ITEM 641.510XYZ16 - MAINTENANCE CLEANING AND WASHING OF BRIDGES

DESCRIPTION

1.01 General. This work shall consist of cleaning bridges by removing and disposing of trash and debris from the bridge, washing the deck, exposed concrete, asphalt, and steel bridge surfaces, and cleaning the drainage system and other drainage ways in accordance with the Contract Documents and as directed by the Engineer.

1.02 Scope. The cleaning and washing of bridges is divided into pay items based on the bridge length, type of washing to be done on steel, if any, and the type of washing to be done on concrete.

1.03 Definitions.

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loose Paint Chips</td>
<td>Paint chips that are no longer adhered to bridge surface.</td>
</tr>
<tr>
<td>Flaking Paint Chips</td>
<td>Paint chips that are still partially adhered to bridge surface.</td>
</tr>
<tr>
<td>Patina</td>
<td>Iron oxide coating that forms on weathering steel over time under proper environmental conditions. Dark chocolate or purple when properly formed with a tightly adhered texture. Capable of withstanding hammering or vigorous wire brushing.</td>
</tr>
<tr>
<td>Loose Flakes</td>
<td>Coarse flakes of rust that do not tightly adhere to the weathering steel surface. Easily dislodged by a wire brushing. Early indication of a non-forming patina.</td>
</tr>
<tr>
<td>Delaminations</td>
<td>Larger sheets of rust that are separating from the weathering steel base metal. More severe indication of a non-forming patina.</td>
</tr>
<tr>
<td>Trash and Debris</td>
<td>Including, but not limited to, sand, soil, cinders, silt, dirt, mud, salt, glass, paper, rubber, metal, wood, loose paint chips, and loose pieces of concrete and asphalt and rock or stones.</td>
</tr>
<tr>
<td>Protected Migratory Birds</td>
<td>Includes all waterfowl, herons, hawks, owls, eagles, and songbirds. Excludes rock doves (pigeons), house sparrows, European starlings, and monk parakeets.</td>
</tr>
<tr>
<td>Migratory Bird Treaty Act</td>
<td>Federal law that protects migratory birds and their nests, eggs, and feathers. Conviction of violating the act can result in a fine of $15,000, imprisonment for six months, or both.</td>
</tr>
</tbody>
</table>

MATERIALS

Water for pressure washing shall be clean, fresh water. Detergents or other agents shall not be used.
CONSTRUCTION DETAILS

3.01 General. Prior to commencing work, the Contractor shall provide the Engineer with a bridge by bridge schedule of the work in accordance with §108-01 and a work plan including work zone traffic control procedures, equipment proposed for use, identification of water source(s) that will be used, and identification of the disposal facility(s) that will be used.

All structures or bridge drainage systems over water courses shall be washed during the periods indicated in the contract documents. The following shall apply:

- Washing shall occur only when adequate flow in the stream exists to dilute possible contaminants.
- Operations shall be sequenced to clean structures over small bodies of water or small streams in the spring of the year when flows are greatest.
- Bridges over trout spawning streams, categorized by DEC as Ct or Ct(s), or located at DEC yearling trout stocking sites shall be washed during time periods acceptable to the appropriate regional DEC office.
- Washing, whether during a scheduled period or not, shall be stopped if stream flow drops below normal.

Washing shall be performed when ambient temperatures are 40 °F or higher, and when ambient temperatures are forecasted to be 40 °F or higher until the bridge dries.

Unless otherwise indicated below, all bridge surfaces shall be cleaned, including but not limited to bridge decks, sidewalks, curbs, approach slabs and shoulders, wing walls, backwalls, bridge seats, railings, parapets, bridge bearings, piers and pier caps, columns, drainage features, structural steel, light standards, signs, concrete paving block, concrete beams and other surfaces.

Limited paved drainage ways and gutters off-structure shall be cleaned of debris that, if permitted to remain, would direct runoff back onto the structure or into its drainage ways including those that may exist underneath the structure. The extent of such removal shall be less than 100 feet but it is intended that they be only the minimum necessary to ensure that runoff is not directed back onto the structure being cleaned or its drainage ways.

Block paving and paved surfaces other than asphalt paving between adjacent or parallel bridges shall be cleaned. Such cleaning shall be limited to narrow areas less than 25 feet in width.

3.02 Environmental Protection.

3.02 A. Waste. All sand, dirt, cinders, and other trash and debris collected from the bridge shall be disposed of at a suitable off-site disposal facility in accordance with the provisions of §107-10 Managing Surplus Material & Waste.

3.02 B. Water. The Contractor shall either withdraw water from local on-site sources or use water from a municipal source for bridge washing. If water is to be drawn from a local on-site water
source, to protect aquatic life, there may not be any loss of water elevation at the site of withdrawal or immediately downstream of the site. Water withdrawal shall be accomplished with use of an inlet screen, with a screen size not to exceed ¼” square. To prevent the unintentional spread of invasive species, wash water withdrawn from a local on-site water source may not be transported to be used at another bridge site in a different watershed. If water is withdrawn from an onsite source, cleaning and sanitizing of equipment shall be conducted prior to leaving that watershed. All small equipment (pumps, hoses, barriers, floating booms, shovels, rakes, jumping jacks, plate tampers, boots, buckets, industrial vacuums, etc.) and large equipment (backhoes, excavators, trucks, tankers, rollers, trailers, etc.) that comes into direct contact with water withdrawn from a local on-site water source must be cleaned (internally and externally) by soaking, dipping in, or scrubbing with a chlorine solution, and/or hot water or steam cleaned and allowed to dry before the next use. The Contractor shall discharge wash water near an original body of water in accordance with the provisions of §107-12 Water Quality Protection. Otherwise, wash water will be collected in suitable containers and disinfected prior to final disposal.

3.02 C. Birds and Bats. All nests of protected migratory birds on bridges are presumed to be active and occupied between April 15 and August 15. The areas within 3 feet laterally of the nest shall not be cleaned or washed; washing shall start at the 3 feet line and progress away from the nest.

Before April 15 and after August 15, nests of protected migratory birds on bridges will most likely be inactive and unoccupied. If confirmed to be unoccupied, the nests shall be removed as part of the cleaning operation.

The areas within 3 feet laterally of a bat nest shall not be cleaned or washed; washing shall start at the 3 feet line and progress away from the nest.

Nests of unprotected species shall be removed as part of the cleaning operations. Pigeons should be treated as humanely as possible. In socially and environmentally sensitive situations removal of young from the nest for raising by a wildlife rehabilitator should be considered.

3.03 Preparation. Prior to any other cleaning work, the Contractor shall inspect and confirm that the bridge drainage system is not blocked by unremovable debris by rodding with a sewer rod or similar tool. A blocked drainage system is one from which debris cannot be removed using the means specified in Section 3.05 below. If the drainage system is blocked prior to performing other cleaning work, then clearing, dismantling and reinstallation of the drainage system will be extra work. If the Contractor does not inspect the bridge drainage system and notify the Engineer prior to beginning work, any blocked drains will be considered the result of the Contractor’s operations, and all clearing and cleaning of the drainage system shall be performed as part of the work.

3.04 Cleaning. All loose trash and debris shall be collected by sweeping, shoveling, vacuuming and other suitable methods. Equipment for collecting trash and other debris from bridge decks shall be determined by the Contractor, subject to the approval of the Engineer, and will normally consist of, but not be limited to, industrial vacuums, brushes, brooms, and shovels. Plastic shovels shall be used if other shovels would damage coated surfaces. The contractor shall not cause or allow trash and/or debris from the bridge to be deposited into a wetland, stream, other water body,
bridge drainage system, or active traffic lanes during the cleaning of the bridge.

After cleaning of the scuppers, downspouts, and troughs has been completed and the system allows the unimpeded flow of water, the cleaned system will be inspected by the Engineer. If flow is still impeded because of the presence of dirt or other removable matter or objects in the system, the Contractor shall reclean the system, including dismantling and reinstallation, at no additional cost to the State.

3.05 Washing. When trash and debris collection from the bridge is complete, the Contractor shall wash all bridge surfaces, including the underside of the bridge, with clean, fresh water. The washing shall remove all visible dirt, salt, animal waste, human waste, and similar debris.

If the required water pressure and flow rate damages the paint or other coatings on the bridge or undercuts the grout or harms the masonry plates beneath the bearings, then the Contractor shall reduce either or both to a level that stops the damage. When washing stream and wetland bridges, the flow rate of the water used shall be the minimum necessary to properly clean the surfaces.

Any dislodged material resting on the top of girder flanges shall be washed off. Flakes and delaminations shall be washed off metal surfaces.

Scuppers, troughs, and downspouts to the first cleanout above ground level or to their outlet if above ground shall be cleaned by using high pressure water, vacuum, or other techniques that produce satisfactory results. Debris from the cleaning operations shall not be deposited in, or around the structure, highway roadway slopes, drainage systems or streams. It shall be disposed of at a suitable off-site disposal facility.

When concrete paving block is cleaned and washed, the removal of weeds between the blocks will not be required under this item.

Work shall be conducted in such a manner so as not to damage or remove existing epoxy protective coatings or any other protective coating on the bridge.

The cleaned bridge surfaces shall be free of trash and debris and the drainage system free running except those systems that were damaged prior to any cleaning work on the bridge.

Drainage of wash water shall be controlled to avoid causing a hazard to traffic or causing erosion of adjacent ground or drainage ways. Under no circumstances shall wash water be discharged directly into active traffic lanes.

3.05 A. Power Washing. The Contractor shall power wash using a centrifugal water pump or comparable pump capable of delivering 100 gallons per minute (minimum) unrestrained flow coupled to a 1 1/2” hose. The angle to the surface being washed should be no more than 30 degrees and the distance from the surface should be no more than 15 feet.

On painted steel bridges with intact paint, the Contractor may substitute Pressure Washing for Power Washing when the concrete elements of the structure are being cleaned with Pressure
Washing.

3.05 B. Pressure Washing. The Contractor shall pressure wash all concrete surfaces of the structure using water pressure between 1,750 psi and 2,000 psi at a minimum flow rate of 3.5 gallons per minute. The pressure washing is intended to clean the surface and not to remove concrete or paint. The wand shall be held no further than 24 inches from the surface. While cleaning, the wand shall be within 45 degrees from perpendicular to the surface being cleaned, both vertically and horizontally. Greater wand angles are permitted for flushing debris from horizontal surfaces.

3.05 C. High Pressure Washing. The Contractor shall high pressure wash using water pressure of between 4,750 psi and 5,000 psi at a minimum flow rate of 5 gallons per minute. The wand shall be held between 6 inches and 12 inches from the surface. While cleaning, the wand shall be within 30 degrees from perpendicular to the surface being cleaned, both vertically and horizontally. Greater wand angles are permitted for flushing debris from horizontal surfaces.

METHOD OF MEASUREMENT

The quantity to be measured for payment will be on an each bridge basis.

BASIS OF PAYMENT

The unit price bid shall include the cost of all labor, materials, and equipment necessary to satisfactorily complete work including the cost of cleaning the drainage system; collecting, removing and disposing of trash and debris including that off structure but necessary to prevent backup of runoff onto the structure or its drainage ways, and repair of any damage caused by the Contractor.

Payment will be made under:

<table>
<thead>
<tr>
<th>Item No.</th>
<th>Item Pay Unit</th>
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<tbody>
<tr>
<td>641.510xyz16 Maintenance Cleaning and Washing of Bridges</td>
<td>Each</td>
</tr>
</tbody>
</table>

Note: xyz denotes a serialized pay item.

<table>
<thead>
<tr>
<th>x</th>
<th>Concrete Wash</th>
<th>y</th>
<th>z</th>
<th>Steel Wash</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>No Wash</td>
<td>0</td>
<td>0</td>
<td>No Wash</td>
</tr>
<tr>
<td>2</td>
<td>Power Wash</td>
<td>1</td>
<td>1</td>
<td>Power Wash</td>
</tr>
<tr>
<td>3</td>
<td>Pressure Wash</td>
<td>2</td>
<td>3</td>
<td>High Pressure Wash</td>
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