PART 1 - GENERAL

1.1 Description

.1 This standard applies to low temperature, water-borne, acrylic, fast drying traffic paints suitable for spray application with specialized equipment, to asphalt surfaces. Included are centre lines to match existing layout (double solid, solid/dash or single dash lines), two shoulder lines, as well as all intersections, arrows, delineation, special markings and temporary markings, etc., for the full length of the work area.

.2 This specification includes a compound to be used as an additive in conjunction with water-borne traffic paint and glass spheres to provide a drying agent which accelerates the no-tack time of the water-borne traffic paint. No-tack time is to be increased by approximately 40% over the same paint without the compound.

.3 All pavement markings to be in accordance with the Manual of Uniform Traffic Devices for Canada, latest edition.

1.2 References

.1 American Society for Testing and Materials (ASTM)
.1 ASTM D 711, Test Method for No-Pick-Up Time of Traffic Paint
.2 ASTM D 868, Test Method for Evaluating Degree of Bleeding of Traffic Paint
.3 ASTM D 869, Test Method for Evaluating Degree of Settling of Paint
.4 ASTM D 969, Test Method for Laboratory Determination of Degree of Bleeding of Traffic Paint
.5 ASTM D 1155, Test Method for Roundness of Glass Spheres
.6 ASTM D 1210, Test Method for Fineness of Dispersion of Pigment-Vehicle Systems
.7 ASTM D 1214, Test Method for Sieve Analysis of Glass Spheres
.8 ASTM D 1309, Test Methods for Settling Properties of Traffic Paints During Accelerated Storage
.9 ASTM D 2205, Guide for Selection of Tests for Traffic Paints
.10 ASTM D 2243, Test Method for Freeze-Thaw Resistance of Water-Borne Coatings
.11 ASTM D 3960, Standard Practice for Determining Volatile Organic Compound (VOC)Content of Paints and Related Coatings

.12 ASTM E 97, Test Method for Directional Reflectance Factor of Opaque Specimens by Broad-Band Filter Reflectometry

.3 Transportation Association of Canada (TAC), Manual of Uniform Traffic Control Devices For Canada.

1.3 Samples

.1 Submit samples in accordance with Section 01 33 00 – Submittal Procedures.

.2 Mark samples with name of project, location, paint manufacturer's name and address, name of paint, CGSB specification number and formulation number and batch number.

.3 The Departmental Representative reserves the right to test samples of paint at the point of delivery, from any or all batches of paint to be used. The samples will be tested and all paint from any batch tested that does not meet specifications, will not be permitted to be used on this project.

PART 2 - PRODUCTS

2.1 Materials

.1 General Requirements:

.1 The low temperature, water-borne (acrylic), lead free, fast drying traffic paints shall be designed to be applied in environmental conditions such that operational temperatures shall be in the range of 2 degrees Celsius and rising.

.2 Paint shall be well ground to a uniform smooth consistency and shall be free from skin, dirt and other foreign particles. The paint shall be capable of being sprayed at the temperature intended for the paint. It shall flow evenly and smoothly and cover solidly when applied to pavement. The paint shall be supplied ready-mixed for use without any addition of water.

.3 The paint mixture shall include the glass bead intermix system.

.4 The paint mixture is to be able to be applied under pneumatic pressure by a standard truck mounted dispensing machine moving at speeds of 8 to 24km/hr.

2.2 Paint .1 Paint to this standard shall comply with the following detail requirements when tested in accordance with the specified test methods:

Property	Specification Min.	Specification Max.	Test Method (1)
General:			
Density	-	-	Method 2.1
Consistency, KU (2)	85	95	Method 4.5
Skinning Properties (3)	0	0	Method 10.1
Contrast Ratio (5)	0.992		
VOC (6)		150g/L	ASTM D3960
Volatile Matter % (mass)(including water)		24	Method 17.1
Freeze-thaw resistance	Pass		ASTM D2243
Pigment Content, % (mass)	56	62	Method 21.2
Binder solid,% of mass	16.75		Method 19.1
100% Acrylic Polymer, % (mass)	15	-	Method 57.1
No-pick-up time, min. (4)	1	5	ASTM D711
Non-tracking time, sec. (8)		60	
Fineness of grind, HU	3	-	ASTM D1210
Coarse Particles:			
#60 Sieve – 250um	nil	nil	ASTM D185 &
#100 Sieve – 150 mm	-	0.01	ASTM D2205
Bleeding	4	-	ASTM D868 & ASTM D2205
Settling Rate	6	-	ASTM D1309
	8	-	ASTM D869
White Paint:			
Titanium Dioxide, g/L	150	-	Method 2.1, 21.1, 50.14
Titanium Dioxide Pigment (7)			
Reflectance	80	-	ASTM E97
Colour	-	-	1-GP-12C 513-301
Yellow Paint:			
Reflectance	60	-	ASTM E97
Colour	-	-	505-308 (approx)

(1) All tests to be performed by methods as per Canadian General Standards Board (CGSB), 1-GP-71 or American Society of Testing and Materials (ASTM) or as noted herein.
(2) Kreb units at 25°C
(3) Paint shall be non-skinning. (See General Requirements, 2.1.1.2).
(4) Perform field tests on a 15 mil wet film thickness of hot spray (maximum 50°C). Wait one minute, drive a passenger vehicle over the film and ensure no visible (from 15m)

deposition of paint is deposited onto the adjacent pavement.

(5) Contrast Ratio: apply a wet film thickness of 381 microns on Laneta Penopac form (1B) Drying Time: Minimum 24 hours at 23°C. (plus or minus 2°C)

(6) Volatile organic compounds (VOC) (excluding water): max. 150g/L; method ASTM D3960.

(7) Titanium dioxide pigment shall be Rutile type and have a minimum TiO_2 content of 93%.

(8) Non-tracking time based upon 375um (15 mils) wet film thickness applied when pavement temperature is greater than 10° C and humidity conditions of 80% or less on dry pavement.

2.3 Glass Bead Intermix System

.1 The compound shall be a mixture of glass beads and drying agent materials.

.2 The compound shall meet the following gradation when tested according to ASTM D1214:

Sieve Size	% Passing
1.180mm (#16)	100%
0.850mm (#20)	90 – 100%
0.600mm (#30)	65 – 95%
0.300mm (#50)	10 – 35%
0.150mm (#100)	0 – 5%

.3 The glass bead component of the compound shall be colourless, clean, transparent, and free from milkiness and excessive air bubbles. They shall be spherical in shape, containing no more than 30% irregularly shaped particles and be the equivalent of an AASHTO Type I glass bead. The silica content of the glass spheres shall not be less than 60% as per ASTM C169 testing. The component shall be manufactured of glass of a composition designed to be highly resistant to traffic wear, decomposition, etching under atmospheric conditions, dilute acids, alkalis, paint film constitutes, and to the effect of weathering, and should be composed of recycled glass (to the maximum extent possible).

.4 The drying agent component shall be smooth and spherically shaped, amber to white in

colour, and of a type that promotes accelerated coalescence of the latex polymer and as such reduces water-borne paint dry to touch time by approximately 40% (minimum).

.5 The compound shall show no tendency to absorb moisture in storage and shall remain free of clusters and hard lumps. It shall flow freely from dispensing equipment at any time when applying with pavement marking.

PART 3 - EXECUTION

3.1 Equipment Requirements

.1 Paint applicator to be an approved pressure type mobile distributor capable of applying paint in single, double and dashed lines. Applicator to be capable of applying marking components uniformly, at rates specified, and to dimensions as indicated, and to have positive shut-off.

3.2 Condition of Surfaces

.1 Surface to be dry, free from ponded water, frost, ice, dust, oil, grease and other foreign materials.

3.3 Traffic Control

.1 Traffic control to be in accordance with Section 01 55 26 – Traffic Regulation.

3.4 Application

.1 Unless otherwise approved by Departmental Representative, apply paint only when air Temperature is above 10°C, wind speed is less than 60km/h and no rain is forecast within next 4h.

.2 Apply traffic paint evenly at rate of 3m/L.

.3 Do not thin paint unless approved by Departmental Representative.

.4 Symbols and letters to conform to dimensions indicated.

.5 Paint lines to be of uniform colour and density with sharp edges.

.6 Thoroughly clean distributor tanks before refilling with paint of different colour.

3.5 Tolerance

.1 Paint markings to be within plus or minus 12mm of dimensions indicated.

.2 Remove incorrect markings to approval of Departmental Representative.

3.6 Protection of Completed Work

.1 Protect pavement markings until dry.

END