



Florida Department of Transportation

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605 Suwannee Street
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STEPHANIE KOPELOUSOS
SECRETARY

August 11, 2010

Monica Gourdine
Program Operations Engineer
Federal Highway Administration
545 John Knox Road, Suite 200
Tallahassee, Florida 32303

Re: Office of Design, Specifications
Section 990
Proposed Specification: **9900301 Temporary Traffic Control Device Materials.**

Dear Ms. Gourdine:

We are submitting, for your approval, two copies of the above referenced Supplemental Specification.

These changes were proposed by Cheryl Adams of the State Roadway Design Office to add material requirements for Temporary Raised Rumble Strip Sets and Automated Flagger Assistance Devices (AFAD's) for consistency with current industry practices and standards and to update the section for general cleanup and formatting.

Please review and transmit your comments, if any, within two weeks. Comments should be sent via Email to ST986RP or rudy.powell@dot.state.fl.us.

If you have any questions relating to this specification change, please call Rudy Powell, State Specifications Engineer at 414-4280.

Sincerely,

Rudy Powell, Jr., P.E.
State Specifications Engineer

RP/dt

Attachment

cc: Gregory Jones, Chief Civil Litigation
Florida Transportation Builders' Assoc.
State Construction Engineer

TEMPORARY TRAFFIC CONTROL DEVICE MATERIALS.**(REV 86-10417-10)**

SUBARTICLE 990-3.1.4 (Pages 958 – 959) is deleted and the following substituted:

990-3.1.4 Support Chassis: The Support ~~Chassis~~*Chassis* shall meet the following:

(a) The support chassis shall be self-contained and self-supporting without the use of additional equipment or tools.

(b) Both trailer and truck-mounted units are allowed for arrow panels. Trailer mounted units are required for changeable message signs, regulatory signs and radar speed display units.

(1) Trailer mounted unit:

(a) The sign, power supply unit and all support systems shall be mounted on a wheeled trailer.

(b) The trailer shall be equipped with class-A lights, using a plug adaptor.

(c) The trailer shall be equipped with adjustable outrigger leveling pads, one on each of the four frame corners.

(d) The trailer shall be designed to be set up at the site with its own chassis and outriggers, without being hitched to a vehicle.

(e) The trailer shall be equipped with fenders over the tires and shall be made from heavy-duty material sufficient to allow a person to stand and operate or perform maintenance on the unit.

(f) The trailer shall meet all equipment specifications set forth in Chapter 316 of the Florida Statutes, and by such rule, regulation or code that may be adopted by the Department of Highway Safety and Motor Vehicles.

(g) The trailers should be delineated on a permanent basis by affixing retroreflective material, known as conspicuity material, in a continuous line on the face of the trailer as seen by oncoming road users.

(2) Truck mounted unit:

(a) The truck-mounted assembly shall be designed to fit on a 1/2 ton or greater duty truck.

(b) The unit shall be self-contained with its own power supply, controls, raising and lowering device and shall be capable of being operated by one person.

(c) The unit shall be secured in the vehicle for normal operation.

ARTICLE 990-5 (of the Supplemental Specifications) is deleted and the following substituted:

990-5 Temporary Retroreflective Pavement Markers.

Temporary Retroreflective Pavement Markers (RPM's) shall meet the requirement of 970-1.2.1, be one of the products listed on the QPL and be certified as meeting the following:

(a) Composition: Use markers made of plastic, ceramic or other durable materials. Markers with studs or mechanical attachments will not be allowed.

(b) Dimensions: Marker minimum and maximum surface dimensions is based on an x and y axis where the y dimension is the axis parallel to the centerline and the x axis is 90 degrees to y. Class E markers shall be 4 inch (W) by 2 inch (H) by 1 inch (D).

The x and y dimension of Class D markers shall be a maximum of 5 inches. The x dimension shall be a minimum of 4 inches and the minimum y dimension will be 2.25 inches.

The maximum installed height of Class D markers shall be 1 inch. The maximum installed height of Class E markers shall be 2 inches. Use Class D markers having a minimum reflective face surface of 0.35 *square inches*^{in²}. Use Class E markers having a minimum reflective surface area of 1 *square inch*^{in²}.

The marker's reflective face shall be completely visible and above the pavement surface after installation, measured from a line even with the pavement perpendicular to the face of the marker.

(c) Optical Performance: Ensure that the specific intensity of each white reflecting surface at 0.2 degrees observation angle shall be at least the following when the incident light is parallel to the base of the marker:

Horizontal Entrance Angle	Specific Intensity
0 deg. rees	3
20 deg. rees	1.2

For yellow reflectors, the specific intensity shall be 60% of the value for white.

For red reflectors, the specific intensity shall be 25% of the value for white. Reflectivity of all RPM's shall not be less than 0.2 Specific Intensity (SI) any time after installation.

(d) Strength requirements: Markers shall support a load of 5,000 pounds. Three markers per lot or shipment will be randomly tested as follows:

Position the marker base down, between the flat, parallel *0.5 inch steel plates*^{plates} of a compression testing machine. Place on top of the marker, a flat piece of *60S (Shore A)* durometer rubber, *6 inch* -by -*6 inch* by -*0.375* inch, centered on the marker. Apply the compressive load through the rubber to the top of the marker at a rate of *0.1 inches per minute*^{0.2 in/s}.

Either cracking or significant deformation of the marker at any load less than 5,000 pounds will constitute failure.

(e) Adhesion: Use bituminous adhesive materials *for bonding the markers to the pavement that meet the requirements of Section 970 and are listed on the QPL.* recommended by the marker manufacturer for bonding the markers to the pavement. ~~The adhesive used shall meet the requirements of Section 970 and be one of the products listed on the QPL.~~

(f) Removability: Ensure that the pavement marker is removable from asphalt pavement and portland cement concrete pavement intact or in substantially large pieces, either manually or by mechanical devices at temperatures above 40°F, and without the use of heat, grinding or blasting.

SECTION 990 (Pages 956 -966) is expanded by the following new Articles:

990-9 Temporary Raised Rumble Strips:

990-9.1 General: *Temporary Raised Rumble Strips shall be one of the products listed on the QPL. Meet the physical display and operational requirements in the MUTCD for Temporary Raised Rumble Strips. The Temporary Raised Rumble Strip may be either a removable polymer striping tape type or a molded engineered polymer material type as described below:*

990-9.1.1 Removable Polymer Striping Tape:

Characteristic	Requirement
<i>Composition:</i>	<i>Removable Polymer Striping Tape with pre-applied adhesive</i>
<i>Color:</i>	<i>White, Black or Orange</i>
<i>Cross-section:</i>	<i>0.25 in. to 0.50 in. (height) x 4 in. (wide)</i>

990-9.1.2 Molded Engineered Polymer Material:

Characteristic	Requirement
<i>Composition:</i>	<i>Molded Engineered Polymer Material</i>
<i>Weight</i>	<i>Internally ballasted to provide proper weight to maintain position in use without the use of adhesives or mechanical fasteners</i>
<i>Color:</i>	<i>White, Black or Orange</i>
<i>Shape</i>	<i>Beveled on the leading edge</i>
<i>Cross-section:</i>	<i>0.625 in. to 0.875 in. (height) x 12 in. (wide)</i>

990-10 Automated Flagger Assistance Devices (AFAD):

990-10.1 General: *AFAD's shall be one of the products listed on the APL. Meet the physical display and operational requirements in the MUTCD for the AFAD as well as the detailed requirements below.*

990-10.1.1 Stop/Slow Automated Flagger Assistance Devices: *Provide a Stop/Slow AFAD including a Stop/Slow sign that alternately displays the stop face and the slow face of a Stop/Slow paddle without the need for a flagger in the immediate vicinity of the AFAD or on the roadway.*

Ensure that the Stop/Slow AFAD includes a gate arm that descends to a down position across the approach lane of traffic when the stop face is displayed and then ascends to an upright position when the slow face is displayed.

Ensure the Gate arm is fully retroreflectorized on both sides, with vertical alternating red and white stripes at 16-inch intervals measured horizontally in accordance with the MUTCD. When the arm is in the down position blocking the approach lane:

A. The minimum vertical aspect of the arm and sheeting shall be 2 inches; and,

B. The end of the arm shall reach at least to the center of the lane being controlled.

990-10.1.2 Red/Yellow Lens Automated Flagger Assistance Devices:

Provide a Red/Yellow Lens AFAD that alternately displays a steadily illuminated circular red lens and a flashing circular yellow lens to control traffic without the need for a flagger in the immediate vicinity of the AFAD or on the roadway.

Ensure that the Red/Yellow Lens AFAD includes a gate arm that descends to a down position across the approach lane of traffic when the steady circular red lens is illuminated and then ascends to an upright position when the flashing circular yellow lens is illuminated.

Ensure that the gate arm is fully retroreflectorized on both sides, with vertical alternating red and white stripes at 16-inch intervals measured horizontally in accordance with the MUTCD. When the arm is in the down position blocking the approach lane:

A. The minimum vertical aspect of the arm and sheeting shall be 2 inches; and,

B. The end of the arm shall reach at least to the center of the lane being controlled.

Do not provide a change interval between the display of the steady circular red indication and the display of the flashing circular yellow indication. Provide a steady illuminated circular yellow indication, with at least a 5 second duration, between the transition from flashing circular yellow indication and the display of the steady circular red indication. The Engineer may approve a different duration, provided it falls within the range recommended by the MUTCD.

TEMPORARY TRAFFIC CONTROL DEVICE MATERIALS.
(REV 8-10-10)

SUBARTICLE 990-3.1.4 (Pages 958 – 959) is deleted and the following substituted:

990-3.1.4 Support Chassis: The Support Chassis shall meet the following:

(a) The support chassis shall be self-contained and self-supporting without the use of additional equipment or tools.

(b) Both trailer and truck-mounted units are allowed for arrow panels. Trailer mounted units are required for changeable message signs, regulatory signs and radar speed display units.

(1) Trailer mounted unit:

(a) The sign, power supply unit and all support systems shall be mounted on a wheeled trailer.

(b) The trailer shall be equipped with class-A lights, using a plug adaptor.

(c) The trailer shall be equipped with adjustable outrigger leveling pads, one on each of the four frame corners.

(d) The trailer shall be designed to be set up at the site with its own chassis and outriggers, without being hitched to a vehicle.

(e) The trailer shall be equipped with fenders over the tires and shall be made from heavy-duty material sufficient to allow a person to stand and operate or perform maintenance on the unit.

(f) The trailer shall meet all equipment specifications set forth in Chapter 316 of the Florida Statutes, and by such rule, regulation or code that may be adopted by the Department of Highway Safety and Motor Vehicles.

(g) The trailers should be delineated on a permanent basis by affixing retroreflective material, known as conspicuity material, in a continuous line on the face of the trailer as seen by oncoming road users.

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(a) The truck-mounted assembly shall be designed to fit on a 1/2 ton or greater duty truck.

(b) The unit shall be self-contained with its own power supply, controls, raising and lowering device and shall be capable of being operated by one person.

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(b) Dimensions: Marker minimum and maximum surface dimensions is based on an x and y axis where the y dimension is the axis parallel to the centerline and the x axis is 90 degrees to y. Class E markers shall be 4 inch (W) by 2 inch (H) by 1 inch (D).

The x and y dimension of Class D markers shall be a maximum of 5 inches. The x dimension shall be a minimum of 4 inches and the minimum y dimension will be 2.25 inches.

The maximum installed height of Class D markers shall be 1 inch. The maximum installed height of Class E markers shall be 2 inches. Use Class D markers having a minimum reflective face surface of 0.35 square inches. Use Class E markers having a minimum reflective surface area of 1 square inch.

The marker's reflective face shall be completely visible and above the pavement surface after installation, measured from a line even with the pavement perpendicular to the face of the marker.

(c) Optical Performance: Ensure that the specific intensity of each white reflecting surface at 0.2 degrees observation angle shall be at least the following when the incident light is parallel to the base of the marker:

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(d) Strength requirements: Markers shall support a load of 5,000 pounds. Three markers per lot or shipment will be randomly tested as follows:

Position the marker base down, between the flat, parallel 0.5 inch steel plates of a compression testing machine. Place on top of the marker, a flat piece of 60 (Shore A) durometer rubber, 6 inch by 6 inch by 0.37 inch, centered on the marker. Apply the compressive load through the rubber to the top of the marker at a rate of 0.1 inches per minute.

Either cracking or significant deformation of the marker at any load less than 5,000 pounds will constitute failure.

(e) Adhesion: Use bituminous adhesive materials for bonding the markers to the pavement that meet the requirements of Section 970 and are listed on the QPL.

(f) Removability: Ensure that the pavement marker is removable from asphalt pavement and portland cement concrete pavement intact or in substantially large pieces, either manually or by mechanical devices at temperatures above 40°F, and without the use of heat, grinding or blasting.

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990-9.1.1 Removable Polymer Striping Tape:

Characteristic	Requirement
Composition:	Removable Polymer Striping Tape with pre-applied adhesive
Color:	White, Black or Orange
Cross-section:	0.25 in. to 0.50 in. (height) x 4 in. (wide)

990-9.1.2 Molded Engineered Polymer Material:

Characteristic	Requirement
Composition:	Molded Engineered Polymer Material
Weight	Internally ballasted to provide proper weight to maintain position in use without the use of adhesives or mechanical fasteners
Color:	White, Black or Orange
Shape	Beveled on the leading edge
Cross-section:	0.625 in. to 0.875 in. (height) x 12 in. (wide)

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Ensure that the Stop/Slow AFAD includes a gate arm that descends to a down position across the approach lane of traffic when the stop face is displayed and then ascends to an upright position when the slow face is displayed.

Ensure the Gate arm is fully retroreflectorized on both sides, with vertical alternating red and white stripes at 16-inch intervals measured horizontally in accordance with the MUTCD. When the arm is in the down position blocking the approach lane:

A. The minimum vertical aspect of the arm and sheeting shall be 2 inches; and,

B. The end of the arm shall reach at least to the center of the lane being controlled.

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B. The end of the arm shall reach at least to the center of the lane being controlled.

Do not provide a change interval between the display of the steady circular red indication and the display of the flashing circular yellow indication. Provide a steady illuminated circular yellow indication, with at least a 5 second duration, between the transition from flashing circular yellow indication and the display of the steady circular red indication. The Engineer may approve a different duration, provided it falls within the range recommended by the MUTCD.