SUPPLEMENT TO

SDI DIAPHRAGM DESIGN MANUAL 4th EDITION

UPDATE DIAPHRAGM TABLES TO COMPLY WITH AISI S310-16

November 2016

The safety factors and resistance factors for diaphragms when governed by connector strengths that are tabulated in Section D of AISI S310-13 were revised in the 2016 edition. The following statement is contained in the Commentary to Section B of AISI S310-16:

> "Based on the expanded test database and the connection strengths [resistances] given in this Standard, the safety factors and resistance factors listed in Standard Table B1.1 changed relative to those in the 2013 edition of AISI S310."

A detailed discussion of how the safety factors and resistance factors were determined is found in Section B of the Commentary to AISI S310-16, and the user is referred there for additional information.

When using AISI S310-16, the same diaphragm tables that are contained in SDI-DDM04 can be used with the following changes to the safety and resistance factors.

Tables in Section 11 for Generic Connectors:

- For bare deck diaphragms, use the revised resistance and safety factors found in AISI S310-16, Table B1.1, reproduced as Table 2.4 in revised DDM04 Section 2.4

<u>Mechanical Fasteners</u>

DDM04 Tables on Pages

11-15 through 11-18

11-22

11-26 through 11-28 (no fill)

11-36 through 11-39 (no fill)

Loading	Ω_d	ϕ_d
Seismic	2.30	0.70
Wind	2.00	0.80
Other	2.30	0.70

Welded Fasteners

DDM04 Tables on Pages

11-5 through 11-14

11-19 through 11-21

11-23 through 11-25 (no fill)

11-29 through 11-35 (no fill)

Loading	Ω_d	ϕ_d
Seismic	3.00	0.55
Wind	2.15	0.75
Other	3.00	0.55

- For filled deck diaphragms, there is no change to the resistance factors from AISI S310-13 to AISI S310-16

DDM04 Tables on Pages

11-23 through 11-39 (with fill)

Tables in Section 12 for Proprietary Connectors:

- For all diaphragms, there is no change to the resistance factors from AISI S310-13 to AISI S310-16

AISI S310-16 Section B1.1 allows test based determination of diaphragm system strengths as long as the more severe factors based on calibration or Table B1.1 are used. The proprietary connections in Section 12 are based on extensive small scale connection tests and large scale diaphragm tests. The safety and resistance factors that were contained in AISI S310-13 were based on the large scale test calibration using the SDI connector strength equations that are listed in Sections 6, 9A and 12 of DDM04, therefore no changes to the safety and resistance factors are warranted. The use of the original safety and resistance factors agrees AISI S310-16.

There are no changes to the resistance factor or factor of safety for the limit of panel buckling from AISI S310-13 to AISI S310-16.

Section 2.4 Resistance and Safety Factors

The shear strengths from Section 2.2 must be modified by resistance or safety factors to determine the design strength.

When the strength of the fastener is determined from AISI S310-16, or as tabulated in Table 9-8 and Table 9-10, the resistance and safety factors are as follows:

Table 2.4 Resistance and Safety Factors

Load Type or Combination Including	Connection Type	Limit State			
		Connection Related		Panel Buckling	
		Ω_d	ϕ_d	Ω_d	ϕ_d
		(ASD)	(LRFD)	(ASD)	(LRFD)
Wind	Welds	2.15	0.75	2.00	0.80
	Screws	2.00	0.80		
Earthquake and All Others	Welds	3.00	0.55		
	Screws	2.30	0.70		

When the alternate or proprietary fasteners provisions in Section 6 are used, the resistance and safety factors are as follows:

Table 2.4a Resistance and Safety Factors

Load Type or Combination Including	Connection Type	Limit State			
		Connection Related		Panel Buckling	
		Ω_d	ϕ_d	Ω_d	ϕ_d
		(ASD)	(LRFD)	(ASD)	(LRFD)
Earthquake	Welds	3.00	0.55	2.00	0.80
	Screws	2.50	0.65		
Wind	Welds	2.35	0.70		
	Screws	2.35	0.70		
All Others	Welds	2.65	0.60		
	Screws	2.50	0.65		