

9730000, Structural Plastics
Comments from Industry Review

Cheryl Hudson
850-414-5332
cheryl.hudson@dot.state.fl.us

Comments:

"fiberglass structurally reinforcing rods placed in the corners of the section. Reinforce 10"x10" fiberglass structurally reinforced composite lumber for use in light duty fender systems with a minimum of four 1 inch fiberglass structurally reinforcing rods placed in the corners of the section. Reinforce 16" O.D. Components including fiberglass structurally reinforced composite piles for use in heavy duty" fiberglass structurally reinforcing rods does not read well. I would suggest fiberglass structurally reinforced rods or fiberglass structural reinforcing rods (unless they are actually called structurally reinforcing rods).

Response:

"fiberglass structurally reinforcing rods" will be changed to "fiberglass reinforcing rods."

Barry E. Smith
(850)414-4776
(850) 414-4199
barry.smith@dot.state.fl.us

Comments:

973-3 Materials

Is a specific color requirement needed?

must be smooth and black in color unless otherwise specified in the Contract Documents.

Should the 4 highlighted portions not all be the same wording?

Reinforce 10"x10" fiberglass structurally reinforced composite lumber for use in heavy duty and medium duty fender systems with a minimum of four 1 1/2 inch fiberglass structurally reinforcing rods placed in the corners of the section. Reinforce 10"x10" fiberglass structurally reinforced composite lumber for use in light duty fender systems with a minimum of four 1 inch fiberglass structurally reinforcing rods placed in the corners of the section. Reinforce 16" O.D. Components including fiberglass structurally reinforced composite piles for use in heavy duty fender systems with a minimum of sixteen 1 1/2 inch fiberglass reinforcing rods. Reinforce 16" O.D. Components including fiberglass structurally reinforced composite piles for use in medium duty fender systems with a minimum of sixteen 1 inch fiberglass reinforcing rods.

Response:

1. This is existing text that was not changed and there have not been any known issues. Other colors may be used if so stated on the plans. No changes made.
2. “fiberglass structurally reinforcing rods” will be changed to “fiberglass reinforcing rods.”

John Previte

Comments:

Please check grammar:

Structurally-reinforced member.....OK

Structural reinforcing rods.....OK

Structurally reinforcing rods????not ok?

One may say “they are **structurally reinforcing** a member...”or

“While **structurally reinforcing** rods, the man smoked a cigarette”

Not so sure about the usage in *italic red* below:

and medium duty fender systems with a minimum of four 1 1/2 inch *fiberglass structurally* reinforcing rods placed in the corners of the section. Reinforce 10”x10” fiberglass structurally reinforced composite lumber for use in light duty fender systems with a minimum of four 1 inch *fiberglass structurally* reinforcing rods placed in the corners of the section. Reinforce 16” O.D.

Response:

“fiberglass structurally reinforcing rods” will be changed to “fiberglass reinforcing rods.”

Duane Brautigam

Comment:

In 973-2, the term "fiberglass structurally reinforcing rods" seems very awkward. Suggest "fiberglass structural reinforcing rods" or just "fiberglass reinforcing rods".

Response:

“fiberglass structurally reinforcing rods” will be changed to “fiberglass reinforcing rods.”

Brian Larsen P.E.
Bedford Technology, LLC

Blarsen@bedfordtech.com
Phone 507-372-5558

Comments:

1) Table 1 - Tensile properties. This has been changed from skin/core to core. The cores of these materials are foamed and will be hard to test for tensile properties because the test procedure calls out a coupon test. The coupon test will need to be machined from the cross section and the test results can vary widely depending on where the coupon is machined from. The core is not the main structural portion of the member and so the skin is more important than the core. This property should be changed to skin or be required to be tested as a full cross section. The problem with using full cross section for tensile test is there are no ASTM tests to be used as a full cross section test. **I recommend keeping it as skin.**

2) Table 1 – Compressive modulus. This was also changed from skin/core to just core. The compressive modulus to give true values should be tested for the product as a complete composite structure to give a true comparison. This can be done using the newer test D6108. D695 calls out to use a specimen of standard shape so you will not get a true test using D695 for the complete member. **I recommend using D6108 and test a full cross section, but if you keep the D695 I think you should leave it at skin/core or skin.**

3) Table 2 – Impact resistance. Why not use the same test as table 1 D256 to keep things consistent. **I recommend using D256.**

4) Table 3 - Corner Radius SCL - When we manufacture this product we have a smaller corner radius of approximately 1" radius. I would like to see the radius tolerance changed to include these radiuses. This has not been a problem in the past but it would be good to get clarified. – **I recommend on the SCL use radius of 1 1/2" +/- 1/2"**

5) Table 5 - Compressive strength. – It has been changed from a full member compressive test using standard D6108 to a coupon test of D695. To get a true reading of the product a full member should be tested under D6108 for both parallel and perpendicular to grain. When doing a coupon test you only value from the skin of the product, but not the true value of the complete structure. If you used only the skin for compressive strength you will get a higher value because it does not have any of the foamed center. Using this kind of a test giving a higher value than the full cross section could result in a design that could fail because the designer used too large of a value for the full board? If you keep test D6108 testing the full cross section you will get a good number for a full board. The current value of 1960 PSI is OK for parallel to grain. If you use D6108 as the test standard then the value for perpendicular to grain should remain at the 700 PSI as the D6112 had called out is it is a full member test also. **I recommend keeping D6108.**

6) Table 4A and 4B. Testing of the modulus of elasticity and yield stress on both of these tables uses a specialized non-ASTM test. ASTM D6109 calculates modulus of elasticity and flexural strength using a standard ASTM test. Why use a non standard test? **I recommend using D6109.**

Response:

1. In Table 3, the outer skin thickness will be changed to a minimum thickness of 3/16" and the tolerance removed. Also "outer skin" will be changed to "skin." The term "skin" in Table 1 refers to the outer surface of the pile. The term "core" in the table refers to the material surrounding the fiberglass reinforcing rods. If your product uses the same material for the outer surface and the material surrounding the fiberglass reinforcing rods then that material would be considered both "skin" and "core" in the table. The table does not address any center core material. The terms skin and core have been defined in 973-3 first paragraph.
2. The compressive modulus of the material is needed not the compressive modulus of the composite section. No changes made.
3. Agree. Change made.
4. Agree. Change made. In addition, the width and height tolerances will be divided into two categories- FFRCL and SCL, and a tolerance for the diameter of CP will be added.
5. Agree. Change made. The value will be 2200 psi. In addition, proposed compressive strength parallel to grain ASTM D695 will not be used and compressive strength perpendicular to grain will use ASTM D6108 with a value of 700 psi?
6. ASTM D6109 will not be used. However, the specialized tests have been revised and combined based on the testing in ASTM D6109 and will be applicable to piles and wales.

Steve Shannon
 717-459-3471 (office)
steve.shannon@trelleborg.com

Comment:

1. - Table 1 (Abrasion) - Based on recent testing, the CP and SCL abrasion value should be < 0.124 grams
2. - Table 1 (Tensile Properties) - The 2200 psi tensile strength value listed was an average value from testing. The minimum tested value was 1740 psi. We recommend listing a minimum value of 1700 psi rather than the average (2200 psi).
3. - Table 2 (Abrasion) - Based on recent testing, the FFRCL abrasion value should be < 0.300 grams
4. - Table 3 (Width & Height) - We recommend changing the Width & Height tolerances to +/- 1/2"
5. - Table 5 (Compressive Strength Parralel to Grain) - The 3500 psi compressive strength value listed was an average value from testing. The minimum tested value was 2970 psi. We recommend listing a minimum value of 2900 psi rather than the average (3500 psi).
6. - Table 5 (Compressive Strength Perpendicular to Grain) - The 4500 psi compressive strength value listed was an average value from testing. The minimum tested value was 2470 psi. We recommend listing a minimum value of 2400 psi rather than the average (4500 psi).

Response:

1. The 0.124 grams is within the requirement stated. No change made.
2. The ASTM averages the individual test values so the requirement will be the average value. No change made.
3. See response to #1 above.

4. The width and height tolerances will be separated based on SCL and FFRCL. The tolerances for SCL will be $\pm 1/2$ ", and the tolerances for FFRCL will be $\pm 1/4$ ". In addition, a tolerance for the diameter of CP will be $\pm 1/2$ ".
5. See response to #2 above.
6. See response to #2 above.
