DESCRIPTION. Under this work, the Contractor shall furnish and apply MMA-CST at the location and in accordance with patterns as specified on provided Work Orders or Plans or as ordered by the Engineer and in conformance with these specifications.

MATERIALS. The MMA-CST shall be capable of application on new and existing asphalt and portland cement concrete surfaces, and shall:

- Be VOC compliant and lead chromate free.
- Not contain 0.1% or more of any chemical listed by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP), or regulated by the US Occupational Safety and Health Administration (OSHA) as a carcinogen.
- Conform to current Federal, State and Local air pollution regulations, including those for the control (emission) of volatile organic compounds (VOC).
- Be packaged and stored in accordance with the manufacturer’s instructions and requirements for shelf life and storage conditions in original unopened containers. Shipping documents and containers shall have identification numbers or batch dates for confirmation of when products were manufactured, clearly labeled as to the type material and the ratio of the components to be mixed by volume as well as showing resin or hardener components, brand name, name of manufacturer, lot or batch number, temperature range for storage, expiration date and the quantity contained. Include any special instructions regarding mixing and the Material Safety Data Sheets. This information shall be made available for inspection at any time.
- Be colored green for bicycle lanes, terra cotta for bus lanes, or truffle for plazas as specified on provided Work Orders or Plans. Colors for each work type shall be approved by the Engineer prior to the material purchase by the Contractor.
- Incorporate aggregates compatible approved by the MMA manufacture for compatibility and handling in compliance with manufacturer recommendations – providing a surface friction level equivalent or better than existing pavement.

APPROVED MATERIALS. Products appearing on the list below with a Manufacturer’s certification that the product meets the requirements of this specification, or a Product approved equal as determined by the Engineer, are deemed acceptable for use:

Color-Safe®
Transpo Industries, Inc.
20 Jones Street, New Rochelle, NY 10801
800-321-7870  www.transpo.com

CycleGrip®MMAX
Ennis-Flint
115 Todd Court, Thomasville, NC 27360
336-475-6600  www.ennisflint.com

Safetrack®SC
Stirling Lloyd North America
152 Rockwell Road, Building A, Newington, CT 06111
860-666-5008  www.northamerica.stirlinglloyd.com
CONSTRUCTION DETAILS.

General. MMA-CST shall be placed as shown on the Contract or Work Order Documents or as ordered by the Engineer.

Before any surface treatment work is begun, a schedule of operations shall be submitted for the approval of the Engineer and his/her authorized representative. At least five (5) days prior to starting application, the Contractor shall provide the Engineer with the MMA color manufacturer's written instructions for use. These instructions shall include, but not be limited to, material mixing ratios and application temperatures.

When MMA-CST is applied under traffic, the Contractor shall provide all necessary flags, markers, signs, etc. in accordance with the MUTCD to maintain and protect traffic, and to protect marking operations and the markings until thoroughly set.

The Contractor shall be responsible for removing, to the satisfaction of the Engineer, all tracking marks, spilled MMA-CST applied in unauthorized areas.

Atmospheric Conditions. MMA-CST shall only be applied during conditions of dry weather and on dry pavement surfaces. At the time of installation the pavement surface temperature shall be at or above manufacturer recommendations.

Surface Preparation. The Contractor shall clean the pavement and existing durable markings to the satisfaction of the Engineer. At the time of application, all pavement surfaces and existing durable markings shall be free of oil, dirt, dust, grease and similar foreign materials.

Application Equipment. Equipment for the placement of MMA-CST shall be approved by the Engineer prior to the start of work. Application equipment shall include:

1. Squeegees designed for heavy duty use (3/16” notched)
2. Rollers that are medium nap in texture and contain a roller cage and handle
3. High speed, high torque drills capable of supplying enough power to thoroughly mix MMA-CST additives when paired with a paint mixing paddle

Application. MMA-CST shall be placed at the width, thickness, and pattern designated by the Contract Documents. Surface treatment operations shall not begin until applicable surface preparation work is completed and approved by the Engineer, and the atmospheric conditions and pavement surface temperature are acceptable to the Engineer.

MMA-CST shall be poured onto pavement and evenly distributed using a squeegee. The applied film thickness shall be 95 +/- 5 mils. Trowels may be used in cases where squeegees are not effective. Rollers should then be used to distribute MMA-CST, remove working lines and create a consistent anti-slip texture. Masking tape or similar should be removed as material gels, but before it cures. If required by manufacturer, all concrete surface areas to be coated with MMA-CST shall be masked with primer prior to MMA-CST application.

Defective Results. MMA-CST, which after application and curing is determined by the Engineer to be defective and not in conformance with this specification, shall be repaired. Repair of defective MMA-CST shall be the responsibility of the Contractor and shall be performed to the satisfaction of the Engineer as follows:

1. Insufficient film thickness:
Repair Method. Prepare the surface of the MMA-CST to the satisfaction of the Engineer.

Cleaning and Surface Preparation. Repair shall be made by reapplying MMA-CST over the cleaned surface in accordance with the requirements of this specification at the full thickness.

2. Uncured or discolored MMA-CST and/or insufficient bond (to pavement surface or existing durable marking):

Repair Method. The defective MMA-CST shall be completely removed and cleaned to the underlying pavement surface to the satisfaction of the Engineer.

After surface preparation work is complete, repair shall be made by reapplying MMA color over the cleaned pavement surface in accordance with the requirements of this specification.

Other defects not noted above, but determined by the Engineer to need repair, shall be repaired or replaced as directed by and to the satisfaction of the Engineer.

All work in conjunction with the repair or replacement of defective MMA color shall be performed at the Contractor’s expense.

Personal Protective Equipment. Follow all exposure, respiratory and personal protective equipment controls, handling and safety precautions and spill and disposal procedures as identified by safety data sheets (SDS), labels and other manufacturer’s recommendations for the products used.

WORK ZONE TRAFFIC CONTROL (WZTC). The Contractor is responsible for ensuring appropriate WZTC in compliance with the MUTCD appropriate for the dry time of the selected material applied. The Contractor is responsible to ensure adequate WZTC to prevent those walking, skating, bicycling, and driving from coming into contact with applied material that is still capable of being tracked. The Contractor shall be liable for such tracking and property damage should it occur.

METHOD OF MEASUREMENT. The quantity for payment, in square feet of MMA-CST, shall be computed within the payment lines shown on the plans, Work Order, or otherwise ordered in writing by the Engineer.

BASIS OF PAYMENT. The accepted quantities of MMA-CST will be paid for at the contract unit price, which shall include the cost of furnishing all labor, materials and equipment to satisfactorily complete the work. The cost of removal of concrete curing compounds and existing pavement markings will be paid under separate items and are not included in this item.

Payment will be made under:

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Item</th>
<th>Pay Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>601.04020011</td>
<td>Methyl Methacrylate Color Surface Treatment for Pavements</td>
<td>Square Foot</td>
</tr>
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