DESCRIPTION
The work shall consist of the treatment of new traffic signal poles, signal mast arms, conduit, and lighting mast arms with a powder coated finish in conformance with this specification.

MATERIALS
Coating Powder: A urethane or triglycidyl isocyanurate (TG1C) polyester powder of a DEGASSING GRADE ONLY whose manufacturer recommends its use over hot dip galvanizing.

Abrasive: The abrasive shall be Aluminum/Magnesium silicate with a particle size between 200-500 microns (8-20 mils). Other natural media with a Mohs hardness of no more than five can also be used (corn cobs, walnut shells, corundum, limestone, and mineral sands). The abrasive should be sized to only roughen the galvanized surface.

Galvanizing: 719-01 Galvanized Coatings and Repair methods as modified below.

CONSTRUCTION DETAILS
The Contractor shall provide the Engineer with three (3) three-inch by five-inch (3” x 5”) plates (or reasonably close to this size) that are galvanized and powder coated to this specification to be used on this job, to verify that the color, gloss and adhesion are correct and acceptable. The plates shall be submitted at least a week prior to the start of coating work. An adhesion test shall be performed on the plates according to ASTM D4541 and no less than 600 psi shall be obtained. Alternately, if tested according to ASTM D3359 a minimum rating of 5A shall be obtained.

Galvanizing:
Poles and mast arms should be galvanized in accordance to the provisions of section 719-01 Galvanized Coatings and Repair methods, with the following additional requirements:
- All hot-dipped galvanized components to be powder-coated shall not receive a water quench or chromate quench.
- All drainage spikes and surface defects shall be removed.
- Galvanized components shall not be left outside or allowed to get wet
- Galvanized components shall not be transported uncovered

Surface Preparation:
- If contamination of the galvanizing has occurred or is suspected, the galvanizing shall be cleaned with a proprietary solvent/detergent designed for pre-cleaning and completely rinsed off prior to powder-coating. Solvents should only be applied with lint-free rags or soft-bristled nylon brushes. Once rinsed, the components shall be allowed to completely air-dry.
- If ash residue from galvanizing is present, it should be removed using a solution of
ITEM 680.1001000 - POWDER COATING TRAFFIC SIGNAL POLES
ITEM 680.1002000 - POWDER COATING TRAFFIC SIGNAL MAST ARM
ITEM 680.1003000 - POWDER COATING STREET LIGHT POLE AND MAST ARM
ITEM 680.1004000 - POWDER COATING PEDESTRIAN SIGNAL POLE
ITEM 680.1005000 - POWDER COATING GALVANIZED CONDUIT

one to two percent ammonia. Apply the ammonia solution with a nylon brush, rinse thoroughly with hot water and allow to dry completely.

- After the poles and arms are galvanized and all contamination, ash residue, etc. is cleaned off, their exterior surfaces shall receive a brush-off blast as per SSPC SP-7 Brush Off Blast Cleaning. The powder coating shall occur within 1 hour of this cleaning.
- Brush-Off blasting should occur only when ambient temperature is 70 degrees Fahrenheit or greater, with no more than 50 percent relative humidity.
- If more than 38 microns (1.5 mil) of galvanizing is removed during brush off blasting, the galvanized component shall be rejected.

Powder Coating:

- To insure quality control, the manufacturer of the poles and mast arms is to perform the powder coating process within 1 hour of the surface preparation as described above.
- Exterior surface of traffic signal poles, conduit, and mast arms are to be coated to a minimum dry film thickness of 3 mils (0.003 inches). Interior surfaces of the base end of traffic signal and pedestrian poles are to be mechanically cleaned and coated with a zinc rich epoxy powder to a minimum depth of 2 feet.
- All galvanized components to be powder coated shall be preheated in an oven to the temperature recommended by the manufacturer of the powder coat to assist in avoidance of pinholing during powder cure.
- The coatings is to be electrostatically applied and cured in a gas fired convection oven by heating the coated components to a specified temperature, and holding that temperature for a duration of time as recommended by the manufacturer of the powder coat (see Product Data Sheet for powder coat) to ensure sufficient stoving time to meet curing specifications of the powder.
- The inspector shall check for correct cure by solvent testing.
- The finish for exterior surfaces is to be colored black in accordance with RAL 9005, unless another finish color has been specified in the plans.
- At least one adhesion test shall be performed per pole or mast arm. Adhesion shall be at least 600psi as per ASTM D4541 or a minimum rating of 5A if performed per ASTM D3359. Damage should be repaired with paint recommended by powder manufacturer.

Packaging and Shipment
For protection of the powder coated finish during shipping, poles, conduit, and mast arms are to be wrapped with a 3/16 inch ultra-violet inhibited plastic backed foam envelope with a built-in mechanism for easy removal of the wrap. In addition, traffic signal poles are to be cradled in a 1 inch thick rubberized foam base.
ITEM 680.1001000 - POWDER COATING TRAFFIC SIGNAL POLES
ITEM 680.10020001 - POWDER COATING TRAFFIC SIGNAL MAST ARM
ITEM 680.10030001 - POWDER COATING STREET LIGHT POLE AND MAST ARM
ITEM 680.10040001 - POWDER COATING PEDESTRIAN SIGNAL POLE
ITEM 680.10050001 - POWDER COATING GALVANIZED CONDUIT

METHOD OF MEASUREMENT
The quantity to be measured for payment will be the number of poles, conduit, or mast arms powder coated.

BASIS OF PAYMENT
The unit price bid will include the cost of: surface preparation; furnishing and applying powder coating; coloring; additional packaging; and furnishing all labor, material and equipment necessary to satisfactorily complete the work.

Payment will be made under:

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>ITEM</th>
<th>PAY UNIT</th>
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<tbody>
<tr>
<td>680.10010001</td>
<td>Powder Coating Traffic Signal Pole</td>
<td>Each</td>
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<tr>
<td>680.10020001</td>
<td>Powder Coating Traffic Signal Mast Arm</td>
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<tr>
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<td>Powder Coating Street Light Pole and Mast Arm</td>
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<tr>
<td>680.10050001</td>
<td>Powder Coating Galvanized Conduit</td>
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