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# ERRATA for *Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals*, Sixth Edition (LTS-6)

AASHTO has issued an errata that includes technical revisions to the *Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals*, Sixth Edition.

To ensure that your editions are accurate and current, we are providing you with the attached summary of the errata changes, as well as the revised pages to which they apply.

Should you need additional copies of the errata, you can download them free of charge on the AASHTO Online Bookstore at the following URL: http://downloads.transportation.org/LTS-6-E1.pdf

We sincerely apologize for any inconvenience. Please feel free to contact us if you have questions or need any additional information.

| Page | Existing Text | Corrected Text |
|---|---|---|
| ***Section 8*** | | |
| 7 | Eq. 8.8.2-1 reads: $F_b = \dfrac{3.27E_1K_1}{n\left(\dfrac{b}{t}\right)^2\mu} \le \dfrac{F_{bu}}{n}$ | Revise to read: $F_b = \dfrac{0.75E_1K_1}{n\left(\dfrac{D}{t}\right)\mu^{1/2}} \le \dfrac{F_{bu}}{n}$ |

**Table 8.8.1-1—Standard Tests for Determining the Mechanical Properties of FRP**

| Property | Standard Test | Minimum Safety Factor, *n* |
|---|---|---|
| Bending Strength, $F_{bu}$ (MPa, psi) | ASTM D790 | 2.5 |
| Modulus of Elasticity in Bending, $E_b$ (MPa, psi) | ASTM D790 | — |
| Tensile Strength, $F_{tu}$ (MPa, psi) | ASTM D638 | 2.0 |
| Modulus of Elasticity in Tension, $E_t$ (MPa, psi) | ASTM D638 | — |
| Compressive Strength, $F_{au}$ (MPa, psi) | ASTM D695 | 3.0 |
| Modulus of Elasticity in Compression, $E_c$ (MPa, psi) | ASTM D695 | — |
| Shear Strength, $F_{vu}$ (MPa, psi) | ASTM D732 | 3.0 |
| Poisson's ratio in the longitudinal direction, $\upsilon_{12}$ | ASTM D3039 | — |

### 8.8.2—Allowable Bending Stress for Tubular Sections

The allowable bending stress for tubular sections may be calculated as follows:

- For round tubular sections:

$$F_b = \frac{0.75E_1K_1}{n\left(\frac{D}{t}\right)^{1/2}\mu} \leq \frac{F_{bu}}{n} \tag{8.8.2-1}$$

where:

$$K_1 = 1.414\left[\left(1+\upsilon_{12}\left(\frac{E_2}{E_1}\right)^{\frac{1}{2}}\right)\left(\frac{E_2}{E_1}\right)^{\frac{1}{2}}\left(\frac{G}{E_1}\right)\right]^{\frac{1}{2}} \tag{8.8.2-2}$$

- For polygonal sections (hexdecagonal, dodecagonal, octagonal, and square tubular sections):

$$F_b = \frac{3.27E_1K_1}{n\left(\frac{b}{t}\right)^2\mu} \leq \frac{F_{bu}}{n} \tag{8.8.2-3}$$

$$K_1 = 0.5\left[\left(\frac{E_2}{E_1}\right)^{\frac{1}{2}} + \upsilon_{12}\left(\frac{E_2}{E_1}\right) + \left(\frac{2G\mu}{E_1}\right)\right] \tag{8.8.2-4}$$

where:

$$\text{for } \mu = 1-\upsilon_{12}^2\left(\frac{E_2}{E_1}\right) \tag{8.8.2-5}$$

### C8.8.2

For thin-walled FRP sections, local buckling is a major parameter that controls the strength of the member in bending. The allowable bending stress is defined as a function of the critical buckling stress of the section. Equations to obtain the critical buckling stress are based on the plate theory for orthotropic elements, and they are expressed in terms of the aspect ratio $b/t$ of the plate or the aspect ratio $D/t$ of the cylinder. For polygonal sections, the critical buckling stress is determined for a long plate with simply supported long edges. Because there is some edge restraint at the intersection between sides of the polygon, the assumption of simply supported long edges leads to conservative values for the critical buckling stress.

According to Johnson (1985), it has been shown that the critical compressive stress caused by bending is 30 percent higher than the critical compressive stress caused by axial compressive loads for round tubular sections. Therefore, the critical buckling stress for a round tubular member under bending Eq. 8.8.2-1 is taken as 1.3 times the critical buckling stress for a round tubular member under axial compression Eq. 8.8.5-1.

Eqs. 8.8.2-1 and 8.8.2-3 may be used for planar isotropic materials by setting $E_1 = E_2$ in the equations for $K_1$ and $\mu$.