

SECTION D – SPECIFICATIONS/SCOPE OF WORKGENERAL DESCRIPTION AND SCOPE

This solicitation requires the preparation and delivery of standard (Type 1) Moisture-Proof, Glass Beads for Reflectorized Highway Pavement Markings to be applied to waterborne pigmented binder paint by Drop-On Method. These specifications describe the required material characteristics, packaging, and delivery.

Material Specifications

Physical Requirements – Glass beads shall meet all of the requirements of AASHTO specification M 247 when tested in accordance with ASTM D-1214, and the gradation shall conform to the following:

SIEVE SIZE	PERCENT PASSING
20 (0.85 mm)	100
30 (0.60 mm)	75 - 95
50 (0.30 mm)	15 - 35
100 (0.15 mm)	0 - 5

1. **Clarity** - Glass beads shall be colorless, clean, transparent and clear, and free of milkiness or excessive air bubbles, with no carbon residue. Gray or black tinted beads will not be accepted. Acceptable clarity will be determined by visual inspection at the time of application.
2. **Reflective Index** – The reflective index shall be 1.5 minimum when tested in conformance with MSMT 211.
3. **Roundness** - Glass beads shall be smooth, spherical in shape, free of sharp angular scars, scratches, or pits, and shall contain a minimum of 60 percent silica. Beads shall have a minimum average roundness of 80 percent when tested in conformance with ASTM D1155.
4. **Embedment Coating** – Glass beads shall be coated for adherence and embedment, and shall “pass” when tested as specified in MSMT 619.
5. **Moisture Resistance** – Glass beads shall not absorb moisture in storage, and shall remain free of clusters or lumps for a minimum of 12 months from the date of manufacture.
6. **Heavy Metals Restriction** – Glass beads shall contain no more than 200 parts per million of arsenic or lead when tested in accordance with EPA Method 3052, 6010B, and 6010C.

Material Acceptance/Certification

The manufacturer shall provide certification that the glass bead supplied conform as specified. Certification shall include manufacturer's name, place (address) of manufacture, lot or batch identification, size of lot / batch, and date of manufacture. Furthermore, the manufacturer shall provide Material Safety Data Sheets (MSDS) for all glass beads submitted for use, a facility, in operation, capable of producing the beads in the quantity and quality required by the County, and a laboratory capable of performing the required tests. The laboratory shall be subject to County's approval. Only those materials conforming to this Specification will be accepted. Any deviation from specifications will result in a rejection of the entire batch. Rejected materials shall be retrieved by the manufacturer at no expense to the County and shall be replaced within 10 business days.

### Packaging/Delivery

Glass beads shall be shipped using either of the following Packaging/Delivery methods:

- Bags – fifty (50)-pound heavy-duty, double poly-lined, moisture-proof bags, with complete identification information including lot number, date of manufacture, and the gradation specification clearly and legibly imprinted on the outside. Bags shall be placed in stacks of 40 (maximum), on 42" X 40" X 6" wooden pallets (skids), shrink-wrapped in clear plastic to facilitate transport and loading/unloading operation using a standard forklift.
- Totes – this is County's preferred delivery method and calls for shipment in sturdy bulk containers (totes), containing up to two thousand (2000) pounds of glass beads. The totes shall not have dimensions exceeding 40 inches. Each tote shall be shipped on a separate skid and shrink-wrapped with clear plastic to facilitate transport and loading/unloading operation using a standard forklift.

The Contractor shall have the capability of delivering a minimum of 25,000 pounds of glass beads within 10 business days after the receipt of a delivery order and a purchase order. Such documents will be deemed to have been received by the Contractor on the day sent when submitted by facsimile transmission, or via email. Failure to deliver the materials within 10 business days may result in assessment of liquidated damages as described below. All deliveries shall be made to County's Sign Shop, located at 1283 Seven Locks Road, Rockville, MD 20854 unless otherwise directed by Mr. David Keller, Shop Supervisor or Designee, between 7:30 AM and 3:00 PM EST weekdays except County holidays. All beads shall be delivered on open-type flat-bed trailers. All deliveries shall be coordinated with Mr. Keller, or Designee, by phone at 240-773-7330 two (2) business days in advance. Failure to provide proper notification may result in a lengthy unloading delay, which will be at no additional cost to the County.

All glass beads supplied for use in Montgomery County, shall include Material Safety Data Sheets (MSDS) for the material, the production facility, and the laboratory where the required tests are performed

### Liquidated Damages

Material delivery shall be made within 10 business days after receipt of a delivery order and a Purchase Order. With the understanding that pavement markings provide positive guidance for traffic safety, and that the County has a responsibility to the traveling public to ensure that adequate markings are present at all times, it follows that late deliveries of Glass Beads could indirectly result in traffic safety issues for the motorists and pedestrians alike. Inasmuch as such safety issues could potentially cause liability concerns for the County, the County will deduct the sum of \$60.00 per business day from money due the Contractor, not as a penalty, but as Liquidated Damages for each scheduled shipment not delivered within the time specified. In addition, the County may assess Liquidated Damages in the amount of \$60.00 per business day for Glass Beads rejected by the County which will be calculated from the original due date of the order until the County's receipt and acceptance of a new Glass Beads order, provided the Contractor is notified of the rejection by facsimile transmission within 24 hours of delivery. Glass Beads determined by the County to be defective at a later date, must be replaced by the Contractor within 10 business days of notification. Liquidated Damages will continue until such time as the Glass Beads are received and rejected Glass Beads have been replaced with Glass Beads that are acceptable to the County. County holidays will be excluded from the computations for the assessment of Liquidated Damages.