

2203 - ROLL-UP SIGNS

SECTION 2203

ROLL-UP SIGNS

2203.1 DESCRIPTION

This specification covers white, fluorescent orange, and fluorescent pink retroreflective sheeting used for temporary roll-up warning signs.

2203.2 REQUIREMENTS

a. Provide retroreflective sheeting that complies with ASTM D 4956, Type VI, Class 5 with the following exceptions and additions:

(1) Color. Provide white and fluorescent pink sheeting that complies with the chromaticity limits in **TABLE 2203-1**.

TABLE 2203-1: CHROMATICITY LIMITS									
COLOR	Chromaticity Coordinates								Reflectance Limit
	1		2		3		4		
	X	Y	X	Y	X	Y	X	Y	Y
White	.310	.313	.328	.331	.316	.345	.300	.327	27.0 min.
Fluorescent Pink	.450	.270	.590	.350	.644	.290	.536	.230	25.0 min.

(2) Coefficient of Retroreflection. Provide fluorescent pink sheeting that meets or exceeds the following minimum requirements:

TABLE 2203-2: COEFFICIENT OF RETROREFLECTION		
Observation Angle	Entrance Angle	Value
0.2°	-4°	160.0
0.2°	+30°	100.0
0.5°	-4°	100.0
0.5°	+30°	40.0

b. Mounting Stands. The type and configuration of stands for mounting and displaying roll-up signs are not specified here, and are at the Contractor's option. However, all stands used must meet the crashworthy criteria for Category 2 devices contained in the testing and acceptance guidelines of the National Cooperative Highway Research Program (NCHRP) Report 350. Retain a copy of the NCHRP Report 350 crashworthy test data and the FHWA acceptance letter to be provided to the Engineer if requested. In addition, the mounted sign and stand must be able to resist normal wind loading without falling over, and be able to maintain a minimum mounting height of 12 inches above the edge of the pavement.

2203.3 TEST METHODS

All tests will be conducted in accordance with ASTM D 4956 with the exception of artificial weathering. Artificial weathering will be conducted according to ASTM G 155, Cycle 1, with the following additions and exceptions:

- At the end of each 20-hour cycle, the panels will be placed in a cold cabinet at approximately 0°F for 1 hour. After removal from the cold cabinet, panels will be returned to the weatherometer to await the start of the next cycle.
- Water used in the weatherometer will be city water softened to a total hardness content of less than 5 parts per million expressed as calcium carbonate.

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2203.4 PREQUALIFICATION

Only the retroreflective sheeting used to manufacture the signs will be prequalified. Sheeting manufacturers interested in prequalifying material under this specification must submit 3 pieces 24 inches x 24 inches to the Engineer of Tests, Materials and Research Center, 2300 Van Buren, Topeka, KS 66611. Samples will be tested for compliance with all requirements of this specification. Each manufacturer will be notified of the test results.

If the prequalification samples of retroreflective sheeting comply with this specification, the product will be placed on a list of prequalified products maintained by the Bureau of Materials and Research. No retroreflective sheeting will be used on KDOT projects unless it has been prequalified. Manufacturers will be required to requalify at intervals determined by the Engineer of Tests.

Testing and evaluation by KDOT may be waived if complete testing has been performed on the identical product by AASHTO National Transportation Product Evaluation Program (NTPEP). Forward an official copy of the test report along with evidence that the product referenced is identical to that submitted for prequalification, to the Engineer of Tests for evaluation.

2203.5 BASIS OF ACCEPTANCE

Prequalification as required by **subsection 2203.4** above.

Receipt and approval of a certification prepared by the manufacturer stating that the sheeting used to manufacture the roll-up signs is essentially the same as that submitted for prequalification.

Visual inspection on delivery.