Florida Department of Transportation

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Tallahassee, FL 32399-0450

KEVIN J. THIBAULT
SECRETARY

February 11, 2019

Khoa Nguyen
Director, Office of Technical Services
Federal Highway Administration
3500 Financial Plaza, Suite 400
Tallahassee, Florida 32312

Re: State Specifications Office
Section: **971**
Proposed Specification: **9710202 Pavement Marking Materials.**

Dear Mr. Nguyen:

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

The changes are proposed by Ken Bergum of the State Materials Office (SMO) to modify the language.

Please review and transmit your comments, if any, within two weeks. Comments should be sent via email to dan.hurtado@dot.state.fl.us.

If you have any questions relating to this specification change, please call me at 414-4130.

Sincerely,

Signature on file

Dan Hurtado, P.E.
State Specifications Engineer

DH/
Attachment
cc: Florida Transportation Builders' Assoc.
State Construction Engineer

PAVEMENT MARKING MATERIALS.
(REV ~~11-28-18~~2-8-19)

SUBARTICLE 971-2.2 is deleted and the following substituted:

971-2.2 Specific Properties: The large (Type 3 or larger) glass spheres used for drop on beads shall have an adhesion coating. Type 1 glass spheres used for drop on beads shall have a dual coating. Beads used in the intermix of materials are not required to be coated.

The following physical requirements apply:

Property	Test Method	Specification
Roundness*	~~ASTM D1155~~~~FM 5-620~~AASHTO PP 74	Min: 70 % by weight
Roundness**	~~ASTM D1155~~~~FM 5-620~~AASHTO PP 74	Min: 80% by weight
Refractive Index*	Becke Line Method (25+/-5C)	1.5 minimum
Refractive Index**	Becke Line Method (25+/-5C)	1.9 minimum
*Type 1, 3, 4 and 5 beads **High Index beads		

Sieve Size	Percent by Mass Passing Designated Sieve (~~ASTM D1214~~ ~~FM 5-620~~AASHTO PP 74)				
	Grading Designation				
	Type 1 (AASHTO)	Type 3 (FP 96)	Type 4 (FP 96)	Type 5 (FP 96)	High Index
No. 8				100	
No. 10			100	95 - 100	
No. 12		100	95 - 100	80 - 95	
No. 14		95 - 100	80 - 95	10 - 40	
No. 16	100	80 - 95	10 - 40	0 - 5	100
No. 18		10 - 40	0 - 5	0 - 2	
No. 20	95 - 100	0 - 5	0 - 2		95 - 100
No. 25		0 - 2			
No. 30	75 - 95				55 - 85
No. 40					15 - 45
No. 50	15 - 35				0 - 5
No. 80					
No. 100	0 - 5				

SUBARTICLE 971-2.4 is deleted and the following substituted:

971-2.4 Containers: The spheres shall be furnished in new 50 pound moisture-proof bags or 2000 pound triwall boxes. All containers shall meet Interstate Commerce Commission requirements for strength and type.

SUBARTICLE 971-3.2 is deleted and the following substituted:

971-3.2 Composition:

Component	Test Method	Criteria
Total Solids, by weight	ASTM D2369	minimum 75%
Pigments, by weight	ASTM D3723	minimum 57%
Vehicle Solids % of Vehicle*		minimum 40%
TiO_2, Type II Rutile (white paint only)	ASTM D476	minimum 1.0 lb/gal
Volatile Organic Content, (VOC)	ASTM D3960	maximum 150 g/L
*Vehicle Solids % of Vehicle = ~~(~~(% total solids - % pigment) (100 - % pigment)		

SUBARTICLE 971-4.2 is deleted and the following substituted:

971-4.2 Composition:

Component	Test Method	Criteria
Total Solids, by weight	ASTM D2369	75% minimum
Pigments, by weight	ASTM D3723	57% minimum
Vehicle Solids, % on Vehicle*		40% minimum
TiO_2, Type II Rutile (white paint only)	ASTM D476	1.0 lb/gal minimum
Volatile Organic Content, (VOC)	ASTM D3960	150 g/L maximum
*Vehicle Solids % of Vehicle = ~~(~~(% total solids - % pigment) (100 - % pigment) Vehicle solids shall be 100% acrylic emulsion polymer.		

SUBARTICLE 971-4.3 is deleted and the following substituted:

971-4.3 Physical Requirements: Test laboratory samples in accordance with ASTM E811 and E1349. ~~and also~~Samples ~~must~~shall meet the following criteria:

Property	Test Method	Minimum	Maximum
Density	ASTM D1475	13.5 ± 1.4 lb/gal	N/A
Viscosity at 77°F	ASTM D562	80 KU	100 KU
Fineness of Grind	ASTM D1210	3(HS)	
Dry Opacity at 5 mils WFT	ASTM D2805	0.92	-
Bleed Ratio	ASTM D969	0.95	-
Flexibility	ASTM D522 Method B	Pass	-
Abrasion Resistance	ASTM D4060	Pass	-

SUBARTICLE 971-5.2 is deleted and the following substituted:

971-5.2 Composition:

Component	Test Method	White	Yellow
Binder	~~AASHTO T250~~ ASTM D 4797	20~~.0~~% minimum	20~~.0~~% minimum
TiO_2, Type II Rutile	ASTM D476	10~~.0~~% minimum	-
Glass Spheres	~~AASHTO T250~~ ASTM D 4797	40~~.0~~% minimum	40~~.0~~% minimum
Yellow Pigment		-	% minimum per manufacturer
Calcium Carbonate and Inert Filler (-200 mesh sieve)		30~~.0~~% maximum	37~~.5~~% maximum
Percentages are by weight.			

SUBARTICLE 971-9.2 is deleted and the following substituted:

971-9.2 Composition:

Component	Test Method	White	Yellow
Binder	~~AASHTO T250~~ ASTM D 4797	20~~.0~~% minimum	20~~.0~~% minimum
TiO_2, Type II Rutile	ASTM D476	10~~.0~~% minimum	-
Reflective Elements	~~AASHTO T250~~ ASTM D 4797	% minimum per manufacturer	% minimum per manufacturer

Component	Test Method	White	Yellow
Yellow Pigment		-	% minimum per manufacturer
Calcium Carbonate and Inert Filler (-200 mesh sieve)		% minimum per manufacturer	% minimum per manufacturer
Note: Percentages are by weight.			

SUBARTICLE 971-10.2 is deleted and the following substituted:

971-10.2 Composition:

Component	Test Method	White
Binder	~~AASHTO T250~~ ASTM D 4797	18.~~0~~% minimum
TiO_2, Type II Rutile	ASTM D476	10.~~0~~% minimum
Reflective Elements	~~AASHTO T250~~ ASTM D 4797	30% minimum per manufacturer
Skid Resistant Elements		10% minimum per manufacturer
Note: Percentages are by weight.		

PAVEMENT MARKING MATERIALS.
(REV 2-8-19)

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	Grading Designation				
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Flexibility	ASTM D522 Method B	Pass	-
Abrasion Resistance	ASTM D4060	Pass	-

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TiO_2, Type II Rutile	ASTM D476	10% minimum	-
Glass Spheres	ASTM D 4797	40% minimum	40% minimum
Yellow Pigment		-	% minimum per manufacturer
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Percentages are by weight.			

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971-9.2 Composition:

Component	Test Method	White	Yellow
Binder	ASTM D 4797	20% minimum	20% minimum
TiO_2, Type II Rutile	ASTM D476	10% minimum	-
Reflective Elements	ASTM D 4797	% minimum per manufacturer	% minimum per manufacturer
Yellow Pigment		-	% minimum per manufacturer
Calcium Carbonate and Inert Filler (-200 mesh sieve)		% minimum per manufacturer	% minimum per manufacturer

Component	Test Method	White	Yellow
Note: Percentages are by weight.			

SUBARTICLE 971-10.2 is deleted and the following substituted:

971-10.2 Composition:

Component	Test Method	White
Binder	ASTM D 4797	18% minimum
TiO_2, Type II Rutile	ASTM D476	10% minimum
Reflective Elements	ASTM D 4797	30% minimum per manufacturer
Skid Resistant Elements		10% minimum per manufacturer
Note: Percentages are by weight.		