ITEM 676
TRAFFIC PAINT (WATER BASED)

676.1 Description. This item shall govern for the materials, composition, manufacture and testing of all water based traffic paint and related materials as covered herein.

676.2 Bidders' Requirements. All prospective bidders are hereby notified that, before any bid is considered, the City of Deer Park may require the bidder to submit a statement in detail of the facts as to the previous experience of the bidder in performing similar or comparable work, as to the business and technical organization, financial resources and the manufacturing facilities of the bidder which are to be used in performing the contemplated work. Any bid submitted by a firm with unsatisfactory facilities, resources, equipment or experience may be rejected by the City of Deer Park.

676.3 Intent. The coating design specified has been stipulated by means of carefully controlled formulation durability testing methods. The intent of the City of Deer Park Engineering Department is to procure coatings which are identical in all essential respects to the standards of the State Department of Transportation; hereafter referred to as "Standards". Specifications, codes, accepted practices, etc., not specifically listed in these specifications are not acceptable.

When required, the paint manufacturer shall supply Labor Form LSB000S-4, "Material Safety Data Sheet".

676.4 Conformance of Finished Products. Coatings shall conform on a weight basis, to the composition requirements of the standard formula. No variation from the standard formula will be permitted except for replacement of materials lost in processing, or those approved by the Engineer. The finished coatings shall conform with all requirements stipulated for each standard formula and in addition shall equal a Wet Standard in characteristics such as color, drying, flow, settling, brush ability, can stability, hiding, etc. Film characteristics as gloss, hardness, light permanency, adhesion, etc., shall also conform. When testing for such conformity, the coating shall be applied and tested under parallel conditions with the Wet Standard.

The finished product shall be free of skins and foreign materials.

676.5 Inspection, Sampling & Testing. All products required to meet these specifications shall be inspected and tested. All tests on finished products and raw materials, as well as inspection during manufacture, will be made by an independent licensed testing laboratory and two (2) copies of the results shall

be furnished to the City Engineer, prior to delivery of product. Contract shall not be considered complete until such copies are received by the City of Deer Park. On material purchased directly by the City of Deer Park, the cost of inspection and testing shall be borne by the Contractor and/or supplier. The manufacturer shall be required to reimburse the City of Deer Park for the cost of storage and/or handling of paint failing to meet specification requirements. Samples of raw materials used in production and samples of paint will be taken during production. Manufacture shall be witnessed in whole or in part, depending upon the discretion of the testing agency. Production shall not begin prior to the arrival of the designated testing agency, unless prior specific approval for such starting has been obtained from the City of Deer Park Engineering Department. The manufacturer shall accord the representatives of the testing agency free access to those parts of the plant wherein the paints are being manufactured or raw materials are being stored and in all other ways shall facilitate the representative of the testing agency in performing his duties. Raw materials and finished coatings, when stored, shall be in an orderly fashion that will permit proper and correct inventory of these materials at all times. Testing shall be done in accordance with the Texas State Department of Public Transportation, "Manual on Testing Procedures". Any questions should be addressed to the City Engineer.

676.6 Manufacturing procedures, except when specified, shall be left to the discretion of the Contractor. It is the responsibility of the manufacturer to ascertain that the raw materials and manufacturing procedures he proposes to use will produce a product meeting the specification requirements.

676.7 Shipment shall be made in suitable, strong, well-sealed containers which not only meet specifications and federal requirements, but are also sufficiently sturdy to withstand normal handling to which shipments are subjected in transit. Finished coating containers and cases shall be plainly marked and securely labeled with the name and designation of the coating, order number, requisition number, batch number, date of manufacture, gross weight and manufacturer's name. Labeling shall be on the sides of containers and cases. Labels must be sufficiently moisture resistant to withstand outdoor storage for a minimum of one year. When the finished product is palletized for shipment, the labels shall be on the outside for easy identification. Once the finished product has been labeled properly, the label shall not be modified or changed in any manner without specific approval of the City Engineer.

Containers shall be filled by weight based on the actual gallon weight of the paint at 77 F.

676.8 Raw Materials. The exact brands and types of raw materials used in the Wet Standard are listed for the purpose of facilitating the selection. The selection of parallel material equal not only in quality and composition but also in physical and chemical behavior after being used in the finished product. Since

evaluation of paint containing questionable materials may require sixty days and since meeting delivery schedules is a responsibility of the paint manufacturer, he is reminded that he should schedule material procurement and paint production to permit him to meet delivery commitments. The final decision as to the equality of materials shall be made by the City of Deer Park. After the City of Deer Park has agreed to the brand names of raw materials proposed by the Contractor, no substitution will be made during the manufacture, without prior agreement with the Engineer.

The Contractor should be aware that it is his responsibility to select raw materials that not only meet the individual raw material specifications, but will also produce coating conforming to the specific formula requirements.

A. Materials of Foreign Origin. Because of the limited information available on materials manufactured outside the continental limits of the United States, the manufacturer is advised to review paragraphs 661.5 and 661.8 of the specifications, when considering the use of materials of foreign origin.

B. Materials Required to Meet Federal & ASTM Specifications: All materials required to meet Federal or ASTM specifications must conform to the latest edition of the specifications.

C. PIGMENTS:

1. White

a. Titanium Dioxide shall meet ASTM Specification D476, Type I or II.

b. Lead Free Zinc Oxide shall meet ASTM Specification D79, either American process or French process.

2. Colored: Titanium Dioxide, Rutile, non-chalking:

Specific Gravity	4.05 to 4.15
Oil Absorption	16 to 20%
Moisture	0.5% Max.
Pigment Retained On No. 325 Sieve	0.1% Max.
$Ti0_2$ Content	95% Min.
Fe_20_3 Content	2.0 to 3.0%
pH	6.5 to 7.0
Ignition Loss	0.35% Max.
Y (luminosity)	42.5 to 45.5

D. Medium Chrome Yellow

Color and Color Characteristics. The luminance factor of the pigment shall be within the limits listed below when tested before and after exposure.

	Min.	Max.
Initial	53	59
Final	45	

In addition, the allowable change between the initial and final luminance factors shall be no more than 9 units. The initial and final CIE Chromaticity Color coordinates of the pigment shall be within the rectangle defined by the sets of coordinates (0.490, 0.455), (0.511, 0.433), (0.514, 0.480), and (0.535, 0.488).

Method of Test: The pigment shall be tested in accordance with Test Method Tex-810-B, two coats.

The formulation for the test enamel using the pigment to be tested is as follows:

Material	Parts by Weight
Medium Chrome Yellow	600
75% Traffic Alkyd Resin (1)	298
4% Calcium Drier	5
6% Cobalt Drier	2
6% Zirconium Drier	2
Anti-Skinning Agent	2
Mineral Spirits	172 (2)

1) Traffic Alkyd Resin Solution shall meet the requirements of the part of this specification titled "Traffic Alkyd Resin Solution" of this specification.

2) The amount of Mineral Spirits may be varied slightly to produce the desired grinding consistency.

3) Extenders

a. Calcium Carbonate

$CaCo_3$	97.0% Min.
H_20	0.4% Max.
Density	2.6302 to 2.7299
Weight Retained on No. 325 Sieve	0.75% Max.

Color: Equal to material listed in Standard Formula. Substitution in a Standard Formula shall not result in a viscosity variation greater than 5 KV.

b. Talc -ASTM D605

c. Silica

$Si0_2$	99.5% Min.
H_20	0.05% Max.
Density	2.5810 to 2.7011
Oil Absorption	25 lb/100 lb Max.
ASTM D281 Weight Retained on No. 325 Sieve	1.0% Max.

E. Resins

1. Acrylic Traffic Resin shall be similar and equal to the standard sample approved by the State Department of Transportation.

Solid Contents, Percent	60.0 -62.0
Viscosity, #3 Spindle 60 RPM, cps	840 -860
pH	8.8 -9.0
Density, 25º C	1.066 to 1.078

In addition to the above requirements, the infrared spectrum and gel permeation chromatogram shall match the standard spectrum and chromatogram on file with the State Department of Public Transportation.

F. Miscellaneous Materials

1. Water, Potable
2. Methyl Alcohol, ASTM D1152 with Refractive Index 1, 3320 Max.
3. Diethylene Glycol Monobutyl Ether, Glycol Ether DB 228 to 234

Boiling Range, Cº	228 to 234
Flash Point, Cº, COC	115 Min.
Density, 25 C	0.948 to 0.953
Refractive Index, 20 C	1.4314 to 1.418
Color	Water, White
Appearance	Clear, Sediment Free

Refractive Index 1.4290 Min.

4. Anti-Skinning Agent
5. Dispersant-Byk 156, Byk Chemie
6. Surfactant-Triton CF-10, Union Carbide
7. Defoamer
8. Hydroxyethyl cellulose -Natrasol 250 LR, Aqualon
9. Attapulgite Clay -Attagel 50, Eulehard
10. Preservative

FORMULA
WPT-10, WHITE WATER BASED TRAFFIC PAINT

		POUNDS
Acrylic Emulsion, 60% Solids, Rhom & Haas, TP-257		460
Coalescent, Glycol Ether DB		20
Coalescent, Exxon, Exxate 800		10
Titanium Dioxide, Rutile Type II		150
Silica		125
Calcium Carbonate, JM Huber, Hubercarb M-4		400
Attapulgite Clay, Engelhard, Attagel 50		4
Hydroxyethyl Cellulose, Aqualon, Natrosol, 250 LR		2
Defoamer		4
Dispersant, Byk Chemie, Byk 156		6
Surfactant, Union Carbide, Triton CF-10		2
Methyl Alcohol		20
Preservative		3-7
Water, Potable		90
	TOTAL	1300

Density: 0.05 Kg of theoretical density
Grind: 4 Min Particles: 8 Max (Test Method Tex-806-B)
Viscosity: 80-100 KV
Skinning: No skinning within 48 hours (Test Method Tex-811-B)

FORMULA
YPT-10, YELLOW WATER BASED TRAFFIC PAINT

	POUNDS
Acrylic Emulsion, 60% Solids, Rhom & Haas, TP-257	460
Coalescent, Glycol Ether DB	20
Coalescent, Exxon, Exxate 800	10
Medium Chrome Yellow, Cookson Y-969-L	125
Titanium Dioxide, Rutile Special	25
Silica	125
Calcium Carbonate, JM Huber, Hubercarb M-4	430
Attapulgite Clay, Engelhard, Attagel 50	4
Hydroxyethyl Cellulose, Aqualon, Natrosol, 250 LR	2
Defoamer	4
Dispersant, Byk Chemie, Byk 156	6
Surfactant, Union Carbide, Triton CF-10	2
Methyl Alcohol	20
Preservative	5
Water, Potable	90
TOTAL	1328

Gallon Weight: 0.10 lb. of theoretical gallon weight
Grind: 4 Min Particles: 8 Max (Test Method Tex-806-B)
Viscosity: 80-100 KV
Skinning: No skinning within 48 hours (Test Method Tex-811-B)

676.9 Construction Methods. All traffic paint applications shall meet the following requirements, and shall be applied in accordance with the Item 675, "Traffic Paint Striping (Water Based)".

A. Traffic paint shall be applied with a minimum thickness of 40 mils, measured in dry condition, prior to adding any glass reflective spheres.

B. The paint shall be transported to the job site in five gallon unopened containers. No thinning of the paint is allowed after the paint is received from the manufacturer. Paint striping shall be applied when the air temperature is 45 F, and rising.

C. Paint striping shall be applied and measured to 1/4" of the specified widths. Paint thinner can only be used to flush the pumps. The flushing liquid is not to go through the spray nozzles and onto the roadway.

All traffic paint striping not meeting these requirements shall be "touched up" and/or completely restriped to these standards and in accordance with the drawings at no additional cost to the City of Deer Park.

Where traffic buttons exist, the paint shall be applied to the pavement adjacent to, but not on the buttons or markers, unless another method is specified.

Word and symbol markings on pavement shall be in accordance with "Pavement Word and Symbol Markings" section of the latest Texas Manual on Uniform Traffic Control Devices of the State Department of Transportation.

Prior to beginning work, the Contractor shall furnish mill certificates, from the paint manufacturer, indicating in detail that the paint meets this specification. As stated, the City of Deer Park retains the option to test this material to determine if it meets this specification. The tests shall be paid for by the Contractor.

676.10 Testing. When required, the Contractor shall pay for and provide to the City of Deer Park, a testing report performed by a local testing laboratory designated by the Engineer. The report shall verify that the raw and finished materials, to be supplied under this contract, meet the requirements of this specification. These tests shall be paid for by the Contractor. One set of tests shall be made on each batch of paint.

676.11 Rejection. Materials and finished products which fail to meet any or all requirements of these specifications shall be subject to rejection. All materials and finished products rejected by the Engineer, whether in containers or applied to the roadway surface, shall be removed from the job site and replaced with materials meeting specifications and requirements and all costs of such removal and replacement shall be borne by the Contractor.

676.12 Measurement & Payment. Payment for this material shall be in accordance with the conditions prescribed in the contract awarded by the City of Deer Park and as shown on the bid items, or payment shall not be made directly but will be considered subsidiary to the furnishing and application of white or colored water based traffic paint, as specified.

END OF ITEM 676