American Welding Society

AWS Errata Sheet

The following Errata have been identified and will be incorporated into the next reprinting of AWS D1.1/D1.1M:2020, *Structural Welding Code-Steel*

Page 9, term ***dihedral angle:** a return is missing between "See local dihedral angle" and "discontinuity"

***dihedral angle.** See **local dihedral angle.**

discontinuity. An interruption of the typical structure of a material, such as a lack of homogeneity in its mechanical or metallurgical, or physical characteristics. A discontinuity is not necessarily a defect.

Page 11, the symbol should be **ϕ** not **θ**.

*groove angle, **ϕ** (tubular structures). **The angle between opposing faces of the groove to be filled with weld metals, determined after the joint is fit-up.**

Page 11, the term **interpass temperature** is missing the asterisk.

***interpass temperature.** In a multipass weld, the temperature of the weld area between weld passes.

Page 12, the symbol should be **Ψ** not **θ**.

***local dihedral angle, Ψ (tubular structures).** The angle, measured in a plane perpendicular to the line of the weld, between tangents to the outside surfaces of the tubes being joined at the weld. The exterior dihedral angle, where one looks at a localized section of the connection, such that the intersecting surfaces may be treated as planes.

Page 13, the term **preheat temperature, *welding*** is missing the asterisk.

***preheat temperature, *welding*.** The temperature of the base metal in the volume surrounding the point of welding immediately before welding is started. In a multiple-pass weld, it is also the temperature immediately before the second and subsequent passes are started.

Page 14, top of page *single electrode ,*parallel electrode, * multiple electrode moved to below the definition of SAW.

Submerged arc welding (SAW). An arc welding process that uses an arc or arcs between a bare metal electrode or electrodes and the weld pool. The arc and molten metal are shielded by a blanket of granular flux on the workpieces. The process is used without pressure and with filler metal from the electrode and sometimes from a supplemental source
(welding rod, flux, or metal granules).

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***single electrode.** One electrode connected exclusively to one power source which may consist of one or more power units.

***parallel electrode.** Two electrodes connected electrically in parallel and exclusively to the same power source. Both electrodes are usually fed by means of a single electrode feeder. Welding current, when specified, is the total for the two.

***multiple electrodes.** The combination of two or more single or parallel electrode systems. Each of the component systems has its own independent

Page 42, Table 4.5 entitled "Fatigue Stress Design Parameters (see 4.14.1)"

-Description 5.6 replace "Formula 4" with "Formula 5".
-Description 5.7 replace "Formula 4" with "Formula 5".
-Description 8.2 replace "Formula 3" with "Formula 4".
-Description 8.4 replace "Formula 3" with "Formula 4".

Page 63, Clause 5.4.1

-Replace the reference "5.4.1.1" with "5.4.1.1 through 5.4.1.9."

Page 69, Table 5.2 entitled "Essential Variables for Prequalified WPSs (see 5.2.1)"

-item (4) Base Metal Preheat Category(s) replace "(See Table 5.4)" with "(See Table 5.8)".

Page 71, Table 5.3 entitle "Approved Base Metals for Prequalified WPSs (see 5.3)"
-Remove the underlines from steel specification requirements shown for ASTM A847

Page 71, Table 5.3 entitled "Approved Base Metals for Prequalified WPSs (see 5.3)"
-Group II, ASTM A633 replace "≥ 2-1/2 in [65 mm]" with "≤ 2-1/2 in [65 mm]"

Page 72, Table 5.3 entitled "Approved Base Metals for Prequalified WPSs (see 5.3)"

-Replace "Group III, ASTM A710, Grade A, Class 2 ≤ in [20 mm]" with "Group III, ASTM A710, Grade A, Class 2 ≤ in [25 mm]"

Page 76, Note 8

-Replace "Annex U" with "Annex M".

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Page 79, Table 5.8 entitled "Prequalified Minimum Preheat and Interpass Temperature (see 5.7)"

-Category B on page 79 lists the Category C Minimum Preheat and Interpass Temperatures instead of the Category B Minimum Preheat and Interpass Temperatures. See corrected Table.

Table 5.8 (Continued)
Prequalified Minimum Preheat and Interpass Temperature (see 5.7)

CATEGORY	Steel Specification		Welding Process	Thickness of Thickest Part at Point of Welding		Minimum Preheat and Interpass Temperature	
				in	mm	°F	°C
B (cont'd)	ASTM A710	Grade A, Class 2 >2 in [50 mm]	SMAW with low-hydrogen electrodes, SAW, GMAW, FCAW	1/8 to 3/4 incl.	3 to 20 incl.	32[a]	0[a]
	ASTM A847			Over 3/4 thru 1-1/2 incl.	Over 20 thru 38 incl.	50	10
	ASTM A913	Grade 50		Over 1-1/2 thru 2-1/2 incl.	Over 38 thru 65 incl.	150	65
	ASTM A992			Over 2-1/2	Over 65	225	110
	ASTM A1008 HSLAS	Grade 45 Class 1 Grade 45 Class 2 Grade 50 Class 1 Grade 50 Class 2 Grade 55 Class 1 Grade 55 Class 2					
	ASTM A1008 HSLAS-F	Grade 50					
	ASTM A1011 SS	Grades 50, 55					
	ASTM A1011 HSLAS	Grade 45 Class 1 Grade 45 Class 2 Grade 50 Class 1 Grade 50 Class 2 Grade 55 Class 1 Grade 55 Class 2					
	ASTM A1011 HSLAS-F	Grade 50					
	ASTM A1018 HSLAS	Grade 45 Class 1 Grade 45 Class 2 Grade 50 Class 1 Grade 50 Class 2 Grade 55 Class 1 Grade 55 Class 2					
	ASTM A1018 HSLAS-F	Grade 50					
	ASTM A1018 SS	Grades 30, 33, 36, 40					
	ASTM A1066	Grade 50					
	ASTM A1085						
	API 5L	Grades B, X42					
	API Spec. 2H	Grades 42, 50					
	API 2MT1	Grade 50					
	API 2W	Grades 42, 50, 50T					
	API 2Y	Grades 42, 50, 50T					
	ABS	Grades A, B, D, E AH 32, 36 DH 32, 36 EH 32, 36					

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Page 81, Notes for Figures 5.1 and 5.2; Footnote g

-Footnote g should read: "[g] If fillet welds are used in statically loaded structures to reinforce groove welds in corner and T-joints, these shall be equal to T1/4, but need not exceed 3/8 in [10 mm]. Groove welds in corner and T-joints of cyclically loaded structures shall be reinforced with fillet welds equal to T1/4, but need not exceed 3/8 in [10 mm]."

Page 88, Figure 5.1 (Continued)—Prequalified CJP Groove Welded Joint Details (See 5.4.1) (Dimensions in Inches), Joint Detail Single-bevel-groove weld (4), T-joint (T), Corner joint (C)

-delete "ALL DIMENSIONS IN mm"

Page 96, Figure 5.1 (Continued)—Prequalified CJP Groove Welded Joint Details (See 5.4.1) (Dimensions in Millimeters)

-Replace Spacer = 1/8 x R with 3 x R
-Replace Spacer = 1/4 x R with 6 x R

Page 99, Figure 5.1 (Continued)—Prequalified CJP Groove Welded Joint Details (See 5.4.1) (Dimensions in Millimeters)

-Replace Spacer = 1/8 x R with 3 x R
-Replace Spacer = 1/4 x R with 6 x R

Page 104, Figure 5.2— Prequalified PJP Groove Weld Joint Details (see 5.4.2) (Dimensions in Inches)

-Replace the title of the Figure with "Prequalified PJP Groove Welded Joint Details (see 5.4.2) (Dimensions in Inches)"

Page 122, Figure 5.4—Prequalified Skewed T-Joint Joint Details (Nontubular) (See 5.4.3.2)

Note 1. (S_n), (S'_n) = Weld size dependent on magnitude of root opening (Rn) (see 7.21.1). (n) represents 1 through 5.

-replace "(n) represents 1 through 5" with "(n) represents 1 through 6."

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Page 140, Table 6.2 entitled "WPS Qualification—CJP Groove Welds: Number and Type of Test Specimens and Range of Thickness Qualified (see 6.5)"

-The metric dimensions were added to the Nominal Base Metal Thickness Column. See corrected Table.

Table 6.2
WPS Qualification—CJP Groove Welds: Number and Type of Test Specimens and Range of Thickness Qualified (see 6.5)

1. Tests on Plate[a]

Nominal Plate Thickness (T) Tested, in [mm]	Number of Specimens				Nominal Base Metal Thickness Qualified, in [mm]	
	Reduced Section Tension (see Fig. 6.10)	Root Bend (see Fig. 6.8)	Face Bend (see Fig. 6.8)	Side Bend (see Fig. 6.9)	Min.	Max.[b]
1/8 ≤ T ≤ 3/8 [3 ≤ T ≤ 10]	2	2	2	(Footnote d)	1/8 [3]	2T
3/8 < T < 1 [10 < T < 25]	2	—	—	4	1/8 [3]	2T
1 and over [25 and over]	2	—	—	4	1/8 [3]	Unlimited

2. Tests on ESW and EGW[c]

Nominal Plate Thickness Tested	Number of Specimens			Nominal Base Metal Thickness Qualified	
	Reduced Section Tension (see Fig. 6.10)	All-Weld-Metal Tension (see Fig. 6.14)	Side Bend (see Fig. 6.9)	Min.	Max.
T	2	1	4	0.5T	1.1T

[a] See Figures 6.6 and 6.7 for test plate requirements.
[b] For square groove welds that are qualified without backgouging, the maximum thickness qualified is limited to the test thickness.
[c] See Figure 6.5 for test plate requirements.
[d] For 3/8 in [10 mm] plate thickness, a side-bend test may be substituted for each of the required face- and root-bend tests.

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Pages 142 and 143, Table 6.5 entitled "PQR Essential Variable Changes Requiring WPS Requalification for SMAW, SAW, GMAW, FCAW, and GTAW (see 6.8.1)"

-Several of the columns had no X and no shading. Shading has been added. See the portion of the Table that has been corrected.

Essential Variable Changes to PQR Requiring Requalification	Process				
	SMAW	SAW	GMAW	FCAW	GTAW
Process Parameters					
(12) A change in the amperage for each diameter used by:	To a value not recommended by manufacturer	> 10% increase or decrease	> 10% increase or decrease	> 10% increase or decrease	> 25% increase or decrease
(13) A change in type of current (ac or dc) or polarity (electrode positive or negative for dc current)	X	X	X	X	X
(14) A change in the mode of transfer			X		
(15) A change from CV to CC output			X	X	
(16) A change in the voltage for each diameter used by:		> 7% increase or decrease	> 7% increase or decrease	> 7% increase or decrease	
(17) An increase or decrease in the wire feed speed for each electrode diameter (if not amperage controlled) by:		> 10%	> 10%	> 10%	

-Several of the columns had an X and shading. Shading has been removed. See the portion of the Table that has been corrected.

Essential Variable Changes to PQR Requiring Requalification	Process				
	SMAW	SAW	GMAW	FCAW	GTAW
SAW Parameters					
(22) A change of > 10%, or 1/8 in [3 mm], whichever is greater, in the longitudinal spacing of the arcs		X			
(23) A change of > 10%, or 1/8 in [3 mm], whichever is greater, in the lateral spacing of the arcs		X			
(24) An increase or decrease of more than 10° in the angular orientation of any parallel electrode		X			
(25) For mechanized or automatic SAW; an increase or decrease of more than 3° in the angle of the electrode		X			
(26) For mechanized or automatic SAW, an increase or decrease of more than 5° normal to the direction of travel		X			

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