ADDENDUM #2 – March 24, 2017

WEST VIRGINIA PARKWAYS AUTHORITY

PLANS, SPECIFICATIONS, AND CONTRACT DOCUMENTS
FOR

CONTRACT NO: BDO-1-17
Protective Bridge Deck Overlay

Replace the following documents with the attached:

SPECIFICATIONS

Sheet 49: Revised paragraph one to remove “salt resistant” and replace “multi-layer” with “single layer”.
Sheet 49: Revised item 1 to replace “multiple layers” with “single layer”.
Sheet 49: Revised 2.2.1 to replace "Table 2" to "Table 1".
Sheet 50: Revised 2.3.1 to remove "for all layers".
Sheet 50: Revised 2.3.3 to replace "Table 3" with "Table 2".
Sheet 52: Revised 4.2.3
Sheet 52: Revised 4.2.4 Title

WEST VIRGINIA PARKWAYS AUTHORITY

Gregory C. Barr
General Manager
The West Virginia Parkways Authority, hereafter “Authority”, is accepting bids for “Protective Bridge Deck Overlay” for the following bridge: 3067N (Mile 74.3). The purpose of the “PROTECTIVE BRIDGE DECK OVERLAY” is to provide a single-layer non-skid surface to withstand continuous heavy traffic and extreme changes in weather conditions.

Operation Bases: Contract BDO-1-17’s operation base will be provided at the below listed Authority Maintenance Area for the Contractor to store materials, equipment and vehicles not in use, park employee’s vehicles and establish a base for employees to report to work. Specific locations inside the fenced areas will be designated by Maintenance supervisors.

- Standard Maintenance Area: Can be accessed via the Turnpike’s Standard I/C near Mile 74 and Paint Creek road.
- Reed Maintenance Area: Can be accessed via Piedmont Road at Reed.

1. Scope of Work

This specification describes the Overlay consisting of a single layer of an approved system and a special blend of extremely hard aggregate designed to provide a non-skid surface to withstand continuous heavy traffic and extreme changes in weather conditions.

2. Specifications

The governing specifications for the protective bridge deck overlay are as follows:

MATERIALS

Overlay

2.1 The two-part overlay system shall be a two component epoxy or epoxy derived co-polymer system. The system shall be free of any fillers, volatile solvents and shall be formulated to provide a simple volumetric mixing ratio such as one or two to one by volume.

The overlay system shall be formulated to provide flexibility in the system without any sacrifice of the hardness, chemical resistance or strength of the overlay system. Uses of external/conventional flexibilizers are not acceptable. Flexibility shall be introduced by interaction of elastomers to chemically link in the process of curing so that the flexibility of the molecule is least affected during the low temperature conditions that are confronted in actual use.

2.2 Material Requirements

2.2.1 Physical requirements of Overlay System. When applied as the manufacturer’s recommendations, the cured resin shall conform to the requirements of Table 1. (Test methods are discussed in detail in Item 3 of this specification.)

<table>
<thead>
<tr>
<th>TABLE 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHYSICAL PROPERTIES OF THE CURED SYSTEM</td>
</tr>
<tr>
<td>Property</td>
</tr>
<tr>
<td>Compressive Strength, min. psi</td>
</tr>
<tr>
<td>Tensile Strength, min. psi</td>
</tr>
</tbody>
</table>

Addendum 2
### Table 2

<table>
<thead>
<tr>
<th>AGGREGATE GRADATION</th>
<th>Percent Passing</th>
</tr>
</thead>
<tbody>
<tr>
<td>No 6</td>
<td>60 - 100</td>
</tr>
<tr>
<td>No. 10</td>
<td>0 - 40</td>
</tr>
<tr>
<td>No. 20</td>
<td>0 - 10</td>
</tr>
</tbody>
</table>

#### 2.2.2 Load Bearing Capabilities

The cured overlay system must exhibit the following load bearing capacity. At approximately 20% strain, the polymer shall retain at least 85% of its original load bearing strength (tensile stress) as per ASTM D-638.

#### 3. METHOD OF TESTING

3.1 Tests shall be conducted in accordance with the following methods:

3.1.1 Compressive Strength: ASTM C109, *Compressive Strength of Hydraulic Cement Mortars*. The material is to be applied as the manufacturer’s recommendations. Two volumes of graded silica sand in accordance with ASTM C778 shall be added to one volume of mixed resin. The samples shall then be prepared according to the requirements of ASTM C109 and allowed to cure for 7 days at 23 ± 2°C.

3.1.2 Tensile Strength and Elongation: ASTM D638, *Tensile Properties of Plastics*, Specimen Type I or Type II. Samples shall be cured at 23 ± 2°C (73.4 ± 3.6°F) and 50 ± 5% relative humidity. Speed of testing shall be at 0.5 in./min.
the moisture content in concrete substrate shall not exceed 4.5% when measured by an electronic moisture meter. Any exception shall be determined by the moisture content present in the deck which shall not exceed 75% of air entrainment in the mix design.

4.1.7 The recommended temperature in which the system shall be applied is 50°F to 105°F. All applications at temperatures outside this range shall require prior written approval from manufacturer.

4.2 Application of Overlay System

4.2.1 The manufacturer shall have a representative on the jobsite for the first full application to ensure proper mixing and application. One full application is defined as a finished product consisting of surface prep through swept and cleaned layer. The manufacturer’s representative must be employed by the resin manufacturer. Upon consultation with the engineer, he may suspend any item of work that is suspect and does not meet the requirements of this specification. Resumption of work will occur only after the manufacturer’s representative and the engineer are satisfied that appropriate remedial action has been taken by the contractor.

4.2.2 The overlay shall be applied on all deck areas using metering, mixing and distribution machinery owned and operated by the manufacturer of the epoxy-urethane overlay system. The application machine shall feature positive displacement volumetric metering pumps controlled by a hydraulic power unit. Components A and B shall be stored in temperature controlled reservoirs capable of maintaining 100°F ± 10°F to insure optimum mixing. Ratio check verification at the pump outlets as well as cycle counting capabilities to monitor output will be standard features. In line mixing shall be motionless so as to not overly shear the material or entrap air in the mix. The machine shall also make maximum use of the working time of the material to insure proper “wetting” of the system by mixing it immediately prior to dispensing onto the deck.

4.2.3 The thickness of the layer and the application rates of the liquid in the layer shall be as recommended by the manufacturer in order to achieve a uniform overlay thickness. The liquid layer shall have a minimum thickness of 50 mils.

4.2.4 Overlay (Single Layer)

Prior to application, all deck drainage scuppers and expansion joints will be covered to prevent any liquids or aggregate from accumulating in them. Special care shall be taken near these joints to ensure the joint material is not compromised and that no sealant and/or aggregate are applied to the joints. If any material accumulates in scuppers or joints it shall be cleaned/removed to the satisfaction of the engineer.

Mixing time of components shall be per manufacturer’s recommendations. After mixing of the components via mechanical application equipment, the liquid shall be evenly distributed on the clean, dry deck surface at the rate recommended by the manufacturer.

4.2.5 After the application of the liquid, the maximum time allowed before broadcasting by truck mounted equipment of the aggregate is as follows:

<table>
<thead>
<tr>
<th>Temperature Range</th>
<th>Time Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Above 90°F</td>
<td>Approximately 10 minutes</td>
</tr>
<tr>
<td>80°F to 90°F</td>
<td>Approximately 15 minutes</td>
</tr>
<tr>
<td>70°F to 80°F</td>
<td>Approximately 20 minutes</td>
</tr>
<tr>
<td>60°F to 70°F</td>
<td>Approximately 25 minutes</td>
</tr>
<tr>
<td>50°F to 60°F</td>
<td>Approximately 35 minutes</td>
</tr>
</tbody>
</table>

4.2.6 No vehicle or equipment shall be allowed on the overlay during the curing period.