

ICC-ES Evaluation Report

ESR-2657

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This report is subject to re-examination in one year.

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A Subsidiary of the International Code Council®

DIVISION: 05—METALS
Section: 05310—Steel Deck
REPORT HOLDER:
CONSOLIDATED SYSTEMS, INC. (CSi®)
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EVALUATION SUBJECT:
CSI® STEEL ROOF DECK PANELS: D4.5, D6 AND D7.5 DEEP-DEK®; D4.5A, D6A AND D7.5A DEEP-DEK® ACOUSTICAL; D4.5C, D6C AND D7.5C DEEP-DEK® CELLULAR; AND D4.5CA, D6CA AND D7.5CA DEEP-DEK® CELLULAR ACOUSTICAL
1.0 EVALUATION SCOPE
Compliance with the following code:

 2006 *International Building Code*® (IBC)

Property evaluated:

Structural

2.0 USES

The CSI® Deep-Dek®, Deep-Dek® Cellular, Deep-Dek® Acoustical and Deep-Dek® Cellular Acoustical steel deck panels are used as roof decks to support the code-required roof loads.

3.0 DESCRIPTION
3.1 General:

The deck panels are cold-formed from steel sheets into panels with fluted sections having galvanized, or galvanized/painted finishes. Panel dimensions and profiles are as shown in the tables and figures of this report.

The galvanized and galvanized/painted deck panels are formed from ASTM A 653 SS Grade 40 steel, with a minimum G40 galvanization coating applied to both surfaces. Galvanized/painted finished deck panels have a primed painted bottom surface.

3.2 D4.5, D6 and D7.5 Deep-Dek® Panels:

The D4.5, D6, and D7.5 deck panels are fluted sections as shown in the accompanying profile drawings, and are available in design thicknesses ranging from No. 14 to No. 20 gage [0.0747 inch (1.90 mm) to 0.0358 inch (0.909 mm)].

3.3 D4.5C, D6C and D7.5C Deep-Dek® Cellular Panels:

The deck panels consist of fluted, hat sections that are factory-welded to pan, liner sections, as shown in the accompanying profile drawings. The D4.5C, D6C and D7.5C Cellular panels are available with hat section design thicknesses ranging from No. 14 to No. 20 gage [0.0747 inch (1.90 mm) to 0.0358 inch (0.909 mm)] and liner section design thicknesses ranging from No. 14 to No. 20 gage [0.0747 inch (1.90 mm) to 0.0358 inch (0.909 mm)].

3.4 D4.5A, D6A and D7.5A Deep-Dek® Acoustical Panels:

The roof deck panels are the same as the D4.5, D6 and D7.5 Deep-Dek® panels described in Section 3.2 above, except the webs of the panels are perforated with holes.

3.5 D4.5CA, D6CA and D7.5CA Deep-Dek® Cellular Acoustical Panels:

The roof deck panels are the same as the D4.5C, D6C and D7.5C Deep-Dek® Cellular panels described in Section 3.3 above, except the bottom liner sections of the panels are perforated with holes.

4.0 DESIGN AND INSTALLATION
4.1 Design:

Allowable gravity and wind uplift loads must be based on section properties shown in Table 1. Allowable reaction based on web crippling must not exceed values in Table 2. See the Table of Contents, following the text of this report, for allowable diaphragm shear values for each deck panel. The section properties and allowable reaction based on web crippling tables in this report are established using the design thicknesses of the deck panels noted in Tables 1A and 1B. Additional design criteria are set forth in the "Table Notes" preceding the figures and tables in this report.

The one-third stress increase permitted for Allowable Stress Design, for the load combination in IBC Section 1605.3.2 including wind or seismic forces, must not be used for shear values in the diaphragm tables.

The allowable tension (uplift) load for arc spot welds fastening steel sheets to supporting members must be calculated in accordance with Section E2.2.2 of AISI-NAS.

The diaphragm design must take into account the following considerations:

1. Diaphragm classification (flexible or rigid) must comply with IBC Section 1602; the diaphragm deflection (Δ) must be calculated using the equations noted in the Diaphragm Flexibility Limitation Table (Table 3).

2. Diaphragm flexibility limitations must comply with Table 3.
3. Diaphragm deflection limits must comply with ASCE 7 Section 12.10.1 and 12.12.2.
4. Horizontal shears must be distributed in accordance with ASCE 7 Section 12.8.4.

4.2 Installation:

The deck panels must be installed in accordance with this report, the approved plans and CSI's published installation guidelines and instructions. If there is a conflict between the manufacturer's published installation guidelines and instructions and this report, this report governs.

4.3 Special Inspection:

4.3.1 Jobsite Welding: Continuous or Periodic special inspection for welding must be in accordance with IBC Section 1704.3. Prior to proceeding, the welder must demonstrate his ability to produce the prescribed weld to the special inspector's satisfaction. The inspector's duties include verification of materials, weld preparation, welding procedures, and welding processes.

4.3.2 Periodic Special Inspection: Periodic special inspections in accordance with IBC Section 1707.4 are required where the steel deck systems are used as part of a seismic-force-resisting system in structures assigned to Seismic Design Category C, D, E or F. Periodic special inspections apply to connections such as screws, power-actuated fasteners and button punches. Periodic special inspections also apply where noted in IBC Tables 1704.3 and 1704.4.

4.3.3 Continuous Special Inspection: Continuous special inspections must be provided where noted in IBC Tables 1704.3 and 1704.4.

4.3.4 Statement of Special Inspections: A statement of special inspections must be prepared by the registered design professional in charge and submitted to the code official as set forth in IBC Section 1705. The statement must include the inspector's duties noted in this section (Section 4.3).

5.0 CONDITIONS OF USE

The CSI® steel roof deck panels described in this report comply with, or are suitable alternatives to what is specified in, the code noted in Section 1.0 of this report, subject to the following conditions:

- 5.1 The deck panels are manufactured, identified and installed in accordance with this report, the approved plans and CSI's published installation guidelines and instructions. If there is a conflict between the manufacturer's published installation guidelines and instructions and this report, this report governs.
- 5.2 Vertical load design of deck panels must be based on section properties and reaction loads shown in Tables 1A, 1B, and 2.

5.3 Where use is as diaphragms:

- 5.3.1 The one-third stress increase permitted for Allowable Stress Design, for load combinations in IBC Section 1605.3.2 including wind or seismic forces, must not be used for shear values in the diaphragm tables.
- 5.3.2 Allowable shear values are as set forth in the tables accompanying this report for the type of deck panel involved.
- 5.3.3 Diaphragm deflections must not exceed the permitted relative deflections of walls between the diaphragm level and the floor below. The flexibility limitations shown in Table 3 may be used as a guide in lieu of the rational analysis of the anticipated deflections.
- 5.3.4 Diaphragms may be zoned by varying deck gage and/or connections across a diaphragm to meet varying shear and flexibility demands.
- 5.4 Special inspection for field-welding must be provided in accordance with Section 4.3.1.
- 5.5 When the steel deck panels are used as roof panels, the panels must be covered with a code-complying roof covering.
- 5.6 Calculations and details demonstrating that the loads applied to the decks comply with this report must be submitted to the code official for approval. Calculations and drawings must be prepared, signed, and sealed by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed.
- 5.7 The cellular deck panels are fabricated in Memphis, Tennessee and Phoenix, Arizona under a quality program with inspections by Testing Engineers, Inc. (AA-532).

6.0 EVIDENCE SUBMITTED

Data in accordance with ICC-ES Acceptance Criteria for Steel Deck Roof and Floor Systems (AC43), dated February 2008 (editorially revised April 2008).

7.0 IDENTIFICATION

Each bundle of the CSI® steel deck panels described in this report is identified by labeling bearing the manufacturer's name (CSI®); the deck panel profile name; the design thickness; the minimum specified yield strength; the cover width of the panel; and the evaluation report number (ICC-ES ESR-2657). The Deep-Dek® Cellular and Cellular Acoustical steel deck panel labeling also includes the manufacturing location (PD—Phoenix, Arizona; or MD—Memphis, Tennessee), and the name of the inspection agency (Testing Engineers, Inc.).

TABLE OF CONTENTS FOR TABLES AND FIGURES

Table	Topic Page General	Page
Table Notes		
1A & 1B	Section Properties	5 and 6
2	Allowable Concentrated Loads and Reactions Based on Web Crippling	7
3	Diaphragm Flexibility Limitations	8

**ROOF DECK PANELS
(Allowable Diaphragm Shear Capacities)**

D4.5, D6 and D7.5 Deep-Dek® Family		
4-9	Deep-Dek 4.5, Deep-Dek 6 and Deep-Dek 7.5	9-14
D4.5C, D6C and D7.5C Deep-Dek® Cellular Family		
10-12	Deep-Dek 4.5 Cellular, Deep-Dek 6.0 Cellular and Deep-Dek 7.5 Cellular	15-17
D4.5A, D6A and D7.5A Deep-Dek® Acoustical Family		
13-15	Deep-Dek 4.5 Acoustical, Deep-Dek 6.0 Acoustical and Deep-Dek 7.5 Acoustical	18-20
D4.5CA, D6CA and D7.5CA Deep-Dek® Cellular Acoustical Family		
16-18	Deep-Dek 4.5 Cellular Acoustical, Deep-Dek 6.0 Cellular Acoustical and Deep-Dek 7.5 Cellular Acoustical	21-23
19	Perforation Patterns of Deep-Dek Acoustical & Deep-Dek Cellular Acoustical	24

Figure	Topic Page	
1	Steel deck panel profiles	25
2	Steel deck panel attachment patterns at supports	25

TABLE NOTES

The notes below apply to all of the tables unless noted otherwise.

¹The allowable diaphragm shears listed in the tables are in pounds per linear foot.

²The design thicknesses and cross-sectional properties for all deck panels are indicated in Table 1A and 1B. The design thickness is the uncoated base-metal thickness of the deck panel.

³The length of seam welds must be a minimum of 1½ inches.

⁴Arc spot (puddle) welds must have an effective fusion area to supporting members at least equivalent to ¾ inch by 1 inch long or ½ inch in diameter.

⁵Puddle-weld patterns are shown in Figure 2.

⁶The standing seam joint must be fastened at a maximum of 3 feet on center.

⁷Spacing of marginal welds to members parallel to flutes:

- (a) Arc spot (puddle) welds to members such as chords and to collector elements, such as struts or ties, must have a spacing in feet equal to $32,000 (t) C/v$

where:

t = Uncoated base-metal thickness of fluted deck panel in inches.

C = 1.0 for galvanized deck panels and 0.65 for painted deck panels.

v = Actual diaphragm shear at marginal supports or actual shear transferred to collector (at struts or ties) in pounds per foot.

- (b) Fillet welds to members such as diaphragm chords must have spacing in feet equal to $480 I_w/v$

where:

I_w = Length of weld in inches [not less than 1½ inches].

v = Actual diaphragm shear to be transferred to chords in pounds per foot.

- (c) Fillet welds attaching the diaphragm to strut, ties or other collector elements must have a spacing in feet equal to $300 I_w/v$ where v is the actual shear to be transferred to the collector elements.

- (d) In no case may any weld spacing exceed 3 feet.

⁸Attachments at interior lines of shear transfer perpendicular to deck panel corrugation:

- (a) The shear transfer from a diaphragm to interior tie or strut lines perpendicular to deck panel corrugation must not exceed the shear values indicated in the tables. Two lines of puddle welds may be used to develop the actual shear transfer to these collector elements,

- (b) In no case may the spacing of welds exceed the deck panel span divided by 3.0.

⁹Where individual panels are cut, the partial panel must be fastened in a manner to fully transfer the shears at the point of the diaphragm to the adjacent full panels for the values specified in the tables.

¹⁰For **SI** dimensions: 1 inch = 25.4 mm; 1 plf = 14.6 N/m; 1 inch² = 645.16 mm²; 1 inch³ = 16.4 × 10⁴ mm³; 1 inch⁴ = 41.6 × 10⁴ mm⁴; 1 psf = 4.88 kg/m²; 1 pcf = 16.018 kg/m³; 1 inch-kip = 0.113 kN-m; 1 kip = 4.448 kN; 1 ksi = 6.89 MPa; 1 foot = 304.8 mm.

TABLE 1A—SECTION PROPERTIES^{1, 2, 3, 4}

DECK PANEL	GAGE	DESIGN THICKNESS (in)	EFFECTIVE MOMENT OF INERTIA (in ⁴ /ft width)		MOMENT OF INERTIA, I _b (in ⁴ /ft width)		EFFECTIVE SECTION MODULUS (in ³ /ft width)	
		t	Normal, I _{on}	Inverted, I _{oi}	Simple Span	Multiple Span	Normal, S _{en}	Inverted, S _{ei}
Deep-Dek® 4.5	20	0.0358	2.866	2.980	2.904	2.980	1.101	1.209
	18	0.0474	3.923	3.941	3.929	3.941	1.549	1.599
	16	0.0598	4.966	4.966	4.966	4.966	1.991	2.014
	14	0.0747	6.195	6.195	6.195	6.195	2.511	2.511
Deep-Dek® 6	20	0.0358	5.537	5.637	5.609	5.676	1.570	1.715
	18	0.0474	7.569	7.609	7.583	7.609	2.292	2.363
	16	0.0598	9.589	9.589	9.589	9.589	2.943	2.978
	14	0.0747	11.963	11.963	11.963	11.963	3.713	3.713
Deep-Dek® 7.5	20	0.0358	9.262	9.141	9.377	9.377	1.967	2.165
	18	0.0474	12.639	12.445	12.661	12.661	3.097	3.061
	16	0.0598	16.014	16.014	16.014	16.014	3.973	4.020
	14	0.0747	19.979	19.979	19.979	19.979	5.013	5.013
Deep-Dek® 4.5 Cellular	20/20	0.0358/0.0358	4.570	4.119	4.667	4.667	1.205	1.542
	20/18	0.0358/0.0474	4.862	4.732	4.995	4.995	1.208	1.597
	18/20	0.0474/0.0358	5.910	5.019	5.931	5.931	1.854	2.004
	18/18	0.0474/0.0474	6.389	5.697	6.412	6.412	1.860	2.069
	18/16	0.0474/0.0598	6.826	6.440	6.852	6.852	1.859	2.130
	16/18	0.0598/0.0474	7.655	6.699	7.655	7.655	2.525	2.566
	16/16	0.0598/0.0598	8.180	7.461	8.180	8.180	2.570	2.639
	16/14	0.0598/0.0747	8.730	8.410	8.730	8.730	2.617	2.709
	14/16	0.0747/0.0598	9.619	8.656	9.619	9.619	3.362	3.240
	14/14	0.0747/0.0747	10.264	9.661	10.264	10.264	3.422	3.326
Deep-Dek® 6 Cellular	20/20	0.0358/0.0358	8.222	7.632	8.491	8.491	1.629	2.192
	20/18	0.0358/0.0474	8.728	8.699	9.075	9.075	1.631	2.270
	18/20	0.0474/0.0358	10.983	9.336	11.018	11.018	2.527	2.846
	18/18	0.0474/0.0474	11.822	10.505	11.877	11.877	2.517	2.939
	18/16	0.0474/0.0598	12.443	11.805	12.565	12.565	2.513	3.026
	16/18	0.0598/0.0474	14.202	12.386	14.202	14.202	3.615	3.643
	16/16	0.0598/0.0598	15.165	13.712	15.165	15.165	3.616	3.746
	16/14	0.0598/0.0747	16.176	15.405	16.176	16.176	3.600	3.848
	14/16	0.0747/0.0598	17.829	15.957	17.829	17.829	4.787	4.598
	14/14	0.0747/0.0747	19.007	17.775	19.007	19.007	4.874	4.723
Deep-Dek® 7.5 Cellular	20/20	0.0358/0.0358	12.979	12.388	13.553	13.553	2.057	2.900
	20/18	0.0358/0.0474	13.722	13.983	14.439	14.613	2.056	3.002
	18/20	0.0474/0.0358	17.593	15.188	17.740	17.740	3.187	3.760
	18/18	0.0474/0.0474	18.661	16.961	18.940	18.940	3.178	3.886
	18/16	0.0474/0.0598	19.622	18.969	20.028	20.028	3.174	4.005
	16/18	0.0598/0.0474	23.086	20.043	23.086	23.086	4.593	4.812
	16/16	0.0598/0.0598	24.652	22.090	24.652	24.652	4.567	4.952
	16/14	0.0598/0.0747	25.953	24.769	26.069	26.069	4.550	5.085
	14/16	0.0747/0.0598	28.967	25.772	28.967	28.967	6.347	6.071
	14/14	0.0747/0.0747	30.874	28.628	30.874	30.874	6.444	6.245

For SI: 1 inch = 25.4 mm; 1 ksi = 6.89 MPa.

¹Properties are determined in accordance with AISI-NAS

²Properties are based on yield strength, F_y = 40 ksi (tensile strength, F_u = 55 ksi)

³Effective Section Modulus values are net ("effective") values

⁴Tabulated Moment of Inertia (I_b) values for deflection are based on ICC-ES Acceptance Criteria for Steel Deck Roof and Floor Systems (AC43) Section 3.2.1.

TABLE 1B—SECTION PROPERTIES^{1, 2, 3, 4}

DECK PANEL	GAGE	DESIGN THICKNESS (in)	EFFECTIVE MOMENT OF INERTIA (in ⁴ /ft width)		MOMENT OF INERTIA, I _D (in ⁴ /ft width)		EFFECTIVE SECTION MODULUS (in ³ /ft width)	
		t	Normal, I _{on}	Inverted, I _{oi}	Simple Span	Multiple Span	Normal, S _{en}	Inverted, S _{ei}
Deep-Dek® 4.5 Acoustical	20	0.0358	2.679	2.791	2.716	2.791	1.020	1.129
	18	0.0474	3.675	3.692	3.681	3.692	1.443	1.493
	16	0.0598	4.655	4.655	4.655	4.655	1.859	1.882
	14	0.0747	5.810	5.810	5.810	5.810	2.347	2.347
Deep-Dek® 6 Acoustical	20	0.0358	5.071	5.152	5.142	5.196	1.396	1.546
	18	0.0474	6.954	6.992	6.966	6.992	2.092	2.165
	16	0.0598	8.815	8.815	8.815	8.815	2.693	2.728
	14	0.0747	11.002	11.002	11.002	11.002	3.404	3.404
Deep-Dek® 7.5 Acoustical	20	0.0358	8.324	8.134	8.437	8.437	1.702	1.900
	18	0.0474	11.399	11.157	11.421	11.421	2.754	2.722
	16	0.0598	14.454	14.454	14.454	14.454	3.568	3.616
	14	0.0747	18.042	18.042	18.042	18.042	4.512	4.512
Deep-Dek® 4.5 Cellular Acoustical	20/20	0.0358/0.0358	4.471	4.112	4.558	4.558	1.204	1.541
	20/18	0.0358/0.0474	4.759	4.716	4.878	4.878	1.207	1.595
	18/20	0.0474/0.0358	5.755	5.013	5.775	5.775	1.841	2.002
	18/18	0.0474/0.0474	6.216	5.682	6.239	6.239	1.860	2.067
	18/16	0.0474/0.0598	6.641	6.407	6.666	6.666	1.859	2.127
	16/18	0.0598/0.0474	7.451	6.686	7.451	7.451	2.506	2.564
	16/16	0.0598/0.0598	7.956	7.429	7.956	7.956	2.551	2.636
	16/14	0.0598/0.0747	8.491	8.491	8.491	8.491	2.598	2.704
	14/16	0.0747/0.0598	9.360	8.626	9.360	9.360	3.337	3.236
	14/14	0.0747/0.0747	9.982	9.599	9.982	9.982	3.397	3.321
Deep-Dek® 6 Cellular Acoustical	20/20	0.0358/0.0358	8.053	7.625	8.299	8.299	1.628	2.191
	20/18	0.0358/0.0474	8.549	8.676	8.868	8.953	1.630	2.268
	18/20	0.0474/0.0358	10.702	9.330	10.737	10.737	2.530	2.844
	18/18	0.0474/0.0474	11.552	10.485	11.591	11.591	2.519	2.936
	18/16	0.0474/0.0598	12.181	11.753	12.275	12.275	2.514	3.022
	16/18	0.0598/0.0474	13.833	12.368	13.833	13.833	3.586	3.640
	16/16	0.0598/0.0598	14.759	13.665	14.759	14.759	3.623	3.742
	16/14	0.0598/0.0747	15.738	15.311	15.738	15.738	3.605	3.842
	14/16	0.0747/0.0598	17.363	15.915	17.363	17.363	4.749	4.593
	14/14	0.0747/0.0747	18.495	17.685	18.495	18.495	4.835	4.745
Deep-Dek® 7.5 Cellular Acoustical	20/20	0.0358/0.0358	12.719	12.370	13.250	13.250	2.056	2.899
	20/18	0.0358/0.0474	13.483	13.983	14.151	14.484	2.057	3.004
	18/20	0.0474/0.0358	17.255	15.185	17.364	17.364	3.189	3.759
	18/18	0.0474/0.0474	18.283	16.937	18.517	18.517	3.179	3.883
	18/16	0.0474/0.0598	19.221	18.901	19.575	19.575	3.174	4.001
	16/18	0.0598/0.0474	22.497	20.022	22.497	22.460	4.601	4.809
	16/16	0.0598/0.0598	23.998	22.030	23.998	23.998	4.574	4.947
	16/14	0.0598/0.0747	25.427	24.638	25.482	25.482	4.554	5.077
	14/16	0.0747/0.0598	28.223	25.718	28.223	28.223	6.294	6.066
	14/14	0.0747/0.0747	30.052	28.503	30.052	30.052	6.415	6.236

For SI: 1 inch = 25.4 mm; 1 ksi = 6.89 MPa.

¹Properties are determined in accordance with AISI-NAS and modified for the perforations in the webs.

²Properties are based on yield strength, F_y = 40 ksi (tensile strength, F_u = 55 ksi)

³Effective Section Modulus values are net ("effective") values

⁴Tabulated Moment of Inertia (I_D) values for deflection are based on ICC-ES Acceptance Criteria for Steel Deck Roof and Floor Systems (AC43) Section 3.2.1.

TABLE 2—ALLOWABLE CONCENTRATED LOADS AND REACTION BASED ON WEB CRIPPLING - ASD ^{1,2}

Deck Type	Gage	Base Metal Thickness (in.)	Minimum Bearing Length (in.)		Allowable Reaction Load (plf)	
			End Reaction	Interior Reaction	End Reaction	Interior Reaction
Deep-Dek® 4.5 Deep-Dek® 4.5 Cellular ³ Deep-Dek® 4.5 Cellular Acoustical ³	14	0.0747	2	4	1847	3860
	16	0.0598			1219	2580
	18	0.0474			788	1693
	20	0.0358			463	1018
Deep-Dek® 6 Deep-Dek® 6 Cellular ³ Deep-Dek® 6 Cellular Acoustical ³	14	0.0747	2	4	1778	3841
	16	0.0598			1166	2565
	18	0.0474			748	1682
	20	0.0358			435	1010
Deep-Dek® 7.5 Deep-Dek® 7.5 Cellular ³ Deep-Dek® 7.5 Cellular Acoustical ³	14	0.0747	2	4	1716	3824
	16	0.0598			1120	2552
	18	0.0474			714	1673
	20	0.0358			398	748
Deep-Dek® 4.5 Acoustical ⁴	14	0.0747	2	4	1847	2763
	16	0.0598			1219	1853
	18	0.0474			788	1221
	20	0.0358			463	737
Deep-Dek® 6 Acoustical ⁴	14	0.0747	2	4	1778	2758
	16	0.0598			1166	1849
	18	0.0474			748	1218
	20	0.0358			433	736
Deep-Dek® 7.5 Acoustical ⁴	14	0.0747	2	4	1716	2790
	16	0.0598			1120	1873
	18	0.0474			714	1236
	20	0.0358			398	748

For **SI**: 1 inch = 25.4 mm, 1 plf = 14.594 N/m.

¹Tabulated values are calculated in accordance with AISI-NAS: Section C3.4, Web Crippling.

²Values are based on a steel yield strength of $F_y = 40$ ksi and Tensile Strength $F_u = 55$ ksi.

³Gage and thickness are that of the fluted hat section.

⁴Tabulated values are calculated in accordance with AISI-NAS: Section C3.4, Web Crippling with an adjustment factor determined in accordance with AC43, Section 4.1.3.

TABLE 3—DIAPHRAGM FLEXIBILITY LIMITATIONS^{1,2,3,4,5,6}

F	MAXIMUM DIAPHRAGM SPAN FOR MASONRY OR CONCRETE WALLS (feet)	DIAPHRAGM SPAN-DEPTH LIMITATION			
		Rotation Not Considered in Diaphragm		Rotation Considered in Diaphragm	
		Masonry or Concrete Walls	Flexible Walls	Masonry or Concrete Walls	Flexible Walls
More than 150	Not used	Not used	2:1	Not used	1 ¹ / ₂ :1
70-150	200	2:1 or as required for deflection	3:1	Not used	2:1
10-70	400	2 ¹ / ₂ :1 or as required for deflection	4:1	As required for deflection	2 ¹ / ₂ :1
1-10	No limitation	3:1 or as required for deflection	5:1	As required for deflection	3:1
Less than 1	No limitation	As required for deflection	No limitation	As required for deflection	3 ¹ / ₂ :1

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 plf = 14.594 N/m, 1 psi = 6894 Pa.

¹Diaphragms must be investigated regarding their flexibility and recommended span-depth limitations.

²Diaphragms supporting masonry or concrete walls must have their deflections limited to the following amount:

$$\Delta_{wall} = \frac{H^2 f_c}{0.01 Et}$$

where:

- H = Unsupported height of wall in feet.
- t = Thickness of wall in inches.
- E = Modulus of elasticity of wall material for deflection determination in pounds per square inch.
- f_c = Allowable compression strength of wall material in flexure in pounds per square inch. For concrete, f_c = 0.45 f'_c. For masonry, f_c = F_b = 0.33 f'_m.

³The total deflection Δ of the diaphragm may be computed from the equation: Δ = Δ_f + Δ_w

where:

- Δ_f = Flexural deflection of the diaphragm determined in the same manner as the deflection of beams.
- Δ_w = The web deflection may be determined by the equation:

$$\Delta_w = \frac{q_{ave} L F}{10^6}$$

where:

- L = Distance in feet between vertical resisting element (such as shear wall) and the point to which the deflection is to be determined.
- q_{ave} = Average shear in diaphragm in pounds per foot over length L.
- F = Flexibility factor: The average micro inches (μm) a diaphragm web will deflect in a span of 1 foot (m) under a shear of 1 pound per foot (N/m). $F = \frac{10^3}{G'}$, Where G' = effective shear modulus based on profile and thickness of deck panel and type and spacing of connectors.

⁴When applying these limitations to cantilevered diaphragms, the allowable span-depth ratio will be half that shown.

⁵Diaphragm classification (flexible or rigid) and deflection limits must comply with the diaphragm design considerations in Section 4.1.

⁶If there is a conflict between this table and the code requirements, the code requirements govern.

TABLE 4
Deep-Dek® 4.5 Allowable Diaphragm Shear, S (plf) and Stiffness Factors, G' (kpi)

SUPPORT CONNECTION: 1/2" Effective Weld Diameter		S = Allowable Diaphragm Shear (lbs/foot)															
SIDE LAP CONNECTION: 1-1/2" Seam Welds		G' = Stiffness Factor (kips/in)															
ATTACHMENT PATTERN: 12/2		ATTACHMENT PATTERN: 12/4															
GAGE	SIDE LAP SPACING	FACTOR						DECK SPAN - C to C SUPPORT									
		12'-0"	14'-0"	16'-0"	18'-0"	20'-0"	24'-0"	26'-0"	12'-0"	14'-0"	16'-0"	18'-0"	20'-0"	24'-0"	26'-0"		
20 0.0358*	6"	S	1320	1311	1305	1300	1296	1164*	1164*	1451	1427	1409	1394	1384	1164*	978*	834*
	G'	9.1	11.8	11.8	13.1	14.4	15.7	16.9	18.2	9.1	11.8	11.8	13.2	14.4	15.7	17.0	18.2
	12"	S	1048	1026	1009	995	985	976	969	1152	1123	1101	1084	1070	1059	978*	834*
	G'	8.9	10.2	11.4	12.7	13.9	15.0	16.1	17.2	8.9	10.2	11.5	12.7	13.9	15.1	16.2	17.3
	18"	S	774	753	738	726	717	709	702	837	808	786	768	755	743	734	726
	G'	6.7	9.9	11.1	12.3	13.4	14.4	15.5	16.4	6.7	10.0	11.2	12.3	13.5	14.5	15.6	16.5
	24"	S	616	596	580	568	559	551	545	680	650	628	611	597	586	576	569
	G'	8.5	9.7	10.8	11.9	13.0	13.9	14.9	15.8	8.6	9.8	10.9	12.0	13.1	14.1	15.0	15.9
	30"	S	521	501	486	474	464	457	450	585	556	533	516	503	491	482	474
	G'	8.4	9.5	10.6	11.6	12.6	13.5	14.4	15.2	8.5	9.7	10.7	11.8	12.8	13.7	14.6	15.4
	36"	S	458	438	423	411	401	393	387	522	493	470	453	439	428	419	411
	G'	8.3	9.4	10.4	11.4	12.3	13.1	13.9	14.7	8.4	9.5	10.6	11.6	12.5	13.4	14.2	14.9
18 0.0474*	6"	S	1724	1713	1705	1699	1693	1689	1489*	1937	1896	1865	1841	1821	1772*	1489*	1269*
	G'	17.5	20.1	22.6	25.0	27.3	29.5	31.7	33.7	17.6	20.1	22.6	25.0	27.3	29.5	31.7	33.8
	12"	S	1369	1340	1318	1300	1286	1275	1265	1505	1467	1438	1416	1398	1383	1371	1269*
	G'	16.9	19.2	21.4	23.5	25.5	27.4	29.3	31.0	16.9	19.3	21.5	23.6	25.6	27.6	28.4	31.2
	18"	S	1010	984	964	948	936	926	917	1094	1055	1026	1004	986	971	959	949
	G'	16.3	18.4	20.4	22.3	24.1	25.8	27.4	28.9	16.5	18.6	20.6	22.5	24.3	26.0	27.6	29.2
	24"	S	804	778	758	742	730	720	711	888	849	820	798	780	765	753	743
	G'	15.8	17.8	19.6	21.3	22.9	24.4	25.8	27.1	16.1	18.1	19.9	21.7	23.3	24.8	26.2	27.5
	30"	S	681	654	634	619	606	596	588	764	726	697	674	656	642	629	619
	G'	15.5	17.3	19.0	20.5	21.9	23.3	24.5	25.6	15.7	17.6	19.4	20.9	22.4	23.7	25.0	26.2
	36"	S	599	572	552	536	524	514	505	682	643	614	592	574	559	547	537
	G'	15.1	16.8	18.4	19.8	21.1	22.3	23.4	24.4	15.9	17.3	18.9	20.3	21.7	22.9	24.0	25.0
16 0.0598*	6"	S	2143	2130	2120	2112	2106	2100	2096	2409	2357	2319	2289	2265	2245	2108*	1796*
	G'	29.8	33.9	37.8	41.5	45.1	48.4	51.7	54.8	29.9	34.0	37.9	41.6	45.2	48.5	51.8	54.9
	12"	S	1702	1666	1638	1617	1599	1585	1573	1872	1824	1788	1760	1738	1720	1704	1691
	G'	28.1	31.6	34.9	38.0	40.9	43.7	46.2	48.6	28.3	31.9	35.2	38.3	41.2	44.0	46.5	49.0
	18"	S	1256	1223	1198	1179	1164	1151	1140	1360	1312	1276	1248	1226	1207	1192	1179
	G'	26.7	29.9	32.7	35.3	37.8	40.0	42.1	44.0	27.1	30.3	33.2	35.8	38.3	40.5	42.6	44.6
	24"	S	1000	967	942	923	908	895	884	1104	1056	1020	992	970	951	936	923
	G'	25.6	28.4	30.9	33.2	35.2	37.1	38.9	40.4	26.2	29.0	31.6	33.9	36.0	37.9	39.6	41.2
	30"	S	847	813	789	769	754	741	731	950	902	866	838	816	798	783	770
	G'	24.8	27.2	29.5	31.4	33.2	34.8	36.2	37.6	25.4	28.0	30.3	32.3	34.1	35.8	37.2	38.6
	36"	S	744	711	686	667	652	639	628	848	800	764	736	714	695	680	667
	G'	24.0	26.3	28.2	30.0	31.5	32.9	34.1	35.2	24.8	27.2	29.2	31.0	32.6	34.0	35.3	36.4
14 0.0747*	6"	S	2630	2614	2601	2592	2584	2578	2572	2956	2893	2845	2809	2779	2755	2735	2605*
	G'	48.5	54.7	60.5	65.9	70.9	75.7	80.2	84.4	48.7	54.9	60.7	66.1	71.1	75.9	80.4	84.6
	12"	S	2089	2044	2010	1984	1963	1945	1931	2297	2238	2194	2160	2133	2110	2092	2076
	G'	44.6	49.1	54.1	58.3	62.1	65.6	68.9	71.9	45.0	50.1	54.7	58.9	62.7	66.3	69.5	72.6
	18"	S	1542	1501	1471	1447	1428	1412	1400	1669	1610	1566	1532	1504	1482	1463	1447
	G'	41.6	45.8	49.5	52.8	55.8	58.5	60.9	63.2	42.4	46.6	50.4	53.7	56.8	59.5	62.0	64.2
	24"	S	1227	1187	1156	1133	1114	1098	1085	1354	1296	1252	1217	1190	1168	1149	1133
	G'	39.3	42.8	45.9	48.6	50.9	53.1	55.0	56.7	40.3	44.0	47.1	49.9	52.3	54.5	56.4	58.1
	30"	S	1039	998	968	944	925	910	897	1166	1107	1063	1029	1001	979	960	944
	G'	37.4	40.4	43.0	45.3	47.2	48.9	50.4	51.7	38.8	41.9	44.6	46.9	48.9	50.6	52.1	53.4
	36"	S	913	873	842	818	799	784	771	1040	981	937	903	876	853	835	819
	G'	35.9	38.5	40.7	42.6	44.2	45.5	46.7	47.8	37.5	40.3	42.6	44.5	46.1	47.5	48.7	49.8

NOTES: Data is prepared in accordance with SDI's DIAPHRAGM DESIGN MANUAL, DDM03
 S values have been divided by a Safety Factor of 3 to obtain (ASD) Diaphragm Shear values for seismic loading (worst case).
 The following Safety Factors shown are from Table D5 of 2004 Supplement AISI Specifications.
Seismic: $\phi = .55$ for LRFD and $\Omega = 3.00$ for ASD for welds.
Wind: $\phi = .70$ for LRFD and $\Omega = 2.35$ for ASD for welds.
Other: $\phi = .60$ for LRFD and $\Omega = 2.65$ for ASD for welds.
 Calculations are based on a "SINGLE SPAN CONDITION". For "Other Span Conditions" contact the Metal Deck Group for additional information.
 Fy = 40 ksi and Fu = 55 ksi
 * Indicates Shear Buckling controls. A Safety Factor of 2.00 was used as referenced in SDI DDM03.
 Support connections parallel to deck flutes spaced at 12 inches o.c.

TABLE 6
Deep-Dek® 6 Allowable Diaphragm Shear, S (plf) and Stiffness Factors, G' (kpi)

SUPPORT CONNECTION: 1/2" Effective Weld Diameter		S = Allowable Diaphragm Shear (lbs/foot)																	
SIDELAP CONNECTION: 1-1/2" Seam Welds		G' = Stiffness Factor (kips/in.)																	
ATTACHMENT PATTERN: 12/2		ATTACHMENT PATTERN: 12/4																	
GAGE	SIDE LAP SPACING	FACTOR						DECK SPAN - C to C SUPPORT											
		14'-0"	16'-0"	18'-0"	20'-0"	22'-0"	24'-0"	26'-0"	28'-0"	14'-0"	16'-0"	18'-0"	20'-0"	22'-0"	24'-0"	26'-0"	28'-0"		
20 0.0358"	6"	S	1311	1305	1300	1296	1293	1291	1288	1140*	S	1451	1427	1409	1382	1372	1322*	1140*	
	G'	6.6	7.5	8.3	9.2	10.0	10.9	11.7	12.5		G'	6.6	7.5	8.3	9.2	10.0	11.7	12.5	
	12"	S	1026	1009	995	985	976	969	962	957	S	1123	1101	1084	1070	1049	1041	1035	
	G'	6.5	7.3	8.2	9.0	9.8	10.5	11.3	12.0		G'	6.5	7.3	8.2	9.0	9.8	10.5	11.3	12.1
	18"	S	753	738	726	717	709	702	697	692	S	808	786	768	755	743	734	726	719
	G'	6.4	7.2	8.0	8.8	9.5	10.2	10.9	11.6		G'	6.4	7.2	8.0	8.8	9.5	10.3	11.0	11.7
	24"	S	596	580	568	559	551	545	539	534	S	650	628	611	597	586	576	569	562
	G'	6.3	7.1	7.8	8.6	9.3	10.0	10.6	11.3		G'	6.3	7.1	7.9	8.6	9.3	10.0	10.7	11.4
	30"	S	501	486	474	464	457	450	445	440	S	556	533	516	503	491	482	474	467
	G'	6.2	7.0	7.7	8.4	9.1	9.7	10.4	11.0		G'	6.2	7.0	7.8	8.5	9.2	9.8	10.5	11.1
	36"	S	438	423	411	401	393	387	382	377	S	483	470	453	439	428	419	411	404
	G'	6.2	6.9	7.6	8.3	8.9	9.5	10.1	10.7		G'	6.2	6.9	7.7	8.4	9.0	9.7	10.3	10.8
18 0.0474"	6"	S	1713	1705	1699	1693	1689	1686	1683	1680	S	1896	1865	1841	1821	1806	1792	1781	1735*
	G'	12.9	14.5	16.1	17.7	19.2	20.8	22.2	23.7		G'	12.9	14.5	16.1	17.7	19.3	20.8	22.3	23.7
	12"	S	1340	1318	1300	1286	1275	1265	1257	1250	S	1467	1438	1416	1398	1383	1371	1360	1352
	G'	12.5	14.0	15.5	17.0	18.4	19.7	21.0	22.3		G'	12.5	14.1	15.6	17.0	18.4	19.7	21.1	22.4
	18"	S	984	964	948	936	926	917	910	903	S	1055	1026	1004	986	971	959	949	940
	G'	12.2	13.6	15.0	16.3	17.6	18.8	20.0	21.2		G'	12.2	13.7	15.1	16.4	17.7	19.0	20.1	21.3
	24"	S	778	758	742	730	720	711	704	698	S	849	820	798	780	765	753	743	734
	G'	11.9	13.2	14.5	15.8	17.0	18.1	19.1	20.2		G'	12.0	13.4	14.7	15.9	17.1	18.3	19.3	20.4
	30"	S	654	634	619	606	596	588	581	575	S	726	697	674	656	642	629	619	610
	G'	11.6	12.9	14.2	15.3	16.4	17.4	18.4	19.3		G'	11.8	13.1	14.4	15.5	16.6	17.7	18.7	19.6
	36"	S	572	552	536	524	514	505	498	492	S	643	614	592	574	559	547	537	528
	G'	11.4	12.7	13.8	14.9	15.9	16.8	17.7	18.6		G'	11.6	12.9	14.1	15.2	16.2	17.2	18.1	18.9
16 0.0598"	6"	S	2130	2120	2112	2106	2100	2096	2093	2089	S	2357	2319	2289	2265	2245	2229	2215	2203
	G'	22.1	24.8	27.4	29.9	32.4	34.8	37.1	39.3		G'	22.1	24.8	27.4	30.0	32.5	34.8	37.1	39.4
	12"	S	1666	1638	1617	1599	1585	1573	1563	1554	S	1824	1788	1760	1738	1720	1704	1691	1680
	G'	21.1	23.5	25.8	28.1	30.2	32.2	34.2	36.0		G'	21.2	23.6	26.0	28.2	30.3	32.4	34.3	36.2
	18"	S	1223	1198	1179	1164	1151	1140	1132	1123	S	1312	1276	1248	1226	1207	1192	1179	1168
	G'	20.3	22.5	24.6	26.5	28.4	30.2	31.8	33.4		G'	20.5	22.7	24.8	26.8	28.7	30.5	32.1	33.7
	24"	S	967	942	923	908	895	884	876	868	S	1056	1020	992	970	951	936	923	912
	G'	19.6	21.6	23.5	25.3	26.9	28.5	29.9	31.3		G'	19.9	21.9	23.9	25.6	27.3	28.9	30.4	31.7
	30"	S	813	789	769	754	741	731	722	714	S	902	866	838	816	798	783	770	759
	G'	19.0	20.9	22.6	24.2	25.7	27.0	28.3	29.5		G'	19.4	21.3	23.1	24.7	26.2	27.6	28.9	30.1
	36"	S	711	686	667	652	639	628	619	612	S	800	764	736	714	695	680	667	656
	G'	18.6	20.3	21.9	23.3	24.6	25.8	27.0	28.0		G'	19.0	20.8	22.4	23.9	25.3	26.5	27.7	28.7
14 0.0747"	6"	S	2614	2601	2592	2584	2578	2572	2568	2564	S	2893	2845	2809	2779	2755	2735	2718	2704
	G'	36.4	40.6	44.7	48.5	52.2	55.7	59.1	62.3		G'	36.5	40.7	44.8	48.6	52.3	55.8	59.2	62.5
	12"	S	2044	2010	1984	1963	1945	1931	1918	1908	S	2238	2194	2160	2133	2110	2092	2076	2062
	G'	34.1	37.7	41.1	44.2	47.2	50.0	52.7	55.2		G'	34.3	38.0	41.4	44.5	47.5	50.4	53.0	55.6
	18"	S	1501	1471	1447	1428	1412	1400	1389	1378	S	1610	1566	1532	1504	1482	1463	1447	1434
	G'	32.2	35.4	38.2	40.9	43.4	45.7	47.8	49.8		G'	32.7	35.8	38.8	41.5	44.0	46.3	48.4	50.5
	24"	S	1187	1156	1133	1114	1098	1085	1074	1065	S	1296	1252	1217	1190	1168	1149	1133	1119
	G'	30.7	33.5	36.0	38.3	40.4	42.3	44.0	45.7		G'	31.3	34.2	36.7	39.0	41.2	43.1	44.9	46.5
	30"	S	998	968	944	925	910	897	886	876	S	1107	1063	1029	1001	979	960	944	931
	G'	29.5	32.0	34.1	36.1	37.9	39.5	41.0	42.3		G'	30.3	32.8	35.1	37.1	38.9	40.6	42.0	43.4
	36"	S	873	842	818	799	784	771	760	751	S	981	937	903	876	853	835	819	805
	G'	28.5	30.7	32.6	34.3	35.8	37.2	38.5	39.6		G'	28.4	31.7	33.7	35.5	37.1	38.5	39.7	40.9

NOTES: Data is prepared in accordance with SDI's DIAPHRAGM DESIGN MANUAL, DDM03
 S values have been divided by a Safety Factor of 3 to obtain (ASD) Diaphragm Shear values for seismic loading (worst case).
 The following Safety Factors shown are from Table D5 of 2004 Supplement AISI Specifications.
Seismic: $\phi = .55$ for LRFD and $\Omega = 3.00$ for ASD for welds.
Wind: $\phi = .70$ for LRFD and $\Omega = 2.35$ for ASD for welds.
Other: $\phi = .60$ for LRFD and $\Omega = 2.65$ for ASD for welds.
 Calculations are based on a "SINGLE SPAN CONDITION". For "Other Span Conditions" contact the Metal Deck Group for additional information.
 Fy = 40 ksi and Fu = 55 ksi
 * Indicates Shear Buckling controls. A Safety Factor of 2.00 was used as referenced in SDI DDM03.
 Support connections parallel to deck flutes spaced at 12 inches o.c.

TABLE 7
Deep-Dek® 6 Allowable Diaphragm Shear, S (plf) and Stiffness Factors, G' (kpi)

SUPPORT CONNECTION: 1/2" Effective Weld Diameter		S = Allowable Diaphragm Shear (lbs/foot)																										
SIDE LAP CONNECTION: S/L Screws #10		G' = Stiffness Factor (kips/in)																										
ATTACHMENT PATTERN: 12/2		ATTACHMENT PATTERN: 12/4																										
GAGE	SIDE LAP SPACING	DECK SPAN - C to C SUPPORT						DECK SPAN - C to C SUPPORT																				
		14'-0"	16'-0"	18'-0"	20'-0"	22'-0"	24'-0"	26'-0"	28'-0"	14'-0"	16'-0"	18'-0"	20'-0"	22'-0"	24'-0"	26'-0"	28'-0"											
20 0.0358"	6"	S	566	577	570	564	559	555	552	549	S	640	625	612	602	594	S	640	625	612	602	594	S	640	625	612	602	594
		G'	6.4	7.3	8.1	8.9	9.6	10.4	11.1	11.8	G'	6.4	7.3	8.1	8.9	9.6	G'	6.4	7.3	8.1	8.9	9.6	G'	6.4	7.3	8.1	8.9	9.6
18 0.0474"	12"	S	330	321	313	308	303	299	296	293	S	384	368	356	346	338	S	384	368	356	346	338	S	384	368	356	346	338
		G'	6.2	7.0	7.7	8.4	9.1	9.7	10.4	11.0	G'	6.3	7.0	7.8	8.5	9.2	G'	6.3	7.0	7.8	8.5	9.2	G'	6.3	7.0	7.8	8.5	9.2
16 0.0598"	18"	S	244	235	228	222	218	214	211	208	S	299	283	271	261	252	S	299	283	271	261	252	S	299	283	271	261	252
		G'	5.9	6.5	7.1	7.7	8.3	8.8	9.3	9.7	G'	6.1	6.8	7.5	8.2	8.8	G'	6.1	6.8	7.5	8.2	8.8	G'	6.1	6.8	7.5	8.2	8.8
14 0.0747"	24"	S	202	192	185	180	175	171	166	163	S	266	240	228	218	210	S	266	240	228	218	210	S	266	240	228	218	210
		G'	5.7	6.2	6.8	7.3	7.7	8.1	8.5	8.9	G'	6.0	6.7	7.3	7.9	8.5	G'	6.0	6.7	7.3	7.9	8.5	G'	6.0	6.7	7.3	7.9	8.5
	30"	S	176	167	160	154	149	146	142	139	S	231	215	202	192	184	S	231	215	202	192	184	S	231	215	202	192	184
		G'	5.8	6.4	6.9	7.5	8.0	8.4	8.9	9.3	G'	5.9	6.6	7.2	7.7	8.2	G'	5.9	6.6	7.2	7.7	8.2	G'	5.9	6.6	7.2	7.7	8.2
	36"	S	159	150	143	137	132	128	125	122	S	213	198	185	175	167	S	213	198	185	175	167	S	213	198	185	175	167
		G'	5.7	6.2	6.8	7.3	7.7	8.1	8.5	8.9	G'	5.8	6.5	7.0	7.6	8.0	G'	5.8	6.5	7.0	7.6	8.0	G'	5.8	6.5	7.0	7.6	8.0
	6"	S	775	763	753	746	740	735	730	727	S	846	825	809	796	785	S	846	825	809	796	785	S	846	825	809	796	785
		G'	12.3	13.8	15.2	16.6	18.0	19.3	20.5	21.7	G'	12.4	13.9	15.3	16.7	18.1	G'	12.4	13.9	15.3	16.7	18.1	G'	12.4	13.9	15.3	16.7	18.1
	12"	S	435	423	414	407	401	395	391	388	S	507	486	470	457	446	S	507	486	470	457	446	S	507	486	470	457	446
		G'	11.6	12.9	14.1	15.2	16.3	17.4	18.3	19.3	G'	11.7	13.0	14.3	15.5	16.6	G'	11.7	13.0	14.3	15.5	16.6	G'	11.7	13.0	14.3	15.5	16.6
	18"	S	322	310	301	294	287	282	278	274	S	394	373	356	344	333	S	394	373	356	344	333	S	394	373	356	344	333
		G'	11.0	12.2	13.2	14.2	15.1	15.9	16.7	17.5	G'	11.3	12.5	13.6	14.6	15.5	G'	11.3	12.5	13.6	14.6	15.5	G'	11.3	12.5	13.6	14.6	15.5
	24"	S	266	254	244	237	231	226	222	218	S	337	316	300	287	276	S	337	316	300	287	276	S	337	316	300	287	276
		G'	10.6	11.6	12.5	13.4	14.1	14.9	15.5	16.1	G'	11.0	12.0	13.0	13.9	14.7	G'	11.0	12.0	13.0	13.9	14.7	G'	11.0	12.0	13.0	13.9	14.7
	30"	S	232	220	211	203	197	192	188	184	S	303	282	266	253	242	S	303	282	266	253	242	S	303	282	266	253	242
		G'	10.3	11.2	12.0	12.7	13.4	14.0	14.5	15.0	G'	10.7	11.7	12.6	13.4	14.1	G'	10.7	11.7	12.6	13.4	14.1	G'	10.7	11.7	12.6	13.4	14.1
	36"	S	209	197	188	180	174	169	165	161	S	281	260	243	230	220	S	281	260	243	230	220	S	281	260	243	230	220
		G'	10.0	10.8	11.5	12.2	12.8	13.3	13.8	14.2	G'	10.9	11.5	12.3	13.0	13.6	G'	10.9	11.5	12.3	13.0	13.6	G'	10.9	11.5	12.3	13.0	13.6
	6"	S	976	961	949	940	932	926	921	916	S	1064	1038	1018	1002	989	S	1064	1038	1018	1002	989	S	1064	1038	1018	1002	989
		G'	20.6	23.0	25.2	27.3	29.3	31.2	33.0	34.8	G'	20.8	23.1	25.4	27.5	29.5	G'	20.8	23.1	25.4	27.5	29.5	G'	20.8	23.1	25.4	27.5	29.5
	12"	S	548	533	521	512	504	498	493	488	S	637	610	590	574	561	S	637	610	590	574	561	S	637	610	590	574	561
		G'	18.9	20.7	22.5	24.1	25.5	26.9	28.2	29.4	G'	19.3	21.2	22.9	24.6	26.1	G'	19.3	21.2	22.9	24.6	26.1	G'	19.3	21.2	22.9	24.6	26.1
	18"	S	405	390	379	369	362	355	350	345	S	484	468	448	431	418	S	484	468	448	431	418	S	484	468	448	431	418
		G'	17.6	19.1	20.5	21.8	22.9	24.0	24.9	25.8	G'	18.2	19.8	21.3	22.6	23.8	G'	18.2	19.8	21.3	22.6	23.8	G'	18.2	19.8	21.3	22.6	23.8
	24"	S	334	319	307	298	290	284	279	274	S	423	397	376	360	347	S	423	397	376	360	347	S	423	397	376	360	347
		G'	16.7	18.0	19.1	20.1	21.0	21.8	22.6	23.2	G'	17.5	18.9	20.1	21.2	22.1	G'	17.5	18.9	20.1	21.2	22.1	G'	17.5	18.9	20.1	21.2	22.1
	30"	S	291	276	264	255	248	241	236	231	S	380	354	333	317	304	S	380	354	333	317	304	S	380	354	333	317	304
		G'	15.9	17.0	18.0	18.8	19.6	20.2	20.8	21.3	G'	17.0	18.2	19.2	20.1	20.9	G'	17.0	18.2	19.2	20.1	20.9	G'	17.0	18.2	19.2	20.1	20.9
	36"	S	262	248	236	227	219	213	207	203	S	351	325	305	289	276	S	351	325	305	289	276	S	351	325	305	289	276
		G'	15.3	16.3	17.1	17.8	18.4	18.9	19.4	19.7	G'	16.5	17.6	18.5	19.3	20.0	G'	16.5	17.6	18.5	19.3	20.0	G'	16.5	17.6	18.5	19.3	20.0
	6"	S	1217	1198	1184	1173	1163	1156	1149	1143	S	1326	1294	1269	1249	1233	S	1326	1294	1269	1249	1233	S	1326	1294	1269	1249	1233
		G'	33.1	36.4	39.6	42.5	45.3	47.8	50.3	52.5	G'	35.4	38.8	40.9	42.9	45.7	G'	35.4	38.8	40.9	42.9	45.7	G'	35.4	38.8	40.9	42.9	45.7
	12"	S	682	664	650	638	629	621	614	609	S	791	759	734	714	698	S	791	759	734	714	698	S	791	759	734	714	698
		G'	29.1	31.6	33.8	35.8	37.6	39.3	40.8	42.2	G'	30.0	32.5	34.8	36.8	38.7	G'	30.0	32.5	34.8	36.8	38.7	G'	30.0	32.5	34.8	36.8	38.7
	18"	S	504	486	471	460	451	443	436	430	S	613	581	556	536	520	S	613	581	556	536	520	S	613	581	556	536	520
		G'	26.5	28.4	30.0	31.4	32.7	33.8	34.8	35.8	G'	27.8	29.8	31.5	33.0	34.3	G'	27.8	29.8	31.5	33.0	34.3	G'	27.8	29.8	31.5	33.0	34.3
	24"	S	415	396	382	371	361	354	347	341	S	524	492	467	447	431	S	524	492	467	447	431	S	524	492	467	447	431
		G'	24.6	26.1	27.3	28.4	29.3	30.1	30.8	31.4	G'	26.3	27.9	29.2	30.3	31.3	G'	26.3	27.9	29.2	30.3	31.3	G'	26.3	27.9	29.2	30.3	31.3
	30"	S	361	343	329	317	308	300	294	288	S	470	438	413	394	377	S	470	438	413	394	377	S	470	438	413	394	377
		G'	23.2	24.4	25.3	26.1	26.8	27.4	27.8	28.3	G'	25.2	26.5	27.6	28.4	29.1	G'	25.2	26.5	27.6	28.4	29.1	G'	25.2	26.5	27.6	28.4	29.1
	36"	S	326	307	293	282	272	264	258	252	S	435	403	378	358	342	S	435	403	378	358	342	S	435	403	378	358	342
		G'	22.1	23.1	23.8	24.4	24.9	25.3	25.6	25.9	G'	24.3	25.4	26.3	26.9	27.5	G'	24.3	25.4	26.3	26.9	27.5	G'	24.3	25.4	26.3	26.9	27.5

NOTES: Data is prepared in accordance with SDI's DIAPHRAGM DESIGN MANUAL, DDM03
 S values have been divided by a Safety Factor of 3 to obtain (ASD) Diaphragm Shear values for seismic loading (worst case).
 The following Safety Factors shown are from Table D5 of 2004 Supplement A/ISI Specifications.
Seismic: $\phi = .55$ for LRFD and $\Omega = 3.00$ for ASD for welds.
Wind: $\phi = .70$ for LRFD and $\Omega = 2.35$ for ASD for welds.
Other: $\phi = .60$ for LRFD and $\Omega = 2.65$ for ASD for welds.
 Calculations are based on a "SINGLE SPAN CONDITION". For "Other Span Conditions" contact the Metal Deck Group for additional information.
 Fy = 40 ksi and Fu = 55 ksi
 * Indicates Shear Buckling controls. A Safety Factor of 2.00 was used as referenced in SDI DDM03.
 Support connections parallel to deck flutes spaced at 12 inches o.c.

TABLE 8
Deep-Dek® 7.5 Allowable Diaphragm Shear, S (plf) and Stiffness Factors, G' (kpi)

SUPPORT CONNECTION: 1/2" Effective Weld Diameter		S = Allowable Diaphragm Shear (lbs/foot)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
SIDELAP CONNECTION: 1-1/2" Seam Welds		G' = Stiffness Factor (kips/in.)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
ATTACHMENT PATTERN: 12/12		ATTACHMENT PATTERN: 12/14																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
GAGE	SIDE LAP SPACING	FACTOR	DECK SPAN - C to C SUPPORT						DECK SPAN - C to C SUPPORT																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
			16'-0"	18'-0"	20'-0"	22'-0"	24'-0"	30'-0"	16'-0"	18'-0"	20'-0"	22'-0"	24'-0"	30'-0"																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
20 0.0358"	6"	S	1305	1300	1296	1293	1291	1288	1286	1284	1282	1280	1278	1276	1274	1272	1270	1268	1266	1264	1262	1260	1258	1256	1254	1252	1250	1248	1246	1244	1242	1240	1238	1236	1234	1232	1230	1228	1226	1224	1222	1220	1218	1216	1214	1212	1210	1208	1206	1204	1202	1200	1198	1196	1194	1192	1190	1188	1186	1184	1182	1180	1178	1176	1174	1172	1170	1168	1166	1164	1162	1160	1158	1156	1154	1152	1150	1148	1146	1144	1142	1140	1138	1136	1134	1132	1130	1128	1126	1124	1122	1120	1118	1116	1114	1112	1110	1108	1106	1104	1102	1100	1098	1096	1094	1092	1090	1088	1086	1084	1082	1080	1078	1076	1074	1072	1070	1068	1066	1064	1062	1060	1058	1056	1054	1052	1050	1048	1046	1044	1042	1040	1038	1036	1034	1032	1030	1028	1026	1024	1022	1020	1018	1016	1014	1012	1010	1008	1006	1004	1002	1000	998	996	994	992	990	988	986	984	982	980	978	976	974	972	970	968	966	964	962	960	958	956	954	952	950	948	946	944	942	940	938	936	934	932	930	928	926	924	922	920	918	916	914	912	910	908	906	904	902	900	898	896	894	892	890	888	886	884	882	880	878	876	874	872	870	868	866	864	862	860	858	856	854	852	850	848	846	844	842	840	838	836	834	832	830	828	826	824	822	820	818	816	814	812	810	808	806	804	802	800	798	796	794	792	790	788	786	784	782	780	778	776	774	772	770	768	766	764	762	760	758	756	754	752	750	748	746	744	742	740	738	736	734	732	730	728	726	724	722	720	718	716	714	712	710	708	706	704	702	700	698	696	694	692	690	688	686	684	682	680	678	676	674	672	670	668	666	664	662	660	658	656	654	652	650	648	646	644	642	640	638	636	634	632	630	628	626	624	622	620	618	616	614	612	610	608	606	604	602	600	598	596	594	592	590	588	586	584	582	580	578	576	574	572	570	568	566	564	562	560	558	556	554	552	550	548	546	544	542	540	538	536	534	532	530	528	526	524	522	520	518	516	514	512	510	508	506	504	502	500	498	496	494	492	490	488	486	484	482	480	478	476	474	472	470	468	466	464	462	460	458	456	454	452	450	448	446	444	442	440	438	436	434	432	430	428	426	424	422	420	418	416	414	412	410	408	406	404	402	400	398	396	394	392	390	388	386	384	382	380	378	376	374	372	370	368	366	364	362	360	358	356	354	352	350	348	346	344	342	340	338	336	334	332	330	328	326	324	322	320	318	316	314	312	310	308	306	304	302	300	298	296	294	292	290	288	286	284	282	280	278	276	274	272	270	268	266	264	262	260	258	256	254	252	250	248	246	244	242	240	238	236	234	232	230	228	226	224	222	220	218	216	214	212	210	208	206	204	202	200	198	196	194	192	190	188	186	184	182	180	178	176	174	172	170	168	166	164	162	160	158	156	154	152	150	148	146	144	142	140	138	136	134	132	130	128	126	124	122	120	118	116	114	112	110	108	106	104	102	100	998	996	994	992	990	988	986	984	982	980	978	976	974	972	970	968	966	964	962	960	958	956	954	952	950	948	946	944	942	940	938	936	934	932	930	928	926	924	922	920	918	916	914	912	910	908	906	904	902	900	898	896	894	892	890	888	886	884	882	880	878	876	874	872	870	868	866	864	862	860	858	856	854	852	850	848	846	844	842	840	838	836	834	832	830	828	826	824	822	820	818	816	814	812	810	808	806	804	802	800	798	796	794	792	790	788	786	784	782	780	778	776	774	772	770	768	766	764	762	760	758	756	754	752	750	748	746	744	742	740	738	736	734	732	730	728	726	724	722	720	718	716	714	712	710	708	706	704	702	700	698	696	694	692	690	688	686	684	682	680	678	676	674	672	670	668	666	664	662	660	658	656	654	652	650	648	646	644	642	640	638	636	634	632	630	628	626	624	622	620	618	616	614	612	610	608	606	604	602	600	598	596	594	592	590	588	586	584	582	580	578	576	574	572	570	568	566	564	562	560	558	556	554	552	550	548	546	544	542	540	538	536	534	532	530	528	526	524	522	520	518	516	514	512	510	508	506	504	502	500	498	496	494	492	490	488	486	484	482	480	478	476	474	472	470	468	466	464	462	460	458	456	454	452	450	448	446	444	442	440	438	436	434	432	430	428	426	424	422	420	418	416	414	412	410	408	406	404	402	400	398	396	394	392	390	388	386	384	382	380	378	376	374	372	370	368	366	364	362	360	358	356	354	352	350	348	346	344	342	340	338	336	334	332	330	328	326	324	322	320	318	316	314	312	310	308	306	304	302	300	298	296	294	292	290	288	286	284	282	280	278	276	274	272	270	268	266	264	262	260	258	256	254	252	250	248	246	244	242	240	238	236	234	232	230	228	226	224	222	220	218	216	214	212	210	208	206	204	202	200	198	196	194	192	190	188	186	184	182	180	178	176	174	172	170	168	166	164	162	160	158	156	154	152	150	148	146	144	142	140	138	136	134	132	130	128	126	124	122	120	118	116	114	112	110	108	106	104	102	100	998	996	994	992	990	988	986	984	982	980	978	976	974	972	970	968	966	964	962	960	958	956	954	952	950	948	946	944	942	940	938	936	934	932	930	928	926	924	922	920	918	916	914	912	910	908	906	904	902	900	898	896	894	892	890	888	886	884	882	880	878	876	874	872	870	868	866	864	862	860	858	856	854	852	850	848	846	844	842	840	838	836	834	832	830	828	826	824	822	820	818	816	814	812	810	808	806	804	802	800	798	796	794	792	790	788	786	784	782	780	778	776	774	772	770	768	766	764	762	760	758	756	754	752	750	748	746	744	742	740	738	736	734	732	730	728	726	724	722	720	718	716	714	712	710	708	706	704	702	700	698	696	694	692	690	688	686	684	682	680	678	676	674	672	670	668	666	664	662	660	658	656	654	652	650	648	646	644	642	640	638	636	634	632	630	628	626	624	622	620	618	616	614	612	610	608	606	604	602	600	598	596	594	592	590	588	586	584	582	580	578	576	574	572	570	568	566	564	562	560	558	556	554	552	550	548	546	544	542	540	538	536	534	532	530	528	526	524	522	520

TABLE 9
Deep-Dek® 7.5 Allowable Diaphragm Shear, S (plf) and Stiffness Factors, G' (kpi)

SUPPORT CONNECTION: 1/2" Effective Weld Diameter		S = Allowable Diaphragm Shear (lbs/foot)																		
SIDE LAP CONNECTION: S/L Screws #10		G' = Stiffness Factor (kips/in)																		
ATTACHMENT PATTERN: 12/2		ATTACHMENT PATTERN: 12/4																		
GAGE	SIDE LAP SPACING	DECK SPAN - C TO C SUPPORT						DECK SPAN - C TO C SUPPORT												
		16'-0"	18'-0"	20'-0"	22'-0"	24'-0"	26'-0"	16'-0"	18'-0"	20'-0"	22'-0"	24'-0"	26'-0"							
20 0.0358"	6"	S	577	570	564	559	555	552	549	547	S	625	612	602	594	587	582	577	572	
	12"	G'	5.1	5.6	6.2	6.8	7.3	7.9	8.4	8.9	G'	3.68	3.56	3.46	3.38	3.31	3.25	3.20	3.16	
	18"	S	321	313	308	303	299	296	293	291	S	2.83	2.71	2.61	2.52	2.46	2.40	2.35	2.31	
	24"	G'	4.9	5.5	6.0	6.5	7.0	7.5	8.0	8.4	G'	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	
	30"	S	235	228	222	218	214	211	208	205	S	2.40	2.28	2.18	2.10	2.03	1.97	1.92	1.88	
	36"	G'	4.7	5.2	5.6	6.1	6.5	6.9	7.3	7.7	G'	2.15	2.02	1.92	1.84	1.77	1.72	1.67	1.63	
	18 0.0474"	6"	S	167	160	154	149	146	142	139	137	S	1.98	1.85	1.75	1.67	1.60	1.55	1.50	1.45
		12"	G'	4.6	5.1	5.5	5.9	6.3	6.7	7.0	7.4	G'	4.7	4.7	4.7	4.7	4.7	4.7	4.7	4.7
		18"	S	150	143	137	132	128	125	122	120	S	1.82	1.69	1.59	1.51	1.44	1.38	1.33	1.29
		24"	G'	4.5	5.0	5.4	5.8	6.1	6.5	6.8	7.1	G'	1.85	1.72	1.62	1.54	1.47	1.41	1.36	1.32
		30"	S	763	753	746	740	735	730	727	724	S	8.25	8.09	7.96	7.85	7.76	7.69	7.62	7.57
		36"	G'	9.8	10.8	11.9	12.9	13.9	14.8	15.8	16.7	G'	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8
16 0.0598"		6"	S	423	414	407	401	395	391	388	384	S	4.86	4.70	4.57	4.46	4.37	4.30	4.23	4.18
		12"	G'	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	G'	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
		18"	S	310	301	294	287	282	278	274	271	S	3.73	3.56	3.44	3.33	3.24	3.17	3.10	3.05
		24"	G'	8.9	9.8	10.6	11.3	12.1	12.8	13.4	14.0	G'	9.1	9.9	10.8	11.6	12.3	13.0	13.7	14.3
		30"	S	254	244	237	231	226	222	218	215	S	3.16	3.00	2.87	2.76	2.67	2.60	2.54	2.48
		36"	G'	8.6	9.4	10.1	10.8	11.4	12.0	12.6	13.1	G'	8.8	9.7	10.4	11.1	11.8	12.4	13.0	13.5
	14 0.0747"	6"	S	220	211	203	197	192	188	184	181	S	2.82	2.66	2.53	2.42	2.34	2.26	2.20	2.14
		12"	G'	8.4	9.1	9.7	10.3	10.9	11.4	11.9	12.4	G'	8.7	9.4	10.1	10.8	11.4	11.9	12.4	12.9
		18"	S	197	188	180	174	169	165	161	158	S	2.60	2.43	2.30	2.20	2.11	2.03	1.97	1.91
		24"	G'	8.2	8.8	9.4	10.0	10.5	10.9	11.4	11.8	G'	8.5	9.2	9.9	10.5	11.0	11.5	12.0	12.4
		30"	S	961	949	940	932	926	921	916	912	S	10.38	10.18	10.02	9.89	9.78	9.68	9.60	9.54
		36"	G'	16.5	18.2	19.9	21.5	23.0	24.5	25.9	27.3	G'	16.6	18.3	20.0	21.6	23.1	24.6	26.0	27.4
14 0.0747"		6"	S	533	521	512	504	498	493	488	484	S	6.10	590	574	561	550	540	532	526
		12"	G'	15.3	16.8	18.1	19.4	20.6	21.7	22.8	23.8	G'	15.6	17.0	18.4	19.7	20.9	22.1	23.2	24.2
		18"	S	390	379	369	362	355	350	345	341	S	4.68	448	431	418	407	398	390	383
		24"	G'	14.5	15.7	16.8	17.8	18.8	19.7	20.6	21.4	G'	14.8	16.1	17.3	18.3	19.4	20.3	21.2	22.0
		30"	S	319	307	298	290	284	279	274	270	S	3.97	3.76	3.60	3.47	3.36	3.27	3.19	3.12
		36"	G'	13.8	14.8	15.8	16.7	17.5	18.2	18.9	19.5	G'	14.3	15.4	16.4	17.4	18.2	19.0	19.7	20.3
	14 0.0747"	6"	S	276	264	255	248	241	236	231	227	S	3.54	3.33	3.17	3.04	2.93	2.84	2.76	2.69
		12"	G'	13.2	14.1	15.0	15.7	16.4	17.0	17.6	18.1	G'	13.9	14.9	15.8	16.6	17.3	18.0	18.6	19.1
		18"	S	248	236	227	219	213	207	203	199	S	3.25	3.05	2.89	2.76	2.65	2.55	2.47	2.40
		24"	G'	12.8	13.6	14.3	15.0	15.5	16.1	16.5	17.0	G'	13.6	14.5	15.3	16.0	16.6	17.2	17.7	18.1
		30"	S	1198	1184	1173	1163	1156	1149	1143	1138	S	12.94	12.69	12.49	12.33	12.19	12.08	11.98	11.89
		36"	G'	26.3	28.4	31.8	34.1	36.3	38.4	40.4	42.3	G'	27.0	28.6	30.0	31.4	32.6	33.6	34.6	35.6
14 0.0747"		6"	S	664	650	638	629	621	614	609	604	S	7.59	7.34	7.14	6.98	6.84	6.73	6.63	6.55
		12"	G'	24.1	26.1	27.9	29.6	31.1	32.6	33.9	35.2	G'	24.6	26.6	28.5	30.2	31.8	33.3	34.7	35.9
		18"	S	486	471	460	451	443	436	430	426	S	5.81	5.56	5.36	5.20	5.06	4.95	4.85	4.76
		24"	G'	22.2	23.8	25.2	26.5	27.6	28.7	29.7	30.6	G'	23.0	24.7	26.1	27.5	28.7	29.8	30.8	31.7
		30"	S	396	382	371	361	354	347	341	336	S	4.92	4.67	4.47	4.31	4.17	4.06	3.96	3.87
		36"	G'	20.8	22.0	23.2	24.2	25.1	25.9	26.6	27.3	G'	21.9	23.3	24.5	25.5	26.5	27.3	28.0	28.7
	14 0.0747"	6"	S	343	329	317	308	300	294	288	283	S	4.38	4.13	3.94	3.77	3.64	3.52	3.42	3.34
		12"	G'	19.7	20.7	21.6	22.4	23.1	23.8	24.3	24.8	G'	21.0	22.2	23.2	24.1	24.8	25.4	26.0	26.5
		18"	S	307	293	282	272	264	258	252	247	S	4.03	3.78	3.58	3.42	3.28	3.17	3.07	2.98
		24"	G'	18.8	19.7	20.4	21.1	21.6	22.1	22.5	22.9	G'	20.4	21.4	22.2	22.9	23.5	24.0	24.5	24.8

NOTES: Data is prepared in accordance with SDI's DIAPHRAGM DESIGN MANUAL, DDM03
 S values have been divided by a Safety Factor of 3 to obtain (ASD) Diaphragm Shear values for seismic loading (worst case).
 The following Safety Factors shown are from Table D5 of 2004 Supplement AISI Specifications.
Seismic: $\phi = .55$ for LRFD and $\Omega = 3.00$ for ASD for welds.
Wind: $\phi = .70$ for LRFD and $\Omega = 2.35$ for ASD for welds.
Other: $\phi = .60$ for LRFD and $\Omega = 2.65$ for ASD for welds.
 Calculations are based on a "SINGLE SPAN CONDITION". For "Other Span Conditions" contact the Metal Deck Group for additional information.
 Fy = 40 ksi and Fu = 55 ksi
 * Indicates Shear Buckling controls. A Safety Factor of 2.00 was used as referenced in SDI DDM03.
 Support connections parallel to deck flutes spaced at 12 inches o.c.

TABLE 10
Deep-Dek® 4.5 Cellular
Allowable Diaphragm Shear

SUPPORT CONNECTION: SIDELAP CONNECTION: ATTACHMENT PATTERN:		1/2" Eff. Weld Diameter 1-1/2" Seam Welds 24 / 4		S = Allowable Diaphragm Shear (lbs/foot) G' = Stiffness Factor (kips/in.)									
GAGE	SIDE LAP SPACING	FACTOR	12'-0"	DECK SPAN - C to C SUPPORT					18'-0"	20'-0"	22'-0"	24'-0"	26'-0"
				16'-0"	14'-0"	12'-0"	10'-0"	8'-0"					
20/20 0.0358*/0.0358*	12"	S	2120	2019	1985	1957	1660*	1660*	1660*	1660*	1660*	1660*	1203*
			G'	84.7	96.6	105.6	111.0	115.9	120.3	124.3	128.3	132.3	136.3
20/18 0.0358*/0.0474*	24"	S	2120	2019	1985	1957	1660*	1660*	1660*	1660*	1660*	1660*	1203*
			G'	84.7	96.6	105.6	111.0	115.9	120.3	124.3	128.3	132.3	136.3
18/18 0.0474*/0.0474*	36"	S	2120	2019	1985	1957	1660*	1660*	1660*	1660*	1660*	1660*	1203*
			G'	84.7	96.6	105.6	111.0	115.9	120.3	124.3	128.3	132.3	136.3
16/16 0.0598*/0.0598*	12"	S	2120	2019	1985	1957	1660*	1660*	1660*	1660*	1660*	1660*	1203*
			G'	84.7	96.6	105.6	111.0	115.9	120.3	124.3	128.3	132.3	136.3
16/16 0.0598*/0.0598*	24"	S	2120	2019	1985	1957	1660*	1660*	1660*	1660*	1660*	1660*	1203*
			G'	84.7	96.6	105.6	111.0	115.9	120.3	124.3	128.3	132.3	136.3
16/14 0.0598*/0.0747*	36"	S	2120	2019	1985	1957	1660*	1660*	1660*	1660*	1660*	1660*	1203*
			G'	84.7	96.6	105.6	111.0	115.9	120.3	124.3	128.3	132.3	136.3
14/14 0.0747*/0.0747*	12"	S	2120	2019	1985	1957	1660*	1660*	1660*	1660*	1660*	1660*	1203*
			G'	84.7	96.6	105.6	111.0	115.9	120.3	124.3	128.3	132.3	136.3
14/14 0.0747*/0.0747*	24"	S	2120	2019	1985	1957	1660*	1660*	1660*	1660*	1660*	1660*	1203*
			G'	84.7	96.6	105.6	111.0	115.9	120.3	124.3	128.3	132.3	136.3
14/14 0.0747*/0.0747*	36"	S	2120	2019	1985	1957	1660*	1660*	1660*	1660*	1660*	1660*	1203*
			G'	84.7	96.6	105.6	111.0	115.9	120.3	124.3	128.3	132.3	136.3

NOTES: Data is prepared in accordance with SDI's DIAPHRAGM DESIGN MANUAL, DDM03
 S values have been divided by a Safety Factor of 3 to obtain (ASD) Diaphragm Shear values for seismic loading (worst case).
 The following Safety Factors shown are from Table D5 of 2004 Supplement AISI Specifications.
Seismic: $\phi = 0.55$ for LRFD and $\Omega = 3.00$ for ASD for welds.
Wind: $\phi = 0.60$ for LRFD and $\Omega = 2.35$ for ASD for welds.
 Calculations are based on a "SINGLE SPAN CONDITION". For "Other Span Conditions" contact the Metal Deck Group for additional information.
 * Indicates Shear Buckling controls. A Safety Factor of 2.00 was used as referenced in SDI DDM03.
 Support connections parallel to deck flutes spaced at 12 inches o.c.

TABLE 11
Deep-Dek® 6 Cellular
Allowable Diaphragm Shear

SUPPORT CONNECTION: SIDE LAP CONNECTION: ATTACHMENT PATTERN:		1/2" Effective Weld Diameter S/L Screws #10 24 / 4		S = Allowable Diaphragm Shear (lbs/foot) G' = Stiffness Factor (kips/in.)		1/2" Eff. Weld Diameter 1-1/2" Seam Welds 24 / 4		S = Allowable Diaphragm Shear (lbs/foot) G' = Stiffness Factor (kips/in.)			
GAGE	SIDE LAP SPACING	FACTOR	DECK SPAN - C to C SUPPORT						28' - 0"		
			14' - 0"	16' - 0"	18' - 0"	20' - 0"	22' - 0"	24' - 0"		26' - 0"	
20/20 0.0358*/0.0358*	12"	S	508	476	452	432	416	403	392	382	1598*
		G'	63.6	67.1	70.0	72.6	74.7	76.6	78.3	79.8	115.8
	24"	S	379	348	324	304	288	275	264	254	1089
20/18 0.0358*/0.0474*	12"	S	508	476	452	432	416	403	392	382	1598*
		G'	63.6	67.1	70.0	72.6	74.7	76.6	78.3	79.8	115.8
	24"	S	379	348	324	304	288	275	264	254	1089
18/20 0.0474*/0.0358*	12"	S	508	476	452	432	416	403	392	382	1598*
		G'	63.6	67.1	70.0	72.6	74.7	76.6	78.3	79.8	115.8
	24"	S	379	348	324	304	288	275	264	254	1089
18/18 0.0474*/0.0474*	12"	S	508	476	452	432	416	403	392	382	1598*
		G'	63.6	67.1	70.0	72.6	74.7	76.6	78.3	79.8	115.8
	24"	S	379	348	324	304	288	275	264	254	1089
16/16 0.0598*/0.0598*	12"	S	508	476	452	432	416	403	392	382	1598*
		G'	63.6	67.1	70.0	72.6	74.7	76.6	78.3	79.8	115.8
	24"	S	379	348	324	304	288	275	264	254	1089
16/14 0.0598*/0.0747*	12"	S	508	476	452	432	416	403	392	382	1598*
		G'	63.6	67.1	70.0	72.6	74.7	76.6	78.3	79.8	115.8
	24"	S	379	348	324	304	288	275	264	254	1089
14/16 0.0747*/0.0747*	12"	S	508	476	452	432	416	403	392	382	1598*
		G'	63.6	67.1	70.0	72.6	74.7	76.6	78.3	79.8	115.8
	24"	S	379	348	324	304	288	275	264	254	1089

NOTES: Data is prepared in accordance with SDI's DIAPHRAGM DESIGN MANUAL, DDM03
 S values have been divided by a Safety Factor of 3 to obtain (ASD) Diaphragm Shear values for seismic loading (worst case).
 The following Safety Factors shown are from Table D5 of 2004 Supplemental AISI Specifications.
Seismic: $\phi = .55$ for LRFD and $\Omega = 3.00$ for ASD for welds.
Wind: $\phi = .70$ for LRFD and $\Omega = 2.35$ for ASD for welds.
Other: $\phi = .60$ for LRFD and $\Omega = 2.65$ for ASD for welds.
 Calculations are based on a "SINGLE SPAN CONDITION". For "Other Span Conditions" contact the Metal Deck Group for additional information.
 * Indicates Shear Buckling controls. A Safety Factor of 2.00 was used as referenced in SDI DDM03.
 † Support connections parallel to deck flutes spaced at 12 inches o.c.

TABLE 12
Deep-Dek® 7.5 Cellular
Allowable Diaphragm Shear

SUPPORT CONNECTION: SIDELAP CONNECTION: ATTACHMENT PATTERN:			1/2" Eff. Weld Diameter 1-1/2" Seam Welds 24 / 4			S = Allowable Diaphragm Shear (lbs/foot) G' = Stiffness Factor (kips/in.)							
GAGE	SIDE LAP SPACING	FACTOR	DECK SPAN - C to C SUPPORT										
			16'-0"	18'-0"	20'-0"	22'-0"	24'-0"	26'-0"	28'-0"	30'-0"			
20/20 0.03587/0.0358*	12"	S	2019	1985	1957	1935	1916	1899	1885	1873			
		G'	78.3	84.1	89.3	94.0	98.4	102.4	106.1	109.5			
		S	1224	1189	1161	1138	1119	1102	1089	1076			
	24"	S	66.5	70.1	73.3	76.1	78.6	80.8	82.8	84.7			
		G'	92.2	88.7	85.9	83.6	81.6	80.0	78.6	77.4			
		S	59.3	61.7	63.8	65.6	67.1	68.4	69.5	70.6			
	36"	S	2314	2275	2243	2217	2195	2177	2161	2147			
		G'	121.3	126.6	131.1	135.1	138.6	141.7	144.5	147.0			
		S	1403	1363	1330	1304	1282	1263	1247	1233			
	20/18 0.03587/0.0474*	12"	S	1056	1016	984	957	935	917	901	887		
			G'	77.1	77.8	78.3	78.6	78.9	79.2	79.2	79.3		
			S	2314	2275	2243	2217	2195	2177	2161	2147		
24"		S	76.2	82.5	88.5	94.0	99.1	103.9	108.4	112.7			
		G'	1403	1363	1330	1304	1282	1263	1247	1233			
		S	67.3	71.9	76.1	79.8	83.2	86.3	89.1	91.7			
36"		S	1056	1016	984	957	935	917	901	887			
		G'	61.6	65.1	68.1	70.8	73.1	75.2	77.1	78.8			
		S	2626	2581	2546	2516	2491	2470	2452	2436			
18/18 0.04747/0.0474*		12"	S	127.3	134.4	140.7	146.3	151.3	155.8	159.8	163.5		
			G'	1592	1546	1510	1480	1455	1434	1415	1400		
			S	101.7	105.3	108.4	111.0	113.2	115.2	116.9	118.4		
	24"	S	1199	1153	1116	1087	1062	1040	1022	1007			
		G'	87.5	89.4	90.9	92.2	93.2	94.0	94.7	95.2			
		S	3020	2969	2928	2894	2866	2841	2820	2802			
	36"	S	1831	1779	1736	1702	1673	1649	1628	1610			
		G'	122.5	125.1	126.2	126.2	126.9	127.5	128.0	128.5			
		S	1379	1326	1284	1250	1221	1197	1176	1158			
	16/16 0.05987/0.0598*	12"	S	3020	2969	2928	2894	2866	2841	2820	2802		
			G'	129.3	137.8	145.5	152.4	158.7	164.4	169.4	174.5		
			S	1831	1779	1736	1702	1673	1649	1628	1610		
24"		S	107.5	112.6	116.9	120.7	124.0	127.0	129.6	131.9			
		G'	147.5	146.1	144.4	144.4	144.4	144.5	144.6	144.6			
		S	3427	3369	3322	3283	3251	3224	3200	3179			
36"		S	180.9	188.4	194.9	200.5	205.5	209.8	213.7	217.2			
		G'	157.2	160.1	162.5	164.4	166.1	167.6	168.6	169.6			
		S	2078	2018	1970	1931	1898	1871	1847	1827			
16/14 0.05987/0.0747*		12"	S	1564	1505	1457	1418	1385	1358	1334	1314		
			G'	114.8	115.7	116.4	116.8	117.1	117.3	117.4	117.5		
			S	3931	3864	3811	3766	3729	3698	3670	3647		
	24"	S	220.2	224.9	228.8	232.1	234.8	237.2	239.3	241.1			
		G'	2383	2315	2260	2215	2178	2146	2119	2095			
		S	153.6	154.0	154.3	154.5	154.6	154.6	154.6	154.6			
	36"	S	1795	1726	1671	1626	1589	1557	1530	1507			
		G'	123.5	122.4	121.3	120.4	119.6	118.8	118.1	117.5			
		S	3931	3864	3811	3766	3729	3698	3670	3647			
	14/16 0.07477/0.0747*	12"	S	189.6	198.4	207.8	215.3	222.0	227.9	233.3	238.1		
			G'	2383	2315	2260	2215	2178	2146	2119	2095		
			S	149.6	154.3	158.2	161.4	164.2	166.6	168.6	170.6		
24"		S	179.5	1726	1671	1626	1589	1557	1530	1507			
		G'	127.9	130.1	131.9	133.2	134.3	135.2	135.9	136.5			
		S	4452	4377	4316	4266	4224	4188	4157	4130			
36"		S	242.6	248.7	255.6	262.6	268.6	274.1	278.0	281.5			
		G'	2699	2621	2559	2508	2466	2430	2400	2373			
		S	175.4	177.5	178.5	179.5	180.4	181.0	181.6	182.0			
36"		S	2032	1955	1893	1842	1799	1764	1733	1706			
		G'	143.5	143.1	142.6	142.1	141.6	141.1	140.7	140.3			
		S	2032	1955	1893	1842	1799	1764	1733	1706			

NOTES: Data is prepared in accordance with SDS DIAPHRAGM DESIGN MANUAL - DDM03
 S values have been divided by a Safety Factor of 3 to obtain (ASD) Diaphragm Shear values for seismic loading (worst case).
 The following Safety Factors shown are from Table D5 of 2004 Supplement A/AS1 Specifications.
Seismic: $\phi = .55$ for LRFD and $\Omega = 3.00$ for ASD for welds.
Wind: $\phi = .70$ for LRFD and $\Omega = 2.35$ for ASD for welds.
Other: $\phi = .60$ for LRFD and $\Omega = 2.65$ for ASD for welds.
 Calculations are based on a "SINGLE SPAN CONDITION". For "Other Span Conditions" contact the Metal Deck Group for additional information.
 * Indicates Shear Buckling controls. A Safety Factor of 2.00 was used as referenced in SDI DDM03.
 † Support connections parallel to deck flutes spaced at 12 inches o.c.

TABLE 13
Deep-Dek® 4.5 Acoustical
Allowable Diaphragm Shear

GAGE	SIDE LAP SPACING	FACTOR	DECK SPAN - C to C SUPPORT						12" Effective Weld Diameter SIDELAP CONNECTION: 1-1/2" Seam Welds ATTACHMENT PATTERN: 12 / 2	SUPPORT CONNECTION: 1/2" Effective Weld Diameter SIDELAP CONNECTION: 1-1/2" Seam Welds ATTACHMENT PATTERN: 12 / 2								
			12'-0"	14'-0"	16'-0"	18'-0"	20'-0"	22'-0"		24'-0"	26'-0"	12'-0"	14'-0"	16'-0"	18'-0"	20'-0"	22'-0"	24'-0"
20 0.0358*	12"	S	301	290	282	276	271	267	263	261	922	903	888	876	867	859	820	698
		G	5.7	6.5	7.3	8.1	8.8	9.5	10.2	10.9	8.6	8.6	8.6	8.6	8.6	8.6	10.3	11.1
		S	244	234	226	220	215	210	207	204	750	732	719	707	696	688	681	675
		G	5.6	6.4	7.1	7.9	8.5	9.2	9.8	10.4	7.6	7.6	7.6	7.6	7.6	7.6	10.1	10.9
		S	226	215	207	201	196	192	188	185	681	663	649	639	631	624	618	613
		G	5.6	6.3	7.1	7.8	8.4	9.0	9.6	10.2	6.7	6.7	6.7	6.7	6.7	10.0	10.8	11.5
		S	188	177	169	163	158	154	151	148	542	524	511	500	492	485	479	475
		G	5.5	6.2	6.8	7.5	8.1	8.6	9.2	9.7	5.8	5.8	5.8	5.8	5.8	9.0	10.5	11.2
		S	166	155	147	141	136	132	128	125	459	441	427	417	409	402	396	391
		G	5.4	6.0	6.7	7.3	7.8	8.3	8.8	9.2	4.7	4.7	4.7	4.7	4.7	8.9	10.3	10.9
		S	151	140	132	126	121	116	113	110	403	385	372	362	353	346	341	336
		G	5.3	5.9	6.5	7.1	7.6	8.0	8.5	8.9	3.7	3.7	3.7	3.7	3.7	9.4	10.0	10.6
18 0.0474*	12"	S	397	383	373	364	358	353	348	344	1205	1179	1160	1144	1132	1122	1114	1063
		G	10.8	12.2	13.5	14.8	16.0	17.1	18.2	19.2	11.5	13.2	14.8	16.4	17.9	19.4	20.8	22.2
		S	323	309	296	290	283	278	273	270	980	956	939	923	910	898	889	881
		G	10.4	11.8	13.0	14.1	15.2	16.2	17.1	18.0	11.3	12.9	14.5	16.0	17.4	18.8	20.1	21.4
		S	298	284	273	265	258	253	249	245	889	866	848	835	824	815	807	801
		G	10.3	11.6	12.7	13.8	14.8	15.8	16.7	17.5	11.2	12.8	14.3	15.8	17.2	18.5	19.8	21.1
		S	248	234	223	215	209	203	199	195	708	685	667	653	642	634	626	620
		G	10.0	11.1	12.2	13.1	14.0	14.7	15.5	16.1	11.0	12.5	13.9	15.2	16.6	17.8	19.0	20.1
		S	218	204	194	185	179	173	169	165	599	576	558	545	534	525	517	511
		G	9.7	10.7	11.7	12.5	13.2	13.9	14.5	15.1	10.8	12.3	13.8	14.9	16.1	17.2	18.3	19.3
		S	198	184	174	165	159	154	149	145	527	503	486	472	461	452	445	439
		G	9.5	10.4	11.3	12.0	12.7	13.3	13.8	14.2	10.7	12.0	13.3	14.5	15.6	16.7	17.6	18.6
16 0.0598*	12"	S	500	482	469	459	451	444	438	434	1498	1466	1442	1423	1408	1395	1385	1376
		G	17.7	19.8	21.7	23.5	25.2	26.7	28.1	29.5	19.5	22.2	24.8	27.3	29.6	31.8	34.0	36.0
		S	405	388	375	365	356	350	344	339	1218	1189	1167	1148	1131	1117	1106	1096
		G	17.0	18.8	20.5	22.0	23.4	24.7	25.9	26.9	19.1	21.6	24.0	26.3	28.4	30.5	32.4	34.2
		S	374	357	343	333	325	318	313	308	1106	1076	1055	1038	1024	1013	1004	996
		G	16.7	18.4	20.0	21.4	22.7	23.9	24.9	25.9	18.9	21.4	23.7	25.9	27.9	29.9	31.7	33.4
		S	311	294	281	270	262	256	250	245	880	851	829	812	799	788	778	771
		G	15.9	17.4	18.7	19.9	20.9	21.8	22.6	23.3	18.3	20.6	22.7	24.7	26.5	28.2	29.8	31.3
		S	274	256	243	233	225	218	212	208	745	716	694	677	664	652	643	635
		G	15.3	16.6	17.7	18.7	19.5	20.2	20.9	21.4	17.9	20.0	21.9	23.7	25.3	26.9	28.3	29.6
		S	249	231	218	208	200	193	187	183	655	626	604	587	573	562	553	545
		G	14.8	16.0	16.9	17.7	18.4	19.0	19.5	19.9	17.5	19.5	21.2	22.9	24.3	25.7	26.9	28.1
14 0.0747*	12"	S	622	600	584	572	562	553	546	541	1838	1799	1769	1746	1727	1712	1699	1688
		G	27.7	30.5	33.0	35.3	37.3	39.2	40.9	42.4	31.9	35.9	39.7	43.3	46.6	49.7	52.7	55.4
		S	504	483	467	454	444	436	429	423	1495	1459	1432	1408	1388	1371	1357	1345
		G	26.1	28.5	30.5	32.4	34.0	35.4	36.7	37.9	30.3	34.5	37.9	41.1	44.0	46.8	49.3	51.7
		S	465	444	427	415	405	397	390	384	1357	1321	1294	1273	1257	1243	1232	1222
		G	25.4	27.6	29.5	31.2	32.6	33.9	35.0	36.0	30.3	33.9	37.1	40.1	42.9	45.5	47.9	50.1
		S	387	365	349	336	326	318	311	305	1090	1044	1018	997	980	966	955	946
		G	23.8	25.6	27.1	28.3	29.3	30.2	30.9	31.0	28.1	32.2	35.1	37.7	40.0	42.2	44.1	45.9
		S	340	318	302	289	279	271	264	258	914	879	852	831	814	801	789	780
		G	22.8	24.1	25.2	26.2	26.9	27.6	28.1	28.6	28.0	30.9	33.4	35.6	37.7	39.5	41.1	42.6
		S	308	287	271	258	248	240	233	227	804	768	741	720	704	690	679	669
		G	21.7	22.9	23.8	24.5	25.1	25.5	25.9	26.2	27.2	29.8	32.0	34.0	35.7	37.3	38.6	39.9

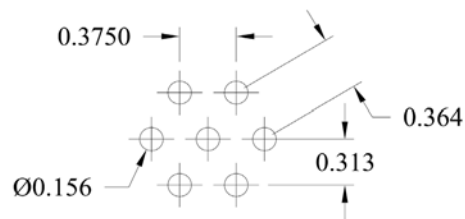
NOTES: Data is prepared in accordance with SDI's DIAPHRAGM DESIGN MANUAL, DDM03
 S_v values have been divided by a Safety Factor of 3 to obtain (ASD) Diaphragm Shear values for seismic loading (worst case).
 The following Safety Factors shown are from Table D6 or 2004 Supplement AISI Specifications.
 Seismic: $\phi = 1.50$ for LRFD and $\Omega = 3.25$ for ASD for welds.
 Other: $\phi = 1.60$ for LRFD and $\Omega = 3.25$ for ASD for welds.
 Calculations are based on a "SINGLE SPAN CONDITION". For "Other Span Conditions" contact the Metal Dek Group for additional information.
 F_y = 40 ksi and F_u = 55 ksi
 * Indicates Shear Buckling controls. A Safety Factor of 2.00 was used as referenced in SDI DDM03.
 Support connections parallel to deck flutes spaced at 12 inches o.c.

TABLE 16
Deep-Dek® 4.5 Cellular Acoustical
Allowable Diaphragm Shear

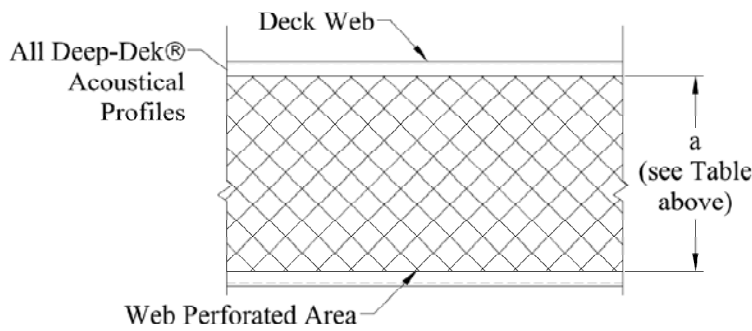
SUPPORT CONNECTION: SIDELAP CONNECTION: ATTACHMENT PATTERN:		1/2" Eff. Weld Diameter 1-1/2" Seam Welds 24 / 4		S = Allowable Diaphragm Shear (lbs/foot) G* = Stiffness Factor (kips/in.)																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
GAGE	SIDELAP SPACING	FACTOR	DECK SPAN - C to C SUPPORT																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
			12'-0"	14'-0"	16'-0"	18'-0"	20'-0"	22'-0"	24'-0"	26'-0"																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
20/20 0.0358*/0.0358*	12"	S	549	508	476	452	432	416	403	392	382	372	362	352	342	332	322	312	302	292	282	272	262	252	242	232	222	212	202	192	182	172	162	152	142	132	122	112	102	92	82	72	62	52	42	32	22	12	2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
		G*	209	236	261	285	308	328	348	368	388	408	428	448	468	488	508	528	548	568	588	608	628	648	668	688	708	728	748	768	788	808	828	848	868	888	908	928	948	968	988	1008	1028	1048	1068	1088	1108	1128	1148	1168	1188	1208	1228	1248	1268	1288	1308	1328	1348	1368	1388	1408	1428	1448	1468	1488	1508	1528	1548	1568	1588	1608	1628	1648	1668	1688	1708	1728	1748	1768	1788	1808	1828	1848	1868	1888	1908	1928	1948	1968	1988	2008	2028	2048	2068	2088	2108	2128	2148	2168	2188	2208	2228	2248	2268	2288	2308	2328	2348	2368	2388	2408	2428	2448	2468	2488	2508	2528	2548	2568	2588	2608	2628	2648	2668	2688	2708	2728	2748	2768	2788	2808	2828	2848	2868	2888	2908	2928	2948	2968	2988	3008	3028	3048	3068	3088	3108	3128	3148	3168	3188	3208	3228	3248	3268	3288	3308	3328	3348	3368	3388	3408	3428	3448	3468	3488	3508	3528	3548	3568	3588	3608	3628	3648	3668	3688	3708	3728	3748	3768	3788	3808	3828	3848	3868	3888	3908	3928	3948	3968	3988	4008	4028	4048	4068	4088	4108	4128	4148	4168	4188	4208	4228	4248	4268	4288	4308	4328	4348	4368	4388	4408	4428	4448	4468	4488	4508	4528	4548	4568	4588	4608	4628	4648	4668	4688	4708	4728	4748	4768	4788	4808	4828	4848	4868	4888	4908	4928	4948	4968	4988	5008	5028	5048	5068	5088	5108	5128	5148	5168	5188	5208	5228	5248	5268	5288	5308	5328	5348	5368	5388	5408	5428	5448	5468	5488	5508	5528	5548	5568	5588	5608	5628	5648	5668	5688	5708	5728	5748	5768	5788	5808	5828	5848	5868	5888	5908	5928	5948	5968	5988	6008	6028	6048	6068	6088	6108	6128	6148	6168	6188	6208	6228	6248	6268	6288	6308	6328	6348	6368	6388	6408	6428	6448	6468	6488	6508	6528	6548	6568	6588	6608	6628	6648	6668	6688	6708	6728	6748	6768	6788	6808	6828	6848	6868	6888	6908	6928	6948	6968	6988	7008	7028	7048	7068	7088	7108	7128	7148	7168	7188	7208	7228	7248	7268	7288	7308	7328	7348	7368	7388	7408	7428	7448	7468	7488	7508	7528	7548	7568	7588	7608	7628	7648	7668	7688	7708	7728	7748	7768	7788	7808	7828	7848	7868	7888	7908	7928	7948	7968	7988	8008	8028	8048	8068	8088	8108	8128	8148	8168	8188	8208	8228	8248	8268	8288	8308	8328	8348	8368	8388	8408	8428	8448	8468	8488	8508	8528	8548	8568	8588	8608	8628	8648	8668	8688	8708	8728	8748	8768	8788	8808	8828	8848	8868	8888	8908	8928	8948	8968	8988	9008	9028	9048	9068	9088	9108	9128	9148	9168	9188	9208	9228	9248	9268	9288	9308	9328	9348	9368	9388	9408	9428	9448	9468	9488	9508	9528	9548	9568	9588	9608	9628	9648	9668	9688	9708	9728	9748	9768	9788	9808	9828	9848	9868	9888	9908	9928	9948	9968	9988	10008	10028	10048	10068	10088	10108	10128	10148	10168	10188	10208	10228	10248	10268	10288	10308	10328	10348	10368	10388	10408	10428	10448	10468	10488	10508	10528	10548	10568	10588	10608	10628	10648	10668	10688	10708	10728	10748	10768	10788	10808	10828	10848	10868	10888	10908	10928	10948	10968	10988	11008	11028	11048	11068	11088	11108	11128	11148	11168	11188	11208	11228	11248	11268	11288	11308	11328	11348	11368	11388	11408	11428	11448	11468	11488	11508	11528	11548	11568	11588	11608	11628	11648	11668	11688	11708	11728	11748	11768	11788	11808	11828	11848	11868	11888	11908	11928	11948	11968	11988	12008	12028	12048	12068	12088	12108	12128	12148	12168	12188	12208	12228	12248	12268	12288	12308	12328	12348	12368	12388	12408	12428	12448	12468	12488	12508	12528	12548	12568	12588	12608	12628	12648	12668	12688	12708	12728	12748	12768	12788	12808	12828	12848	12868	12888	12908	12928	12948	12968	12988	13008	13028	13048	13068	13088	13108	13128	13148	13168	13188	13208	13228	13248	13268	13288	13308	13328	13348	13368	13388	13408	13428	13448	13468	13488	13508	13528	13548	13568	13588	13608	13628	13648	13668	13688	13708	13728	13748	13768	13788	13808	13828	13848	13868	13888	13908	13928	13948	13968	13988	14008	14028	14048	14068	14088	14108	14128	14148	14168	14188	14208	14228	14248	14268	14288	14308	14328	14348	14368	14388	14408	14428	14448	14468	14488	14508	14528	14548	14568	14588	14608	14628	14648	14668	14688	14708	14728	14748	14768	14788	14808	14828	14848	14868	14888	14908	14928	14948	14968	14988	15008	15028	15048	15068	15088	15108	15128	15148	15168	15188	15208	15228	15248	15268	15288	15308	15328	15348	15368	15388	15408	15428	15448	15468	15488	15508	15528	15548	15568	15588	15608	15628	15648	15668	15688	15708	15728	15748	15768	15788	15808	15828	15848	15868	15888	15908	15928	15948	15968	15988	16008	16028	16048	16068	16088	16108	16128	16148	16168	16188	16208	16228	16248	16268	16288	16308	16328	16348	16368	16388	16408	16428	16448	16468	16488	16508	16528	16548	16568	16588	16608	16628	16648	16668	16688	16708	16728	16748	16768	16788	16808	16828	16848	16868	16888	16908	16928	16948	16968	16988	17008	17028	17048	17068	17088	17108	17128	17148	17168	17188	17208	17228	17248	17268	17288	17308	17328	17348	17368	17388	17408	17428	17448	17468	17488	17508	17528	17548	17568	17588	17608	17628	17648	17668	17688	17708	17728	17748	17768	17788	17808	17828	17848	17868	17888	17908	17928	17948	17968	17988	18008	18028	18048	18068	18088	18108	18128	18148	18168	18188	18208	18228	18248	18268	18288	18308	18328	18348	18368	18388	18408	18428	18448	18468	18488	18508	18528	18548	18568	18588	18608	186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TABLE 19 - PERFORATION PATTERNS OF DEEP-DEK® ACOUSTICAL & DEEP-DEK® CELLULAR ACOUSTICAL

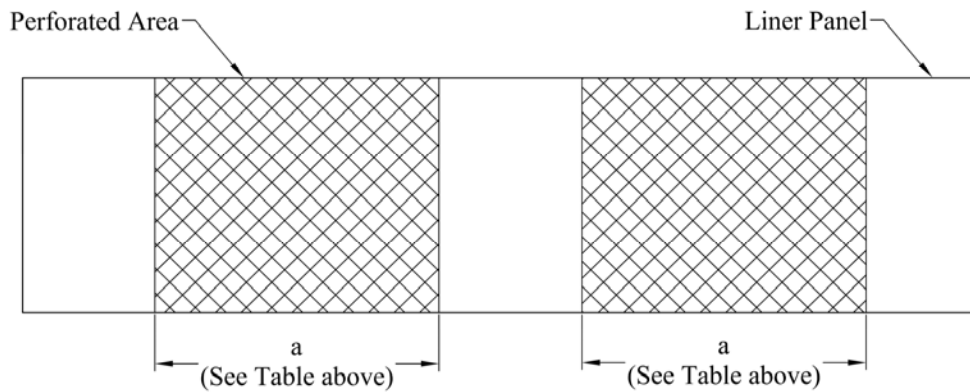
DECK TYPE	PERFORATION DIAMETER (in)	PERFORATION SPACING, a
Deep-Dek® 4.5 Acoustical	0.156	10 spaces @ 0.375" = 3.750"
Deep-Dek® 6 Acoustical	0.156	14 spaces @ 0.375" = 5.250"
Deep-Dek® 7.5 Acoustical	0.156	18 spaces @ 0.375" = 6.750"
Deep-Dek® Cellular Acoustical	0.156	21 spaces @ 0.375" = 7.875"



All Deep-Dek® Acoustical & Deep-Dek® Cellular Acoustical Profiles



All Deep-Dek® Acoustical Profiles



All Deep-Dek® Cellular Acoustical Profiles

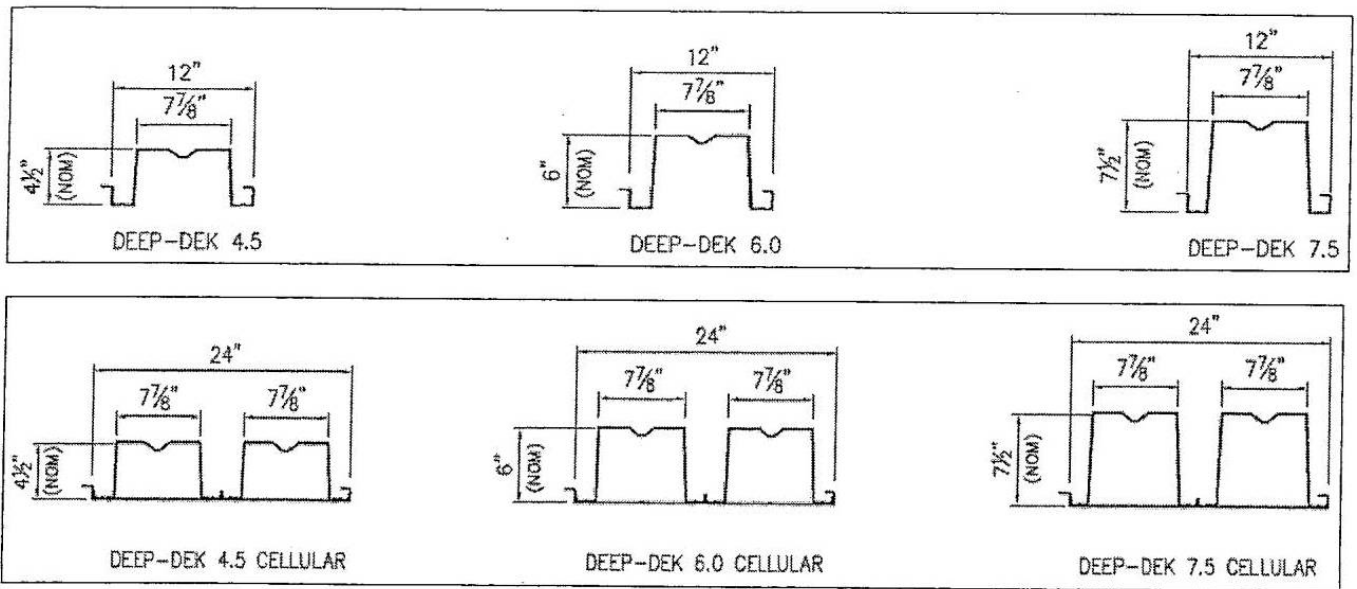


FIGURE 1—STEEL DECK PANEL PROFILES

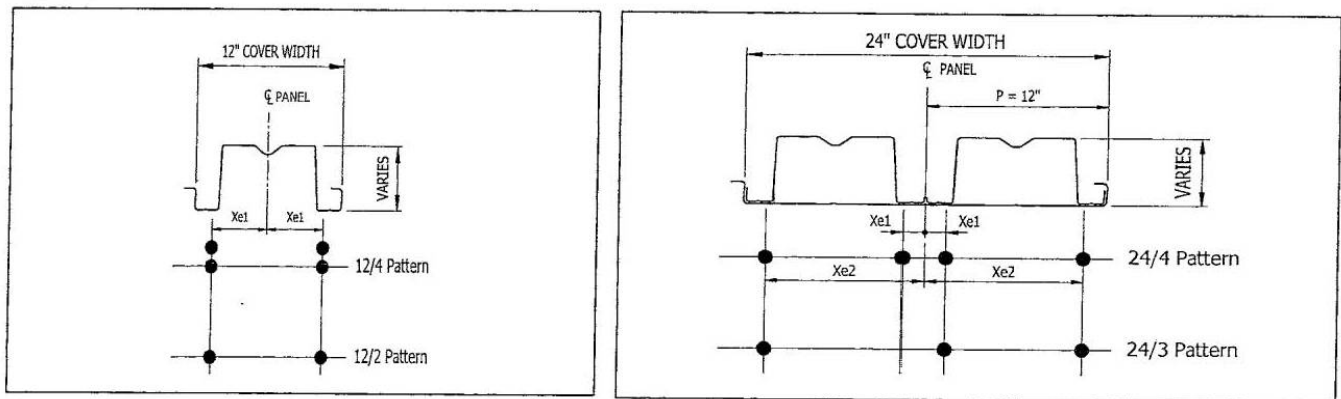


FIGURE 2—STEEL DECK PANEL ATTACHMENT PATTERNS AT SUPPORT