

1723 - NON-METALLIC OFFSET BLOCKS FOR GUARDRAIL

SECTION 1723

NON-METALLIC OFFSET BLOCKS FOR GUARDRAIL

1723.1 DESCRIPTION

This specification governs non-metallic offset blocks for guardrail that are not covered under the wood post specification in **DIVISION 2300**. Substitution for the wood offset blocks is permitted for line and bullnose guardrail sections as shown on the Contract Documents. Substitution within the end terminal sections is only permitted when specified by the manufacturer of the end terminal.

1723.2 REQUIREMENTS

a. General.

(1) Any manufacturer producing non-metallic offset blocks for guardrail under this specification must be currently prequalified. Procedures for prequalification are outlined in **subsection 1723.4**.

(2) Unless shown otherwise in the Contract Documents, manufacture all offset blocks provided under this specification that comply with the applicable subsections.

b. Material Specifications. Provide offset blocks of the same chemical composition and physical properties as those accepted under the NCHRP 350 crash test. Provide offset blocks that comply with **TABLE 1723-1**.

TABLE 1723-1, REQUIREMENTS FOR NON-METALLIC OFFSET BLOCKS		
Property	Test Method	Requirement
UV Protection	ASTM G 155	No visible change to the block.
Compressive Strength	See subsection 1723.3	To become prequalified ≥ 450 psi. Verification Samples not to exceed $\pm 20\%$ of prequalification results.
Water Absorption	ASTM D 2842	% Absorption $\leq 20\%$
Solvent Resistance	KTMR-31	No evidence of softening, blistering, crinkling, dissolving, or change in color or appearance.
Defects and Voids	Visual	Not to exceed $\frac{1}{2}$ inch diameter.

c. Dimensions. Provide offset blocks that comply with the dimensions and details shown in the Contract Documents.

1723.3 TEST METHODS

Test the ultraviolet (UV) protection of the block using ASTM G 155, "Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-metallic Materials." Utilize Cycle #1 for 500 hours following Table X3. Use a sample size of 1 inch by 4 inch by 4 inch.

Perform KTMR-31, "Solvent Resistance of Non-metallic Materials." Obtain a copy of this test by contacting KDOT's Bureau of Materials and Research.

Determine the strength of 1 complete block in this manner: Apply the compressive force along the entire length and in the direction that is perpendicular to both the guardrail and post. Support the post track so no force is applied to edges. Blocks are required to have a minimum compressive stress of 450 psi. Calculate the pressure by using the average longitudinal cross section area. Use a properly calibrated compression machine as defined in ASTM E 4.

Determine the water absorption of the block using ASTM D 2842, Procedure B, with the following exceptions:

- Use the actual width and thickness of the specimen instead of the specified 6 inch by 6 inch dimensions.

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- Under 9. Conditioning, delete 9.2 and 9.3. Add 9.2 Cool to room temperature and weigh to the nearest 0.1 g. Change 9.4 to 9.3.
- Under 10. 2 Procedure B, maintain a water bath temperature of 77 ± 2°F.
- When calculating the absorption, use this equation:
$$\% \text{absorption} = [(W2i - W3i) - (W2f - W3f)] / (W2i - W3i) \times 100$$

1723.4 PREQUALIFICATION

To become prequalified, provide the Bureau of Materials and Research with a copy of the FHWA letter showing the product has been accepted under the National Cooperative Highway Research Program (NCHRP) Report 350. Blocks must be able to complying with **subsection 1723.3**. Submit 4 offset blocks to the Engineer of Tests.

The Bureau of Materials and Research will maintain a prequalified list of all complying manufacturers.

1723.5 BASIS OF ACCEPTANCE

The plant must be currently prequalified as specified in **subsection 1723.4**.

Receipt and approval of a Type C certification as specified in **DIVISION 2600**.

Visual inspection for voids as outlined in **subsection 1723.2.b**.