

CONTRACT # **N00485-10-0516**
PROJECT # **10M120CN**
MACC # **10-0516**
MAXIMO # **4279093**

TITLE: **ROAD STRIPING ON NEW RIVER AIR STATION**

ATTACHMENTS:

- 1. Site Plan (2 Pages)**

SCOPE OF WORK (6 Pages)

Note: The measurements and quantities within this scope and attached site plan are approximate and are used for reference only. If required, actual precise measurements must be field verified by the contractor.

The P.O.C.'s have no authority to alter the scope of work.

All work related issues must be coordinated with the government project manager.

General Description:

Note; Road markings in this scope include; sidelines, center lines, stop bars, crosswalks, turning lanes, arrows, painted islands, etc.

The contractor shall provide all material, labor, equipment and supervision required to accomplish the following;

Reflectors:

- Install N.C.D.O.T. compliant dual sided road reflectors where there are damaged or missing reflectors on the entire length of Curtis Rd, (Approx. 1,000 reflectors).

Thermoplastic:

- Remove all Thermoplastic road markings and install new Thermoplastic road markings with Reflective Beads on Curtis Road and for 50 feet around each intersection starting from Robert L. Wilson Blvd. to Perimeter Road. See site map. The new thermoplastic markings shall match the current layout and shall be N.C.D.O.T. compliant. (Approx. 20,500 Linear Feet of ROAD).

Paint:

- Clean all areas the roads listed below to be painted with a mobile street sweeper or some other means to prepare the roads prior to painting.
- Re-paint all road markings on White Street, Douglas Road, Campbell Street, Bancroft Street, and Mcavoy Street. (Approx. 29,417 Linear Feet of Road). See site map.
- The roads listed shall be painted from one end to the other end to include 50 feet around any adjoining intersections (excluding painting any new thermoplastic that has just been installed).
- All road markings shall be painted with N.C.D.O.T. approved paint as directed by this scope and Reflective Glass Beads to comply with N.C.D.O.T. Specifications.
- Contractor shall have personnel certified and experienced with N.C.D.O.T. Standards and Specifications and shall comply with and meet the N.C.D.O.T. Standard Specifications for Roads and Structures” and “N.C.D.O.T. Roadway Standard Drawings” as they apply to this project.
- Comply with the Detailed Requirements, Specifications, and Special Requirements listed in this scope of work and the attached site plan.

Detailed Requirements and Specifications:

Prior to starting work the contractor shall contact the S-4, Randall Scott, at (910) 499-5403 to coordinate scheduling of work, traffic control procedures, etc.

The contractor shall provide traffic control (i.e. cones, flagman, signs, etc.) sufficient to prevent injury to personnel, damage to property, and allow for safe flow of traffic.

Any removed markings shall be replaced no longer than 48 Hours after being removed (Weather Permitting) and shall be remarked with identical colors.

Materials:

Thermoplastic; N.C.D.O.T. compliant (Alkyd/Maleic & Hydrocarbon)

Paint; Acrylic Waterborne.

Glass Beads/Spheres; Glass spheres type III, gradation A.

References U.F.G.S. and FS TT-B-1325

Thermoplastic Application (Alkyd/Maleic & Hydrocarbon):

All thermoplastic markings shall be of the hot, machine applied type. Application of Alkyd/Maleic thermoplastic pavement markings shall be accomplished by extrusion methods only. Hydrocarbon thermoplastic pavement markings shall be applied using either extrusion, or spraying methods. Extrusion may be accomplished using either conventional extrusion equipment or "ribbon gun" extrusion devices.

All parts of the application and premelting equipment shall be thoroughly cleaned of foreign material prior to the introduction of the thermoplastic marking material.

The thermoplastic material shall be heated uniformly throughout and shall have a homogeneous disbursement of binder, pigment, and glass beads when applied to the surface of the pavement.

To avoid blistering and poor adhesion, the thermoplastic material shall be applied to dry pavements in a molten state at a minimum temperature of 400F.

The temperature shall be checked regularly for compliance with the specified application temperature range.

Glass beads shall be applied in the proper ratio to immediately produce a highly reflective marking. "Drop-on Beads" shall be uniformly applied to the surface of the molten thermoplastic material so that the beads are partially embedded. The beads shall be applied at a rate to obtain the minimum reflectance values. The rate of bead application shall be no less than 8 lbs. per 100 square feet of the line surface area.

At the time of installation, the in-place marking shall have the minimum reflectance values shown below, as obtained with a LTL 2000 Retroreflectometer or Department approved 30 m mobile retroreflectometer. The reflectance values shown below shall be maintained for a minimum of 30 days from the time of placement of the marking material.

WHITE: 375 mcd/lux/m²

YELLOW: 250 mcd/lux/m²

Paint Application and Glass Bead Dispensing Equipment:

The equipment to apply paint to pavements must be a truck-mounted pneumatic spraying machine with suitable arrangements of atomizing nozzles and controls to obtain the specified markings. The machine must be capable of applying the desired stripe widths with uniform thickness and clear-cut edges at the paint coverage rate specified in N.C.D.O.T. Standard Specifications For Roads And Structures Sub article 1205-3(G)(3). Equipment used for application of paint pavement marking must be capable of placing double solid lines, single solid lines, intermittent skip lines or a combination of solid and

intermittent skip lines in a single pass. Equipment must also have an internal timing mechanism for measurement and controlled output of required line lengths. The paint applicator must have at least two (2) paint tanks with a minimum sixty (60) gallon (227 liter) capacity each and one (1) tank for glass beads with a minimum of 500 lb. (226 Kg) Capacity. The pneumatic spray guns used for hand held paint pavement marking application should be operable from the application truck. All metal parts that hold or transfer paint pavement marking material should be stainless steel.

The paint tanks must be equipped with air-driven or mechanical agitators. The tanks and the spray mechanism must also be equipped with quick-action valves. The required gauges and pressure regulators must be conveniently located and in full view and reach of the operator. Paint strainers are required in paint supply lines.

The paint applicator must be equipped with a dispenser for the glass beads as described in N.C.D.O.T. Standard Specifications For Roads And Structures Sub article 1205-3(B)(2).

The glass bead dispenser should operate automatically and simultaneously with the paint applicator through the same control mechanism. The glass bead dispenser should be capable of adjustment and designed to provide uniform flow over the full length and width of the stripe at the rate of coverage specified in N.C.D.O.T. Standard Specifications For Roads And Structures Sub article 1205(G)(2). Pneumatic spray guns must be provided for hand application of detail markings, symbols and legends. A hand-operated push type applicator with a glass bead dispenser may be used for radii and/or parking spaces.

Apply drop-on beads to the surface of pavement long line markings using an automatic high pressurized bead dispenser or a pressurized mechanical feed, attached to the marking equipment. Hand-liner type equipments are exempt from this requirement. Locate the bead applicator at the proper distance behind the application of pavement marking material to provide the proper amount of retro reflectivity.

Equip the bead applicator with an automatic cut-off control synchronized with the cut-off of the marking material. Spread the beads uniformly over the entire surface of the pavement marking material such that they are partially embedded in the pavement marking. 60% bead embedment depth provides optimum retro reflectivity.

The dispenser for applying the reflective beads shall be attached to the paint dispenser and shall operate automatically and simultaneously with the applicator through the same control mechanism. The dispenser shall be capable of adjustment and designed to provide uniform flow of reflective beads over the full length and width of the stripe at the rate of coverage specified, at all operating speeds of the applicator to which it is attached.

Qualifications:

The Contractor shall utilize qualified personnel for equipment operation and handling of chemicals.

Personal performing layout of markings shall have experience with road markings and be able to properly apply markings according to the “N.C.D.O.T. Standard Specifications for Roads and Structures”.

Weather Limitations Application:

Pavement surface shall be free of water, snow, ice, slush, dirt, etc. Surface temperature shall be at least 40 degrees F and rising at the beginning of operations.

The pavement shall be both clean and dry prior to and during the painting process.

Application guidelines for Temperature and Humidity shall be followed according to the paint manufacturers' specifications.

Application of Pavement Markings:

General for all types of Pavement Markings;

Install pavement marking material which has a uniform thickness, a smooth surfaced cross-section throughout its entire length. Do not exceed the dimension by more than 1/2 inch (12.7 mm). Do not apply pavement marking materials over a longitudinal joint. See Roadway Standard Drawing No. 1205.01 sheet 2 of 2 for details. Install pavement marking lines which are straight or of uniform curvature and conform with the tangents, curves, and transitions. Produce finished lines which have well defined edges and are free of horizontal fluctuations. Do not exceed 1/2 inch (12.7 mm) in lateral deviation from the proposed location alignment at any point. Any greater deviations may be cause for requiring the material to be removed and replaced at no additional cost. Apply all longitudinal pavement marking lines 8 inches (203 mm) or less in width with one pass of the pavement marking equipment. Pavement marking lines greater than 8 inches (203 mm) in width and pavement marking symbols may be applied with multiple passes of the pavement marking equipment. The stem portion of straight arrows is to be applied in a single pass and the stem portion of turn arrows is to be applied in a maximum of 2 passes of the application equipment. Arrow heads may be applied by multiple passes of the application equipment, not to exceed three passes. Install all pavement marking lines, characters, and symbols which require multiple passes of the application equipment such that there are no gaps separating the application passes.

Install characters and symbols so that they conform to the sizes and shapes shown in the N.C.D.O.T. Roadway Standard Drawings.

Use pavement marking material which is capable of accepting an overlay of compatible material.

Protect the pavement markings until they are track free. Remove any markings tracked by a vehicle by acceptable methods and at no additional. Remove all pavement marking materials spilled on the road surface by acceptable methods. Use yellow and white pavement markings, without drop-on glass beads, that visually match the color chips that correspond to the Federal Test Standard Number 595a for the following colors. Use markings that when subjected to accelerated weathering as described in U.S. Federal Specification No. (TT-P-115F) are within the tolerance limits of the color chips listed below:

WHITE: Color 17886 and YELLOW: Color 13538.

Final pavement marking applications of paint shall be placed in two applications of 0.38 mm wet each. Apply the second application of paint upon sufficient drying time of the first. Each application of paint shall consist of drop-on beads applied at a rate to immediately obtain the minimum retro reflective values. Take the thickness measurements as specified by Materials and Tests unit Procedure 1.0. See the N.C.D.O.T. *Construction Manual* for details.

For each 0.38 mm application of paint, apply drop-on beads uniformly to the surface of the paint material at a rate to immediately obtain the minimum retro reflective values. At the time of installation, produce in-place markings with the minimum retro reflective values shown below, as obtained with a LTL 2000 Retroreflectometer or Department approved 30 m mobile retroreflectometer. Maintain the retro reflective values shown below for a minimum of 30 days from the time of placement of the marking material.

White 225 mcd/lux/m²

Yellow 200 mcd/lux/m²

Make sure that the marking is uniformly retroreflectorized upon drying.

Observation Period:

Measurements will be taken within 30 days prior to the end of the 180 day observation period. Maintain minimum retro reflective values shown below for a minimum of 180 days from the time of placement of the marking material.

White: 200 mcd/lux/m²

Yellow: 180 mcd/lux/m²