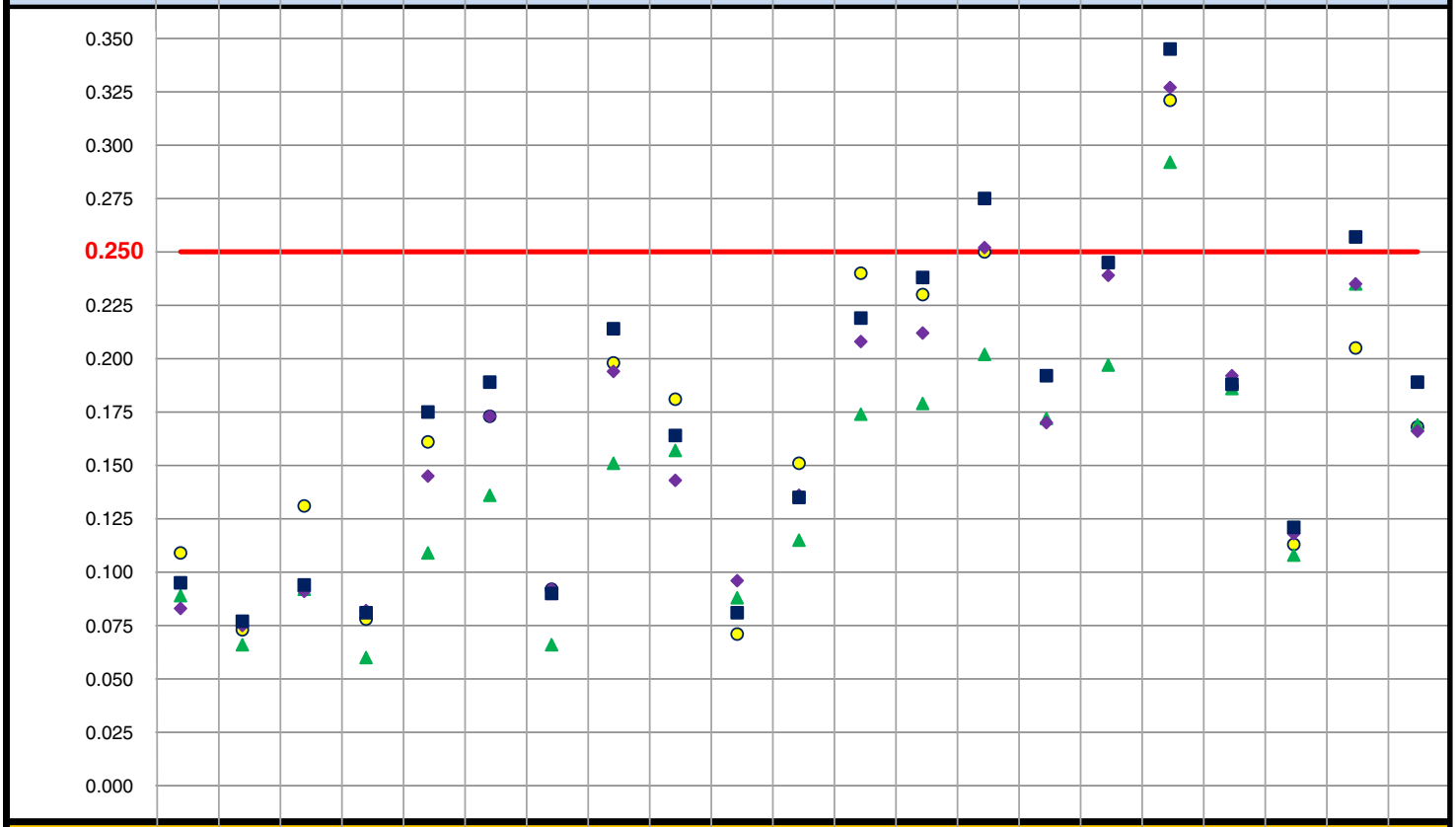


14” Hole Points

GRATING DEFLECTION TEST
Increasing Load
July 2014

Deflection: Average deflection at cut bars in lbs
Load: Lbs
Load Location: See test method drawings
Hole Size: 6" & 14"
Hole Location: Center & Offset

Load	234	234	234	234	234	234	273	273	468	468	468	468	468	468	546	546	936	1404	1404	1560	1560
Load Location	A	B	C						A-A'	B-B'	C-C'	A-A'	One	One	A-A'	A-A'	A-A'	U	U	U	U
Hole Size	6	6	6	6	14	14	6	14	6	6	6	14	14	14	6	14	14	6	6	14	14
Hole Location	C	C	C	O	C	O	O	O	C	C	C	C	C	O	C	C	C	C	O	C	O
Deflection																					
Banding	0.109	0.073	0.131	0.078	0.161	0.173	0.092	0.198	0.181	0.071	0.151	0.240	0.230	0.250			0.321	0.187	0.113	0.205	0.168
GPC	0.089	0.066	0.092	0.060	0.109	0.136	0.066	0.151	0.157	0.088	0.115	0.174	0.179	0.202	0.172	0.197	0.292	0.186	0.108	0.235	0.169
T5-L	0.083	0.075	0.091	0.082	0.145	0.173	0.092	0.194	0.143	0.096	0.136	0.208	0.212	0.252	0.170	0.239	0.327	0.192	0.118	0.235	0.166
T5-J	0.095	0.077	0.094	0.081	0.175	0.189	0.090	0.214	0.164	0.081	0.135	0.219	0.238	0.275	0.192	0.245	0.345	0.188	0.121	0.257	0.189



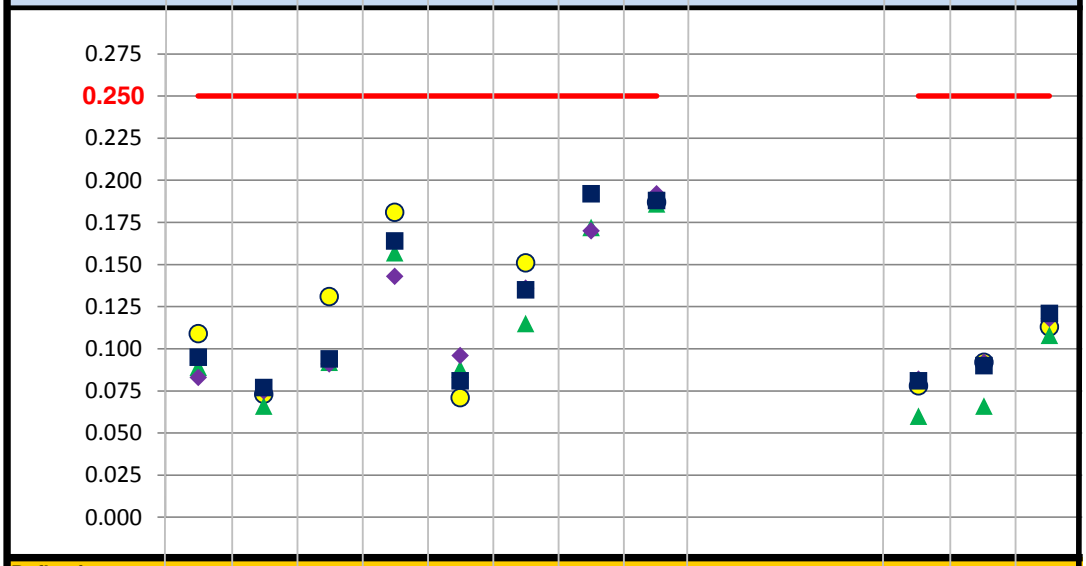
Deflection Spread	0.026	0.011	0.040	0.022	0.066	0.053	0.026	0.063	0.038	0.025	0.036	0.066	0.059	0.073	0.022	0.048	0.053	0.006	0.013	0.052	0.023

GRATING DEFLECTION TEST
Hole Size & Location (6")
July 2014

Deflection: Average deflection at cut bars in lbs
Load: Lbs
Load Location: See test method drawings
Hole Size: 6"
Hole Location: Center & Offset

6" Hole

	Center									Offset		
Load	234	234	234	468	468	468	546	1404		234	273	1404
Load Location	A	B	C	A-A'	B-B'	C-C'	A-A'	U				U
Deflection												
Banding	0.109	0.073	0.131	0.181	0.071	0.151		0.187		0.078	0.092	0.113
GPC	0.089	0.066	0.092	0.157	0.088	0.115	0.172	0.186		0.060	0.066	0.108
T5-L	0.083	0.075	0.091	0.143	0.096	0.136	0.170	0.192		0.082	0.092	0.118
T5-J	0.095	0.077	0.094	0.164	0.081	0.135	0.192	0.188		0.081	0.090	0.121
Deflection Spread	0.026	0.011	0.040	0.038	0.025	0.036	0.022	0.006		0.022	0.026	0.013

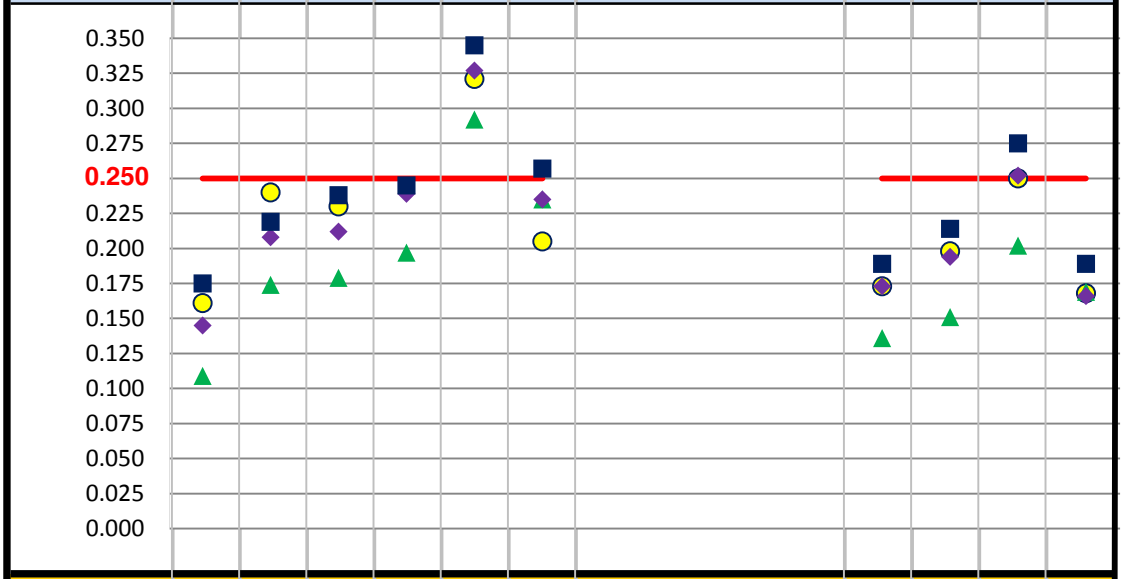


GRATING DEFLECTION TEST
Hole Size & Location (14")
July 2014

Deflection: Average deflection at cut bars in lbs
Load: Lbs
Load Location: See test method drawings
Hole Size: 14"
Hole Location: Center & Offset

14" Hole

	Center							Offset			
Load	234	468	468	546	936	1560		234	273	468	1560
Load Location		A-A'	One	A-A'	A-A'	U				One	U
Deflection											
Banding	0.161	0.240	0.230		0.321	0.205		0.173	0.198	0.250	0.168
GPC	0.109	0.174	0.179	0.197	0.292	0.235		0.136	0.151	0.202	0.169
T5-L	0.145	0.208	0.212	0.239	0.327	0.235		0.173	0.194	0.252	0.166
T5-J	0.175	0.219	0.238	0.245	0.345	0.257		0.189	0.214	0.275	0.189
Deflection Spread	0.066	0.066	0.059	0.048	0.053	0.052		0.053	0.063	0.073	0.023



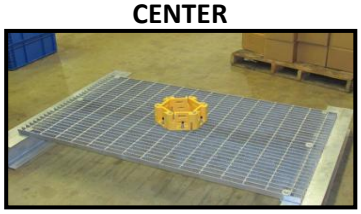
GRATING DEFLECTION TEST

A. Uniform Load Test

July 2014

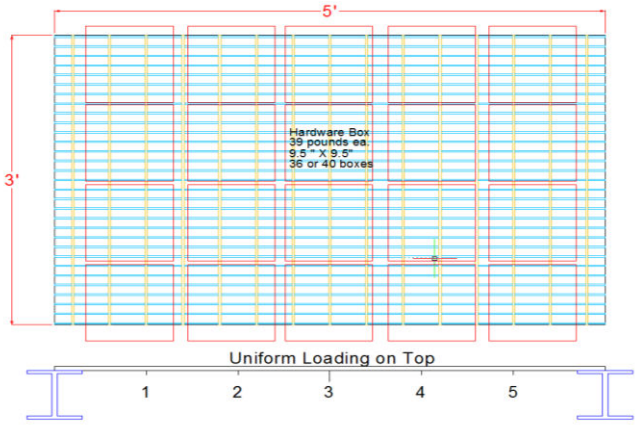
Split Steel Grating — 5' x 3' x 1 1/4" Serrated

CENTER



24" From Support For 6"
20" From Support For 14"

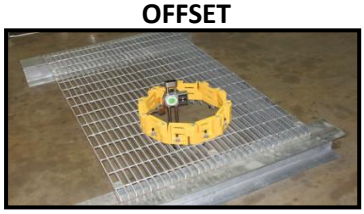
1404 lb Load For 6"
1560 lb Load For 14"



Support 1

Support 2

OFFSET



45" From Support For 6"
40" From Support For 14"

1404 lb Load For 6"
1560 lb Load For 14"

6" Hole

Center		Offset
-0.187	**Banding**	-0.113
-0.186	**GPC-6**	-0.108
-0.192	**T5-L**	-0.118
-0.188	**T5-J**	-0.121

14" Hole

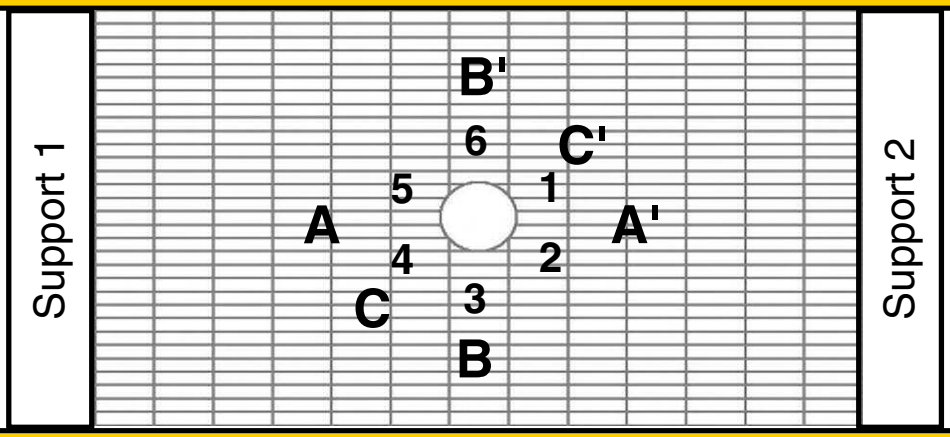
Center		Offset
-0.205	**Banding**	-0.168
-0.235	**GPC-14**	-0.169
-0.235	**T5-L**	-0.166
-0.257	**T5-J**	-0.189

The spread of all deflection for the GPC-6, GPC-14, T5-L, and T5-J was .050 inches.

GRATING DEFLECTION TEST
B. Load Location Test
July 2014

Split Steel Grating — **5' x 3' x 1 1/4" Serrated**

Location Of Load Points



6" Hole In Center — **24" From Center** — **234 lb**

A		A-A'
-0.109	Banding	-0.181
-0.089	GPC-6	-0.157
-0.083	T5-L	-0.143
-0.095	T5-J	-0.164

B		B-B'
-0.073	Banding	-0.071
-0.066	GPC-6	-0.088
-0.075	T5-L	-0.096
-0.077	T5-J	-0.086

C		C-C'
-0.131	Banding	-0.151
-0.092	GPC-6	-0.115
-0.091	T5-L	-0.136
-0.094	T5-J	-0.135

Summary

Single experiment to determine significance of location of point loading.

A and A-A' = Most cut bars --- most deflection
B and B-B' = Least cut bars --- least deflection
C and C-C' = Similar to A and A-A'

All further testing utilized A and A-A' locations for point loads.

GRATING DEFLECTION TEST

A. Uniform Load Test

July 2014

Uniform Load Test 6" Hole In Center 24" From Support

	Height Gauge Zeroed At Point 1				Height Gauge Zeroed at Point 3	Uncut Grating	
	No Load					1404 lb Load	
Point #	**Banding**	**GPC-6**	**T5-L**	**T5-J**	**Uncut Grating**	Reading	Actual Deflection
1	0.000	0.000	0.000	0.000	-0.004	-0.124	-0.120
2	-0.031	-0.055	-0.082	-0.098	0.031	-0.130	-0.161
3	0.004	-0.062	-0.066	-0.099	0.000	-0.205	**-0.205**
4	0.021	-0.053	-0.071	-0.101	0.004	-0.138	-0.142
5	0.031	0.005	0.031	0.017	-0.033	-0.112	-0.079
6	0.028	0.051	0.069	0.048	*Measured every 10"		

Test used 5' x 3' x 1 1/4" serrated steel grating supported by I-beams.
The grating was split and a 6" hole was centered.
Distance from support 1 to the edge of the 6" hole: 24"

Uniform Load Deflection Test

1404 lb Load was equaly distributed across all of the grating.
The average deflection is comparable to point 3 on the uncut grating.

	Banding 1404 lb load		**GPC-6 1404 lb load**		**T5-L 1404 lb load**		**T5-J 1404 lb load**	
Point #	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection
1	-0.208	**-0.208**	-0.184	**-0.184**	-0.194	**-0.194**	-0.183	**-0.183**
2	-0.219	**-0.188**	-0.236	**-0.181**	-0.268	**-0.186**	-0.287	**-0.189**
3	-0.172	**-0.176**	-0.244	**-0.182**	-0.260	**-0.194**	-0.292	**-0.193**
4	-0.162	**-0.183**	-0.238	**-0.185**	-0.256	**-0.185**	-0.288	**-0.187**
5	-0.185	**-0.216**	-0.178	**-0.183**	-0.149	**-0.180**	-0.174	**-0.191**
6	-0.121	**-0.149**	-0.151	**-0.202**	-0.142	**-0.211**	-0.134	**-0.182**
Average Deflection		**-0.187**		**-0.186**		**-0.192**		**-0.188**

All deflection readings measured in inches

GRATING DEFLECTION TEST

A. Uniform Load Test

July 2014

Uniform Load Test 6" Hole Offset 46" From Support

	Height Gauge Zeroed At Point 1				Height Gauge Zeroed at Point 3	Uncut Grating	
	No Load					1404 lb Load	
Point #	**Banding**	**GPC-6**	**T5-L**	**T5-J**	**Uncut Grating**	Reading	Actual Deflection
1	0.000	0.000	0.000	0.000	-0.004	-0.124	-0.120
2	-0.049	0.030	0.044	0.078	0.031	-0.130	-0.161
3	0.003	0.106	0.145	0.195	0.000	-0.205	-0.205
4	0.047	0.092	0.136	0.184	0.004	-0.138	-0.142
5	0.127	0.045	0.097	0.087	-0.033	-0.112	**-0.079**
6	0.091	0.039	0.044	0.042	*Measured every 10"		

Test used 5' x 3' x 1 1/4" serrated steel grating supported by I-beams.
The grating was split and a 6" hole was located near support 2.
Distance from support 1 to the edge of the 6" hole: 46"

Uniform Load Deflection Test

1404 lb Load was equaly distributed across all of the grating.
The average deflection is comparable to point 5 on the uncut grating.

	Banding 1404 lb load		**GPC-6 1404 lb load**		**T5-L 1404 lb load**		**T5-J 1404 lb load**	
Point #	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection
1	-0.088	**-0.088**	-0.083	**-0.083**	-0.082	**-0.082**	-0.093	**-0.093**
2	-0.137	**-0.088**	-0.056	**-0.086**	-0.038	**-0.082**	-0.026	**-0.104**
3	-0.106	**-0.109**	0.006	**-0.100**	0.016	**-0.129**	0.053	**-0.142**
4	-0.078	**-0.125**	-0.042	**-0.134**	-0.018	**-0.154**	0.019	**-0.165**
5	-0.024	**-0.151**	-0.091	**-0.136**	-0.048	**-0.145**	-0.058	**-0.145**
6	-0.028	**-0.119**	-0.069	**-0.108**	-0.072	**-0.116**	-0.037	**-0.079**
Average Deflection		**-0.113**		**-0.108**		**-0.118**		**-0.121**

All deflection readings measured in inches

GRATING DEFLECTION TEST
A. Uniform Load Test
July 2014

Uniform Load Test 14" Hole In Center 20" From Support

	Height Gauge Zeroed At Point 1				Height Gauge Zeroed at Point 3	Uncut Grating	
	No Load					1560 lb Load	
Point #	Banding	GPC-14	T5-L	T5-J	Uncut Grating	Reading	Actual Deflection
1	0.000	0.000	0.000	0.000	-0.004	-0.139	-0.135
2	0.021	-0.007	0.009	0.017	0.031	-0.166	-0.197
3	-0.112	0.008	0.012	0.039	0.000	-0.224	**-0.224**
4	-0.123	0.076	-0.029	-0.009	0.004	-0.168	-0.172
5	-0.081	0.043	0.007	0.023	-0.033	-0.123	-0.090
6	-0.086	-0.011	0.029	0.046	*Measured every 10"		
7	0.008	-0.015	0.005	0.019			
8	0.021	0.017	-0.017	-0.023			
9	0.016	0.062	-0.014	-0.040			
10	0.043	0.020	-0.022	-0.021			

Test used 5' x 3' x 1 1/4" serrated steel grating supported by I-beams.
The grating was split and a 14" hole was centered.
Distance from support 1 to the edge of the 14" hole: 20"

Uniform Load Deflection Test

1560 lb Load was equaly distributed across all of the grating.
The average deflection is comparable to point 3 on the uncut grating.

	Banding 1560 lb load		GPC-14 1560 lb load		T5-L 1560 lb load		T5-J 1560 lb load	
Point #	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection
1	-0.199	**-0.199**	-0.243	**-0.243**	-0.248	**-0.248**	-0.266	**-0.266**
2	-0.201	**-0.222**	-0.245	**-0.238**	-0.223	**-0.232**	-0.223	**-0.240**
3	-0.316	**-0.204**	-0.215	**-0.223**	-0.218	**-0.230**	-0.202	**-0.241**
4	-0.323	**-0.200**	-0.148	**-0.224**	-0.253	**-0.224**	-0.247	**-0.238**
5	-0.287	**-0.206**	-0.174	**-0.217**	-0.211	**-0.218**	-0.217	**-0.240**
6	-0.308	**-0.222**	-0.226	**-0.215**	-0.202	**-0.231**	-0.212	**-0.258**
7	-0.192	**-0.200**	-0.249	**-0.234**	-0.228	**-0.233**	-0.247	**-0.266**
8	-0.174	**-0.195**	-0.230	**-0.247**	-0.267	**-0.250**	-0.295	**-0.272**
9	-0.181	**-0.197**	-0.195	**-0.257**	-0.253	**-0.239**	-0.311	**-0.271**
10	-0.157	**-0.200**	-0.234	**-0.254**	-0.262	**-0.240**	-0.297	**-0.276**
Average Deflection		**-0.205**		**-0.235**		**-0.235**		**-0.257**

All deflection readings measured in inches

GRATING DEFLECTION TEST
A. Uniform Load Test
July 2014

Uniform Load Test 14" Hole Offset 38" From Support

	Height Gauge Zeroed At Point 1				Height Gauge Zeroed at Point 3	Uncut Grating	
	No Load					1560 lb Load	
Point #	Banding	GPC-14	T5-L	T5-J	Uncut Grating	Reading	Actual Deflection
1	0.000	0.000	0.000	0.000	-0.004	-0.139	-0.135
2	-0.087	0.011	0.016	-0.019	0.031	-0.166	-0.197
3	-0.066	0.065	0.078	0.029	0.000	-0.224	-0.224
4	-0.021	0.144	0.091	0.048	0.004	-0.168	**-0.172**
5	0.023	0.113	0.098	0.108	-0.033	-0.123	**-0.090**
6	0.031	0.055	0.094	0.110	*Measured every 10"		
7	-0.005	0.036	0.080	0.097			
8	-0.056	0.052	0.061	0.052			
9	-0.108	0.068	0.038	0.019			
10	-0.126	0.009	-0.008	-0.024			

Test used 5' x 3' x 1 1/4" serrated steel grating supported by I-beams.
The grating was split and a 14" hole was located near support 2.
Distance from support 1 to the edge of the 14" hole: 38"

Uniform Load Deflection Test

1560 lb Load was equaly distributed across all of the grating.
The average deflection is comparable to points 4-5 on the uncut grating.

	Banding 1560 lb load		GPC-14 1560 lb load		T5-L 1560 lb load		T5-J 1560 lb load	
Point #	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection
1	-0.089	**-0.089**	-0.105	**-0.105**	-0.090	**-0.090**	-0.111	**-0.111**
2	-0.184	**-0.097**	-0.079	**-0.090**	-0.069	**-0.085**	-0.116	**-0.097**
3	-0.201	**-0.135**	-0.051	**-0.116**	-0.039	**-0.117**	-0.102	**-0.131**
4	-0.202	**-0.181**	-0.018	**-0.162**	-0.066	**-0.157**	-0.112	**-0.160**
5	-0.191	**-0.214**	-0.094	**-0.207**	-0.104	**-0.202**	-0.121	**-0.229**
6	-0.236	**-0.267**	-0.183	**-0.238**	-0.159	**-0.253**	-0.170	**-0.280**
7	-0.236	**-0.231**	-0.208	**-0.244**	-0.174	**-0.254**	-0.197	**-0.294**
8	-0.246	**-0.190**	-0.167	**-0.219**	-0.157	**-0.218**	-0.202	**-0.254**
9	-0.265	**-0.157**	-0.109	**-0.177**	-0.132	**-0.170**	-0.178	**-0.197**
10	-0.247	**-0.121**	-0.119	**-0.128**	-0.126	**-0.118**	-0.161	**-0.137**
Average Deflection		**-0.168**		**-0.169**		**-0.166**		**-0.189**

All deflection readings measured in inches

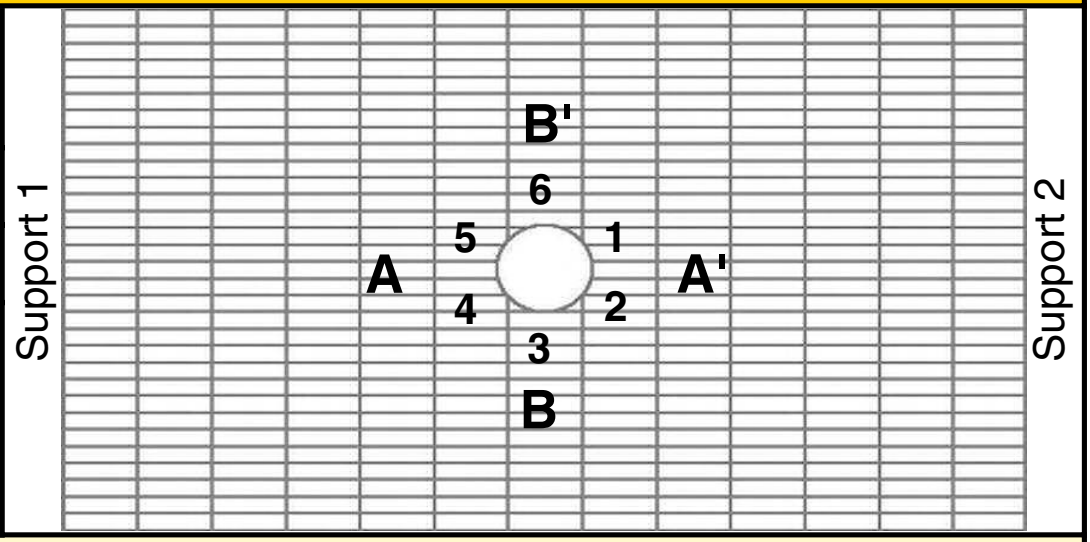
GRATING DEFLECTION TEST
B. Load Location Test
July 2014

Load Location Test 6" Hole In Center 24" From Center

Height Gauge Zeroed At Point 1

No Load

Point #	Reading
1	0.000
2	-0.031
3	0.004
4	0.021
5	0.031
6	0.028



Test used 5' x 3' x 1 1/4" serrated steel grating supported by I-beams.
The grating was split and a 6" hole was centered.
Distance from support to the edge of the 6" hole: 24"

Banding

Load: 234 lb on 0.627 Sq. ft. --- 373 psf

	Location A Load: 234 lb Total: 234 lb		Location A & A' Load: 234 lb Total: 468 lb		Location B Load: 234 lb Total: 234 lb		Location B & B' Load: 234 lb Total: 468 lb	
Point #	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection
1	-0.096	-0.096	-0.183	**-0.183**	-0.018	-0.018	-0.086	-0.086
2	-0.111	-0.080	-0.214	**-0.183**	-0.103	-0.072	-0.118	-0.087
3	-0.078	-0.082	-0.158	-0.162	-0.069	**-0.073**	-0.078	**-0.082**
4	-0.092	**-0.113**	-0.154	**-0.175**	-0.057	-0.078	-0.054	-0.075
5	-0.073	**-0.104**	-0.153	**-0.184**	0.004	-0.027	-0.056	-0.087
6	-0.019	-0.047	-0.089	-0.117	0.009	-0.019	-0.032	**-0.060**
Average Deflection		**-0.109**		**-0.181**		**-0.073**		**-0.071**

All deflection readings measured in inches

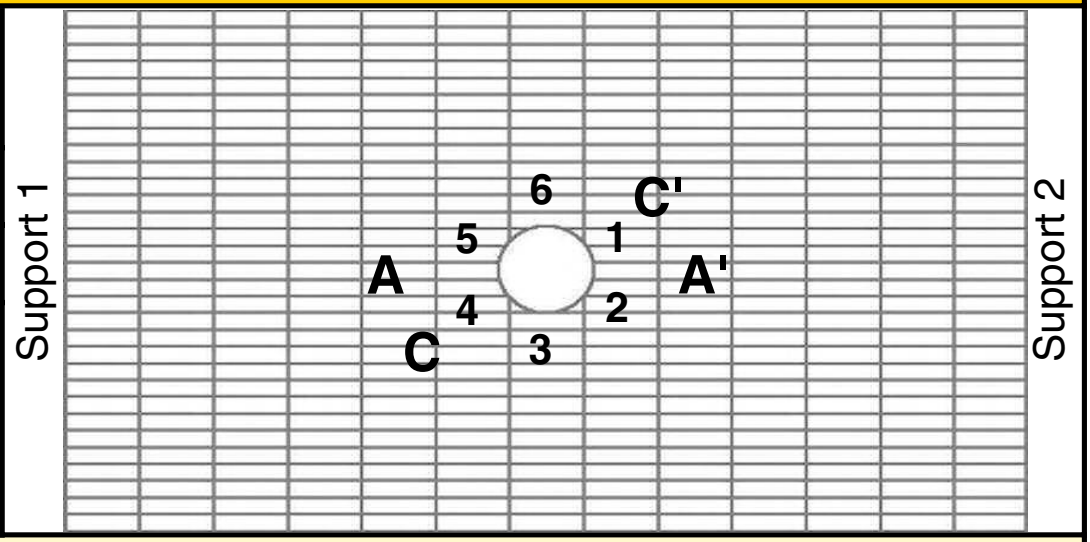
GRATING DEFLECTION TEST
B. Load Location Test
July 2014

Load Location Test 6" Hole In Center 24" From Center

Height Gauge Zeroed At Point 1

No Load

Point #	Reading
1	0.000
2	-0.031
3	0.004
4	0.021
5	0.031
6	0.028



Test used 5' x 3' x 1 1/4" serrated steel grating supported by I-beams.
The grating was split and a 6" hole was centered.
Distance from support to the edge of the 6" hole: 24"

Banding

Load: 234 lb on 0.627 Sq. ft. --- 373 psf

	Location A Load: 234 lb Total: 234 lb		Location A & A' Load: 234 lb Total: 468 lb		Location C Load: 234 lb Total: 234 lb		Location C & C' Load: 234 lb Total: 468 lb	
Point #	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection
1	-0.096	-0.096	-0.183	**-0.183**	-0.029	-0.029	-0.178	**-0.178**
2	-0.111	-0.080	-0.214	**-0.183**	-0.164	-0.133	-0.204	-0.173
3	-0.078	-0.082	-0.158	-0.162	-0.115	**-0.119**	-0.138	**-0.142**
4	-0.092	**-0.113**	-0.154	**-0.175**	-0.122	**-0.143**	-0.152	**-0.173**
5	-0.073	**-0.104**	-0.153	**-0.184**	0.004	-0.027	-0.126	-0.157
6	-0.019	-0.047	-0.089	-0.117	0.033	0.005	-0.081	**-0.109**
Average Deflection		**-0.109**		**-0.181**		**-0.131**		**-0.151**

All deflection readings measured in inches

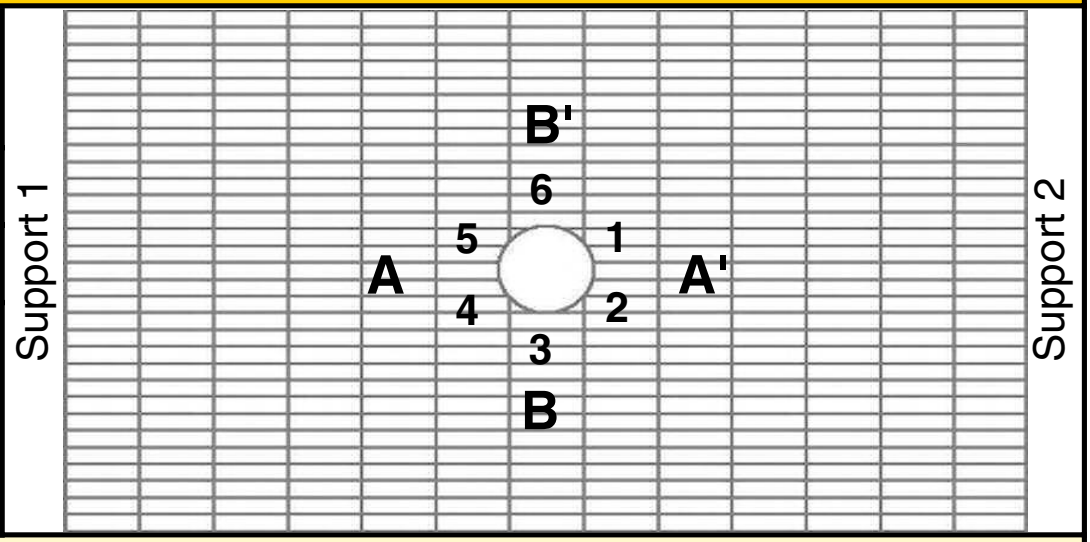
GRATING DEFLECTION TEST
B. Load Location Test
July 2014

Load Location Test 6" Hole In Center 24" From Center

Height Gauge Zeroed At Point 1

No Load

Point #	Reading
1	0.000
2	-0.055
3	-0.062
4	-0.053
5	0.005
6	-0.051



Test used 5' x 3' x 1 1/4" serrated steel grating supported by I-beams.
The grating was split and a 6" hole was centered.
Distance from support to the edge of the 6" hole: 24"

GPC - 6

Load: 234 lb on 0.627 Sq. ft. --- 373 psf

	Location A Load: 234 lb Total: 234 lb		Location A & A' Load: 234 lb Total: 468 lb		Location B Load: 234 lb Total: 234 lb		Location B & B' Load: 234 lb Total: 468 lb	
Point #	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection
1	-0.078	-0.078	-0.157	**-0.157**	-0.036	-0.036	-0.085	-0.085
2	-0.131	-0.076	-0.209	**-0.154**	-0.106	-0.051	-0.133	-0.078
3	-0.137	-0.075	-0.212	-0.150	-0.128	**-0.066**	-0.149	**-0.087**
4	-0.144	**-0.091**	-0.211	**-0.158**	-0.112	-0.059	-0.132	-0.079
5	-0.082	**-0.087**	-0.154	**-0.159**	-0.024	-0.029	-0.093	-0.098
6	-0.033	0.018	-0.105	-0.054	-0.014	0.037	-0.140	**-0.089**
Average Deflection		**-0.089**		**-0.157**		**-0.066**		**-0.088**

All deflection readings measured in inches

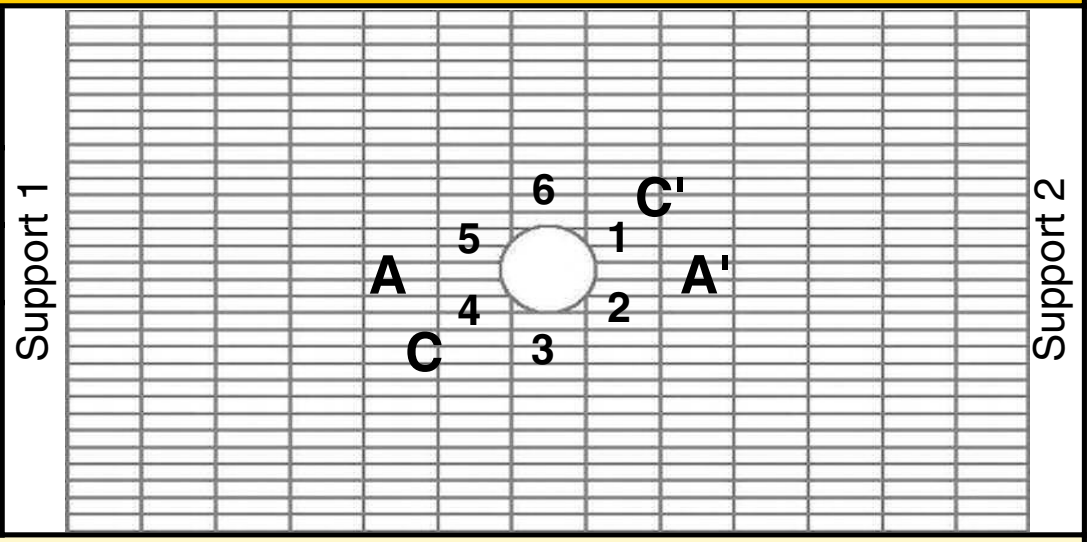
GRATING DEFLECTION TEST
B. Load Location Test
July 2014

Load Location Test 6" Hole In Center 24" From Center

Height Gauge Zeroed At Point 1

No Load

Point #	Reading
1	0.000
2	-0.055
3	-0.062
4	-0.053
5	0.005
6	-0.051



Test used 5' x 3' x 1 1/4" serrated steel grating supported by I-beams.
The grating was split and a 6" hole was centered.
Distance from support to the edge of the 6" hole: 24"

GPC - 6

Load: 234 lb on 0.627 Sq. ft. --- 373 psf

	Location A Load: 234 lb Total: 234 lb		Location A & A' Load: 234 lb Total: 468 lb		Location C Load: 234 lb Total: 234 lb		Location C & C' Load: 234 lb Total: 468 lb	
Point #	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection
1	-0.078	-0.078	-0.157	**-0.157**	-0.064	-0.064	-0.144	**-0.144**
2	-0.131	-0.076	-0.209	**-0.154**	-0.129	-0.074	-0.189	-0.134
3	-0.137	-0.075	-0.212	-0.150	-0.153	**-0.091**	-0.192	**-0.130**
4	-0.144	**-0.091**	-0.211	**-0.158**	-0.146	**-0.093**	-0.197	**-0.144**
5	-0.082	**-0.087**	-0.154	**-0.159**	-0.063	-0.068	-0.144	-0.149
6	-0.033	0.018	-0.105	-0.054	-0.011	0.040	-0.094	**-0.043**
Average Deflection		**-0.089**		**-0.157**		**-0.092**		**-0.115**

All deflection readings measured in inches

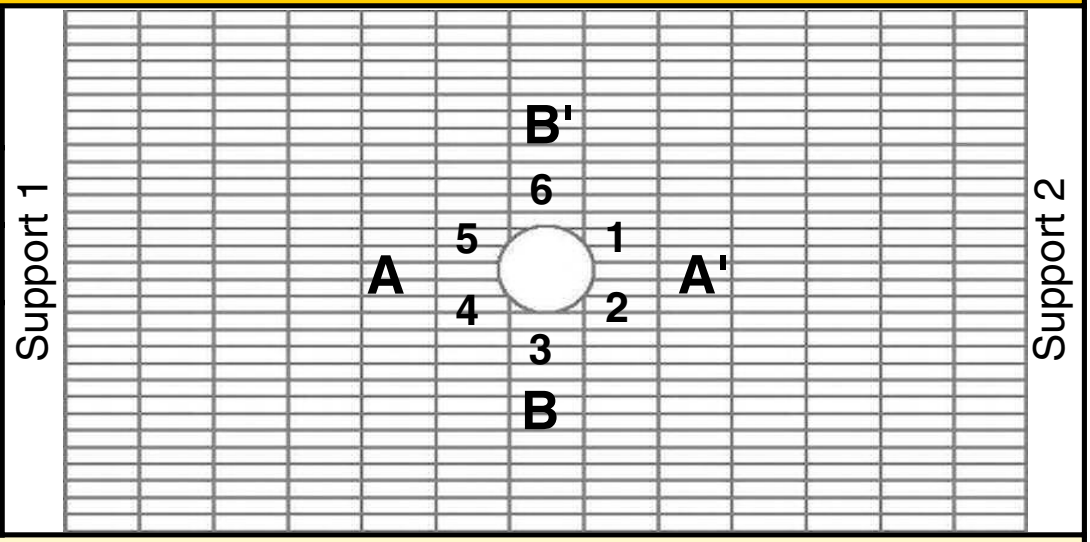
GRATING DEFLECTION TEST
B. Load Location Test
July 2014

Load Location Test 6" Hole In Center 24" From Center

Height Gauge Zeroed At Point 1

No Load

Point #	Reading
1	0.000
2	-0.082
3	-0.066
4	-0.071
5	0.031
6	0.069



Test used 5' x 3' x 1 1/4" serrated steel grating supported by I-beams.
The grating was split and a 6" hole was centered.
Distance from support to the edge of the 6" hole: 24"

T5 - L

Load: 234 lb on 0.627 Sq. ft. --- 373 psf

	Location A Load: 234 lb Total: 234 lb		Location A & A' Load: 234 lb Total: 468 lb		Location B Load: 234 lb Total: 234 lb		Location B & B' Load: 234 lb Total: 468 lb	
Point #	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection
1	-0.076	-0.076	-0.147	**-0.147**	-0.034	-0.034	-0.095	-0.095
2	-0.161	-0.079	-0.218	**-0.136**	-0.145	-0.063	-0.162	-0.080
3	-0.141	-0.075	-0.211	-0.145	-0.141	**-0.075**	-0.161	**-0.095**
4	-0.148	**-0.077**	-0.218	**-0.147**	-0.126	-0.055	-0.154	-0.083
5	-0.057	**-0.088**	-0.112	**-0.143**	0.003	-0.028	-0.053	-0.084
6	-0.013	-0.082	-0.080	-0.149	0.028	-0.041	-0.027	**-0.096**
Average Deflection		**-0.083**		**-0.143**		**-0.075**		**-0.096**

All deflection readings measured in inches

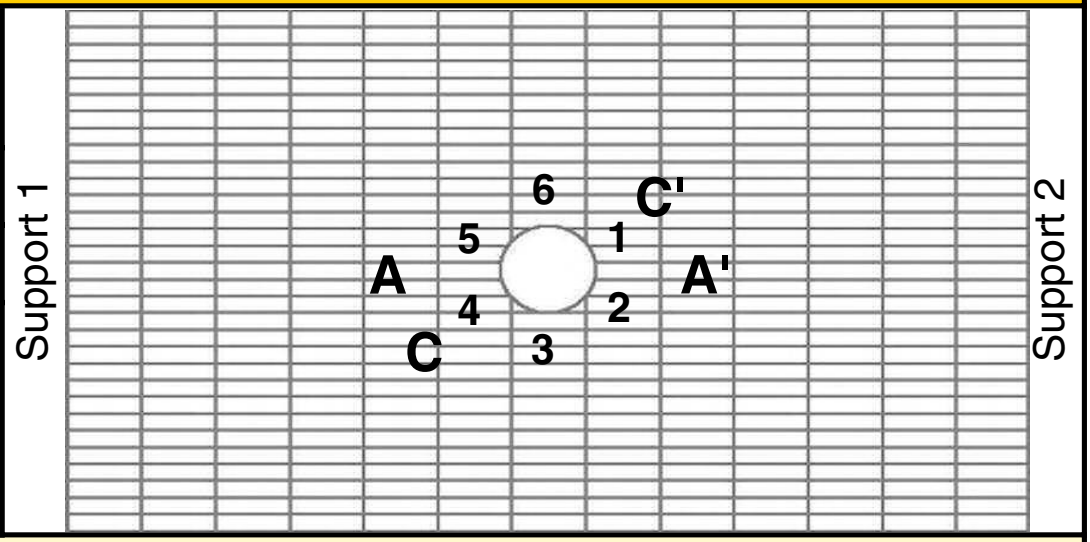
GRATING DEFLECTION TEST
B. Load Location Test
July 2014

Load Location Test 6" Hole In Center 24" From Center

Height Gauge Zeroed At Point 1

No Load

Point #	Reading
1	0.000
2	-0.082
3	-0.066
4	-0.071
5	0.031
6	0.069



Test used 5' x 3' x 1 1/4" serrated steel grating supported by I-beams.
The grating was split and a 6" hole was centered.
Distance from support to the edge of the 6" hole: 24"

T5 - L

Load: 234 lb on 0.627 Sq. ft. --- 373 psf

	Location A Load: 234 lb Total: 234 lb		Location A & A' Load: 234 lb Total: 468 lb		Location C Load: 234 lb Total: 234 lb		Location C & C' Load: 234 lb Total: 468 lb	
Point #	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection
1	-0.076	-0.076	-0.147	**-0.147**	-0.059	-0.059	-0.148	**-0.148**
2	-0.161	-0.079	-0.218	**-0.136**	-0.164	-0.082	-0.194	-0.112
3	-0.141	-0.075	-0.211	-0.145	-0.156	**-0.090**	-0.190	**-0.124**
4	-0.148	**-0.077**	-0.218	**-0.147**	-0.162	**-0.091**	-0.203	**-0.132**
5	-0.057	**-0.088**	-0.112	**-0.143**	-0.024	-0.055	-0.107	-0.138
6	-0.013	-0.082	-0.080	-0.149	0.014	-0.055	-0.069	**-0.138**
Average Deflection		**-0.083**		**-0.143**		**-0.091**		**-0.136**

All deflection readings measured in inches

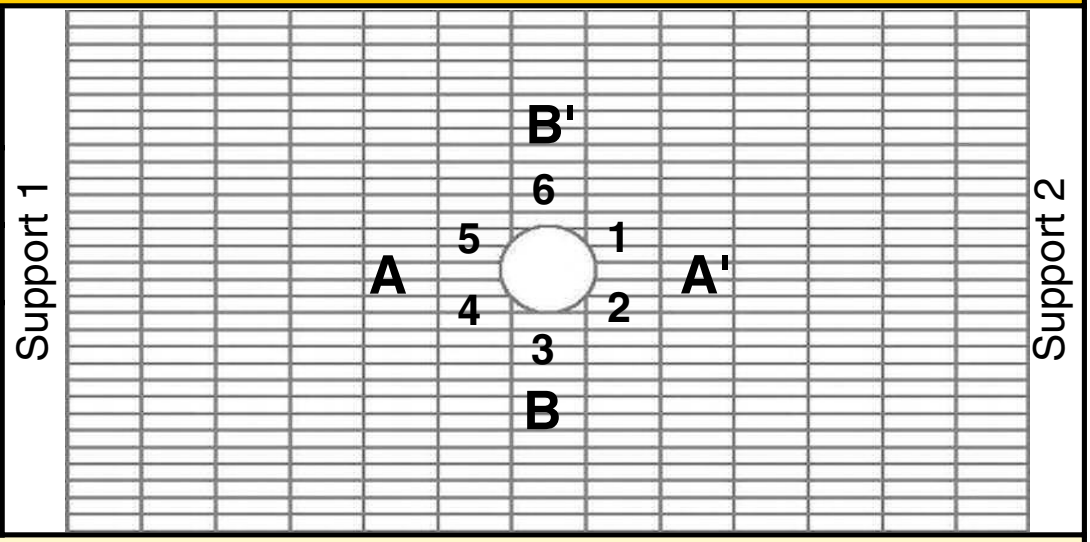
GRATING DEFLECTION TEST
B. Load Location Test
July 2014

Load Location Test 6" Hole In Center 24" From Center

Height Gauge Zeroed At Point 1

No Load

Point #	Reading
1	0.000
2	-0.098
3	-0.099
4	-0.101
5	0.017
6	0.048



Test used 5' x 3' x 1 1/4" serrated steel grating supported by I-beams.
The grating was split and a 6" hole was centered.
Distance from support to the edge of the 6" hole: 24"

T5 - J

Load: 234 lb on 0.627 Sq. ft. --- 373 psf

	Location A Load: 234 lb Total: 234 lb		Location A & A' Load: 234 lb Total: 468 lb		Location B Load: 234 lb Total: 234 lb		Location B & B' Load: 234 lb Total: 468 lb	
Point #	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection
1	-0.076	-0.076	-0.159	**-0.159**	-0.024	-0.024	-0.084	-0.084
2	-0.180	-0.082	-0.263	**-0.165**	-0.151	-0.053	-0.178	-0.080
3	-0.183	-0.084	-0.253	-0.154	-0.176	**-0.077**	-0.194	**-0.095**
4	-0.197	**-0.096**	-0.270	**-0.169**	-0.156	-0.055	-0.182	-0.081
5	-0.076	**-0.093**	-0.144	**-0.161**	-0.008	-0.025	-0.068	-0.085
6	-0.008	-0.056	-0.086	-0.134	0.035	-0.013	-0.028	**-0.076**
Average Deflection		**-0.095**		**-0.164**		**-0.077**		**-0.086**

All deflection readings measured in inches

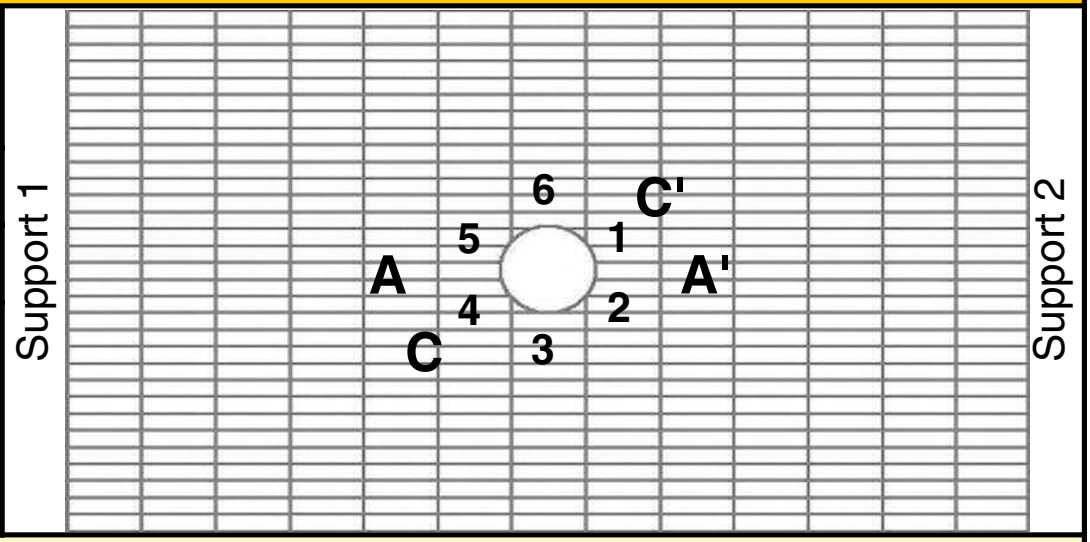
GRATING DEFLECTION TEST
B. Load Location Test
July 2014

Load Location Test 6" Hole In Center 24" From Center

Height Gauge Zeroed At Point 1

No Load

Point #	Reading
1	0.000
2	-0.098
3	-0.099
4	-0.101
5	0.017
6	0.048



Test used 5' x 3' x 1 1/4" serrated steel grating supported by I-beams.
The grating was split and a 6" hole was centered.
Distance from support to the edge of the 6" hole: 24"

T5 - J

Load: 234 lb on 0.627 Sq. ft. --- 373 psf

	Location A Load: 234 lb Total: 234 lb		Location A & A' Load: 234 lb Total: 468 lb		Location C Load: 234 lb Total: 234 lb		Location C & C' Load: 234 lb Total: 468 lb	
Point #	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection
1	-0.076	-0.076	-0.159	**-0.159**	-0.059	-0.059	-0.140	**-0.140**
2	-0.180	-0.082	-0.263	**-0.165**	-0.193	-0.095	-0.234	-0.136
3	-0.183	-0.084	-0.253	-0.154	-0.196	**-0.097**	-0.236	**-0.137**
4	-0.197	**-0.096**	-0.270	**-0.169**	-0.191	**-0.090**	-0.246	**-0.145**
5	-0.076	**-0.093**	-0.144	**-0.161**	-0.048	-0.065	-0.128	-0.145
6	-0.008	-0.056	-0.086	-0.134	0.026	-0.022	-0.071	**-0.119**
Average Deflection		**-0.095**		**-0.164**		**-0.094**		**-0.135**

All deflection readings measured in inches

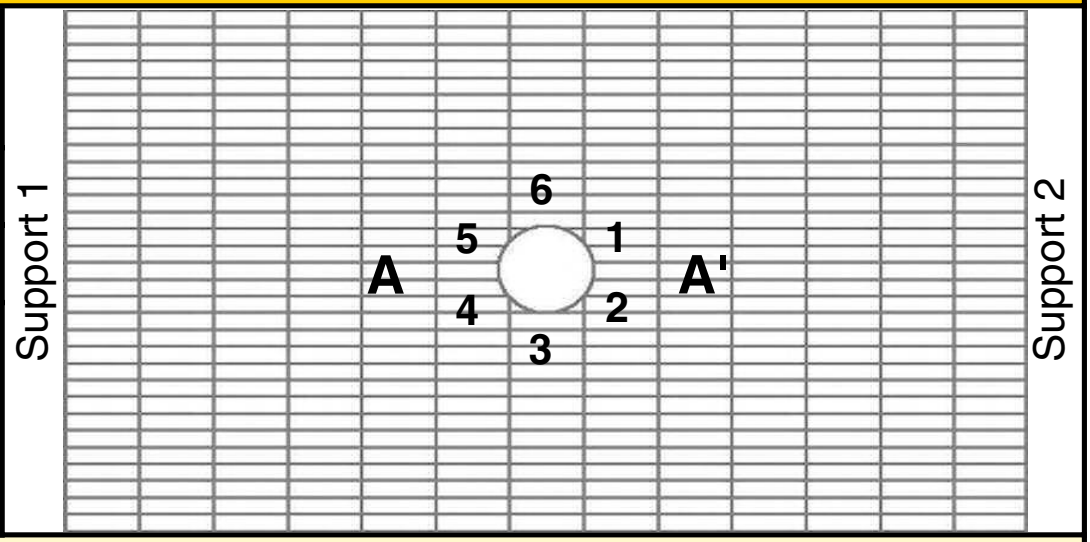
GRATING DEFLECTION TEST
C. Point Load: 6" Hole Center
July 2014

Banding 6" Hole In Center 24" From Support

Height Gauge Zeroed At Point 1

No Load

Point #	Reading
1	0.000
2	-0.031
3	0.004
4	0.021
5	0.031
6	0.028



Test used 5' x 3' x 1 1/4" serrated steel grating supported by I-beams.
The grating was split and a 6" hole was centered.
Distance from support to the edge of the 6" hole: 24"

Point Load: Banding

First Load: 234 lb on 0.627 Sq. ft. --- 373 psf
Second Load: 273 lb on 0.627 Sq. ft. --- 436 psf

	Location A Load: 234 lb Total: 234 lb		**Load: 273 lb**		**Location A & A' Load: 234 lb Total: 468 lb**		**Load: 273 lb**	
Point #	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection
1	-0.096	-0.096			-0.183	**-0.183**		
2	-0.111	-0.080			-0.214	**-0.183**		
3	-0.078	-0.082			-0.158	-0.162		
4	-0.092	**-0.113**			-0.154	**-0.175**		
5	-0.073	**-0.104**			-0.153	**-0.184**		
6	-0.019	-0.047			-0.089	-0.117		
Average Deflection		**-0.109**				**-0.181**		

All deflection readings measured in inches

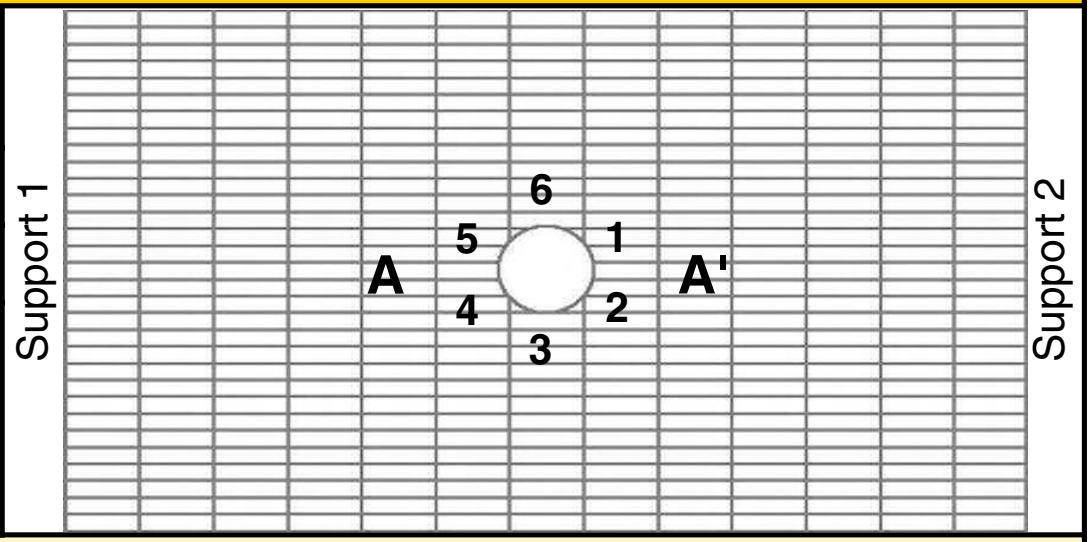
GRATING DEFLECTION TEST
C. Point Load: 6" Hole Center
July 2014

GPC-6 6" Hole In Center 24" From Support

Height Gauge Zeroed At Point 1

No Load

Point #	Reading
1	0.000
2	-0.055
3	-0.062
4	-0.053
5	0.005
6	0.051



Test used 5' x 3' x 1 1/4" serrated steel grating supported by I-beams.
The grating was split and a 6" hole was centered.
Distance from support to the edge of the 6" hole: 24"

Point Load: GPC-6

First Load: 234 lb on 0.627 Sq. ft. --- 373 psf
Second Load: 273 lb on 0.627 Sq. ft. --- 436 psf

	Location A Load: 234 lb Total: 234 lb		**Location A Load: 273 lb Total: 273 lb**		**Location A & A' Load: 234 lb Total: 468 lb**		**Location A & A' Load: 273 lb Total: 546 lb**	
Point #	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection
1	-0.078	-0.078	-0.090	-0.090	-0.157	**-0.157**	-0.173	**-0.173**
2	-0.131	-0.076	-0.135	-0.080	-0.209	**-0.154**	-0.225	**-0.170**
3	-0.137	-0.075	-0.160	-0.098	-0.212	-0.150	-0.234	-0.172
4	-0.144	**-0.091**	-0.150	**-0.097**	-0.211	**-0.158**	-0.225	**-0.172**
5	-0.082	**-0.087**	-0.093	**-0.098**	-0.154	**-0.159**	-0.168	**-0.173**
6	-0.033	-0.084	-0.037	-0.088	-0.105	-0.156	-0.101	-0.152
Average Deflection		**-0.089**		**-0.098**		**-0.157**		**-0.172**

All deflection readings measured in inches

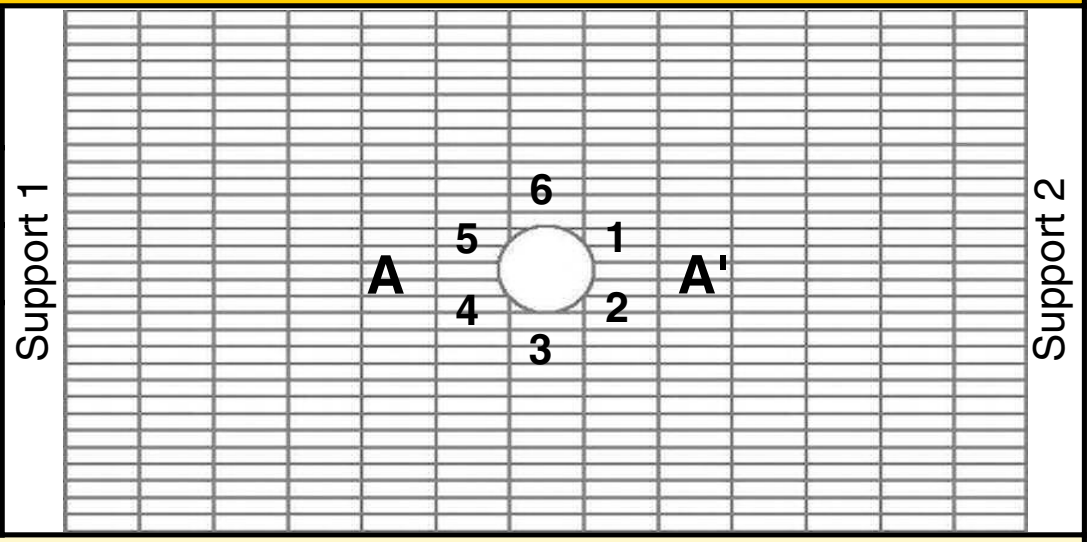
GRATING DEFLECTION TEST
C. Point Load: 6" Hole Center
July 2014

T5-L 6" Hole In Center 24" From Support

Height Gauge Zeroed At Point 1

No Load

Point #	Reading
1	0.000
2	-0.082
3	-0.066
4	-0.071
5	0.031
6	0.069



Test used 5' x 3' x 1 1/4" serrated steel grating supported by I-beams.
The grating was split and a 6" hole was centered.
Distance from support to the edge of the 6" hole: 24"

Point Load: T5-L

First Load: 234 lb on 0.627 Sq. ft. --- 373 psf
Second Load: 273 lb on 0.627 Sq. ft. --- 436 psf

	Location A Load: 234 lb Total: 234 lb		**Load: 273 lb**		**Location A & A' Load: 234 lb Total: 468 lb**		**Location A & A' Load: 273 lb Total: 546 lb**	
Point #	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection
1	-0.076	-0.076			-0.147	**-0.147**	-0.175	**-0.175**
2	-0.161	-0.079			-0.218	**-0.136**	-0.249	**-0.167**
3	-0.141	-0.075			-0.211	-0.145	-0.221	-0.155
4	-0.148	**-0.077**			-0.218	**-0.147**	-0.236	**-0.165**
5	-0.057	**-0.088**			-0.112	**-0.143**	-0.143	**-0.174**
6	-0.013	-0.082			-0.080	-0.149	-0.108	-0.177
Average Deflection		**-0.083**				**-0.143**		**-0.170**

All deflection readings measured in inches

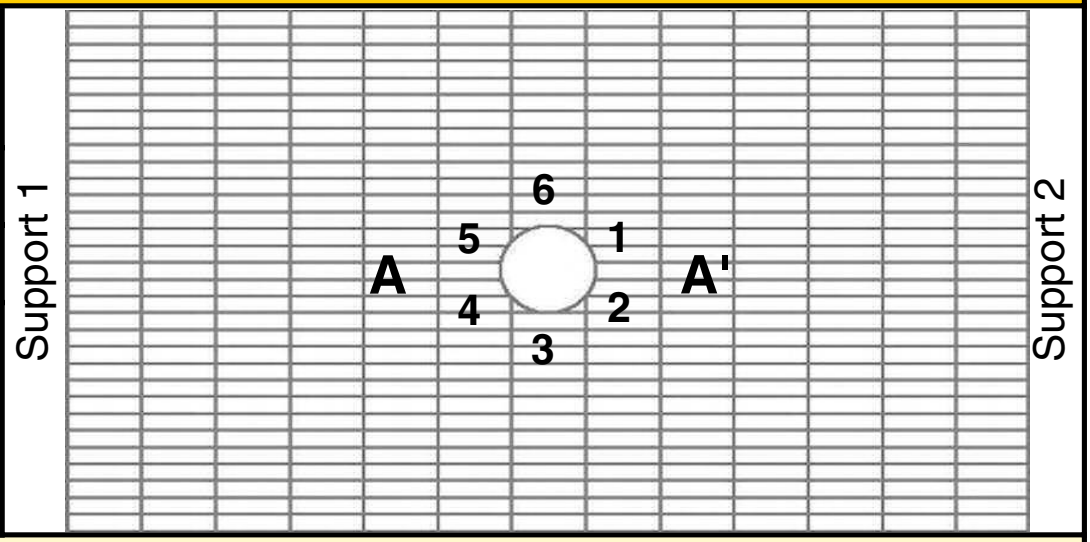
GRATING DEFLECTION TEST
C. Point Load: 6" Hole Center
July 2014

T5-J 6" Hole In Center 24" From Support

Height Gauge Zeroed At Point 1

No Load

Point #	Reading
1	0.000
2	-0.098
3	-0.099
4	-0.101
5	0.017
6	0.048



Test used 5' x 3' x 1 1/4" serrated steel grating supported by I-beams.
The grating was split and a 6" hole was centered.
Distance from support to the edge of the 6" hole: 24"

Point Load: T5-J

First Load: 234 lb on 0.627 Sq. ft. --- 373 psf
Second Load: 273 lb on 0.627 Sq. ft. --- 436 psf

	Location A Load: 234 lb Total: 234 lb		**Load: 273 lb**		**Location A & A' Load: 234 lb Total: 468 lb**		**Location A & A' Load: 273 lb Total: 546 lb**	
Point #	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection
1	-0.076	-0.076			-0.159	**-0.159**	-0.189	**-0.189**
2	-0.180	-0.082			-0.263	**-0.165**	-0.298	**-0.200**
3	-0.183	-0.084			-0.253	-0.154	-0.279	-0.180
4	-0.197	**-0.096**			-0.270	**-0.169**	-0.295	**-0.194**
5	-0.076	**-0.093**			-0.144	**-0.161**	-0.166	**-0.183**
6	-0.008	-0.056			-0.086	-0.134	-0.105	-0.153
Average Deflection		**-0.095**				**-0.164**		**-0.192**

All deflection readings measured in inches

GRATING DEFLECTION TEST

D. Point Load: 6" Hole Offset

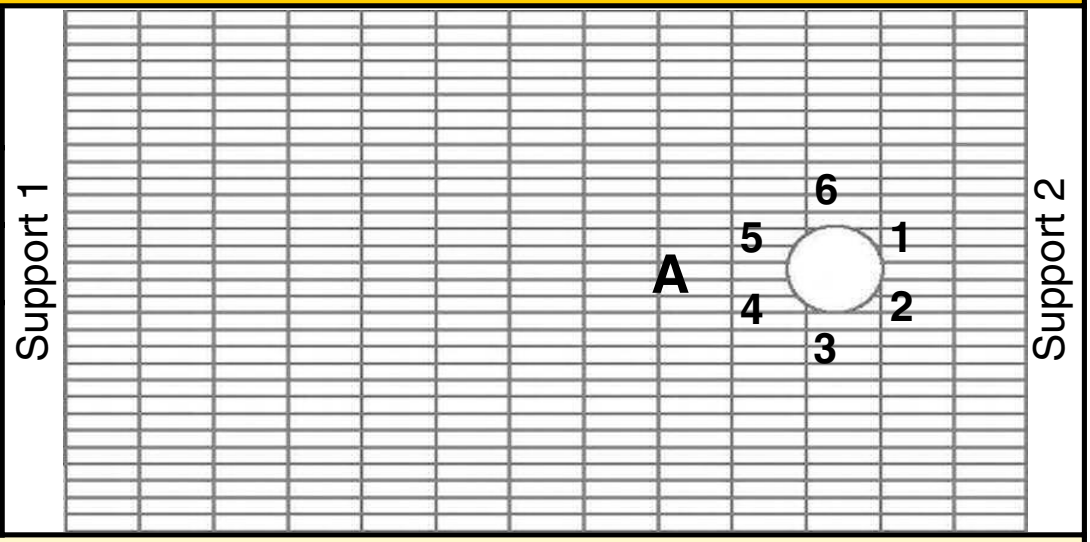
July 2014

Banding 6" Hole Offset 46" From Support

Height Gauge Zeroed At Point 1

No Load

Point #	Reading
1	0.000
2	-0.049
3	0.003
4	0.047
5	0.127
6	0.091



Test used 5' x 3' x 1 1/4" serrated steel grating supported by I-beams.
The grating was split and a 6" hole was located near support 2.
Distance from support 1 to the edge of the 6" hole: 46"

Point Load: Banding

First Load: 234 lb on 0.627 Sq. ft. --- 373 psf
Second Load: 273 lb on 0.627 Sq. ft. --- 436 psf

	Location A Load: 234 lb Total: 234 lb		**Location A Load: 273 lb Total: 273 lb**					
Point #	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection
1	-0.043	-0.043	-0.051	-0.051				
2	-0.091	-0.042	-0.098	-0.049				
3	-0.053	-0.056	-0.063	-0.066				
4	-0.022	**-0.069**	-0.031	**-0.078**				
5	0.04	**-0.087**	0.022	**-0.105**				
6	0.027	-0.064	0.028	-0.063				
Average Deflection		**-0.078**		**-0.092**				

All deflection readings measured in inches

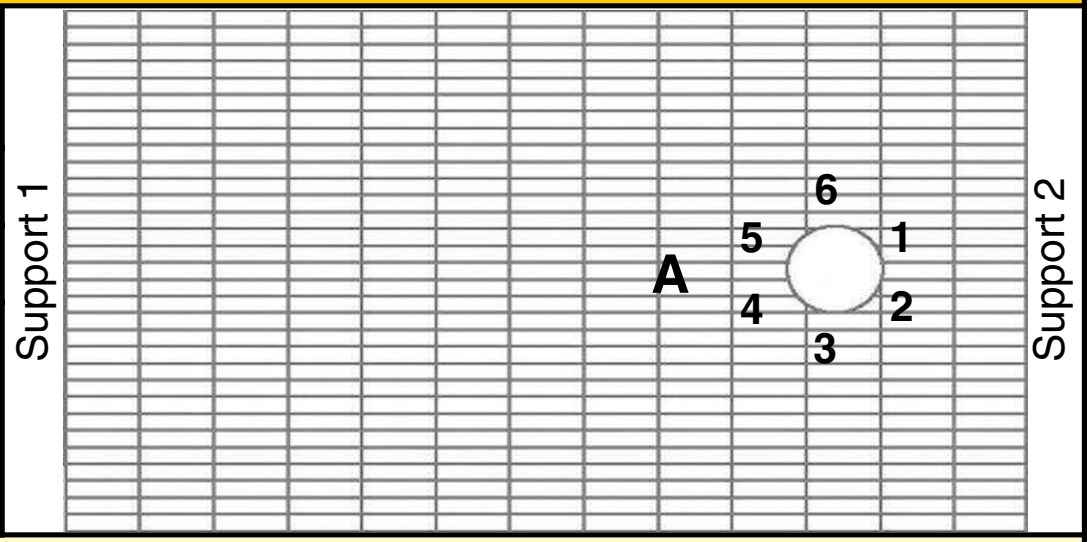
GRATING DEFLECTION TEST
D. Point Load: 6" Hole Offset
July 2014

GPC-6 6" Hole Offset 46" From Support

Height Gauge Zeroed At Point 1

No Load

Point #	Reading
1	0.000
2	0.030
3	0.106
4	0.092
5	0.045
6	0.039



Test used 5' x 3' x 1 1/4" serrated steel grating supported by I-beams.
The grating was split and a 6" hole was located near support 1.
Distance from support 1 to the edge of the 6" hole: 46"

Point Load: GPC-6

First Load: 234 lb on 0.627 Sq. ft. --- 373 psf
Second Load: 273 lb on 0.627 Sq. ft. --- 436 psf

	Location A Load: 234 lb Total: 234 lb		**Location A Load: 273 lb Total: 273 lb**					
Point #	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection
1	-0.036	-0.036	-0.043	-0.043				
2	-0.003	-0.033	-0.003	-0.033				
3	0.064	-0.042	0.059	-0.047				
4	0.034	**-0.058**	0.028	**-0.064**				
5	-0.017	**-0.062**	-0.022	**-0.067**				
6	-0.014	-0.053	-0.02	-0.059				
Average Deflection		**-0.060**		**-0.066**				

All deflection readings measured in inches

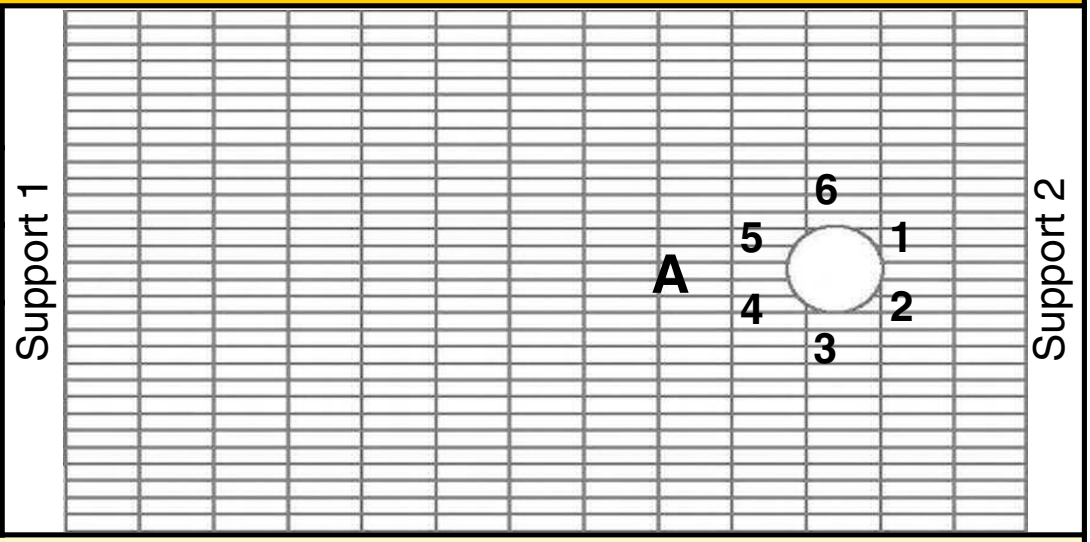
GRATING DEFLECTION TEST
D. Point Load: 6" Hole Offset
July 2014

T5-L 6" Hole Offset 46" From Support

Height Gauge Zeroed At Point 1

No Load

Point #	Reading
1	0.000
2	0.044
3	0.145
4	0.136
5	0.097
6	0.044



Test used 5' x 3' x 1 1/4" serrated steel grating supported by I-beams.
The grating was split and a 6" hole was located near support 1.
Distance from support 1 to the edge of the 6" hole: 46"

Point Load: T5-L

First Load: 234 lb on 0.627 Sq. ft. --- 373 psf
Second Load: 273 lb on 0.627 Sq. ft. --- 436 psf

	Location A Load: 234 lb Total: 234 lb		**Location A Load: 273 lb Total: 273 lb**					
Point #	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection
1	-0.046	-0.046	-0.049	-0.049				
2	0.002	-0.042	0.004	-0.040				
3	0.077	-0.068	0.076	-0.069				
4	0.056	**-0.080**	0.044	**-0.092**				
5	0.014	**-0.083**	0.005	**-0.092**				
6	-0.017	-0.061	-0.023	-0.067				
Average Deflection		**-0.082**		**-0.092**				

All deflection readings measured in inches

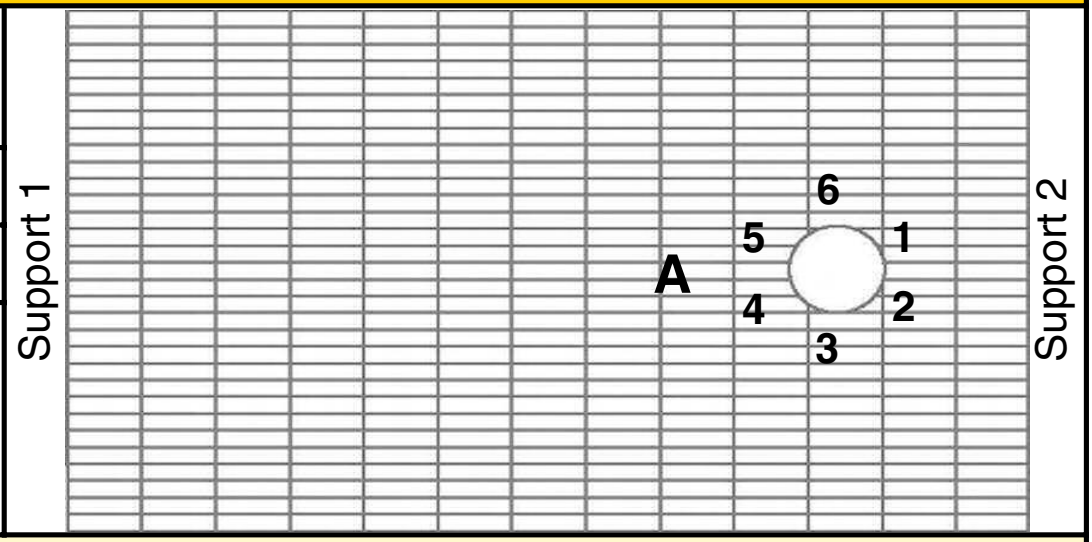
GRATING DEFLECTION TEST
D. Point Load: 6" Hole Offset
July 2014

T5-J 6" Hole Offset 46" From Support

Height Gauge Zeroed At Point 1

No Load

Point #	Reading
1	0.000
2	0.078
3	0.195
4	0.184
5	0.087
6	0.042



Test used 5' x 3' x 1 1/4" serrated steel grating supported by I-beams.
The grating was split and a 6" hole was located near support 1.
Distance from support 1 to the edge of the 6" hole: 46"

Point Load: T5-J

First Load: 234 lb on 0.627 Sq. ft. --- 373 psf
Second Load: 273 lb on 0.627 Sq. ft. --- 436 psf

	Location A Load: 234 lb Total: 234 lb		**Location A Load: 273 lb Total: 273 lb**					
Point #	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection
1	-0.032	-0.032	-0.063	-0.063				
2	0.017	-0.061	0.018	-0.060				
3	0.126	-0.069	0.115	-0.080				
4	0.101	**-0.083**	0.093	**-0.091**				
5	0.009	**-0.078**	-0.001	**-0.088**				
6	-0.019	-0.061	-0.073	-0.115				
Average Deflection		**-0.081**		**-0.090**				

All deflection readings measured in inches

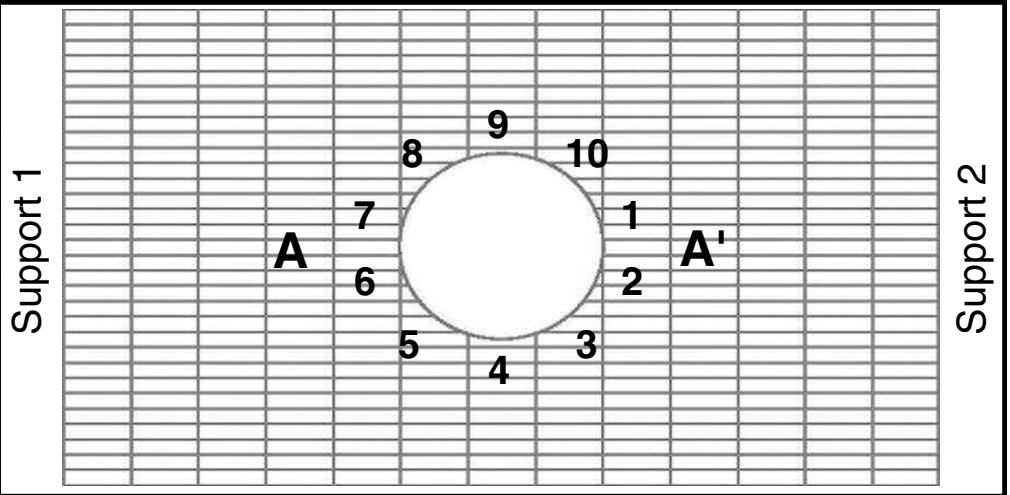
GRATING DEFLECTION TEST
E. Point Load: 14" Hole Center
July 2014

Banding 14" Hole In Center 20" From Support

Height Gauge Zeroed At Point 1

No Load

Point #	Reading
1	0.000
2	0.021
3	-0.112
4	-0.123
5	-0.081
6	-0.086
7	0.008
8	0.021
9	0.016
10	0.043



Test used 5' x 3' x 1 1/4" serrated steel grating supported by I-beams.

The grating was split and a 14" hole was centered.

Distance from support to the edge of the 14" hole: 20"

Point Load: Banding

First Load: 234 lb on 0.627 Sq. ft. --- 373 psf
Second Load: 273 lb on 0.627 Sq. ft. --- 436 psf

	Location A Load: 234 lb Total: 234 lb		**Load: 273 lb**		**Location A & A' Load: 234 lb Total: 468 lb**		**Load: 273 lb**	
Point #	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection
1	-0.118	-0.118			-0.227	**-0.227**		
2	-0.093	-0.114			-0.217	**-0.238**		
3	-0.198	-0.086			-0.284	-0.172		
4	-0.206	-0.083			-0.272	-0.149		
5	-0.183	-0.102			-0.244	-0.163		
6	-0.259	**-0.173**			-0.341	**-0.255**		
7	-0.140	**-0.148**			-0.232	**-0.240**		
8	-0.072	-0.093			-0.140	-0.161		
9	-0.051	-0.067			-0.128	-0.144		
10	-0.035	-0.078			-0.114	-0.157		
Average Deflection		**-0.161**				**-0.240**		

All deflection readings measured in inches

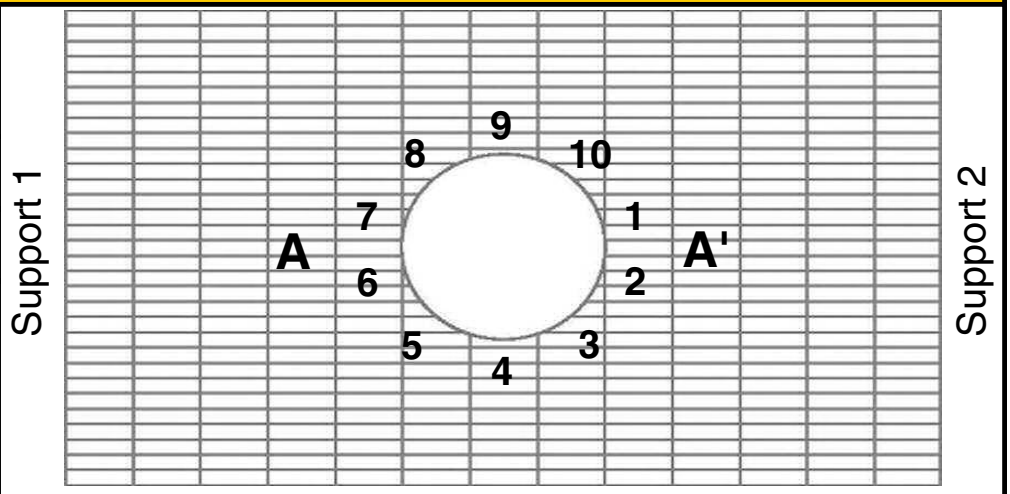
GRATING DEFLECTION TEST
E. Point Load: 14" Hole Center
July 2014

GPC-14 14" Hole In Center 20" From Support

Height Gauge Zeroed At Point 1

No Load

Point #	Reading
1	0.000
2	-0.007
3	0.008
4	0.076
5	0.043
6	-0.011
7	-0.015
8	0.017
9	0.062
10	0.020



Test used 5' x 3' x 1 1/4" serrated steel grating supported by I-beams.

The grating was split and a 14" hole was centered.

Distance from support to the edge of the 14" hole: 20"

Point Load: GPC-14

First Load: 234 lb on 0.627 Sq. ft. --- 373 psf
Second Load: 273 lb on 0.627 Sq. ft. --- 436 psf

	Location A Load: 234 lb Total: 234 lb		**Load: 273 lb**		**Location A & A' Load: 234 lb Total: 468 lb**		**Location A & A' Load: 273 lb Total: 546 lb**	
Point #	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection
1	-0.084	-0.084			-0.179	**-0.179**	-0.202	**-0.202**
2	-0.094	-0.087			-0.186	**-0.179**	-0.208	**-0.201**
3	-0.072	-0.080			-0.144	-0.152	-0.167	-0.175
4	-0.008	-0.084			-0.070	-0.146	-0.089	-0.165
5	-0.054	-0.097			-0.103	-0.146	-0.129	-0.172
6	-0.118	**-0.107**			-0.172	**-0.161**	-0.198	**-0.187**
7	-0.126	**-0.111**			-0.192	**-0.177**	-0.211	**-0.196**
8	-0.087	-0.104			-0.146	-0.163	-0.178	-0.195
9	-0.033	-0.095			-0.104	-0.166	-0.131	-0.193
10	-0.070	-0.090			-0.157	-0.177	-0.181	-0.201
Average Deflection		**-0.109**				**-0.174**		**-0.197**

All deflection readings measured in inches

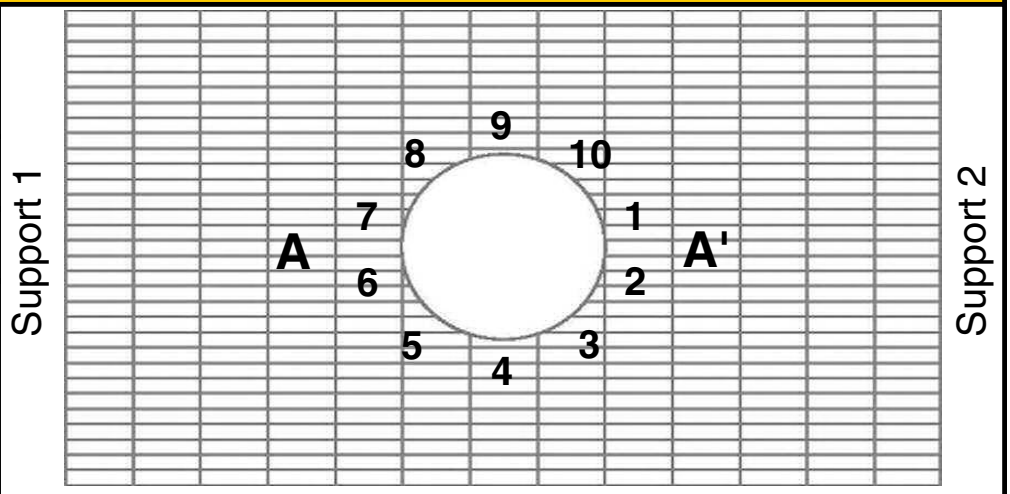
GRATING DEFLECTION TEST
E. Point Load: 14" Hole Center
July 2014

T5-L 14" Hole In Center 20" From Support

Height Gauge Zeroed At Point 1

No Load

Point #	Reading
1	0.000
2	0.009
3	0.012
4	-0.029
5	0.007
6	0.029
7	0.005
8	-0.017
9	-0.014
10	-0.022



Test used 5' x 3' x 1 1/4" serrated steel grating supported by I-beams.

The grating was split and a 14" hole was centered.

Distance from support to the edge of the 14" hole: 20"

Point Load: T5-L

First Load: 234 lb on 0.627 Sq. ft. --- 373 psf
Second Load: 273 lb on 0.627 Sq. ft. --- 436 psf

	Location A Load: 234 lb Total: 234 lb		**Load: 273 lb**		**Location A & A' Load: 234 lb Total: 468 lb**		**Location A & A' Load: 273 lb Total: 546 lb**	
Point #	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection
1	-0.109	-0.109			-0.213	**-0.213**	-0.241	**-0.241**
2	-0.097	-0.106			-0.203	**-0.212**	-0.228	**-0.237**
3	-0.091	-0.103			-0.175	-0.187	-0.204	-0.216
4	-0.118	-0.089			-0.200	-0.171	-0.215	-0.186
5	-0.104	-0.111			-0.173	-0.180	-0.202	-0.209
6	-0.118	**-0.147**			-0.176	**-0.205**	-0.216	**-0.245**
7	-0.138	**-0.143**			-0.197	**-0.202**	-0.226	**-0.231**
8	-0.147	-0.130			-0.210	-0.193	-0.240	-0.223
9	-0.129	-0.115			-0.206	-0.192	-0.219	-0.205
10	-0.112	-0.090			-0.208	-0.186	-0.236	-0.214
Average Deflection		**-0.145**				**-0.208**		**-0.239**

All deflection readings measured in inches

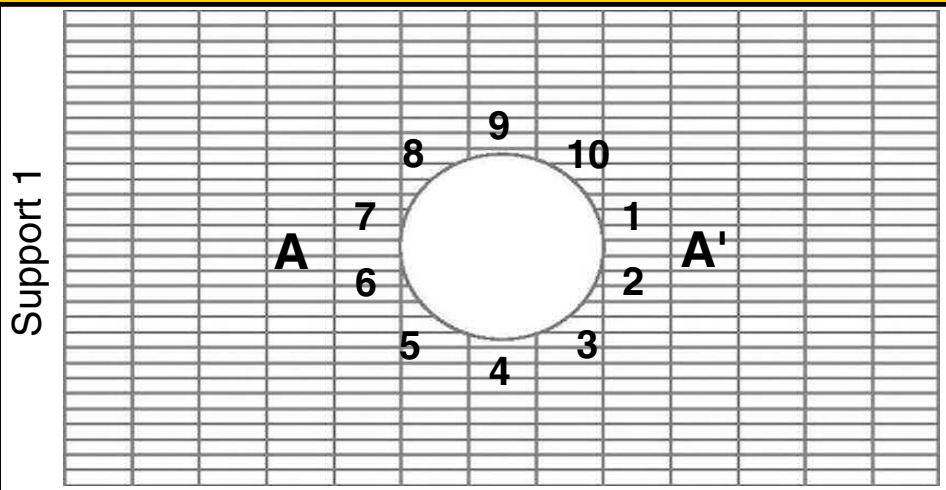
GRATING DEFLECTION TEST
E. Point Load: 14" Hole Center
July 2014

T5-J 14" Hole In Center 20" From Support

Height Gauge Zeroed At Point 1

No Load

Point #	Reading
1	0.000
2	0.017
3	0.039
4	-0.009
5	0.023
6	0.046
7	0.019
8	-0.023
9	-0.040
10	-0.021



Test used 5' x 3' x 1 1/4" serrated steel grating supported by I-beams.

The grating was split and a 14" hole was centered.

Distance from support to the edge of the 14" hole: 20"

Point Load: T5-J

First Load: 234 lb on 0.627 Sq. ft. --- 373 psf
Second Load: 273 lb on 0.627 Sq. ft. --- 436 psf

	Location A Load: 234 lb Total: 234 lb		**Load: 273 lb**		**Location A & A' Load: 234 lb Total: 468 lb**		**Location A & A' Load: 273 lb Total: 546 lb**	
Point #	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection
1	-0.126	-0.126			-0.227	**-0.227**	-0.259	**-0.259**
2	-0.084	-0.101			-0.176	**-0.193**	-0.198	**-0.215**
3	-0.063	-0.102			-0.132	-0.171	-0.153	-0.192
4	-0.108	-0.099			-0.159	-0.150	-0.174	-0.165
5	-0.097	-0.120			-0.148	-0.171	-0.173	-0.196
6	-0.112	**-0.158**			-0.167	**-0.213**	-0.188	**-0.234**
7	-0.173	**-0.192**			-0.223	**-0.242**	-0.253	**-0.272**
8	-0.172	-0.149			-0.236	-0.213	-0.268	-0.245
9	-0.162	-0.122			-0.234	-0.194	-0.259	-0.219
10	-0.151	-0.130			-0.236	-0.215	-0.264	-0.243
Average Deflection		**-0.175**				**-0.219**		**-0.245**

All deflection readings measured in inches

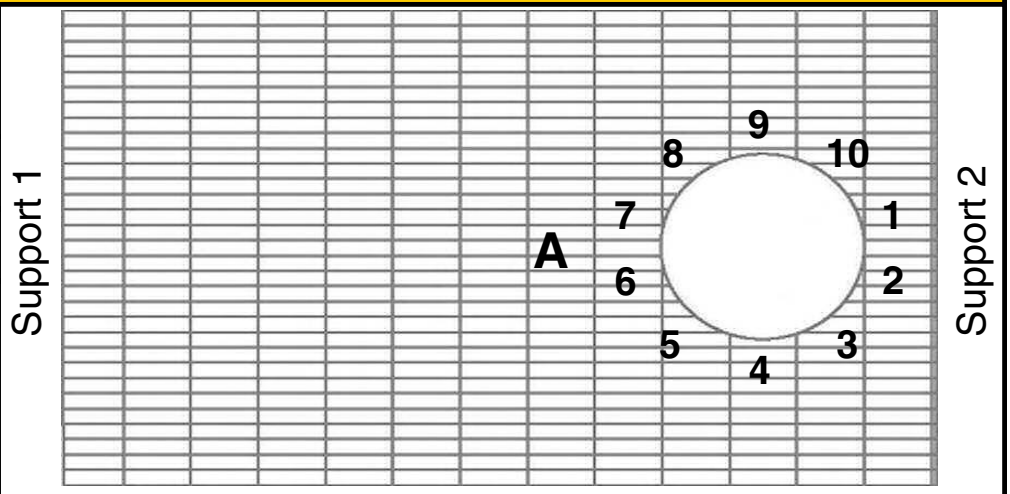
GRATING DEFLECTION TEST
F. Point Load: 14" Hole Offset
July 2014

Banding 14" Hole Offset 38" From Support

Height Gauge Zeroed At Point 1

No Load

Point #	Reading
1	0.000
2	-0.087
3	-0.066
4	-0.021
5	0.023
6	0.031
7	-0.005
8	-0.056
9	-0.108
10	-0.126



Test used 5' x 3' x 1 1/4" serrated steel grating supported by I-beams.

The grating was split and a 14" hole was located near support 2.

Distance from support 1 to the edge of the 14" hole: 38"

Point Load: Banding

First Load: 234 lb on 0.627 Sq. ft. --- 373 psf
Second Load: 273 lb on 0.627 Sq. ft. --- 436 psf

	Location A Load: 234 lb Total: 234 lb		**Location A Load: 273 lb Total: 273 lb**					
Point #	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection
1	-0.049	-0.049	-0.055	-0.055				
2	-0.128	-0.041	-0.136	-0.049				
3	-0.121	-0.055	-0.128	-0.062				
4	-0.088	-0.067	-0.103	-0.082				
5	-0.076	-0.099	-0.089	-0.112				
6	-0.136	**-0.167**	-0.161	**-0.192**				
7	-0.183	**-0.178**	-0.208	**-0.203**				
8	-0.162	-0.106	-0.174	-0.118				
9	-0.184	-0.076	-0.194	-0.086				
10	-0.179	-0.053	-0.188	-0.062				
Average Deflection		**-0.173**		**-0.198**				

All deflection readings measured in inches

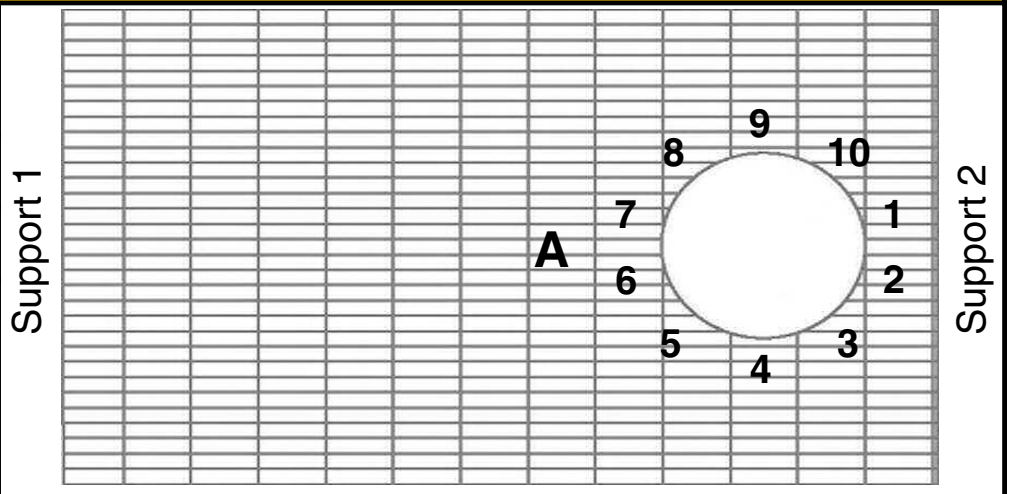
GRATING DEFLECTION TEST
F. Point Load: 14" Hole Offset
July 2014

GPC-14 14" Hole Offset 38" From Support

Height Gauge Zeroed At Point 1

No Load

Point #	Reading
1	0.000
2	0.011
3	0.065
4	0.144
5	0.113
6	0.055
7	0.036
8	0.052
9	0.068
10	0.009



Test used 5' x 3' x 1 1/4" serrated steel grating supported by I-beams.

The grating was split and a 14" hole was located near support 2.

Distance from support 1 to the edge of the 14" hole: 38"

Point Load: GPC-14

First Load: 234 lb on 0.627 Sq. ft. --- 373 psf
Second Load: 273 lb on 0.627 Sq. ft. --- 436 psf

	Location A Load: 234 lb Total: 234 lb		**Location A Load: 273 lb Total: 273 lb**					
Point #	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection
1	-0.053	-0.053	-0.049	-0.049				
2	-0.029	-0.040	-0.032	-0.043				
3	0.017	-0.048	0.009	-0.056				
4	0.076	-0.068	0.066	-0.078				
5	0.011	-0.102	0.003	-0.110				
6	-0.078	**-0.133**	-0.092	**-0.147**				
7	-0.102	**-0.138**	-0.119	**-0.155**				
8	-0.068	-0.120	-0.079	-0.131				
9	-0.021	-0.089	-0.032	-0.100				
10	-0.051	-0.060	-0.039	-0.048				
Average Deflection		**-0.136**		**-0.151**				

All deflection readings measured in inches

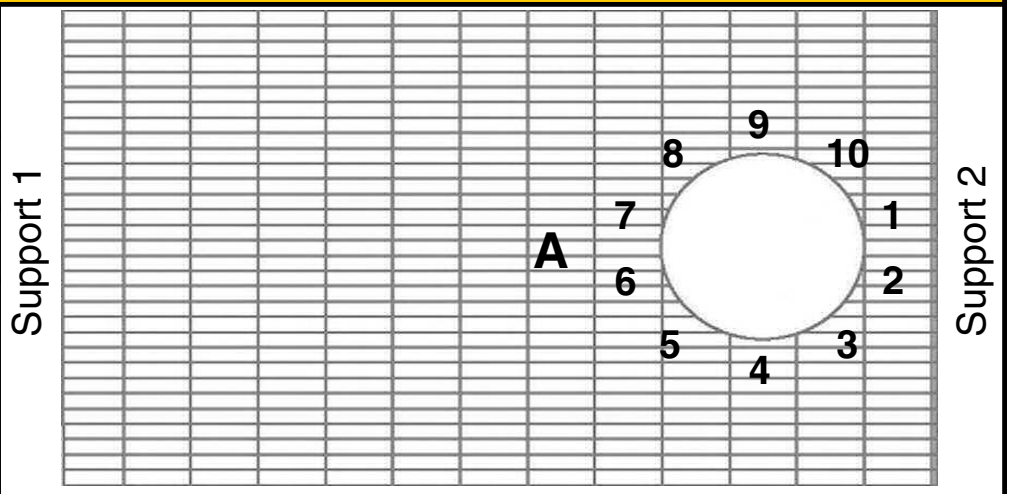
GRATING DEFLECTION TEST
F. Point Load: 14" Hole Offset
July 2014

T5-L 14" Hole Offset 38" From Support

Height Gauge Zeroed At Point 1

No Load

Point #	Reading
1	0.000
2	0.016
3	0.078
4	0.091
5	0.098
6	0.094
7	0.080
8	0.061
9	0.038
10	-0.008



Test used 5' x 3' x 1 1/4" serrated steel grating supported by I-beams.

The grating was split and a 14" hole was located near support 2.

Distance from support 1 to the edge of the 14" hole: 38"

Point Load: T5-L

First Load: 234 lb on 0.627 Sq. ft. --- 373 psf
Second Load: 273 lb on 0.627 Sq. ft. --- 436 psf

	Location A Load: 234 lb Total: 234 lb		**Location A Load: 273 lb Total: 273 lb**					
Point #	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection
1	-0.049	-0.049	-0.057	-0.057				
2	-0.019	-0.035	-0.030	-0.046				
3	0.022	-0.056	-0.014	-0.092				
4	0.003	-0.088	0.004	-0.087				
5	-0.014	-0.112	-0.032	-0.130				
6	-0.081	**-0.175**	-0.101	**-0.195**				
7	-0.091	**-0.171**	-0.112	**-0.192**				
8	-0.054	-0.115	-0.073	-0.134				
9	-0.048	-0.086	-0.058	-0.096				
10	-0.066	-0.058	-0.078	-0.070				
Average Deflection		**-0.173**		**-0.194**				

All deflection readings measured in inches

GRATING DEFLECTION TEST

F. Point Load: 14" Hole Offset

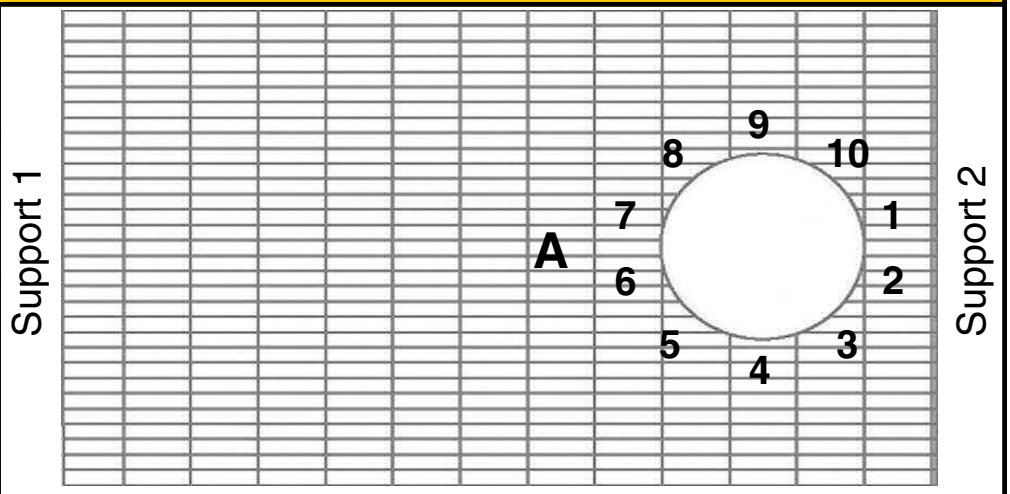
July 2014

T5-J 14" Hole Offset 38" From Support

Height Gauge Zeroed At Point 1

No Load

Point #	Reading
1	0.000
2	-0.019
3	0.029
4	0.048
5	0.108
6	0.110
7	0.097
8	0.052
9	0.019
10	-0.024



Test used 5' x 3' x 1 1/4" serrated steel grating supported by I-beams.

The grating was split and a 14" hole was located near support 2.

Distance from support 1 to the edge of the 14" hole: 38"

Point Load: T5-J

First Load: 234 lb on 0.627 Sq. ft. --- 373 psf
Second Load: 273 lb on 0.627 Sq. ft. --- 436 psf

	Location A Load: 234 lb Total: 234 lb		**Location A Load: 273 lb Total: 273 lb**					
Point #	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection	Reading	Actual Deflection
1	-0.052	-0.052	-0.065	-0.065				
2	-0.061	-0.042	-0.077	-0.058				
3	-0.033	-0.062	-0.048	-0.077				
4	-0.029	-0.077	-0.032	-0.080				
5	-0.028	-0.136	-0.047	-0.155				
6	-0.084	**-0.194**	-0.112	**-0.222**				
7	-0.086	**-0.183**	-0.109	**-0.206**				
8	-0.077	-0.129	-0.096	-0.148				
9	-0.063	-0.082	-0.077	-0.096				
10	-0.086	-0.062	-0.096	-0.072				
Average Deflection		**-0.189**		**-0.214**				

All deflection readings measured in inches

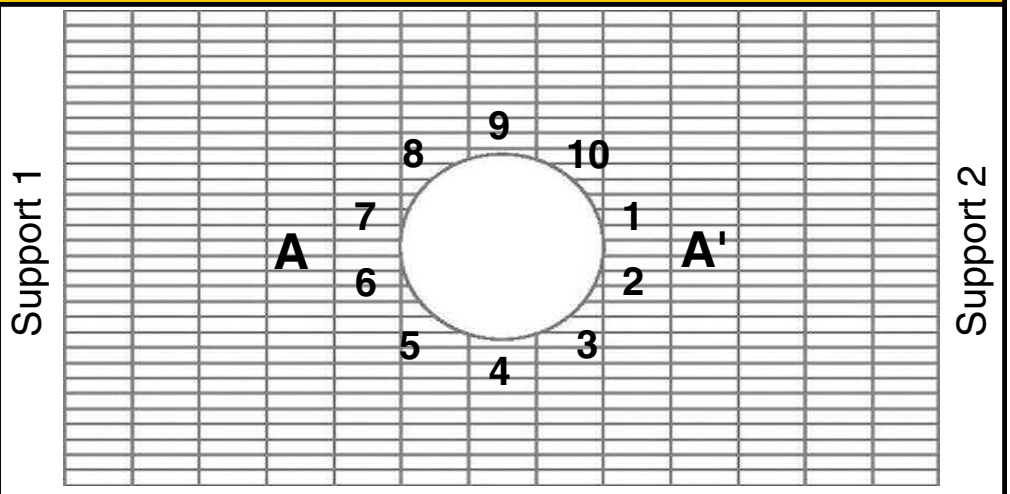
GRATING DEFLECTION TEST
G. Special Point Load: 14" Center
July 2014

Banding 14" Hole In Center 20" From Support

Height Gauge Zeroed At Point 1

No Load

Point #	Reading
1	0.000
2	0.021
3	-0.112
4	-0.123
5	-0.081
6	-0.086
7	0.008
8	0.021
9	0.016
10	0.043



Test used 5' x 3' x 1 1/4" serrated steel grating supported by I-beams.

The grating was split and a 14" hole was centered.

Distance from support to the edge of the 14" hole: 20"

Point Load: Banding

First Load: 234 lb on 0.627 Sq. ft. --- 373 psf

		Location A Load: 234 lb Total: 468 lb		**Location A & A' Load: 234 lb Total: 936 lb**		
Point #		Reading	Actual Deflection	Reading	Actual Deflection	
1		-0.162	-0.162	-0.314	**-0.314**	
2		-0.148	-0.169	-0.344	**-0.365**	
3		-0.263	-0.151	-0.296	-0.184	
4		-0.272	-0.149	-0.375	-0.252	
5		-0.251	-0.170	-0.357	-0.276	
6		-0.334	**-0.248**	-0.376	**-0.290**	
7		-0.204	**-0.212**	-0.306	**-0.314**	
8		-0.123	-0.144	-0.235	-0.256	
9		-0.121	-0.137	-0.223	-0.239	
10		-0.083	-0.126	-0.214	-0.257	
Average Deflection			**-0.230**		**-0.321**	

All deflection readings measured in inches

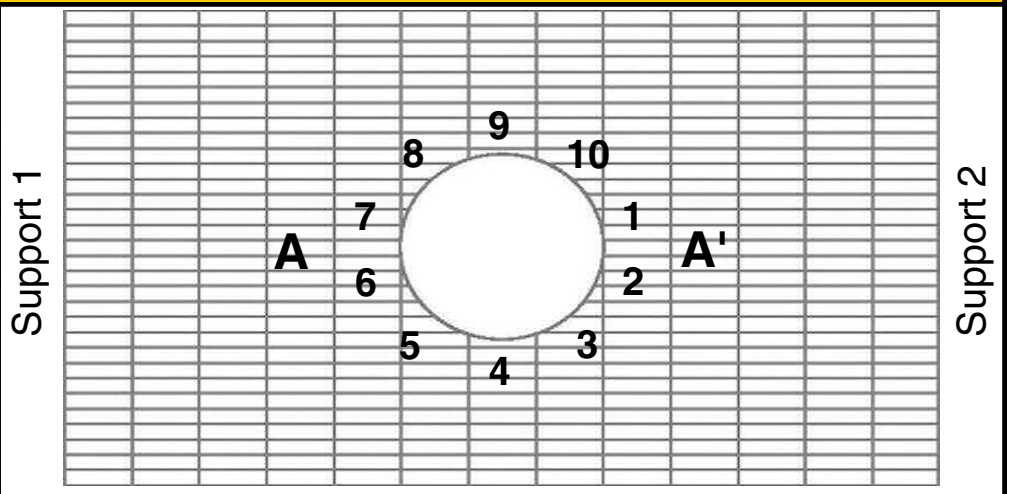
GRATING DEFLECTION TEST
G. Special Point Load: 14" Center
July 2014

GPC-14 14" Hole In Center 20" From Support

Height Gauge Zeroed At Point 1

No Load

Point #	Reading
1	0.000
2	-0.007
3	0.008
4	0.076
5	0.043
6	-0.011
7	-0.015
8	0.017
9	0.062
10	0.020



Test used 5' x 3' x 1 1/4" serrated steel grating supported by I-beams.

The grating was split and a 14" hole was centered.

Distance from support to the edge of the 14" hole: 20"

Point Load: GPC-14

First Load: 234 lb on 0.627 Sq. ft. --- 373 psf

		Location A Load: 234 lb Total: 468 lb		**Location A & A' Load: 234 lb Total: 936 lb**		
Point #		Reading	Actual Deflection	Reading	Actual Deflection	
1		-0.144	-0.144	-0.304	**-0.304**	
2		-0.153	-0.146	-0.305	**-0.298**	
3		-0.129	-0.137	-0.264	-0.272	
4		-0.066	-0.142	-0.190	-0.266	
5		-0.111	-0.154	-0.223	-0.266	
6		-0.183	**-0.172**	-0.285	**-0.274**	
7		-0.201	**-0.186**	-0.308	**-0.293**	
8		-0.167	-0.184	-0.287	-0.304	
9		-0.108	-0.170	-0.241	-0.303	
10		-0.145	-0.165	-0.293	-0.313	
Average Deflection			**-0.179**		**-0.292**	

All deflection readings measured in inches

GRATING DEFLECTION TEST

G. Special Point Load: 14" Center

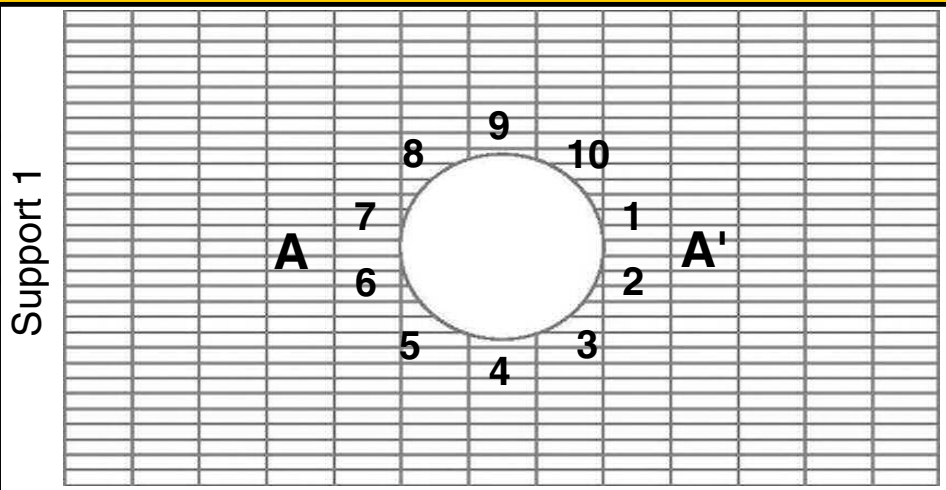
July 2014

T5-L 14" Hole In Center 20" From Support

Height Gauge Zeroed At Point 1

No Load

Point #	Reading
1	0.000
2	0.009
3	0.012
4	-0.029
5	0.007
6	0.029
7	0.005
8	-0.017
9	-0.014
10	-0.022



Test used 5' x 3' x 1 1/4" serrated steel grating supported by I-beams.

The grating was split and a 14" hole was centered.

Distance from support to the edge of the 14" hole: 20"

Point Load: T5-L

First Load: 234 lb on 0.627 Sq. ft. --- 373 psf

		Location A Load: 234 lb Total: 468 lb		**Location A & A' Load: 234 lb Total: 936 lb**		
Point #		Reading	Actual Deflection	Reading	Actual Deflection	
1		-0.168	-0.168	-0.329	**-0.329**	
2		-0.158	-0.167	-0.322	**-0.331**	
3		-0.150	-0.162	-0.295	-0.307	
4		-0.186	-0.157	-0.313	-0.284	
5		-0.178	-0.185	-0.290	-0.297	
6		-0.180	**-0.209**	-0.294	**-0.323**	
7		-0.210	**-0.215**	-0.321	**-0.326**	
8		-0.213	-0.196	-0.329	-0.312	
9		-0.195	-0.181	-0.331	-0.317	
10		-0.173	-0.151	-0.338	-0.316	
Average Deflection			**-0.212**		**-0.327**	

All deflection readings measured in inches

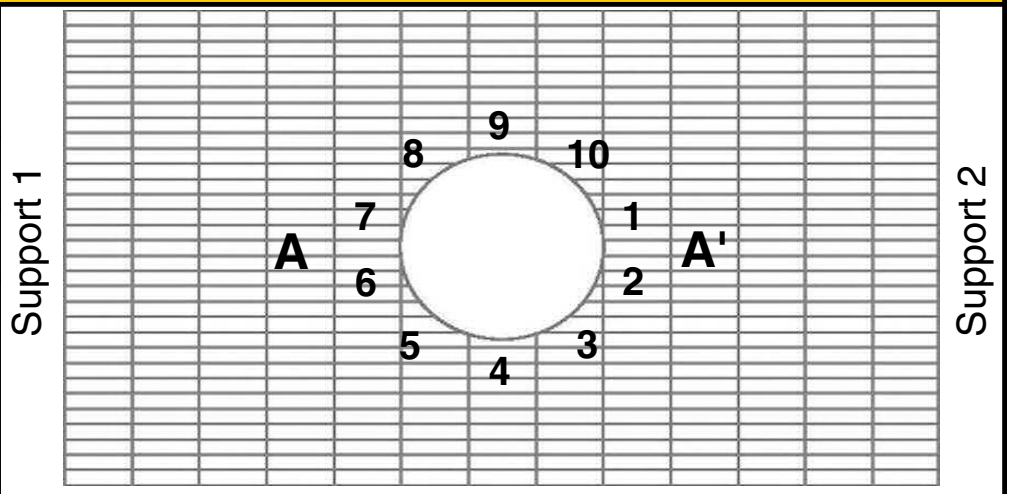
GRATING DEFLECTION TEST
G. Special Point Load: 14" Center
July 2014

T5-J 14" Hole In Center 20" From Support

Height Gauge Zeroed At Point 1

No Load

Point #	Reading
1	0.000
2	0.017
3	0.039
4	-0.009
5	0.023
6	0.046
7	0.019
8	-0.023
9	-0.040
10	-0.021



Test used 5' x 3' x 1 1/4" serrated steel grating supported by I-beams.

The grating was split and a 14" hole was centered.

Distance from support to the edge of the 14" hole: 20"

Point Load: T5-J

First Load: 234 lb on 0.627 Sq. ft. --- 373 psf

			Location A Load: 234 lb Total: 468 lb		**Location A & A' Load: 234 lb Total: 936 lb**			
Point #			Reading	Actual Deflection	Reading	Actual Deflection		
1			-0.174	-0.174	-0.364	**-0.364**		
2			-0.132	-0.149	-0.306	**-0.323**		
3			-0.115	-0.154	-0.266	-0.305		
4			-0.159	-0.150	-0.293	-0.284		
5			-0.161	-0.184	-0.286	-0.309		
6			-0.174	**-0.220**	-0.28	**-0.326**		
7			-0.236	**-0.255**	-0.346	**-0.365**		
8			-0.233	-0.210	-0.362	-0.339		
9			-0.222	-0.182	-0.361	-0.321		
10			-0.199	-0.178	-0.372	-0.351		
Average Deflection				**-0.238**		**-0.345**		

All deflection readings measured in inches

GRATING DEFLECTION TEST

H. Special Point Load: 14" Offset

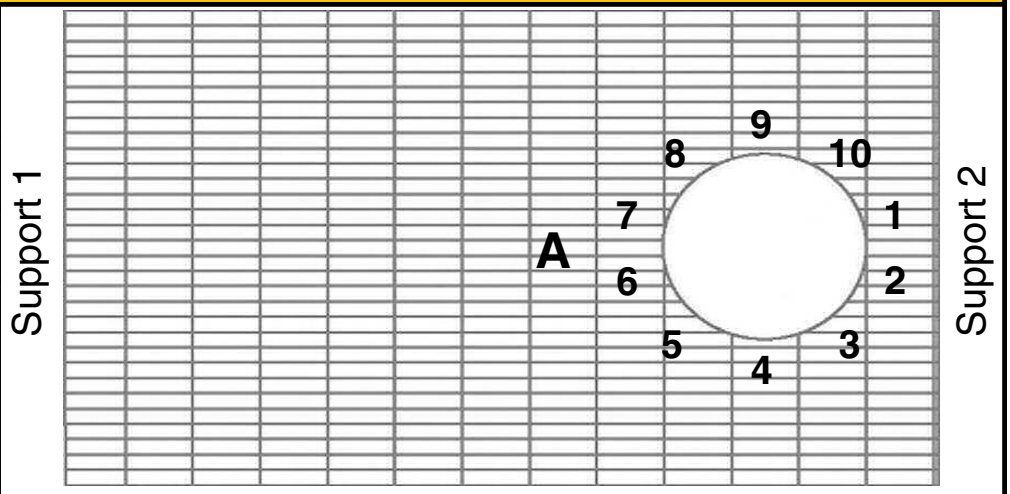
July 2014

Banding 14" Hole Offset 38" From Support

Height Gauge Zeroed At Point 1

No Load

Point #	Reading
1	0.000
2	-0.087
3	-0.066
4	-0.021
5	0.023
6	0.031
7	-0.005
8	-0.056
9	-0.108
10	-0.126



Test used 5' x 3' x 1 1/4" serrated steel grating supported by I-beams.

The grating was split and a 14" hole was located near support 2.

Distance from support 1 to the edge of the 14" hole: 38"

Point Load: Banding

First Load: 234 lb on 0.627 Sq. ft. --- 373 psf

					Location A Load: 234 lb Total: 468 lb			
Point #					Reading	Actual Deflection		
1					-0.077	-0.077		
2					-0.159	-0.072		
3					-0.154	-0.088		
4					-0.141	-0.120		
5					-0.133	-0.156		
6					-0.209	**-0.240**		
7					-0.264	**-0.259**		
8					-0.229	-0.173		
9					-0.240	-0.132		
10					-0.226	-0.100		
Average Deflection						**-0.250**		

All deflection readings measured in inches

GRATING DEFLECTION TEST

H. Special Point Load: 14" Offset

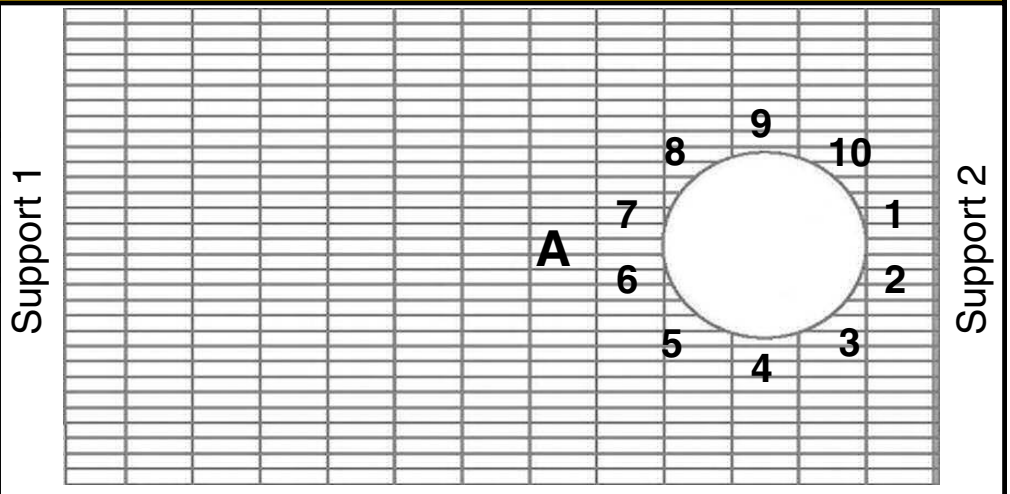
July 2014

GPC-14 14" Hole Offset 38" From Support

Height Gauge Zeroed At Point 1

No Load

Point #	Reading
1	0.000
2	0.011
3	0.065
4	0.144
5	0.113
6	0.055
7	0.036
8	0.052
9	0.068
10	0.009



Test used 5' x 3' x 1 1/4" serrated steel grating supported by I-beams.

The grating was split and a 14" hole was located near support 2.

Distance from support 1 to the edge of the 14" hole: 38"

Point Load: GPC-14

First Load: 234 lb on 0.627 Sq. ft. --- 373 psf

					Location A Load: 234 lb Total: 468 lb			
Point #					Reading	Actual Deflection		
1					-0.079	-0.079		
2					-0.053	-0.064		
3					-0.026	-0.091		
4					0.016	-0.128		
5					-0.058	-0.171		
6					-0.147	**-0.202**		
7					-0.166	**-0.202**		
8					-0.116	-0.168		
9					-0.063	-0.131		
10					-0.082	-0.091		
Average Deflection						**-0.202**		

All deflection readings measured in inches

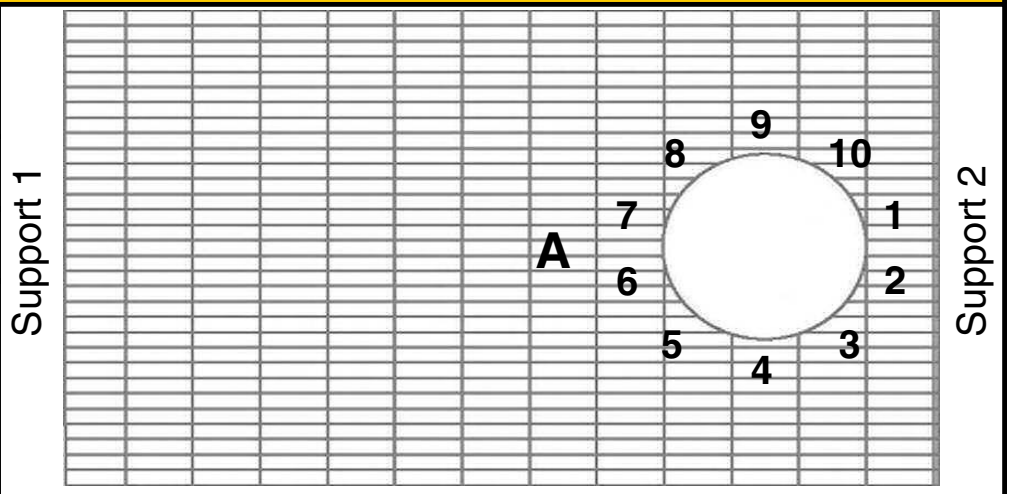
GRATING DEFLECTION TEST
H. Special Point Load: 14" Offset
July 2014

T5-L 14" Hole Offset 38" From Support

Height Gauge Zeroed At Point 1

No Load

Point #	Reading
1	0.000
2	0.016
3	0.078
4	0.091
5	0.098
6	0.094
7	0.080
8	0.061
9	0.038
10	-0.008



Test used 5' x 3' x 1 1/4" serrated steel grating supported by I-beams.

The grating was split and a 14" hole was located near support 2.

Distance from support 1 to the edge of the 14" hole: 38"

Point Load: T5-L

First Load: 234 lb on 0.627 Sq. ft. --- 373 psf

					Location A Load: 234 lb Total: 468 lb			
Point #					Reading	Actual Deflection		
1					-0.079	-0.079		
2					-0.051	-0.067		
3					-0.016	-0.094		
4					-0.038	-0.129		
5					-0.091	-0.189		
6					-0.160	**-0.254**		
7					-0.169	**-0.249**		
8					-0.132	-0.193		
9					-0.105	-0.143		
10					-0.109	-0.101		
Average Deflection						**-0.252**		

All deflection readings measured in inches

GRATING DEFLECTION TEST

H. Special Point Load: 14" Offset

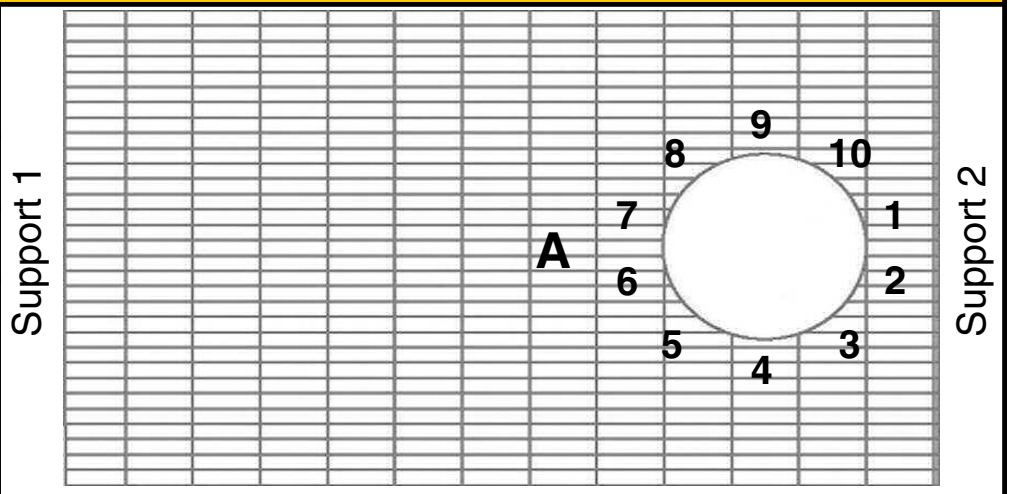
July 2014

T5-J 14" Hole Offset 38" From Support

Height Gauge Zeroed At Point 1

No Load

Point #	Reading
1	0.000
2	-0.019
3	0.029
4	0.048
5	0.108
6	0.110
7	0.097
8	0.052
9	0.019
10	-0.024



Test used 5' x 3' x 1 1/4" serrated steel grating supported by I-beams.

The grating was split and a 14" hole was located near support 2.

Distance from support 1 to the edge of the 14" hole: 38"

Point Load: T5-J

First Load: 234 lb on 0.627 Sq. ft. --- 373 psf

					Location A Load: 234 lb Total: 468 lb			
Point #					Reading	Actual Deflection		
1					-0.079	-0.079		
2					-0.097	-0.078		
3					-0.071	-0.100		
4					-0.075	-0.123		
5					-0.092	-0.200		
6					-0.161	**-0.271**		
7					-0.181	**-0.278**		
8					-0.162	-0.214		
9					-0.129	-0.148		
10					-0.132	-0.108		
Average Deflection						**-0.275**		

All deflection readings measured in inches

INTREPID INDUSTRIES INC.

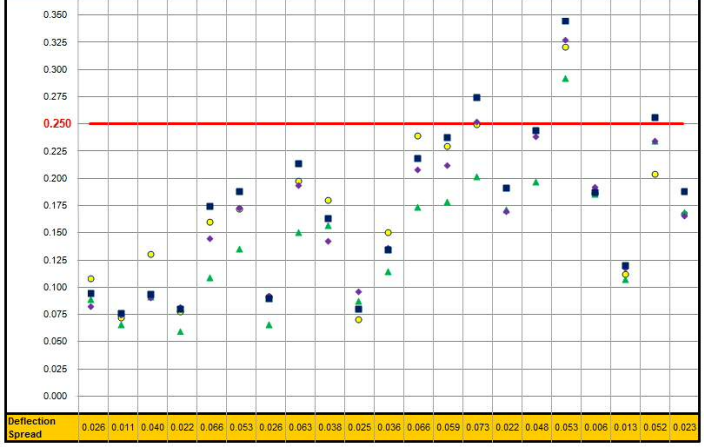
La Porte, TX

Deflection Test Data

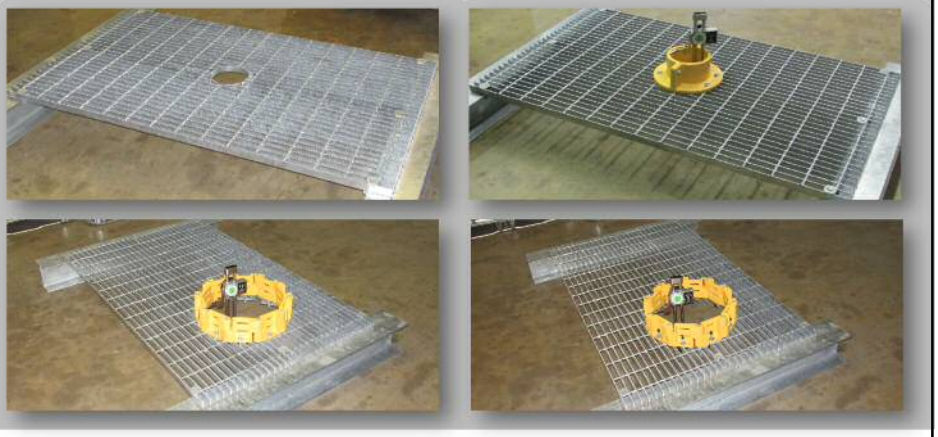
DEFLECTION TEST

Summary

Load	234	234	234	234	234	234	273	273	468	468	468	468	468	468	546	546	936	1404	1404	1560	1560
Load Location	A	B	C						A-A'	B-B'	C-C'	A-A'	One	One	A-A'	A-A'	A-A'	U	U	U	U
Hole Size	6	6	6	6	14	14	6	14	6	6	6	14	14	14	6	14	14	6	6	14	14
Hole Location	C	C	C	O	C	O	O	O	C	C	C	C	C	O	C	C	C	C	O	C	O
Deflection																					
Banding	0.109	0.073	0.131	0.078	0.161	0.173	0.092	0.198	0.181	0.071	0.151	0.240	0.230	0.250			0.321	0.187	0.113	0.205	0.168
GPC	0.089	0.066	0.092	0.060	0.109	0.136	0.066	0.151	0.157	0.088	0.115	0.174	0.179	0.202	0.172	0.197	0.292	0.186	0.108	0.235	0.169
T5-L	0.083	0.075	0.091	0.082	0.145	0.173	0.092	0.194	0.143	0.096	0.136	0.208	0.212	0.252	0.170	0.239	0.327	0.192	0.118	0.235	0.166
T5-J	0.095	0.077	0.094	0.081	0.175	0.189	0.090	0.214	0.164	0.081	0.135	0.219	0.238	0.275	0.192	0.245	0.345	0.188	0.121	0.257	0.189
Deflection Spread	0.026	0.011	0.040	0.022	0.066	0.053	0.026	0.063	0.038	0.025	0.036	0.066	0.059	0.073	0.022	0.048	0.053	0.006	0.013	0.052	0.023



DEFLECTION TEST
Introduction



Split Steel Grating
- 5'x3' 1.25" Serrated

Centered
- 24" From Support For 6"
- 20" From Support For 14"

Offset
- 45" From Support For 6"
- 40" From Support for 14"

Tested
- Banding
- Grating Penetration Collar (GPC)
- Toeboard Link (T5-L)
- Toeboard Link (T5-J)

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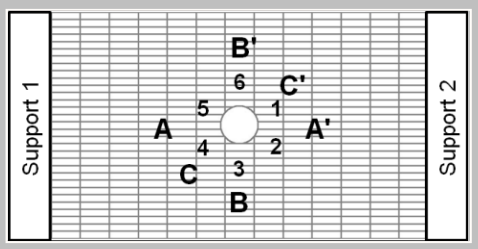
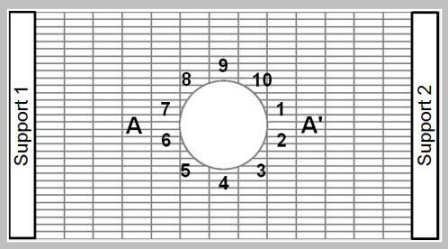
DEFLECTION TEST
T5-L v T5-J

INTREPID

DEFLECTION TEST
Points



6" Hole Points



14" Hole Points

Load
- Hardware Boxes
  - Steel Hardware
  - Area: 0.627 sq ft
  - Weight: 39 lbs

6" Hole
- Points 1 - 6
  - Measurements Taken
- A-C & A'-C'
  - Point Load Location

14" Hole
- Points 1 - 10
  - Measurements Taken
- A & A'
  - Point Load Location

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DEFLECTION TEST
Uniform Load Summary

6" Hole

All performed as well as uncut grating.

Center		Offset
-0.205	Uncut	-0.079
-0.187	Banding	-0.113
-0.186	GPC-6	-0.108
-0.192	T5-L	-0.118
-0.188	T5-J	-0.121

All performed consistently, uncut grating deflected the least

14" Hole

GPC-14, T5-L, and T5-J did not perform as well as uncut grating.

Center		Offset
-0.224	Uncut	-0.131
-0.205	Banding	-0.168
-0.235	GPC-14	-0.169
-0.235	T5-L	-0.166
-0.257	T5-J	-0.189

All performed consistently, uncut grating deflected the least.

The spread of all deflection for the GPC-6, GPC-14, T5-L, and T5-J was .050 inches.

Load
- 6" Hole: 1404 lbs
- 14" Hole: 1560 lbs

INTREPID

DEFLECTION TEST
Point Load Summary

6" Hole In Center	24" From Center	234 lb

A		A-A'
-0.109	Banding	-0.181
-0.089	GPC-6	-0.157
-0.083	T5-L	-0.143
-0.095	T5-J	-0.164

B		B-B'
-0.073	Banding	-0.071
-0.066	GPC-6	-0.088
-0.075	T5-L	-0.096
-0.077	T5-J	-0.086

C		C-C'
-0.131	Banding	-0.151
-0.092	GPC-6	-0.115
-0.091	T5-L	-0.136
-0.094	T5-J	-0.135

Summary

Single experiment to determine significance of location of point loading.

A and A-A' = Most cut bars --- most deflection
B and B-B' = Least cut bars --- least deflection
C and C-C' = Similar to A and A-A'

All further testing utilized A and A-A' locations for point loads.

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DEFLECTION TEST
Summary

234 lb Load (373 psf)
- All Deflection <0.200”
- Max Deflection Spread: 0.066” (Approx. 1/16”)

273 lb Load (436 psf)
- All Deflection <0.220”
- Max Deflection Spread: 0.063” (Approx. 1/16”)

468 lb, 546 lb and 936 lb Load
- Deflection Exceeded 0.250” in 2 out of 9 tests

1404 lb, 1560 lb Load
- Deflection Exceeded 0.250” in 1 out of 4 tests

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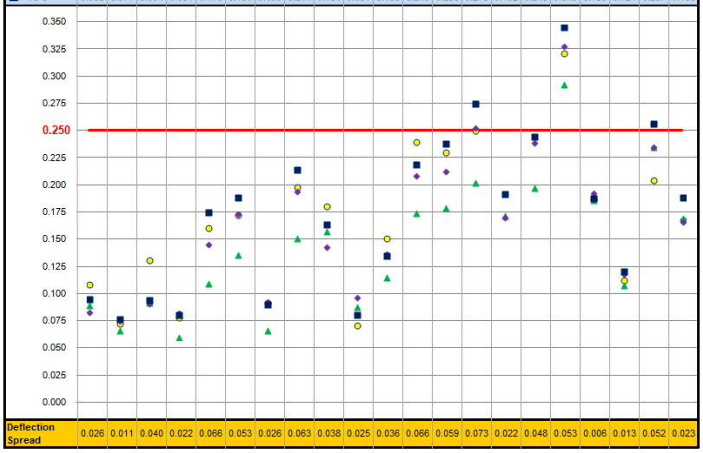
DEFLECTION TEST

Summary

Load	234	234	234	234	234	234	273	273	468	468	468	468	468	468	546	546	936	1404	1404	1560	1560
Load Location	A	B	C						A-A'	B-B'	C-C'	A-A'	One	One	A-A'	A-A'	A-A'	U	U	U	U
Hole Size	6	6	6	6	14	14	6	14	6	6	6	14	14	14	6	14	14	6	6	14	14
Hole Location	C	C	C	O	C	O	O	O	C	C	C	C	C	O	C	C	C	C	O	C	O
Deflection																					
Banding	0.109	0.073	0.131	0.078	0.161	0.173	0.092	0.198	0.181	0.071	0.151	0.240	0.230	0.250			0.321	0.187	0.113	0.205	0.168
GPC	0.089	0.066	0.092	0.060	0.109	0.136	0.066	0.151	0.157	0.088	0.115	0.174	0.179	0.202	0.172	0.197	0.292	0.186	0.108	0.235	0.169
T5-L	0.083	0.075	0.091	0.082	0.145	0.173	0.092	0.194	0.143	0.096	0.136	0.208	0.212	0.252	0.170	0.239	0.327	0.192	0.118	0.235	0.166
T5-J	0.095	0.077	0.094	0.081	0.175	0.189	0.090	0.214	0.164	0.081	0.135	0.219	0.238	0.275	0.192	0.245	0.345	0.188	0.121	0.257	0.189
Deflection Spread	0.026	0.011	0.040	0.022	0.066	0.053	0.026	0.063	0.038	0.025	0.036	0.066	0.059	0.073	0.022	0.048	0.053	0.006	0.013	0.052	0.023



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THANK YOU!

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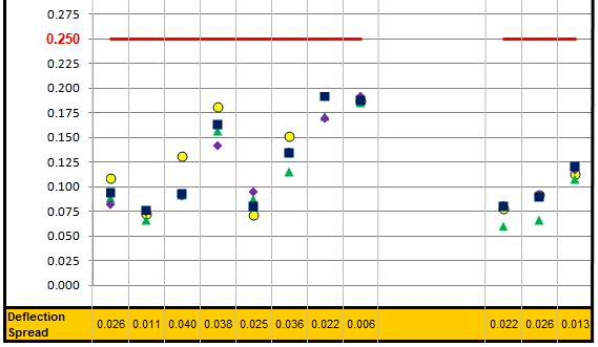
DEFLECTION TEST

6" Hole Summary

6" Hole

	Center								Offset		
Load	234	234	234	468	468	468	546	1404	234	273	1404
Load Location	A	B	C	A-A'	B-B'	C-C'	A-A'	U			U
Deflection											
Banding	0.109	0.073	0.131	0.181	0.071	0.151		0.187	0.078	0.092	0.113
GPC	0.089	0.066	0.092	0.157	0.088	0.115	0.172	0.186	0.060	0.066	0.108
T5-L	0.083	0.075	0.091	0.143	0.096	0.136	0.170	0.192	0.082	0.092	0.118
T5-J	0.095	0.077	0.094	0.164	0.081	0.135	0.192	0.188	0.081	0.090	0.121
Deflection Spread	0.026	0.011	0.040	0.038	0.025	0.036	0.022	0.006	0.022	0.026	0.013



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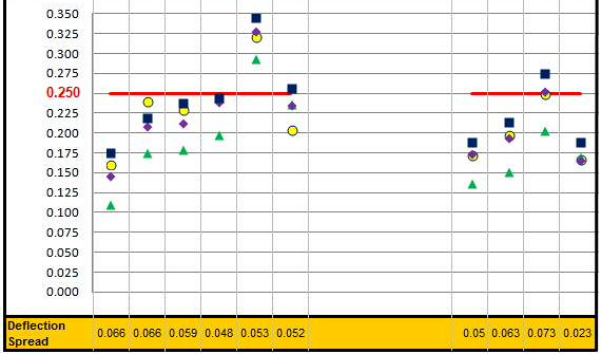
DEFLECTION TEST

14" Hole Summary

14" Hole

	Center						Offset			
Load	234	468	468	546	936	1560	234	273	468	1560
Load Location		A-A'	One	A-A'	A-A'	U			One	U
Deflection										
Banding	0.161	0.240	0.230		0.321	0.205	0.17	0.198	0.250	0.168
GPC	0.109	0.174	0.179	0.197	0.292	0.235	0.14	0.151	0.202	0.169
T5-L	0.145	0.208	0.212	0.239	0.327	0.235	0.17	0.194	0.252	0.166
T5-J	0.175	0.219	0.238	0.245	0.345	0.257	0.19	0.214	0.275	0.189
Deflection Spread	0.066	0.066	0.059	0.048	0.053	0.052	0.05	0.063	0.073	0.023



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