

JANUARY 29, 2013
BEAM END PAINTING AND BEARING REPLACEMENT DISTRICT 2
FEDERAL AID PROJECT NO. N/A
STATE PROJECT NO. 172-405
TOWNS OF ESSEX, DEEP RIVER, CHESTER, AND HADDAM

ADDENDUM NO. 1

SPECIAL PROVISIONS

NEW SPECIAL PROVISIONS

The following Special Provisions are hereby added to the contract:

- NOTICE TO CONTRACTOR – SEQUENCE OF BRIDGE WORK

The existing Special Provision entitled ITEM NO. 0603062A - STRUCTURAL STEEL (SITE NO.2) through ITEM NO. 0603931A - STRUCTURAL STEEL (SITE NO. 11) is hereby revised to include the addition of:

- ITEM NO. 0603061A-STRUCTURAL STEEL (SITE NO. 1)
- ITEM NO. 0603063A-STRUCTURAL STEEL (SITE NO. 3)
- ITEM NO. 0603907A-STRUCTURAL STEEL (SITE NO. 7)

REVISED SPECIAL PROVISIONS

The following Special Provisions are hereby deleted in their entirety and replaced with the attached like-named Special Provisions:

- ITEM NO. 0603062A - STRUCTURAL STEEL (SITE NO.2)
- ITEM NO. 0603065A - STRUCTURAL STEEL (SITE NO. 5)
- ITEM NO. 0603906A - STRUCTURAL STEEL (SITE NO. 6)
- ITEM NO. 0603908A - STRUCTURAL STEEL (SITE NO. 8)
- ITEM NO. 0603930A - STRUCTURAL STEEL (SITE NO. 10)
- ITEM NO. 0603931A - STRUCTURAL STEEL (SITE NO. 11)

- ITEM NO. 0603768A - STRUCTURAL STEEL

- ITEM NO. 0603591A - STRUCTURAL STEEL – MISCELLANEOUS

- ITEM NO. 0603661A- LOCALIZED PAINT REMOVAL AND FIELD PAINTING OF EXISTING STEEL (SITE NO. 1)
- ITEM NO. 0603662A- LOCALIZED PAINT REMOVAL AND FIELD PAINTING OF EXISTING STEEL (SITE NO. 2)
- ITEM NO. 0603663A- LOCALIZED PAINT REMOVAL AND FIELD PAINTING OF EXISTING STEEL (SITE NO. 3)
- ITEM NO. 0603664A- LOCALIZED PAINT REMOVAL AND FIELD PAINTING OF EXISTING STEEL (SITE NO. 4)
- ITEM NO. 0603667A- LOCALIZED PAINT REMOVAL AND FIELD PAINTING OF EXISTING STEEL (SITE NO. 7)

- ITEM NO. 0603668A- LOCALIZED PAINT REMOVAL AND FIELD PAINTING OF EXISTING STEEL (SITE NO. 8)
- ITEM NO. 0603669A- LOCALIZED PAINT REMOVAL AND FIELD PAINTING OF EXISTING STEEL (SITE NO. 9)
- ITEM NO. 0603670A- LOCALIZED PAINT REMOVAL AND FIELD PAINTING OF EXISTING STEEL (SITE NO. 10)
- ITEM NO. 0603671A- LOCALIZED PAINT REMOVAL AND FIELD PAINTING OF EXISTING STEEL (SITE NO. 11)
- ITEM NO. 0603672A- LOCALIZED PAINT REMOVAL AND FIELD PAINTING OF EXISTING STEEL (SITE NO. 12)
- ITEM NO. 0603673A- LOCALIZED PAINT REMOVAL AND FIELD PAINTING OF EXISTING STEEL (SITE NO. 13)

- ITEM NO. 0603729A – LOCALIZED PAINT REMOVAL AND FIELD PAINTING OF EXISTING STEEL

- ITEM NO. 0603935A – ABRASIVE BLAST CLEANING AND FIELD PAINTING OF STRUCTURE (SITE NO. 5)
- ITEM NO. 0603936A – ABRASIVE BLAST CLEANING AND FIELD PAINTING OF STRUCTURE (SITE NO. 6)

CONTRACT ITEMS

NEW CONTRACT ITEMS

| <u>ITEM NO.</u> | <u>DESCRIPTION</u> | <u>UNIT</u> | <u>QUANTITY</u> |
|-----------------|-------------------------------|-------------|-----------------|
| 0603061A | STRUCTURAL STEEL (SITE NO. 1) | L. S. | 1.0 |
| 0603063A | STRUCTURAL STEEL (SITE NO. 3) | L. S. | 1.0 |
| 0603907A | STRUCTURAL STEEL (SITE NO. 7) | L. S. | 1.0 |

REVISED CONTRACT ITEMS

| <u>ITEM NO.</u> | <u>DESCRIPTION</u> | <u>ORIGINAL QUANTITY</u> | <u>REVISED QUANTITY</u> |
|-----------------|----------------------------------|--------------------------|-------------------------|
| 0522178A | CONSTRUCT CONCRETE KEEPER BLOCKS | 10 | 21 |
| 0603591A | STRUCTURAL STEEL-MISCELLANEOUS | 23 CWT | 112 CWT |
| 0603768A | STRUCTURAL STEEL | 6246 LB | 4562 LB |

PLANS

NEW PLANS

The following Plan Sheets are hereby added to the Contract:

04.11-1.A1, 04.11-2.A1, 04.11-3.A1, 04.40-1.A1, 04.40-2.A1, 04.61-1.A1, 04.61-2.A1, 04.61-3.A1

REVISED PLANS

The following Plan Sheets are hereby deleted and replaced with the like-numbered Plan Sheets:

- 02.01.A1, 04.03.A1, 04.04.A1, 04.10.A1, 04.15.A1, 04.16.A1, 04.17.A1, 04.18.A1, 04.19.A1, 04.20.A1, 04.22.A1, 04.23.A1, 04.24.A1, 04.25.A1, 04.34.A1, 04.35.A1, 04.36.A1, 04.37.A1, 04.38.A1, 04.39.A1, 04.41.A1, 04.50.A1, 04.51.A1, 04.52.A1, 04.53.A1, 04.54.A1, 04.55.A1

QUESTIONS & ANSWERS

Q1. Contract plan Structural Steel specifications note the scope of work covered by each item. Contract plan notes conflict with scope limits listed in item specs, and result in discrepancies in per unit quantities. The (L.S.) Site steel item spec. scope includes beam end web repairs replacement of crossframe members, & replacement of fixed bearings. Item 603768A - Struct. Steel (LB) scope includes repair of deteriorated webs, flanges, & stiffeners. Item 603591 - Struct. Steel – Misc. (CWT) scope per spec. is general, and not specifically defined. Please review & define item scopes for the following;

A1. The special provision entitled ITEM NO. 0603061A - STRUCTURAL STEEL (SITE NO.1) through ITEM NO. 0603931A - STRUCTURAL STEEL (SITE NO. 11) shall be used for the following types of work:

- Steel plates, angles and channels for the purpose of strengthening web ends beyond the bearing stiffeners as shown in sheet 04.46.
- Replacement of cross frame members.
- Proposed fixed bearings.
- Stiffeners and bracing member required for the installation of concrete keeper block with steel plate and weldment.

The special provision entitled “ITEM NO. 0603768A - STRUCTURAL STEEL” shall be used for the following types of work:

- Web, bottom flange and stiffener repair locations where the Engineer shall determine the length and width of the new plates. The value shown in the detailed estimate sheet reflects an estimated quantity based on the latest bridge safety report, however the exact quantity will not be known until the paint is removed and the Engineer inspects the deterioration.

The special provision entitled “ITEM NO. 0603591A – STRUCTURAL STEEL – MISCELLANEOUS” shall be used for the following types of work:

- Steel for this item shall be galvanized.
- Weep pipe connection angle and plate details shown on sheet 04.91. The locations requiring weep pipe extensions in accordance with the details shown on 04.91 are shown on the framing plans.
- Keeper assemblies shown on sheets 04.10 and 04.61
- Steel plates and pipes excluding stiffeners and bracing members required for the installation of concrete keeper block with steel plate and weldment.

Q2. Br. 03342 0 Site 2:

Notes on plan shts. S17 & S18 state that payment for replacement of crossframe bottom chord beams & conn. Plates is included in the item “Structural Steel (LB)”. The (L.S.) Site 2 item spec. state that these member replacements are under the (L.S.) item scope. On the other hand, if crossframe members are not included in the PER LB Steel item, then the estimated quantity is substantially under the State estimate. Please clarify pay item scopes.

A2. Plan Sheet No. 04.16, 04.17, 04.18, 04.19, 04.20, 04.22, 04.23, 04.24, and 04.25 are hereby revised in this addendum to clarify how structural steel shall be paid.

Q3. Notes on plan shts. S17 & S18 state that payment for new web & stiffener repair plates is under the item “Structural Steel (LB)”. Notes on plan shts. S21 & S23 also state the same. The Site 2 (L.S.) item spec. scope includes strengthening of ends of beam webs. Please confirm that these repairs are to be paid for under item “Structural Steel (LB), & not the Site 2 (L.S.) item.

Similar scope issues exist at all other Sites with (L.S.) Steel pay item – please define item scopes.

A3. The strengthening of beam ends stated within the special provision entitled ITEM NO. 0603061A - STRUCTURAL STEEL (SITE NO. 1) through ITEM NO. 0603931A - STRUCTURAL STEEL (SITE NO. 11) refers to the work required beyond the bearing stiffener shown in Sheet No. 04.46.

Web and stiffener repair shown on Plan Sheet Nos. 04.18, 04.19, 04.22 and 04.24 are included for payment under the “ITEM NO. 0603768A - STRUCTURAL STEEL”.

Q4. Various bridge – Item 603591 – Struct. Steel – Misc; Sites 1, 5, 6, & 9
For the above sites, contract plan details do not identify any work under this item. Are the quantities listed on estimate sheets budgeted quantities, or is there specific work associated with this item? The only sites which specifically identify work under this item are Sites 2, 7, & 8.

A4. The special provision entitled “ITEM NO. 0603591A – STRUCTURAL STEEL – MISCELLANEOUS” shall be used for the following types of work:

- Steel for this item shall be galvanized.
- Weep pipe connection angle and plate details shown on sheet 04.91. The locations requiring weep pipe extensions in accordance with the details shown on 04.91 are shown on the framing plans.
- Keeper assemblies shown on sheets 04.10 and 04.61
- Steel plates and pipes excluding stiffeners and bracing members required for the installation of concrete keeper block with steel plate and weldment.

Q5. Br. 03342 – Site 2:

Contract plan S-14 – note 6 states that new fixed bearing shall be shop painted. New fixed bearings are also req'd. at Sites 5, 10 & 11. Notes at these locs. Do not require shop painting of bearings, but note that they are to be painted under the applicable Site Localized field painting item. Please confirm shop coating requirements for all new fixed bearings.

A5. The special provisions entitled ITEM NO. 0603661A – LOCALIZED PAINT REMOVAL AND FIELD PAINTING OF EXISTING STEEL (SITE NO. 1) through ITEM NO. 0603673A – LOCALIZED PAINT REMOVAL AND FIELD PAINTING OF EXISTING STEEL (SITE NO. 13), ITEM NO. 0603729A – LOCALIZED PAINT REMOVAL AND FIELD PAINTING OF EXISTING STEEL, and ITEM NO. 0603935A – ABRASIVE BLAST CLEANING AND FIELD PAINTING OF STRUCTURE (SITE NO. 5) through ITEM NO. 0603936A – ABRASIVE BLAST CLEANING AND FIELD PAINTING OF STRUCTURE (SITE NO. 6) have been modified in this addendum to state, “The new steel shall be furnished either coated or uncoated, unless otherwise specified on the plans”.

Q6. Br. 03415 – Site 5:

Contract plan S-40 – note 6 mentions a bronze plate and masonry plate. Please confirm that all new fixed bearing components are steel only, conforming to AASHTO M270, Gr. 50T2.

A6. Note #6 on Sheet No. 04.41 is hereby revised in this addendum.

Q7. All structural steel item specs. Exclude any requirements for shop cleaning or coating of new structural steel. Contract plan notes also do not list any of the same requirements. Please confirm that all new structural steel is to be furnished an unpainted/uncoated, and in mill finish condition.

A7. . The special provisions entitled ITEM NO. 0603661A – LOCALIZED PAINT REMOVAL AND FIELD PAINTING OF EXISTING STEEL (SITE NO. 1) through ITEM NO. 0603673A – LOCALIZED PAINT REMOVAL AND FIELD PAINTING OF EXISTING STEEL (SITE NO. 13), ITEM NO. 0603729A – LOCALIZED PAINT REMOVAL AND FIELD PAINTING OF EXISTING STEEL, and ITEM NO. 0603935A – ABRASIVE BLAST CLEANING AND FIELD PAINTING OF STRUCTURE (SITE NO. 5) through ITEM NO. 0603936A – ABRASIVE BLAST CLEANING AND FIELD PAINTING OF STRUCTURE (SITE NO. 6) have been modified in this addendum to state “The new steel shall be furnished either coated or uncoated, unless otherwise specified on the plans”.

Q8. Notes on the Drawing sheets 04.43- 04.45 state that “the contractor shall shift live load off the exterior beam to ensure that the exterior beam carries no live load”. What methods of shifting the live load are permitted?

A8. Temporary lane or shoulder closure to shift traffic off the exterior beam shall be in accordance with the Special Provisions entitled “ITEM NO. 0971001A – MAINTENANCE AND PROTECTION OF TRAFFIC”.

The Detailed Estimate Sheet does not reflect these changes.

The Bid Proposal Form has been revised to reflect these changes.

There will be no change in the number of calendar days due to this Addendum.

The foregoing is hereby made a part of the contract.

NOTICE TO CONTRACTOR – SEQUENCE OF BRIDGE WORK

Due to the extensive deterioration found in the beam ends of numerous exterior girders on Bridge Numbers 03415 and 03416, rough cut timber and steel shims were installed in front of the existing bearings to support the exterior girders.

The Contractor is directed to perform steel repairs on Bridge Numbers 03416 and 03415 in that order prior to performing work at all other locations.

The steel shims at Bridges 03415 and 03416 shall be salvaged by the Contractor and set aside in a secure location for Bridge Maintenance to pick up. The Contractor shall contact Mr. Paul Mozzicato at (860)-388-3366 to arrange a time that Bridge Maintenance can pick up the steel shims.

The cost to salvage and set aside the steel shims in a secure location shall be included in the general cost of work.

GENERAL

ITEM #0603061A-STURTURAL STEEL (SITE NO.1)

ITEM #0603062A-STRUCTURAL STEEL (SITE NO. 2)

ITEM #0603063A-STRUCTURAL STEEL (SITE NO.3)

ITEM #0603065A-STRUCTURAL STEEL (SITE NO. 5)

ITEM #0603907A-STRUCTURAL STEEL (SITE NO. 7)

ITEM #0603906A-STRUCTURAL STEEL (SITE NO. 6)

ITEM #0603908A-STRUCTURAL STEEL (SITE NO. 8)

ITEM #0603930A-STRUCTURAL STEEL (SITE NO. 10)

ITEM #0603931A-STRUCTURAL STEEL (SITE NO. 11)

Description: Work under this item shall consist of furnishing, fabricating, transporting, storing, handling and installing structural steel plates, angles, and channels for the purpose of strengthening ends of beam webs, replacing cross frame members and replacing fixed bearings as shown on the plans, as directed by the Engineer and in accordance with these specifications.

All work except as stated in the following paragraph shall conform to the requirements of the AASHTO LRFD Bridge Construction Specification and the ANSI/AASHTO/AWS D1.5-Bridge Welding Code.

Materials:

- 1.) The steel plates for this work shall conform to the requirements of AASHTO M270, Grade 50T2.
- 2.) The 1/8" Prefabricated pad shall be a 90 durometer elastomeric pad.
- 3.) Grease used for the mating surface of the fixed bearing web plate and the sole plate at site 2 shall be a lithium complex grease with 3% molybdenum disulfide and shall have extreme pressure and anti-corrosion additives meeting the requirements of astm d1743. To be included

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for payment under the item "Structural Steel (Site No. 2)."

Materials for this work shall be stored off the ground before, during, and after fabrication. The plates shall be kept free from dirt, grease and other contaminants and shall be reasonably protected from corrosion.

Construction Methods:

The work under this item shall conform to the requirements of Section 6.03.

With exception of abutting joints and base plates, machine-finished surfaces that are not to be painted shall be coated, as soon as practical after being accepted, with grease. The coating of grease shall be maintained until the bearing components are installed.

Method of Measurement: This work will be paid for at the contract lump sum price for "Structural Steel (Site No.)." No measurements will be made for payment.

Basis of Payment: This work will be paid for at the contract lump sum price for "Structural Steel (Site No.)," completed and accepted, which price shall include, furnishing, transporting, storing, erecting and installing the plates, angles, and channels, all welding and weld inspection, and all other materials, equipment, tools, labor and work incidental thereto.

| <u>Pay Item</u> | <u>Pay Unit</u> |
|-----------------|-----------------|
|-----------------|-----------------|

| | |
|-----------------------------|------|
| Structural Steel (Site No.) | l.s. |
|-----------------------------|------|

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ITEM #0603768A – STRUCTURAL STEEL

Description: Work under this item shall consist of furnishing, fabricating, transporting, storing, handling and installing structural steel plates and steel angles for the purpose of repairing deteriorated beam webs, flanges, and stiffeners of the type and size designated, as shown on the plans, as directed by the Engineer and in accordance with these specifications.

All work except as stated in the following paragraph shall conform to the requirements of the AASHTO LRFD Bridge Construction Specification and the ANSI/AASHTO/AWS D1.5-Bridge Welding Code.

Materials: The materials for this work shall conform to the requirements of AASHTO M270, Grade 50T2.

Materials for this work shall be stored off the ground before, during, and after fabrication. The plates shall be kept free from dirt, grease and other contaminants and shall be reasonably protected from corrosion.

Construction Methods:

The work under this item shall conform to the requirements of Section 6.03.

Method of Measurement: This work will be measured for payment at the contract unit price per pound of new steel complete and accepted in place.

The weight of the structural steel to be measured for payment under this item shall be computed on the basis of the net finished dimensions of the plates based on measurements taken by the Engineer, deducting for copes and cuts. The weight of weld metal and temporary erection bolts, boxes, crates, and other containers used for shipping, materials used for supporting members during transportation and erection, and weld metal shall not be measured for payment.

Basis of Payment: The structural steel, incorporated in the completed and accepted structure, will be paid for at the contract unit price per pound for "Structural Steel."

Payment shall be for structural steel, complete in place, which price shall include fabricating, furnishing, transporting, storing, erecting and installing the plates, all welding and weld inspection, and all other materials, equipment, tools, labor and work incidental thereto.

| <u>Pay Item</u> | <u>Pay Unit</u> |
|------------------|-----------------|
| Structural Steel | lb. |

ITEM #0603591A – STRUCTURAL STEEL - MISCELLANEOUS

Description: Work under this item shall consist of furnishing, fabricating, transporting, storing, handling and installing galvanized structural steel plates and shapes, as shown on the plans for weep pipe installations, keeper assemblies, and for the “Concrete Keeper Block With Steel Plate and Weldment” details, as directed by the Engineer and in accordance with these specifications.

The steel for stiffeners and bracing members shown in the “Concrete Keeper Block With Steel Plate and Weldment” details are not included under this item.

All work except as stated in the following paragraph shall conform to the requirements of the AASHTO LRFD Bridge Construction Specification and the ANSI/AASHTO/AWS D1.5-Bridge Welding Code.

Materials: The materials shall conform to the following requirements:

1. The materials for this work shall conform to the requirements of AASHTO M270, Grade 50T2, unless otherwise noted on the plans.
2. The pipes shall conform to the requirements of ASTM A53, Grade B.
3. The anchor bolts shall conform to ASTM F1554, Grade 55. The nuts shall be prevailing torque reusable type (with nylon insert) lock nuts and conform to ASTM A563, Grade DH. The washers shall conform to ASTM F436, Type 1 and shall be quenched and tempered.
4. The high strength bolts shall conform to ASTM A325, Type 1. The nuts shall conform to ASTM A563, Grade DH. The washers shall conform to ASTM F436, Type 1 and shall be quenched and tempered.
5. The steel shall be hot dip galvanized after fabrication in accordance with ASTM A123.
6. The anchor bolts, high strength bolts, nuts and washers shall be galvanized after fabrication in accordance with ASTM A153.

Materials for this work shall be stored off the ground before, during, and after fabrication. The assembled steel shall be kept free from dirt, grease and other contaminants and shall be reasonably protected from corrosion.

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Construction Methods:

The work under this item shall conform to the requirements of Section 6.03.

Method of Measurement: This work will be paid for at the contract unit price per CWT of new steel, complete and accepted in place.

The net weight (mass) of metal in the fabricated structure, shall be computed as described below.

The weight (mass) of the metal works to be paid for under the item of Structural Steel - Miscellaneous shall be computed on the basis of the net finished dimensions of the parts as shown on the contract plans, deducting for copes, cuts, clips and all open holes, except bolt holes, and on the following basis:

1. The weights (masses) of rolled shapes shall be computed on the basis of their nominal weights (masses) per foot (meter), as shown in the contract plans or listed in handbooks.

The weight (mass) of plates shall be computed on the basis of the nominal weight (mass) for their width and thickness as shown on the contract plans.

2. The weight (mass) of temporary erection bolts, shop and field paint, galvanization, boxes, crates and other containers used for shipping, and materials used for supporting members during transportation and erection, shall not be included.

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3. The weight (mass) of all high strength bolts, nuts, and washers shall be included on the basis of the following weights (masses):

| Weight per 100 | | | |
|---|---|---|--|
| Nominal diameter of H.S. bolt (inch) | Bolthead, nut, 1 washer and stickthrough (lbs) | Nominal diameter of H.S. bolt (mm) | Bolthead, nut, 1 washer and Stickthrough (kg) |
| 1/2 | 22 | 16 | 17 |
| 5/8 | 33 | 20 | 26 |
| 3/4 | 55 | 22 | 39 |
| 7/8 | 84 | 24 | 50 |
| 1 | 120 | 27 | 60 |
| 1 1/8 | 169 | 30 | 73 |
| 1 1/4 | 216 | 36 | 122 |

4. The weight (mass) of weld metal shall be computed on the basis of the theoretical volume from plan dimensions of the welds.

| Size of fillet in Inches (mm) | Weight of weld in pounds per foot (kg per meter) |
|--------------------------------------|---|
| 3/16 (5) | 0.08 (0.119) |
| 1/4 (6) | 0.14 (0.208) |
| 5/16 (8) | 0.22 (0.327) |
| 3/8 (9.5) | 0.30 (0.446) |
| 1/2 (13) | 0.55 (0.818) |
| 5/8 (16) | 0.80 (1.190) |
| 3/4 (19) | 1.10 (1.636) |
| 7/8 (22) | 1.50 (2.231) |
| 1 (25) | 2.00 (2.974) |

5. The weight (mass) of steel shims, filler plates and anchor bolts shall be measured for payment.

The weight of weld metal and temporary erection bolts, boxes, crates, and other containers used for shipping, materials used for supporting members during transportation and erection, and weld metal shall not be measured for payment.

Basis of Payment: This work will be paid for at the contract unit price per CWT for "Structural Steel - Miscellaneous", which price shall include the structural steel, complete in place, which price shall include furnishing, fabricating, transporting, storing, erecting, all welding and weld inspection, and all materials, equipment, tools, labor and work incidental thereto.

Pay Item
Structural Steel - Miscellaneous

Pay Unit
CWT

ITEM #0603591A

ITEM #0603661A – LOCALIZED PAINT REMOVAL AND FIELD PAINTING OF EXISTING STEEL (SITE NO. 1)

ITEM #0603662A – LOCALIZED PAINT REMOVAL AND FIELD PAINTING OF EXISTING STEEL (SITE NO. 2)

ITEM #0603663A-LOCALIZED PAINT REMOVAL AND FIELD PAINTING OF EXISTING STEEL (SITE NO. 3)

ITEM #0603664A-LOCALIZED PAINT REMOVAL AND FIELD PAINTING OF EXISTING STEEL (SITE NO. 4)

ITEM #0603667A-LOCALIZED PAINT REMOVAL AND FIELD PAINTING OF EXISTING STEEL (SITE NO. 7)

ITEM #0603668A-LOCALIZED PAINT REMOVAL AND FIELD PAINTING OF EXISTING STEEL (SITE NO. 8)

ITEM #0603669A-LOCALIZED PAINT REMOVAL AND FIELD PAINTING OF EXISTING STEEL (SITE NO. 9)

ITEM #0603670A-LOCALIZED PAINT REMOVAL AND FIELD PAINTING OF EXISTING STEEL (SITE NO. 10)

ITEM #0603671A-LOCALIZED PAINT REMOVAL AND FIELD PAINTING OF EXISTING STEEL (SITE NO. 11)

ITEM #0603672A-LOCALIZED PAINT REMOVAL AND FIELD PAINTING OF EXISTING STEEL (SITE NO. 12)

ITEM #0603673A-LOCALIZED PAINT REMOVAL AND FIELD PAINTING OF EXISTING STEEL (SITE NO. 13)

Description: Work under this item shall consist of paint removal and field painting of the existing steel and new steel at designated areas. The work shall include containments, paint removal, collection and disposal of paint and associated debris, surface preparation and field

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painting. Designated areas include: areas specifically designated on the plans and those areas where construction activities required the removal of the existing coatings to accomplish other contract work (i.e., arc gouging, welding, etc.). The paint removal is required because of the possible presence of hazardous paint (e.g., containing lead or other hazardous metals). The paint removal is required to comply with OSHA, EPA and DEEP regulations.

The Engineer previously tested representative painted steel surfaces on the bridges and identified the paint to be lead-containing. A summation of the analytical data is included herein. Refer also to Item 0020903A – Lead Compliance for Miscellaneous Exterior Tasks.

| | |
|----------------------------|-----------------------------------|
| Site No. 1 – Bridge 03341 | 1.5-28.9 mg/cm ² Lead |
| Site No. 2 – Bridge 03342 | 12.4-20.7 mg/cm ² Lead |
| Site No. 3 – Bridge 03343 | 0.1-32.6 mg/cm ² Lead |
| Site No. 4 – Bridge 03417 | 9.1-24.5 mg/cm ² Lead |
| Site No. 7 – Bridge 03445 | 0.6-12.9 mg/cm ² Lead |
| Site No. 8 – Bridge 03446 | 3.3-25.5 mg/cm ² Lead |
| Site No. 9 – Bridge 03439 | 2.6-25.3 mg/cm ² Lead |
| Site No. 10 – Bridge 03284 | 16.7-21.5 mg/cm ² Lead |
| Site No. 11 – Bridge 03285 | 7.5-41.3 mg/cm ² Lead |
| Site No. 12 – Bridge 03287 | 14.5-21.6 mg/cm ² Lead |
| Site No. 13 – Bridge 03288 | 13.6-26.3 mg/cm ² Lead |

Privately-owned utilities, bridge rails, stay-in-place forms, fences, elastomeric bearing pads and bronze components shall be protected from damage by surface preparation and painting operations and are not to be painted.

Contractor - Subcontractor Qualifications: Contractors and subcontractors doing this work are required to be certified by the SSPC Painting Contractor Certification Program (PCCP) to QP-1 entitled “Standard Procedure for Evaluating Qualifications of Painting Contractors: Field Application to Complex Structures”. When the work involves the disturbance of lead-containing paint, the contractor and subcontractor are also required to be certified to SSPC QP-2 “Standard Procedure for Evaluating the Qualifications of Painting Contractors to Remove Hazardous Paint”. The certification(s) must be kept current for the duration of the work. If a contractor’s or subcontractor’s certification expires, the firm will not be allowed to do any work related to this item until the certification is reissued. Requests for extension of time for delay to the completion of the project due to an inactive certification will not be considered and liquidated damages will apply. In addition, if any recoat times are exceeded, the affected areas shall be cleaned to SSPC-SP 11 and coatings reapplied in accordance with these specifications at no additional cost to the State.

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 #0603673A

Submittals: A minimum of 20 calendar days before starting any paint removal, surface preparation and coating application work, the contractor shall submit the following to the Engineer for acceptance:

- A copy of the firm's written Quality Control Program used to control the quality of surface preparation and coating application including ambient conditions, surface cleanliness and profile, coating mixing, dry film thickness, final film continuity, etc.
- A copy of the firm's written surface preparation and application procedures. This written program must contain a description of the equipment that will be used for surface preparation, including the remediation of soluble salts, and for paint mixing and application. Coating repair procedures shall be included.
- A detailed description of the contractor's enforcement procedures and the authority of personnel.
- Containment plans (paint removal/collection of debris, surface preparation, coating applications, coating applications with heat, etc.).
- If the application of heat is proposed for coating application purposes, provide information on the heat containment and procedures that will be used, with data sheets for the equipment. **Note:** If heat is used for coating operations, the heat and containment must be maintained to provide the required temperatures for the duration of the **cure** period.
- Proof of SSPC-QP1 qualifications and QP2 qualifications, as applicable.
- Proof that the finish coat complies with the color and gloss retention performance criteria of SSPC Paint 36, Level 3, for accelerated weathering.
- Coating product information, including coating manufacturer, product name, application instructions, technical data, MSDS and color chips.

The Contractor shall not begin paint removal Work until the Engineer has accepted the submittals. The Contractor shall not construe Engineer acceptance of the submittals to imply approval of any particular method or sequence for conducting the Work, or for addressing health and safety concerns. Acceptance of the programs does not relieve the Contractor from the responsibility to conduct the Work in strict accordance with the requirements of Federal, State, or local regulations, this specification, or to adequately protect the health and safety of all workers involved in the project and any members of the public who may be affected by the project. The Contractor remains solely responsible for the adequacy and completeness of the programs and work practices, and adherence to them.

Materials: The paint shall be one of the following two coat systems:

Carbomastic 15

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Carbothane 134 HS, manufactured by: Carboline
2150 Schuetz Road
St. Louis, MO 63146
(800) 848-4645

Epoxy Mastic Aluminum II
Acrolon 218 HS, manufactured by: Sherwin Williams
425 Benton Street
Stratford, CT 06615
(203) 377-1711
(800) 474-3794

Carbomastic 90
Carbothane 134 HS, manufactured by: Carboline
2150 Schuetz Road
St. Louis, MO 63146
(800) 848-4645

Amerlock 2AL
Amercoat 450H, manufactured by: PPG Industries
1 PPG Place
Pittsburgh, PA 15272
(412) 434-3131

All materials for the complete coating system shall be furnished by the same coating material manufacturer with no subcontracted manufacturing allowed. Intermixing of materials within and between coating systems will not be permitted. Thinning of paint shall conform to the manufacturer's written recommendations. The coating thickness shall be in accordance with the Manufacturer's printed instructions. All components of the coating system and the mixed paint shall comply with the Emission Standards for Volatile Organic Compounds (VOC) stated in the Connecticut Department of Environmental Protection's Administration Regulation for the Abatement of Air Pollution, Section 22a-174-20(s).

Control of Materials: A Materials Certificate will be required for the selected paint system in accordance with Article 1.06.07, confirming the conformance of the paint to the requirements set forth in these specifications. The coating thickness shall be in accordance with the Manufacturer's printed instructions. The selected Topcoat shall conform (as close as possible) in color to the existing topcoat.

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Note: If any of the above and/or following stipulated contract specifications differ from those of the manufacturer's recommended procedures or ranges, the more restrictive of the requirements shall be adhered to unless directed by the Engineer in writing.

Construction Methods: All Contractor activities associated with the work described and specified herein shall be conducted in accordance with all applicable Federal, State of Connecticut and local safety regulations and guidelines.

Quality Control Inspections: The Contractor shall perform first line, in process Quality Control (QC) inspections. The Contractor shall implement a Quality Control Program accepted by the Engineer, including written daily reports, that ensures that the work accomplished complies with these specifications. All Quality Control Reports must be reviewed and signed by either a NACE Coating Inspector Level 2 - Certified (must have completed sessions I, II and III) or SSPC – BCI Level I Inspector (Minimum qualifications). Copies of these reports shall be provided daily to the Engineer. Contractor QC inspections shall include, but not be limited to the following:

- Suitability of protective coverings and containments
- Ambient conditions
- Surface preparation (solvent cleaning or hand/power tool cleaning)
- Coating application (mixing, thinning, and wet/dry film thickness)
- Recoat times and cleanliness between coats
- Coating continuity (freedom from runs, sags, pinholes, shadow-through, skips, misses, etc.)
- Final film acceptance

Limits of Paint Removal and Field Painting: Prior to applying the heat of welding/cutting equipment to localized areas of existing steel superstructures, the existing paint shall be removed to width of 6 inches from wherever the heat will be applied, or as directed by the Engineer. The locations of the paint removal and field painting shall be reviewed and accepted by the Engineer prior to commencement of the work. Such acceptance by the Engineer does not relieve the Contractor of his responsibility for complying with applicable OSHA, EPA and DEEP regulations.

Containment for Paint Removal and Collection of Debris: The containment(s) shall be designed and erected to contain, as well as facilitate the collection of debris from the paint removal operations. Drawings and details of the containment(s) shall be submitted to the Engineer for review and comments prior to any paint removal. Review of the containment by the Engineer shall in no way relieve the Contractor of his responsibility for the containment. The containment shall conform to the requirements found within the SSPC Guide 6. The class of the containment shall be a minimum of Class 3P, modified to include paragraphs A) through C).

A. The containment materials shall be air and water impenetrable and fire resistant.

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- B. With the exception of the entryways, all seams in the containment enclosure shall be lapped a minimum of 24 inches and shall be tied off at intervals not to exceed 18 inches.
- C. All attachments to bridge parapets and/or the underside of the bridge deck shall be sealed to prevent the escape of dust and debris

The above specified containment must be utilized for **all** paint removal and collection of debris operations. The containment must remain in place until all associated debris has been collected.

Paint Removal/Surface Preparation: The existing structural steel and new structural steel shall be power tool cleaned according to SSPC-SP 11 “Power Tool Cleaning To Bare Metal”. The power tools (needle guns, grinders, etc.) shall be equipped with HEPA vacuum attachments. Before the power tool cleaning, all dissolvable foreign matter, such as oil, grease, and dust shall be removed by wiping or scrubbing the surface with rags or brushes wetted with solvent in accordance with the provisions of SSPC-SP 1 “Solvent Cleaning.” Clean solvent and clean rags or brushes shall be used for the final wiping. The cleaned surface shall be accepted by the Engineer. If the surface is determined to meet the requirements of SSPC-SP 11, painting operations can commence.

Note: Chemical stripping and abrasive blast cleaning will not be permitted.

During the surface preparation of the existing steel, the Contractor shall immediately notify the Engineer if operations reveal areas of significant steel section loss, perforations or cracks that have not been addressed by repair details in the contract plans. Unless directed otherwise on the contract plans, significant steel section loss is defined as follows:

- Section loss more 1/8” or section loss equal to or greater than 5% of flange thickness in the maximum moment areas (i.e. section loss in the middle one half of a single span structure).
- Section loss more than 1/4” or section loss equal to or greater than 25% of the flange thickness in other than the maximum moment areas (i.e. section loss up to quarter points of the middle one half of a single span structure).
- Section loss exceeding the amounts or percentages indicated in the plans for girder webs or bearing stiffeners in the maximum shear areas (i.e. section loss within ten feet of the center line of bearing).

The Contractor shall furnish the engineer with all equipment necessary for determining the amount of deterioration present on the existing structural steel. The equipment shall include but not be limited to inside and outside calipers, straight rulers, Ultrasonic thickness meter and pit gauge.

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Storage and Disposal of Collected Debris: Work under this item shall include the handling, loading, packing, storage, transportation and final off-site disposal of hazardous lead debris and related non-hazardous debris which has been generated in conjunction with work conducted under this Item and Item 0020903A – Lead Compliance For Miscellaneous Exterior Tasks.

The Engineer previously analyzed representative samples of the lead paint debris prior to generation and found leachable lead above RCRA-hazardous levels. A copy of the analytical results are included.

| | |
|---|---------------------------|
| Site No. 1/2/3 - Bridge 03341/03342/03343 Paint Debris | 230 mg/L TCLP – Hazardous |
| Site No. 4 - Bridge 03417 Paint Debris | 420 mg/L TCLP – Hazardous |
| Site No. 7/8 - Bridge 03445/03446 Paint Debris | 290 mg/L TCLP – Hazardous |
| Site No. 9 - Bridge 03439 Paint Debris | 380 mg/L TCLP – Hazardous |
| Site No. 10/11 - Bridge 03284/03285 Paint Debris | 400 mg/L TCLP – Hazardous |
| Site No. 12/13 - Bridge 03287/03288 Paint Debris | 400 mg/L TCLP – Hazardous |

The Contractor shall comply with the latest requirements of the USEPA RCRA Hazardous Waste Regulations 40 CFR 260-274 and the DEEP Hazardous/Solid Waste Management Standards 22a-449(c).

Hazardous lead debris shall be transported from the Project by a licensed hazardous waste transporter approved by the Department and disposed of at an EPA-permitted and Department-approved hazardous waste landfill within 90 days from the date of generation.

The Contractor must use one or more of the following Department-approved disposal facilities for the disposal of hazardous waste:

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| Clean Earth of North Jersey, Inc., (CENJ) 115 Jacobus Avenue, South Kearny, NJ 07105 Phone: (973) 344-4004; Fax: (973) 344-8652 | Clean Harbors Environmental Services, Inc. 2247 South Highway 71, Kimball, NE 69145 Phone: (308) 235-8212; Fax: (308) 235-4307 |
| Clean Harbors of Braintree, Inc. 1 Hill Avenue, Braintree, MA 02184 Phone: (781) 380-7134; Fax: (781) 380-7193 | Cycle Chem (General Chemical Corp.) 217 South First Street, Elizabeth, NJ 07206 Phone: (908) 355-5800; Fax (908) 355-0562 |
| EnviroSafe Corporation Northeast (former Jones Environmental Services (NE), Inc.) 263 Howard Street, Lowell, MA 01852 Phone: (978) 453-7772; Fax: (978) 453-7775 | Environmental Quality Detroit, Inc. 1923 Frederick Street, Detroit, MI 48211 Phone: (800) 495-6059; Fax: (313) 923-3375 |
| Republic Environmental Systems 2869 Sandstone Drive, Hatfield, PA 19440 Phone: (215) 822-8995; Fax: (215) 997-1293 | Chemical Waste Management of New York 1550 Balmer Rd., Model City, NY 14107 Phone: (800) 843-3604; Fax: (716) 754-0211 |
| Environmental Quality Company: Wayne Disposal Facility 49350 North I-94 Service Drive Belleville, MI 48111 Phone: (800) 592-5489; Fax: (800) 592-5329 | Northland Environmental, Inc. (PSC Environmental Systems) 275 Allens Avenue, Providence, RI 02905 Phone: (401) 781-6340; Fax: (401) 781-9710 |

The apparent low bidder shall submit in writing, within fourteen days after Bid opening, (1) a letter listing the names of the hazardous waste disposal facilities (from the above list) that the bidder, if it is awarded the Contract, will use to receive hazardous material from this Project, and (2) a copy of each facility's acceptance criteria and sampling frequency requirements.

Any other Contractor which the Department may subsequently designate as the apparent low bidder shall make the aforementioned submissions within fourteen (14) days from the date on which the Department notifies the Contractor that it has become the apparent low bidder. If, however, the Department deems it is necessary for such a subsequent-designated Contractor to make said submissions within a shorter period of time, the Contractor shall make those submissions within the time designated by the Department.

Failure to comply with all of the above requirements may result in the rejection of the bid.

No facility may be substituted for the one(s) designated in the Contractor's submittal without the Engineer's prior approval. If the material cannot be accepted by any of the Contractor's designated facilities, the Department will supply the Contractor with the name(s) of other acceptable facilities.

Prior to the generation of any hazardous waste, the Contractor shall notify the Engineer of its selected hazardous waste transporter and disposal facility. The Contractor must submit to the

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Engineer (1) the transporter's current US DOT Certificate of Registration and (2) the transporter's current Hazardous Waste Transporter Permits for the State of Connecticut, the hazardous waste destination state and any other applicable states. The Engineer will then obtain a temporary EPA Generators ID number for the site that he will forward to the Contractor. Any changes in transporter or facility shall be immediately forwarded to the Engineer for review.

Handling, storage, transportation and disposal of hazardous waste materials generated as a result of execution of this project shall comply with all Federal, State and Local regulations including the USEPA RCRA Hazardous Waste Regulations (40 CFR Parts 260-271), the CTDEEP Hazardous Waste Regulations (22a-209 and 22a-449(c)), and the USDOT Hazardous Materials Regulations (49 CFR Part 171-180).

All debris shall be contained and collected daily or more frequently as directed by the Engineer, due to debris buildup. Debris shall be removed by HEPA vacuum collection. Such debris, abrasive blast residue, rust and paint chips shall be stored in leak-proof storage containers in the secured storage site, or as directed by the Engineer. The storage containers and storage locations shall be reviewed by the Engineer and shall be located in areas not subject to ponding. Storage containers shall be placed on pallets and closed and covered with tarps at all times except during placement, sampling and disposal of the debris.

Hazardous waste materials are to be properly packed and labeled for transport by the Contractor in accordance with EPA, CTDEEP and USDOT regulations. The disposal of debris characterized as hazardous waste shall be completed within 90 calendar days of the date on which it began to be accumulated in the lined containers. Storage of containers shall be in accordance with current DEEP/EPA procedures.

The Contractor shall label hazardous waste storage containers with a 6-inch square, yellow, weatherproof, Hazardous Waste sticker in accordance with USDOT regulations.

Materials other than direct paint related debris which are incidental to the paint removal work activities (tarps, poly, plywood, PPE, gloves, decontamination materials, etc.) which may be contaminated with lead, shall be stored separately from the direct paint debris, and shall be sampled by the Engineer for waste disposal characterization testing. Such materials characterized as hazardous shall be handled/disposed of as described herein, while materials characterized as non-hazardous shall be disposed of as non-hazardous CTDEEP Solid Waste.

Direct paint related debris materials not previously sampled and characterized for disposal, which may be originally presumed to be hazardous waste, shall also be stored separately and

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sampled by the Engineer for ultimate waste disposal characterization testing and handled/disposed of based on that testing.

Project construction waste materials unrelated to the paint removal operations shall NOT be combined/stored with paint debris waste and/or incidental paint removal materials as they are not lead contaminated and shall NOT be disposed of as hazardous waste. The Engineer's on-site Inspectors shall conduct inspections to verify materials remain segregated.

The Contractor shall obtain and complete all paperwork necessary to arrange for material disposal, including disposal facility waste profile sheets. It is solely the Contractor's responsibility to co-ordinate the disposal of hazardous materials with its selected treatment/recycling/disposal facility(s). Upon receipt of the final approval from the facility, the Contractor shall arrange for the loading, transport and treatment/recycling/disposal of the materials in accordance with all Federal and State regulations. **No claim will be considered based on the failure of the Contractor's disposal facility(s) to meet the Contractor's production rate or for the Contractor's failure to select sufficient facilities to meet its production rate.**

The Contractor shall process the hazardous waste such that the material conforms with the requirements of the selected treatment/disposal facility, including but not limited to specified size and dimension. Refusal on the part of the treatment/disposal facility to accept said material solely on the basis of non-conformance of the material to the facility's physical requirements is the responsibility of the Contractor and no claim for extra work shall be accepted for reprocessing of said materials to meet these requirements.

All DOT shipping documents, including the Uniform Hazardous Waste Manifests utilized to accompany the transportation of the hazardous waste material shall be prepared by the Contractor and reviewed/signed by an authorized agent representing ConnDOT, as Generator, for each load of hazardous material that is packed to leave the site. The Contractor shall not sign manifests on behalf of the State as Generator. The Contractor shall forward the appropriate original copies of all manifests to the Engineer the same day the material leaves the Project site.

Materials not related to lead paint removal and/or characterized as non-hazardous waste shall NOT be shipped for hazardous waste disposal in accordance with USEPA RCRA hazardous waste minimization requirements.

A load-specific certificate of disposal, signed by the authorized agent representing the waste

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disposal facility, shall be obtained by the Contractor and promptly delivered to the Engineer for each load.

In addition to all pertinent Federal, State and local laws or regulatory agency polices, the Contractor shall adhere to the following precautions during the transport of hazardous materials off-site:

- All vehicles departing the site are to be properly logged to show the vehicle identification, driver's name, time of departure, destination, and approximate volume, and contents of materials carried. Vehicles shall display the proper USDOT placards for the type and quantity of waste;
- No materials shall leave the site unless a disposal facility willing to accept all of the material being transported has agreed to accept the type and quantity of waste;
- Documentation must be maintained indicating that all applicable laws have been satisfied and that the materials have been successfully transported and received at the disposal facility; and,
- The Contractor shall segregate the waste streams (i.e. concrete, wood, etc.) as directed by the receiving disposal facility.

Any spillage of debris during disposal operations during loading, transport and unloading shall be cleaned up in accordance with EPA 40 CFR 265 Subparts C & D, at the Contractor's expense.

The Contractor is liable for any fines, costs or remediation costs incurred as a result of their failure to be in compliance with this Item and all Federal, State and Local laws.

The Contractor shall provide the Engineer, within 30 days of completion of the work, a compliance package; which shall include, but not be limited to, the following:

1. Copies of completed Hazardous Waste Manifests (signed by authorized disposal facility representative)
2. Completed Waste Shipment Records/Bills of Lading (signed by authorized disposal facility representative)
3. Completed Weigh Bills (indicating each loads net weight).

Final payment will not be made until completed copies of all Manifests and Bills of Lading signed by an authorized disposal facility representative have been provided to the Engineer.

Steel Surfaces to be Painted: After the designated areas have been inspected and accepted according to the surface preparation specification, SSPC SP 11, the steel surfaces which are to receive the field

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touch up paint shall be cleaned immediately prior to coating operations by wiping or scrubbing the surface with rags or brushes wetted with solvent. Use clean solvent and clean rags for the final wiping.

- Solvent must be compatible with the specified coatings. Solvent cleaned surfaces shall be primed before any detrimental recontamination or corrosion occurs. Follow manufacturer's safety recommendations when using any solvent.
- All foreign materials such as dirt, dust, loose rust scale, sand, bird droppings, and all materials loosened or deposited on the steel surface by cleaning operations shall also be completely removed by vacuuming before any painting operations commence.
- Failure by the Contractor to properly prepare and clean surfaces to be painted in accordance with the specifications shall be cause for rejection by the Engineer. All surfaces that are rejected shall be cleaned and painted to the satisfaction of the Engineer in accordance with the specifications, at no additional cost to the State.

Application of Field Paint: The method for coating application shall be by brush and roll equipment. The containment for paint application shall consist of drop clothes and a solid platform bottom.

Storage, opening, mixing, thinning and application of the paint shall be accomplished in strict accordance with the specified contract requirements and procedures published by the paint manufacturer and supplier. The Contractor shall have at the project site, at all times, the current copies of all technical data, recommendations and procedures published by the paint manufacturer. All coatings shall be supplied in sealed containers bearing the manufacturers name, product designation, batch number and mixing/thinning instructions. Leaking containers shall not be used. Paint shall be furnished in the manufacturer's original sealed and undamaged containers. For multiple component paints, only complete kits shall be mixed and used. Partial mixing is not allowed. The paint shall be applied to produce a uniform smooth coat without runs, streaks sags, wrinkles, or other defects.

The Contractor shall provide a suitable facility for the storage of paint, which is in accordance with the latest Federal and State regulations. This facility must provide protection from the elements and insure that the paint is not subjected to temperatures outside the manufacturer's recommended extremes. Storage for paint must be located in reasonable proximity to the painting locations. The Engineer shall be provided access to the stored paint at any time, for inspection and to witness removal of the materials. The Contractor's facility for the storage of paint is subject to the approval of the Engineer.

Ambient Conditions: No solvent cleaning just prior to coating application or coating application work shall be performed when the conditions are as follow:

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- When the relative humidity is at or above 80 percent or when there is falling rain or dew present, or anticipated, before a prepared surface can be coated.
- When the substrate is damp or covered by frost or ice.
- When the surface temperature or air temperature are less than 50 degrees Fahrenheit or greater than 100 degrees Fahrenheit.
- When the surface temperatures of the steel or air are less than five (5) degrees Fahrenheit above the dewpoint temperature as determined by a surface temperature thermometer and electric or sling psychrometer.

Painting of Existing Steel:

A - Primer Coat Application: The existing steel surfaces to be coated shall be prepared in accordance with the requirement of this special provision before coating. The prime coat shall be applied by brush or roll equipment before the end of the day or before any visible rust-back occurs. If rust-back occurs, affected surfaces shall be re-cleaned to the satisfaction of the Engineer according to these specifications, at no additional cost to the state. All surfaces shall receive 1 coat of the primer coat. Temperature ranges (both steel and air) shall be the more restrictive of that specified in the Manufacturer's written application instructions or between 50° F. to 100° F., unless directed otherwise by the Engineer in writing. The dry film thickness shall be according to the Manufacturer's written instructions. The primer coat shall be of a contrasting color to the topcoat color. The dry film thickness will be checked for compliance per the guidelines of SSPC-PA 2.

All plate and shape edges, plate seams, back to back angle seams, pitted steel, and other sharp discontinuities shall be hand-stripped with a brush in the longitudinal direction with the primer coat. Bolted connections shall also have all bolt heads and nuts hand-stripped in a circular brush motion with the primer coat material. Stripe coats shall be applied before or after the full primer coat application. The primer coat material used for hand-stripping shall be tinted to distinguish it from material used for the full primer coat application.

The containment for paint application shall consist of drop clothes and a solid platform bottom.

B - Top Coat Application: After the primer coat has cured per the Manufacturer's written recommendations (not to exceed 10 days), all previously coated surfaces shall receive the top coat. The cured and dry primer coat shall be clean and free of all surface and embedded contamination and dry-spray. If it is not clean and free of all contamination, and dry-spray, the surfaces shall be cleaned by using clean rags or brushes to water wipe, solvent wipe, or detergent wash and rinse. Power washing is not allowed. Temperature ranges (both steel and air) shall be the more restrictive of that specified in the Manufacturer's written application instructions or between 50° F. to 100° F., unless directed otherwise by the Engineer in writing. The dry film thickness shall be according to the Manufacturer's written instructions.

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All paint that is damaged by field welding operations or by any other operation shall be removed, the area cleaned to the satisfaction of the Engineer, and the affected areas repainted with the primer coat. The steel shall then be painted with the rest of the paint system

Painting of New Steel: All new steel shall be painted with the same coating system selected for use at the beam ends, unless permitted otherwise in writing by the Engineer. The new steel shall be furnished either coated or uncoated, unless otherwise specified on the plans.

Coated Steel:

A - Primer Coat Application: The new steel shall be painted with the primer coat after fabrication. The surface for the new steel surface shall be prepared in accordance with the requirements of this special provision. The primer coat application shall be in accordance with the requirements listed under Painting of Existing Steel.

B - Top Coat Application: The new steel shall be top coated after it has been installed. The top coat application shall be in accordance with the requirements listed under Painting of Existing Steel.

All paint that is damaged by field welding operations or by any other operation shall be removed, the area cleaned to the satisfaction of the Engineer, and the affected areas repainted with the primer coat. The new steel shall then be painted with the rest of the paint system

Uncoated Steel:

A – Primer Coat Application: After the uncoated steel has been installed the surface shall be prepared in accordance with the requirements of this special provision. The primer coat application shall be in accordance with the requirements listed under Painting of Existing Steel.

B - Top Coat Application: The top coat application shall be in accordance with the requirements listed under Painting of Existing Steel.

The Contractor is liable for any fines, costs, or remediation costs incurred as a result of his failure to be in compliance with this special provision and all federal, state, and local laws.

Method of Measurement: This work will not be measured for payment.

Note: In some instances when new steel is being added to the designated areas where paint was

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removed, the removal area may not equal the area to be re-painted.

Basis of Payment: This work shall be paid for at the contract lump sum price for "Localized Paint Removal and Field Painting of Existing Steel (Site No.)", complete in place, which price shall include all materials, containments, collection, storage, handling, transport and disposal of debris, containers, equipment, tools, labor, heating devices, services of the technical advisor and for any incidental work. No direct payment will be made for the cost of storage or hauling the paint and other materials, including paint chips and associated debris, to and/or from the bridge site, but the cost thereof shall be included in the contract lump sum price.

| <u>Pay Item</u> | <u>Pay Unit</u> |
|--|-----------------|
| Localized Paint Removal And Field Painting Of Existing Steel (Site No.) | Lump Sum |

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ITEM #0603729A – LOCALIZED PAINT REMOVAL AND FIELD PAINTING OF EXISTING STEEL

Description: Work under this item shall consist of paint removal and field painting of the existing steel and new steel at designated areas. The work shall include containments, paint removal, collection and disposal of paint and associated debris, surface preparation and field painting. Designated areas include: areas specifically designated on the plans and those areas where construction activities required the removal of the existing coatings to accomplish other contract work (i.e., arc gouging, welding, etc.). The paint removal is required because of the possible presence of hazardous paint (e.g., containing lead or other hazardous metals). The paint removal is required to comply with OSHA, EPA and DEEP regulations.

The Engineer previously tested representative painted steel surfaces on the bridges and identified the paint to be lead-containing. A summation of the analytical data is included herein. Refer also to Item 0020903A – Lead Compliance for Miscellaneous Exterior Tasks.

| | |
|----------------------------|-----------------------------------|
| Site No. 1 – Bridge 03341 | 1.5-28.9 mg/cm ² Lead |
| Site No. 2 – Bridge 03342 | 12.4-20.7 mg/cm ² Lead |
| Site No. 3 – Bridge 03343 | 0.1-32.6 mg/cm ² Lead |
| Site No. 4 – Bridge 03417 | 9.1-24.5 mg/cm ² Lead |
| Site No. 5 – Bridge 03415 | 15.1-15.3 mg/cm ² Lead |
| Site No. 6 – Bridge 03416 | 10.1-30.6 mg/cm ² Lead |
| Site No. 7 – Bridge 03445 | 0.6-12.9 mg/cm ² Lead |
| Site No. 8 – Bridge 03446 | 3.3-25.5 mg/cm ² Lead |
| Site No. 9 – Bridge 03439 | 2.6-25.3 mg/cm ² Lead |
| Site No. 10 – Bridge 03284 | 16.7-21.5 mg/cm ² Lead |
| Site No. 11 – Bridge 03285 | 7.5-41.3 mg/cm ² Lead |
| Site No. 12 – Bridge 03287 | 14.5-21.6 mg/cm ² Lead |
| Site No. 13 – Bridge 03288 | 13.6-26.3 mg/cm ² Lead |

Privately-owned utilities, bridge rails, stay-in-place forms, fences, elastomeric bearing pads and bronze components shall be protected from damage by surface preparation and painting operations and are not to be painted.

Contractor - Subcontractor Qualifications: Contractors and subcontractors doing this work are required to be certified by the SSPC Painting Contractor Certification Program (PCCP) to QP-1 entitled “Standard Procedure for Evaluating Qualifications of Painting Contractors: Field Application to Complex Structures”. When the work involves the disturbance of lead-containing paint, the contractor and subcontractor are also required to be certified to SSPC QP-2 “Standard Procedure for Evaluating the Qualifications of Painting Contractors to Remove Hazardous Paint”. The certification(s) must be kept current for the duration of the work. If a contractor’s or subcontractor’s certification expires, the firm will not be allowed to do any work related to this

item until the certification is reissued. Requests for extension of time for delay to the completion of the project due to an inactive certification will not be considered and liquidated damages will apply. In addition, if any recoat times are exceeded, the affected areas shall be cleaned to SSPC-SP 11 and coatings reapplied in accordance with these specifications at no additional cost to the State.

Submittals: A minimum of 20 calendar days before starting any paint removal, surface preparation and coating application work, the contractor shall submit the following to the Engineer for acceptance:

- A copy of the firm's written Quality Control Program used to control the quality of surface preparation and coating application including ambient conditions, surface cleanliness and profile, coating mixing, dry film thickness, final film continuity, etc.
- A copy of the firm's written surface preparation and application procedures. This written program must contain a description of the equipment that will be used for surface preparation, including the remediation of soluble salts, and for paint mixing and application. Coating repair procedures shall be included.
- A detailed description of the contractor's enforcement procedures and the authority of personnel.
- Containment plans (paint removal/collection of debris, surface preparation, coating applications, coating applications with heat, etc.).
- If the application of heat is proposed for coating application purposes, provide information on the heat containment and procedures that will be used, with data sheets for the equipment. **Note:** If heat is used for coating operations, the heat and containment must be maintained to provide the required temperatures for the duration of the **cure** period.
- Proof of SSPC-QP1 qualifications and QP2 qualifications, as applicable.
- Proof that the finish coat complies with the color and gloss retention performance criteria of SSPC Paint 36, Level 3, for accelerated weathering.
- Coating product information, including coating manufacturer, product name, application instructions, technical data, MSDS and color chips.

The Contractor shall not begin paint removal Work until the Engineer has accepted the submittals. The Contractor shall not construe Engineer acceptance of the submittals to imply approval of any particular method or sequence for conducting the Work, or for addressing health and safety concerns. Acceptance of the programs does not relieve the Contractor from the responsibility to conduct the Work in strict accordance with the requirements of Federal, State, or local regulations, this specification, or to adequately protect the health and safety of all workers involved in the project and any members of the public who may be affected by the project. The Contractor remains solely responsible for the adequacy and completeness of the programs and work practices, and adherence to them.

Materials: The paint shall be one of the following two coat systems:

Carbomastic 15
Carbothane 134 HS, manufactured by: Carboline
2150 Schuetz Road
St. Louis, MO 63146
(800) 848-4645

Epoxy Mastic Aluminum II
Acrolon 218 HS, manufactured by: Sherwin Williams
425 Benton Street
Stratford, CT 06615
(203) 377-1711
(800) 474-3794

Carbomastic 90
Carbothane 134 HS, manufactured by: Carboline
2150 Schuetz Road
St. Louis, MO 63146
(800) 848-4645

Amerlock 2AL
Amercoat 450H, manufactured by: PPG Industries
1 PPG Place
Pittsburgh, PA 15272
(412) 434-3131

All materials for the complete coating system shall be furnished by the same coating material manufacturer with no subcontracted manufacturing allowed. Intermixing of materials within and between coating systems will not be permitted. Thinning of paint shall conform to the manufacturer's written recommendations. The coating thickness shall be in accordance with the Manufacturer's printed instructions. All components of the coating system and the mixed paint shall comply with the Emission Standards for Volatile Organic Compounds (VOC) stated in the Connecticut Department of Environmental Protection's Administration Regulation for the Abatement of Air Pollution, Section 22a-174-20(s).

Control of Materials: A Materials Certificate will be required for the selected paint system in accordance with Article 1.06.07, confirming the conformance of the paint to the requirements set forth in these specifications. The coating thickness shall be in accordance with the Manufacturer's printed instructions. The selected Topcoat shall conform (as close as possible) in color to the existing topcoat.

Note: If any of the above and/or following stipulated contract specifications differ from those of the manufacturer's recommended procedures or ranges, the more restrictive of the requirements shall be adhered to unless directed by the Engineer in writing.

Construction Methods: All Contractor activities associated with the work described and specified herein shall be conducted in accordance with all applicable Federal, State of Connecticut and local safety regulations and guidelines.

Quality Control Inspections: The Contractor shall perform first line, in process Quality Control (QC) inspections. The Contractor shall implement a Quality Control Program accepted by the Engineer, including written daily reports, that ensures that the work accomplished complies with these specifications. All Quality Control Reports must be reviewed and signed by either a NACE Coating Inspector Level 2 - Certified (must have completed sessions I, II and III) or SSPC – BCI Level I Inspector (Minimum qualifications). Copies of these reports shall be provided daily to the Engineer. Contractor QC inspections shall include, but not be limited to the following:

- Suitability of protective coverings and containments
- Ambient conditions
- Surface preparation (solvent cleaning or hand/power tool cleaning)
- Coating application (mixing, thinning, and wet/dry film thickness)
- Recoat times and cleanliness between coats
- Coating continuity (freedom from runs, sags, pinholes, shadow-through, skips, misses, etc.)
- Final film acceptance

Limits of Paint Removal and Field Painting: Prior to applying the heat of welding/cutting equipment to localized areas of existing steel superstructures, the existing paint shall be removed to width of 6 inches from wherever the heat will be applied, or as directed by the Engineer. The locations of the paint removal and field painting shall be reviewed and accepted by the Engineer prior to commencement of the work. Such acceptance by the Engineer does not relieve the Contractor of his responsibility for complying with applicable OSHA, EPA and DEEP regulations.

Containment for Paint Removal and Collection of Debris: The containment(s) shall be designed and erected to contain, as well as facilitate the collection of debris from the paint removal operations. Drawings and details of the containment(s) shall be submitted to the Engineer for review and comments prior to any paint removal. Review of the containment by the Engineer shall in no way relieve the Contractor of his responsibility for the containment. The containment shall conform to the requirements found within the SSPC Guide 6. The class of the containment shall be a minimum of Class 3P, modified to include paragraphs A) through C).

- A. The containment materials shall be air and water impenetrable and fire resistant.
- B. With the exception of the entryways, all seams in the containment enclosure shall be lapped a minimum of 24 inches and shall be tied off at intervals not to exceed 18 inches.
- C. All attachments to bridge parapets and/or the underside of the bridge deck shall be sealed to prevent the escape of dust and debris

The above specified containment must be utilized for **all** paint removal and collection of debris operations. The containment must remain in place until all associated debris has been collected.

Paint Removal/Surface Preparation: The existing structural steel and new structural steel shall be power tool cleaned according to SSPC-SP 11 “Power Tool Cleaning To Bare Metal”. The power tools (needle guns, grinders, etc.) shall be equipped with HEPA vacuum attachments. Before the power tool cleaning, all dissolvable foreign matter, such as oil, grease, and dust shall be removed by wiping or scrubbing the surface with rags or brushes wetted with solvent in accordance with the provisions of SSPC-SP 1 “Solvent Cleaning.” Clean solvent and clean rags or brushes shall be used for the final wiping. The cleaned surface shall be accepted by the Engineer. If the surface is determined to meet the requirements of SSPC-SP 11, painting operations can commence.

Note: Chemical stripping and abrasive blast cleaning will not be permitted.

During the surface preparation of the existing steel, the Contractor shall immediately notify the Engineer if operations reveal areas of significant steel section loss, perforations or cracks that have not been addressed by repair details in the contract plans. Unless otherwise noted on the contract plans, significant steel section loss is defined as follows:

- Section loss more 1/8” or section loss equal to or greater than 5% of flange thickness in the maximum moment areas (i.e. section loss in the middle one half of a single span structure).
- Section loss more than 1/4” or section loss equal to or greater than 25% of the flange thickness in other than the maximum moment areas (i.e. section loss up to quarter points of the middle one half of a single span structure).
- Section loss exceeding the amounts or percentages indicated in the plans for girder webs or bearing stiffeners in the maximum shear areas (i.e. section loss within ten feet of the center line of bearing).

The Contractor shall furnish the engineer with all equipment necessary for determining the amount of deterioration present on the existing structural steel. The equipment shall include but not be limited to inside and outside calipers, straight rulers, Ultrasonic thickness meter and pit gauge.

Storage and Disposal of Collected Debris: Work under this item shall include the handling, loading, packing, storage, transportation and final off-site disposal of hazardous lead debris and related non-hazardous debris which has been generated in conjunction with work conducted under this Item and Item 0020903A – Lead Compliance For Miscellaneous Exterior Tasks.

The Engineer previously analyzed representative samples of the lead paint debris prior to generation and found leachable lead above RCRA-hazardous levels. A copy of the analytical results are included.

| | |
|---|---------------------------|
| Site No. 1/2/3 - Bridge 03341/03342/03343 Paint Debris | 230 mg/L TCLP – Hazardous |
| Site No. 4 - Bridge 03417 Paint Debris | 420 mg/L TCLP – Hazardous |

| | |
|---|---------------------------|
| Site No. 5/6 - Bridge 03415/03416 Paint Debris | 360 mg/L TCLP – Hazardous |
| Site No. 7/8 - Bridge 03445/03446 Paint Debris | 290 mg/L TCLP – Hazardous |
| Site No. 9 - Bridge 03439 Paint Debris | 380 mg/L TCLP – Hazardous |
| Site No. 10/11 - Bridge 03284/03285 Paint Debris | 400 mg/L TCLP – Hazardous |
| Site No. 12/13 - Bridge 03287/03288 Paint Debris | 400 mg/L TCLP – Hazardous |

The Contractor shall comply with the latest requirements of the USEPA RCRA Hazardous Waste Regulations 40 CFR 260-274 and the DEEP Hazardous/Solid Waste Management Standards 22a-449(c).

Hazardous lead debris shall be transported from the Project by a licensed hazardous waste transporter approved by the Department and disposed of at an EPA-permitted and Department-approved hazardous waste landfill within 90 days from the date of generation.

The Contractor must use one or more of the following Department-approved disposal facilities for the disposal of hazardous waste:

| | |
|---|---|
| Clean Earth of North Jersey, Inc., (CENJ) 115 Jacobus Avenue, South Kearny, NJ 07105 Phone: (973) 344-4004; Fax: (973) 344-8652 | Clean Harbors Environmental Services, Inc. 2247 South Highway 71, Kimball, NE 69145 Phone: (308) 235-8212; Fax: (308) 235-4307 |
| Clean Harbors of Braintree, Inc. 1 Hill Avenue, Braintree, MA 02184 Phone: (781) 380-7134; Fax: (781) 380-7193 | Cycle Chem (General Chemical Corp.) 217 South First Street, Elizabeth, NJ 07206 Phone: (908) 355-5800; Fax (908) 355-0562 |
| EnviroSafe Corporation Northeast (former Jones Environmental Services (NE), Inc.) 263 Howard Street, Lowell, MA 01852 Phone: (978) 453-7772; Fax: (978) 453-7775 | Environmental Quality Detroit, Inc. 1923 Frederick Street, Detroit, MI 48211 Phone: (800) 495-6059; Fax: (313) 923-3375 |
| Republic Environmental Systems 2869 Sandstone Drive, Hatfield, PA 19440 Phone: (215) 822-8995; Fax: (215) 997-1293 | Chemical Waste Management of New York 1550 Balmer Rd., Model City, NY 14107 Phone: (800) 843-3604; Fax: (716) 754-0211 |
| Environmental Quality Company: Wayne Disposal Facility 49350 North I-94 Service Drive Belleville, MI 48111 Phone: (800) 592-5489; Fax: (800) 592-5329 | Northland Environmental, Inc. (PSC Environmental Systems) 275 Allens Avenue, Providence, RI 02905 Phone: (401) 781-6340; Fax: (401) 781-9710 |

The apparent low bidder shall submit in writing, within fourteen days after Bid opening, (1) a letter listing the names of the hazardous waste disposal facilities (from the above list) that the bidder, if it is awarded the Contract, will use to receive hazardous material from this Project, and (2) a copy of each facility's acceptance criteria and sampling frequency requirements.

Any other Contractor which the Department may subsequently designate as the apparent low bidder shall make the aforementioned submissions within fourteen (14) days from the date on which the Department notifies the Contractor that it has become the apparent low bidder. If, however, the Department deems it is necessary for such a subsequent-designated Contractor to make said submissions within a shorter period of time, the Contractor shall make those submissions within the time designated by the Department.

Failure to comply with all of the above requirements may result in the rejection of the bid.

No facility may be substituted for the one(s) designated in the Contractor's submittal without the Engineer's prior approval. If the material cannot be accepted by any of the Contractor's designated facilities, the Department will supply the Contractor with the name(s) of other acceptable facilities.

Prior to the generation of any hazardous waste, the Contractor shall notify the Engineer of its selected hazardous waste transporter and disposal facility. The Contractor must submit to the Engineer (1) the transporter's current US DOT Certificate of Registration and (2) the transporter's current Hazardous Waste Transporter Permits for the State of Connecticut, the hazardous waste destination state and any other applicable states. The Engineer will then obtain a temporary EPA Generators ID number for the site that he will forward to the Contractor. Any changes in transporter or facility shall be immediately forwarded to the Engineer for review.

Handling, storage, transportation and disposal of hazardous waste materials generated as a result of execution of this project shall comply with all Federal, State and Local regulations including the USEPA RCRA Hazardous Waste Regulations (40 CFR Parts 260-271), the CTDEEP Hazardous Waste Regulations (22a-209 and 22a-449(c)), and the USDOT Hazardous Materials Regulations (49 CFR Part 171-180).

All debris shall be contained and collected daily or more frequently as directed by the Engineer, due to debris buildup. Debris shall be removed by HEPA vacuum collection. Such debris, abrasive blast residue, rust and paint chips shall be stored in leak-proof storage containers in the secured storage site, or as directed by the Engineer. The storage containers and storage locations shall be reviewed by the Engineer and shall be located in areas not subject to ponding. Storage containers shall be placed on pallets and closed and covered with tarps at all times except during placement, sampling and disposal of the debris.

Hazardous waste materials are to be properly packed and labeled for transport by the Contractor in accordance with EPA, CTDEEP and USDOT regulations. The disposal of debris characterized as hazardous waste shall be completed within 90 calendar days of the date on which it began to be accumulated in the lined containers. Storage of containers shall be in accordance with current DEEP/EPA procedures.

The Contractor shall label hazardous waste storage containers with a 6-inch square, yellow, weatherproof, Hazardous Waste sticker in accordance with USDOT regulations.

Materials other than direct paint related debris which are incidental to the paint removal work activities (tarps, poly, plywood, PPE, gloves, decontamination materials, etc.) which may be contaminated with lead, shall be stored separately from the direct paint debris, and shall be sampled by the Engineer for waste disposal characterization testing. Such materials characterized as hazardous shall be handled/disposed of as described herein, while materials characterized as non-hazardous shall be disposed of as non-hazardous CTDEEP Solid Waste.

Direct paint related debris materials not previously sampled and characterized for disposal, which may be originally presumed to be hazardous waste, shall also be stored separately and sampled by the Engineer for ultimate waste disposal characterization testing and handled/disposed of based on that testing.

Project construction waste materials unrelated to the paint removal operations shall NOT be combined/stored with paint debris waste and/or incidental paint removal materials as they are not lead contaminated and shall NOT be disposed of as hazardous waste. The Engineer's on-site Inspectors shall conduct inspections to verify materials remain segregated.

The Contractor shall obtain and complete all paperwork necessary to arrange for material disposal, including disposal facility waste profile sheets. It is solely the Contractor's responsibility to co-ordinate the disposal of hazardous materials with its selected treatment/recycling/disposal facility(s). Upon receipt of the final approval from the facility, the Contractor shall arrange for the loading, transport and treatment/recycling/disposal of the materials in accordance with all Federal and State regulations. **No claim will be considered based on the failure of the Contractor's disposal facility(s) to meet the Contractor's production rate or for the Contractor's failure to select sufficient facilities to meet its production rate.**

The Contractor shall process the hazardous waste such that the material conforms with the requirements of the selected treatment/disposal facility, including but not limited to specified size and dimension. Refusal on the part of the treatment/disposal facility to accept said material solely on the basis of non-conformance of the material to the facility's physical requirements is the responsibility of the Contractor and no claim for extra work shall be accepted for reprocessing of said materials to meet these requirements.

All DOT shipping documents, including the Uniform Hazardous Waste Manifests utilized to accompany the transportation of the hazardous waste material shall be prepared by the

Contractor and reviewed/signed by an authorized agent representing ConnDOT, as Generator, for each load of hazardous material that is packed to leave the site. The Contractor shall not sign manifests on behalf of the State as Generator. The Contractor shall forward the appropriate original copies of all manifests to the Engineer the same day the material leaves the Project site.

Materials not related to lead paint removal and/or characterized as non-hazardous waste shall NOT be shipped for hazardous waste disposal in accordance with USEPA RCRA hazardous waste minimization requirements.

A load-specific certificate of disposal, signed by the authorized agent representing the waste disposal facility, shall be obtained by the Contractor and promptly delivered to the Engineer for each load.

In addition to all pertinent Federal, State and local laws or regulatory agency polices, the Contractor shall adhere to the following precautions during the transport of hazardous materials off-site:

- All vehicles departing the site are to be properly logged to show the vehicle identification, driver's name, time of departure, destination, and approximate volume, and contents of materials carried. Vehicles shall display the proper USDOT placards for the type and quantity of waste;
- No materials shall leave the site unless a disposal facility willing to accept all of the material being transported has agreed to accept the type and quantity of waste;
- Documentation must be maintained indicating that all applicable laws have been satisfied and that the materials have been successfully transported and received at the disposal facility; and,
- The Contractor shall segregate the waste streams (i.e. concrete, wood, etc.) as directed by the receiving disposal facility.

Any spillage of debris during disposal operations during loading, transport and unloading shall be cleaned up in accordance with EPA 40 CFR 265 Subparts C & D, at the Contractor's expense.

The Contractor is liable for any fines, costs or remediation costs incurred as a result of their failure to be in compliance with this Item and all Federal, State and Local laws.

The Contractor shall provide the Engineer, within 30 days of completion of the work, a compliance package; which shall include, but not be limited to, the following:

1. Copies of completed Hazardous Waste Manifests (signed by authorized disposal facility representative)
2. Completed Waste Shipment Records/Bills of Lading (signed by authorized disposal facility representative)

3. Completed Weigh Bills (indicating each loads net weight).
Final payment will not be made until completed copies of all Manifests and Bills of Lading signed by an authorized disposal facility representative have been provided to the Engineer.

Steel Surfaces to be Painted: After the designated areas have been inspected and accepted according to the surface preparation specification, SSPC SP 11, the steel surfaces which are to receive the field touch up paint shall be cleaned immediately prior to coating operations by wiping or scrubbing the surface with rags or brushes wetted with solvent. Use clean solvent and clean rags for the final wiping.

- Solvent must be compatible with the specified coatings. Solvent cleaned surfaces shall be primed before any detrimental recontamination or corrosion occurs. Follow manufacturer's safety recommendations when using any solvent.
- All foreign materials such as dirt, dust, loose rust scale, sand, bird droppings, and all materials loosened or deposited on the steel surface by cleaning operations shall also be completely removed by vacuuming before any painting operations commence.
- Failure by the Contractor to properly prepare and clean surfaces to be painted in accordance with the specifications shall be cause for rejection by the Engineer. All surfaces that are rejected shall be cleaned and painted to the satisfaction of the Engineer in accordance with the specifications, at no additional cost to the State.

Application of Field Paint: The method for coating application shall be by brush and roll equipment. The containment for paint application shall consist of drop clothes and a solid platform bottom.

Storage, opening, mixing, thinning and application of the paint shall be accomplished in strict accordance with the specified contract requirements and procedures published by the paint manufacturer and supplier. The Contractor shall have at the project site, at all times, the current copies of all technical data, recommendations and procedures published by the paint manufacturer. All coatings shall be supplied in sealed containers bearing the manufacturers name, product designation, batch number and mixing/thinning instructions. Leaking containers shall not be used. Paint shall be furnished in the manufacturer's original sealed and undamaged containers. For multiple component paints, only complete kits shall be mixed and used. Partial mixing is not allowed. The paint shall be applied to produce a uniform smooth coat without runs, streaks sags, wrinkles, or other defects.

The Contractor shall provide a suitable facility for the storage of paint, which is in accordance with the latest Federal and State regulations. This facility must provide protection from the elements and insure that the paint is not subjected to temperatures outside the manufacturer's recommended extremes. Storage for paint must be located in reasonable proximity to the painting locations. The Engineer shall be provided access to the stored paint at any time, for inspection and to witness removal of the materials. The Contractor's facility for the storage of paint is subject to the approval of the Engineer.

Ambient Conditions: No solvent cleaning just prior to coating application or coating application

work shall be performed when the conditions are as follow:

- When the relative humidity is at or above 80 percent or when there is falling rain or dew present, or anticipated, before a prepared surface can be coated.
- When the substrate is damp or covered by frost or ice.
- When the surface temperature or air temperature are less than 50 degrees Fahrenheit or greater than 100 degrees Fahrenheit.
- When the surface temperatures of the steel or air are less than five (5) degrees Fahrenheit above the dewpoint temperature as determined by a surface temperature thermometer and electric or sling psychrometer.

Painting of Existing Steel:

A - Primer Coat Application: The existing steel surfaces to be coated shall be prepared in accordance with the requirement of this special provision before coating. The prime coat shall be applied by brush or roll equipment before the end of the day or before any visible rust-back occurs. If rust-back occurs, affected surfaces shall be re-cleaned to the satisfaction of the Engineer according to these specifications, at no additional cost to the state. All surfaces shall receive 1 coat of the primer coat. Temperature ranges (both steel and air) shall be the more restrictive of that specified in the Manufacturer's written application instructions or between 50° F. to 100° F., unless directed otherwise by the Engineer in writing. The dry film thickness shall be according to the Manufacturer's written instructions. The primer coat shall be of a contrasting color to the topcoat color. The dry film thickness will be checked for compliance per the guidelines of SSPC-PA 2.

All plate and shape edges, plate seams, back to back angle seams, pitted steel, and other sharp discontinuities shall be hand-stripped with a brush in the longitudinal direction with the primer coat. Bolted connections shall also have all bolt heads and nuts hand-stripped in a circular brush motion with the primer coat material. Stripe coats shall be applied before or after the full primer coat application. The primer coat material used for hand-stripping shall be tinted to distinguish it from material used for the full primer coat application.

The containment for paint application shall consist of drop clothes and a solid platform bottom.

B - Top Coat Application: After the primer coat has cured per the Manufacturer's written recommendations (not to exceed 10 days), all previously coated surfaces shall receive the top coat. The cured and dry primer coat shall be clean and free of all surface and embedded contamination and dry-spray. If it is not clean and free of all contamination, and dry-spray, the surfaces shall be cleaned by using clean rags or brushes to water wipe, solvent wipe, or detergent wash and rinse. Power washing is not allowed. Temperature ranges (both steel and air) shall be the more restrictive of that specified in the Manufacturer's written application instructions or between 50° F. to 100° F., unless directed otherwise by the Engineer in writing. The dry film thickness shall be according to the Manufacturer's written instructions.

All paint that is damaged by field welding operations or by any other operation shall be removed, the area cleaned to the satisfaction of the Engineer, and the affected areas repainted with the primer coat. The steel shall then be painted with the rest of the paint system

Painting of New Steel: All new steel shall be painted with the same coating system selected for use at the beam ends, unless permitted otherwise in writing by the Engineer. The new steel shall be furnished either coated or uncoated, unless otherwise specified on the plans.

Coated Steel:

A - Primer Coat Application: The new steel shall be painted with the primer coat after fabrication. The surface for the new steel surface shall be prepared in accordance with the requirements of this special provision. The primer coat application shall be in accordance with the requirements listed under Painting of Existing Steel.

B - Top Coat Application: The new steel shall be top coated after it has been installed. The top coat application shall be in accordance with the requirements listed under Painting of Existing Steel. All paint that is damaged by field welding operations or by any other operation shall be removed, the area cleaned to the satisfaction of the Engineer, and the affected areas repainted with the primer coat. The new steel shall then be painted with the rest of the paint system

Uncoated Steel:

A – Primer Coat Application: After the uncoated steel has been installed the surface shall be prepared in accordance with the requirements of this special provision. The primer coat application shall be in accordance with the requirements listed under Painting of Existing Steel.

B - Top Coat Application: The top coat application shall be in accordance with the requirements listed under Painting of Existing Steel.

The Contractor is liable for any fines, costs, or remediation costs incurred as a result of his failure to be in compliance with this special provision and all federal, state, and local laws.

Method of Measurement: This work will be measured for payment by the actual number of square feet of existing steel at designated areas where surfaces were cleaned, painted and accepted.

Note: In some instances when new steel is being added to the designated areas where paint was removed, the removal area may not equal the area to be re-painted. Measurement in these cases will be by the actual square footage of existing steel where the paint was removed and accepted.

Basis of Payment: This work shall be paid for at the contract unit price square foot for "Localized Paint Removal and Field Painting of Existing Steel", complete in place, which price shall include all materials, containments, collection, storage, handling, transport and disposal of debris, containers, equipment, tools, labor, heating devices, services of the technical advisor and for any incidental work. No direct payment will be made for the cost of storage or hauling the paint and other materials, including paint chips and associated debris, to and/or from the bridge

site, but the cost thereof shall be included in the contract square foot price.

| <u>Pay Item</u> | <u>Pay Unit</u> |
|--|-----------------|
| Localized Paint Removal And Field Painting Of Existing Steel | S.F. |

ITEM #0603935A – ABRASIVE BLAST CLEANING AND FIELD PAINTING OF STRUCTURE (SITE NO. 5)

ITEM #0603936A – ABRASIVE BLAST CLEANING AND FIELD PAINTING OF STRUCTURE (SITE NO. 6)

Description:

Work under this item shall consist of surface preparation and field painting of steel components with a 2-coat system as shown on the plans, as directed by the Engineer and in accordance with these specifications.

Components to be painted include but are not limited to the following: ends of beams and girders, diaphragms and cross frames, steel fixed bearings, steel components of expansion bearings, scuppers, drainage pipes and troughs, state-owned utility conduits, structural steel utility supports, all new structural steel installed for repair purposes, and all other metal components that are an integral part of the bridge system.

Privately-owned utilities, bridge rails, stay-in-place forms, fences, elastomeric bearing pads and bronze components shall be protected from damage by surface preparation and painting operations and are not to be painted. Any damage resulting from surface preparations, containment and/or overspray from paint operations shall be repaired by the Contractor at no cost to the State.

The amount of steel to be painted under this special provision varies by bridge site, and is to be determined by the Contractor based on the information contained in the plans. Bidders shall examine the structures in this contract and shall make their own determinations as to the work involved and conditions to be encountered.

Lead paint is known to be present at all bridge sites and in all locations.

Submittals: A minimum of 20 calendar days before starting any surface preparation and coating application work, the painting contractor shall submit the following to the Engineer for acceptance:

1. A copy of the firm's written Quality Control Program used to control the quality of surface preparation and coating application including ambient conditions, surface cleanliness and profile, coating mixing, dry film thickness, final film continuity, etc.
2. A copy of the firm's written surface preparation and application procedures detailing the Materials and Construction Methods for both accessible and inaccessible areas. All areas are deemed accessible, except those areas specifically designated as inaccessible. The Engineer will be the sole judge in determining the exact locations of said inaccessible areas.

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Inaccessible areas may include: Between back to back angles, Edges of top flanges of steel members in contact with concrete and areas of visible non-removable impacted rust. Such locations designated as inaccessible shall be coated with special materials, such as penetrating sealer or equivalent, as recommended by the Manufacturer of the selected paint system (see Materials below for paint systems). This written program must contain a description of all the equipment that will be used for removal of laminar and stratified rust, for surface preparation, including the remediation of soluble salts, and for paint mixing and application, including stripe coating. Coating repair procedures shall be included for both accessible and inaccessible areas.

3. A detailed description of the Contractor's enforcement procedures and the authority of personnel.
4. If the application of heat is proposed for coating application purposes, provide information on the heat containment and procedures that will be used, with data sheets for the equipment. Note: If heat is used for coating operations, the heat and containment must be maintained to provide the required temperatures for the duration of the cure period.
5. Containment plans (paint removal/collection of debris, surface preparation, coating applications, coating applications with heat, etc.).
6. Proof of SSPC-QP 1 qualifications and QP 2 qualifications, as applicable.
7. Coating product information, including coating manufacturer, product name, application instructions, technical data, MSDS and color chips.
8. Abrasive product information, including abrasive manufacturer, product name, technical data, and MSDS.

The Contractor shall not begin any paint removal work until the Engineer has accepted the submittals. The Contractor shall not construe Engineer acceptance of the submittals to imply approval of any particular method or sequence for conducting the work, or for addressing health and safety concerns. Acceptance of the programs does not relieve the Contractor from the responsibility to conduct the work in strict accordance with the requirements of Federal, State, or local regulations, this specification, or to adequately protect the health and safety of all workers involved in the project and any members of the public who may be affected by the project. The Contractor remains solely responsible for the adequacy and completeness of the programs and work practices, and adherence to them.

Materials: The materials for the coating system for this work shall conform to the requirements of Section M.07.02 amended as follows:

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The coating system shall be one of the following 2-coat systems:

Corothane I Galvapak,

1K Zinc Primer

Fast Clad Urethane, manufactured by: Sherwin Williams
425 Benton Street
Stratford, CT 06615
(203) 377-1711
(800) 474-3794

Carbomastic 15
Carbothane 134 HS, manufactured by: Carboline
2150 Schuetz Road
St. Louis, MO 63146
(800) 848-4645

Epoxy Mastic Aluminum II
Acrolon 218 HS, manufactured by: Sherwin Williams
425 Benton Street
Stratford, CT 06615
(203) 377-1711
(800) 474-3794

Carbomastic 90
Carbothane 134 HS, manufactured by: Carboline
2150 Schuetz Road
St. Louis, MO 63146
(800) 848-4645

All materials for the complete coating system shall be furnished by the same coating material manufacturer with no subcontracted manufacturing allowed. Intermixing of materials within and between coating systems will not be permitted. Thinning of paint shall conform to the manufacturer's written recommendations. All components of the coating system and the mixed paint shall comply with the Emission Standards for Volatile Organic Compounds (VOC) stated in the Connecticut Department of Environmental Protection's Administration Regulation for the Abatement of Air Pollution, Section 22a-174-20(s).

Note: If any of the above and/or following stipulated contract specifications differ from those of the Manufacturer's recommended procedures or ranges, the more restrictive of the requirements shall be adhered to unless directed by the Engineer in writing.

The abrasive media for blast cleaning shall be recyclable steel grit.

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Construction Methods:

Contractor - Subcontractor Qualifications: Contractors and subcontractors doing this work are required to be certified by the SSPC Painting Contractor Certification Program (PCCP) to QP 1 entitled “Standard Procedure for Evaluating Qualifications of Painting Contractors (Field Application to Complex Structures”. When the work involves the disturbance of lead-containing paint, the Contractor and subcontractor are also required to be certified to SSPC-QP 2 “Standard Procedure for Evaluating the Qualifications of Painting Contractors to Remove Hazardous Paint”. The certification(s) must be kept current for the duration of the work. If a Contractor’s or subcontractor’s certification expires, the firm will not be allowed to do any work on this item until the certification is reissued. Requests for extension of time for any delay to the completion of the project due to an inactive certification will not be considered and liquidated damages will apply. In addition, if any recoat times are exceeded, the affected areas shall be abrasive blast cleaned to SSPC-SP 6 and coatings reapplied in accordance with these specifications at no additional cost to the State. At the option of the Engineer, if such a delay will adversely impact the successful and timely completion of the project, the Department may require the Contractor to engage another SSPC certified contractor to do the painting work at the prime contractor’s expense.

Quality Control Inspections: The Contractor shall perform first line, in process Quality Control (QC) inspections. The Contractor shall implement a Quality Control Program accepted by the Engineer, including written daily reports, that ensures that the work accomplished complies with these specifications. Copies of these reports shall be provided daily to the Engineer. Contractor QC inspections shall include, but not be limited to the following:

- Suitability of protective coverings and containments
- Ambient conditions
- Surface preparation (solvent cleaning, hand/power tool or abrasive blast cleaning, etc.)
- Coating application (mixing, thinning, and wet/dry film thickness)
- Recoat times and cleanliness between coats
- Coating continuity (freedom from runs, sags, overspray, dryspray, pinholes, shadow-through, skips, misses, etc.)
- Final film acceptance

The personnel managing and performing the quality control program shall be NACE Certified Coating Inspector(s) (successfully completed Sessions I, II, III and Peer Review) or must be SSPC certified BCI level 2. The personnel performing the quality control tests shall be trained in the use of the quality control instruments. Documentation of training shall be provided. These personnel shall not perform surface preparation and painting.

Test Equipment and Materials: The Contractor shall furnish the following new test equipment and materials for use by the QC Inspector: Two PTC Surface Temperature Thermometers

1. Psychron 566 Psychrometer (Battery Operated) with two sets of batteries or a Bacharach Sling Psychrometer
2. U.S. Weather Bureau Psychrometric Tables
3. Hypodermic Needle Pressure Gage for nozzle pressure tests.

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4. SSPC Visual Standards VIS 1, VIS 3, and/or VIS 4, as applicable.
5. Testex Spring Micrometer
6. Testex Press-O-Film Replica Tape, one roll (100 pieces) each of course and extra-coarse per bridge span.
7. Wet film thickness gage
8. PosiTest, Mikrotest or Elcometer Dry Film Thickness Gauge (FM)
9. SSPC Type 2 Dry Film Thickness Gauge per PA2
10. NIST (NBS) Calibration Standards Range: 0 – 39 mils

Quality Assurance Inspections: The Engineer may conduct Quality Assurance (QA) observations of any or all phases of the work. The presence or activity of Engineer inspections in no way relieves the Contractor of the responsibility to provide all necessary daily Quality Control inspections of its own and to comply with all requirements of this Specification.

The Contractor shall facilitate the Engineer's inspections as required, including allowing ample time for the inspections and providing suitable lighting (50 foot candles minimum at the surface as defined later in this specification). The Contractor shall furnish, erect and move scaffolding or other mechanical equipment to permit inspection and close observation of all surfaces to be cleaned and painted. This equipment shall be provided during all phases of the work. The Contractor shall notify the Engineer in advance of plans to remove staging used in cleaning and painting operations in order to allow for inspection. The QA inspection will be performed with his own equipment when verifying the Contractor's test results in the field.

Safety: All Contractor activities associated with the coating work described and specified herein shall be conducted according to all applicable Federal (OSHA), State of Connecticut safety regulations and SSPC-PA Guide 3 entitled "A Guide to Safety in Paint Application".

Ambient Conditions: Surface preparation and coating application work shall only be done inside a containment enclosure as specified elsewhere in these specifications. No surface preparation or coating work shall be performed when the conditions inside the containment enclosure are as follows:

- When the relative humidity is at or above 90 percent.
- When the substrate is damp or covered by frost or ice.
- When the surface temperature or air temperature are less than 50 degrees Fahrenheit or greater than 100 degrees Fahrenheit.
- When the surface temperatures of the steel or air are less than five (5) degrees Fahrenheit above the dewpoint temperature as determined by a surface temperature thermometer and electric or sling psychrometer.

If the requirements of the coating manufacturer differ from the ranges provided above, comply with the most restrictive requirements unless directed otherwise by the Engineer in writing.

Protective Coverings: The Contractor shall protect property, pedestrians, vehicular, and other traffic upon, underneath, or near the bridge, and all portions of the bridge superstructure and

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substructure against abrasive blast cleaning damage or disfigurement from splatters, splashes, or spray of paint or paint materials. See the specification for “Class 1 - Containment and Collection of Surface Preparation Debris (Site No.)”. All coating overspray, drips and spills shall be contained. Maintain the integrity and security of all protective coverings and containment materials throughout the entire project.

Any paint chips, paint removal media (e.g., abrasives), coating or solvent that has escaped the Contractor’s containment enclosure shall be cleaned up immediately. For bridges over water, the Contractor shall have on site a sufficient quantity of spill containment boom and pads to contain a spill. The length of containment boom on site shall be at least equal to twice the length of the active work site over the water.

Observed Steel Defects: If significant deficiencies, such as cracks or section losses, are found during cleaning or coating operations, the Contractor shall immediately notify the Engineer as to their extent. Significant deficiencies include the following:

- a) Cracks in any part of the superstructure
- b) Section loss more than 1/8” or section loss equal to or greater than 5 percent of flange thickness in the maximum moment areas (ie. section loss in the middle one half of a single span structure.)
- c) Section loss more than 1/4” or section loss equal to or greater than 25 percent of the flange thickness in other than the maximum moment areas (i.e. Section loss up to quarter points of the middle one half of a single span structure.)
- d) Section loss more than 1/8” or section loss equal to or greater than 33 percent of web thickness in the maximum shear areas (ie. Section loss within five feet of the bearing center line.)

Heating Devices: The Contractor may use heating devices to obtain and maintain a condition within the containment enclosure that is suitable for surface preparation and painting application, up to and including the minimum time to recoat, or minimum time to dry for service or topcoat. Heating devices shall be limited to gas or oil-fired indirect air heaters in which the combustion products are discharged separately from the forced airstream to an area outside the containment enclosure. The heating devices must be configured so as not to form condensation on cold surfaces or cause rust-back and must be automatically controlled. Information describing the proposed heating devices and the proposed heating procedures shall be provided a minimum of 20 days in advance for Engineer acceptance.

Lighting Requirements: A minimum illumination level of 20 foot-candles shall be provided throughout the inside of the containment enclosure during surface preparation and coating application work. A minimum illumination level of 50 foot-candles shall be provided at the location of the specific work task and for inspection. All lighting fixtures and related connectors located inside the containment enclosure must be explosion proof and UL listed.

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Material Storage: The Contractor shall provide a suitable facility for the storage of paint that complies with all Federal and State laws and regulations.

This facility shall provide protection from the elements and ensure that the paint is not subjected to temperatures outside of the more stringent of (1) the manufacturer's written recommended temperature extremes, or (2) below 40 degrees Fahrenheit or above 100 degrees Fahrenheit. If paint application takes place in conditions that require heating of the containment, then the temperature of the stored paint shall be maintained as at similar temperature. Storage of paint shall be in reasonable proximity to the painting locations. The Engineer shall be provided access to the stored paint anytime for inspection and to witness removal of the materials. The Contractor's facility for the storage of paint shall be subject to the approval of the Engineer.

Equipment: All equipment used in surface preparation and removal of debris, such as hoses, hoppers, recycling and vacuum machines that the Contractor brings to the site, shall be clean and free of any prior debris.

Spray equipment, brushes and rollers used in application of coatings shall be sized sufficiently and be in proper working order to accomplish the work according to the manufacturer's written recommendations.

Compressed Air: All compressed air sources shall have oil and moisture separators, attached and functional, and properly designed and sized. The compressed air sources shall deliver air to the blast nozzle, for blowing down the surfaces, or for conventional spray application that is free of oil and moisture and of sufficient pressure to accomplish the associated work efficiently and effectively. The tanks on the air compressor and moisture separator shall be drained at the end of each workday. The compressed air source shall produce a minimum pressure of 90 psi at the nozzle during abrasive blast cleaning.

The Contractor shall verify that the compressed air is free of moisture and oil contamination in accordance with the requirements of ASTM D4285. The tests shall be conducted at least every four hours for each compressor system in operation. Sufficient freedom from oil and moisture is confirmed if soiling or discoloration is not visible on the paper. If air contamination is evidenced, the Contractor shall change filters, clean traps, add moisture separations or filters, or make other adjustments as necessary to achieve clean, dry, air.

Test Sections: Prior to surface preparation, the Contractor shall prepare a test section(s) on each structure to be painted in a location(s) that the Engineer considers to be representative of the existing surface condition and steel type for the structure as a whole. The test section(s) shall be prepared using the same equipment, materials and procedures as the production operations. The Contractor shall prepare the test section(s) to the specified level according to the appropriate SSPC written specifications and visual standards. The written requirements of the specification prevail in the event of a conflict with the SSPC visual standards. Only after a test section area has been approved shall the Contractor proceed with surface preparation operations. The test

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section(s) shall cover approximately 10 square feet each. Additional compensation will not be allowed the Contractor for preparation of test sections.

For the production cleaning operations, the specifications and written definitions, the test section(s), and the SSPC visual standards shall be used in that order for determining compliance with the contractual requirements.

Surface Preparation:

1 – Laminar and Stratified Rust: All laminar and stratified rust or corrosion products that have formed on any area of the existing steel surfaces and accessible rust formed along edges of connected plates or shapes of structural steel shall be removed. The tools used to remove these corrosion products shall be identified in the submittals and accepted by the Engineer. If the surface preparation or removal of rust results in nicks or gouges, the work will be suspended. The Contractor shall demonstrate that the necessary adjustments have been made to prevent a reoccurrence of the damage prior to resuming work.

2 – Commercial Blast Cleaning (SSPC-SP 6): Steel surfaces, including all new steel plates installed for structural repairs, shall be cleaned by the specified methods described in the SSPC Steel Structures Painting Manual, Volume 2 - Systems and Specifications, latest edition. The structural steel shall be abrasive blast cleaned according to SSPC-SP 6 “Commercial Blast Cleaning”. Before and after blast cleaning, all dissolvable foreign matter, such as oil, grease, and dust shall be removed by wiping or scrubbing the surface with rags or brushes wetted with solvent in accordance with the provisions SSPC-SP 1 “Solvent Cleaning.” Clean solvent and clean rags or brushes shall be used for the final wiping.

All foreign materials such as dirt, dust, rust scale, sand, bird droppings, and all materials loosened by abrasive blasting operations shall be completely removed by vacuuming before any painting operations are begun.

Following completion of the initial abrasive blast cleaning operations, the Contractor shall proceed with installation of new structural steel plates where required by the plans and as directed by the Engineer.

The cleaned surface shall be accepted by the Engineer before any painting. If the surface is determined to meet the requirements of SSPC-SP 6, painting operations can commence. The base coat shall be applied to the steel before the end of the day that preparation was performed and before the formation of any flash rusting or rerusting of the steel. Flash rusting or rerusting of the surface is unacceptable and requires additional blast cleaning prior to painting.

Failure of the Contractor to prepare and clean the surfaces to be painted according to these specifications shall be cause for rejection by the Engineer. All surfaces that are rejected shall be

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re-cleaned to the satisfaction of the Engineer according to these specifications, at no additional cost to the State.

3 – Steel Grit Abrasive Mix: The recyclable steel grit abrasive mix shall be maintained and monitored such that the final surface profile is within the range specified elsewhere in these specifications.

Before each reuse, the recyclable steel grit abrasive shall be cleaned of millscale, rust, paint, and other contaminants by an abrasive reclaimer.

On a weekly basis during blast cleaning operations, the Contractor shall verify that the recycled steel grit abrasives meet the requirements of SSPC-AB 2. If the abrasive fails the testing, all abrasive blast cleaning operations shall be suspended. The abrasive reclaimer shall be repaired and another abrasive sample will be required for testing after grit recovery and reclassification. For test results within the acceptable limits, abrasive blast cleaning may resume. Test results outside of the acceptable limits will require additional equipment repairs or replacement at no cost to the State. If additional repairs were performed, another sample will be required for testing after grit recovery and reclassification. If the test results continue to remain outside of the acceptable limits, the Contractor shall replace the abrasive reclaimer at no cost to the State.

4 - Surface Profile: The specified height of the steel surface profile shall be according to the manufacturer's written instructions and shall be uniform. Verification of the profile height will be done with Testex Replica Tape. A surface profile correction factor will be measured according to SSPC-PA 2, Section 2.2.4 with the dry film thickness gauge.

Painting Operation:

1 - General: All coatings shall be supplied in sealed containers bearing the manufacturer's name, product designation, batch number and mixing/thinning instructions. Leaking containers shall not be used. Storage, opening, mixing, thinning and application of coating materials shall be accomplished in strict accordance with the written requirements and procedures published by the respective coating material manufacturer and supplier. In the event of a conflict, the Contractor shall notify the Engineer in writing, and unless directed otherwise in writing, the requirements of this specification shall prevail. The Contractor shall always have at the project site the current copies of all material safety data sheets (MSDS), technical data, recommendations and procedures published by the coating manufacturer for the coating materials.

2 - Paint Mixing and Thinning: Thinning shall be performed only to the extent allowed by the manufacturer's written instructions, and only with the manufacturer's approved thinner. In no case shall thinning be permitted that would cause the coating to exceed the local VOC restrictions. For multiple component paints, only complete kits shall be mixed and used. Partial mixing is not allowed.

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The ingredients in the containers of paint shall be thoroughly mixed by mechanical power mixers in the original containers, or as directed by the manufacturer, before use or mixing with other containers of paint. The paint shall be mixed in a manner that will break up all lumps, completely disperse pigment and result in a uniform composition. Paint shall be carefully examined after mixing for uniformity and to verify that no unmixed pigment remains on the bottom of the container. Excessive skinning or partial hardening due to improper or prolonged storage will be cause for rejection of the paint, even though it may have been previously inspected and accepted.

Multiple component coatings shall be discarded after the expiration of the pot life. Single component paint shall not remain in spray pots, painter's buckets, etc. overnight. It shall be stored in a covered container and remixed before use.

The Engineer reserves the right to sample field paint (individual components and/or the mixed material) and have it analyzed. If the paint does not meet the product requirements due to excessive thinning or because of other field problems, the coating shall be removed from that section of the structure and replaced as directed by the Engineer.

3 – Methods of Application: All applicators of the specified coating material shall show proficiency on a test panel, or a portion of the structure as selected by the Engineer, to the satisfaction of the Engineer before commencing full-scale application.

The preferred method for coating application shall be by airless spray equipment. For striping and for application in areas where complex shapes or tight clearances will not allow spray application, the Contractor shall apply the coating material by appropriately designed and constructed rollers and brushes.

4 – Recoat Times: The recoat time of each coat of paint shall not deviate from the written recommendation of the manufacturer or the times specified in these specifications, complying with the most restrictive requirements unless directed otherwise by the Engineer in writing. If any individual time is exceeded, the affected areas shall be abrasive blast cleaned to SSPC-SP 6 and coatings reapplied in accordance with these specifications at no additional cost to the State.

5 – Film Continuity: All applied coatings shall exhibit no running, streaking, sagging, wrinkling, holidays, pinholes, top coat color or gloss variation, or other film defects. Failure of the Contractor to apply coatings that are free of film defects shall be cause for rejection by the Engineer. All coatings rejected shall be repaired to the satisfaction of the Engineer, at no additional cost to the State. Before doing any coating repair work, the Contractor shall submit to the Engineer for approval the procedures that will be used to repair the coating.

6 - Technical Advisor: It is mandatory that the Contractor obtain the services of a qualified technical advisor employed by the coating manufacturer. This advisor shall be familiar with the technical properties of the coating products and proper application methods. The technical

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advisor shall assist the Engineer and the Contractor in establishing correct application methods for the complete coating system. He/she shall be present at the work site before the opening of the material containers and shall remain at the site until the Engineer is satisfied that the Contractor's personnel have mastered the proper handling, mixing and application of the material. The Engineer may call the technical advisor back to the site if there are concerns that the Contractor is not handling, mixing or applying the material correctly.

7 - Containment Plan: For each individual site, the Contractor shall submit a plan of containment to the Engineer for acceptance. The plan shall be submitted twenty days before commencing painting operation. The minimum containment enclosure for the intermediate and top coat shall conform to the requirements of SSPC Guide 6, Class 1A and the following. Components of the containment system must be made from flame retardant materials. Tarpaulin material shall be clean and impermeable to air and water. Joints shall be fully sealed except for entryways. Entryways shall use multiple flap overlapping door tarps to minimize dust escape through the entryway. All mists or dust shall be filtered with collection equipment. For truss bridges a ceiling shall also be included.

8 - Application:

2-COAT SYSTEM:

Painting of Existing Steel:

A - Primer Coat Application: All prepared surfaces shall be cleaned by vacuuming to remove dust, remaining debris, and other surface contaminants before coating. Such surfaces shall then be sprayed, brushed or rolled within the specified abrasive blast cleaning containment enclosure before the end of the day or before any visible rust-back occurs. If rust-back occurs, affected surfaces shall be re-cleaned to the satisfaction of the Engineer according to these specifications, at no additional cost to the state. All surfaces shall receive 1 coat of the primer coat. Temperature ranges (both steel and air) shall be the more restrictive of that specified in the Manufacturer's written application instructions or between 50° F. to 100° F., unless directed otherwise by the Engineer in writing. The dry film thickness shall be according to the Manufacturer's written instructions. The primer coat shall be of a contrasting color to the topcoat color. The dry film thickness will be checked for compliance per the guidelines of SSPC-PA 2.

All plate and shape edges, plate seams, back to back angle seams, pitted steel, and other sharp discontinuities shall be hand-striped with a brush in the longitudinal direction with the primer coat. Bolted connections shall also have all bolt heads and nuts hand-striped in a circular brush motion with the primer coat material. Stripe coats shall be applied before or after the full primer coat application. The primer coat material used for hand-striping shall be tinted to distinguish it from material used for the full primer coat application.

B - Top Coat Application: After the primer coat has cured per the Manufacturer's written recommendations (not to exceed 10 days), all previously coated surfaces shall receive the top

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coat. The cured and dry primer coat shall be clean and free of all surface and embedded contamination and dry-spray. If it is not clean and free of all contamination, and dry-spray, the surfaces shall be cleaned by using clean rags or brushes to water wipe, solvent wipe, or detergent wash and rinse. Power washing is not allowed. Temperature ranges (both steel and air) shall be the more restrictive of that specified in the Manufacturer's written application instructions or between 50° F. to 100° F., unless directed otherwise by the Engineer in writing. The dry film thickness shall be according to the Manufacturer's written instructions.

All paint that is damaged by field welding operations or by any other operation shall be removed, the area cleaned to the satisfaction of the Engineer, and the affected areas repainted with the primer coat. The steel shall then be painted with the rest of the paint system.

9 – Painting of New Steel:

All new steel shall be painted with the same coating system selected for use at the beam ends, unless permitted otherwise in writing by the Engineer. The new steel shall be furnished either coated or uncoated, unless otherwise specified on the plans.

Coated Steel:

A - Primer Coat Application: The new steel shall be painted with the primer coat after fabrication. The surface for the new steel surface shall be prepared in accordance with the requirements of this special provision. The primer coat application shall be in accordance with the requirements listed under Painting of Existing Steel.

B - Top Coat Application: The new steel shall be top coated after it has been installed. The top coat application shall be in accordance with the requirements listed under Painting of Existing Steel.

All paint that is damaged by field welding operations or by any other operation shall be removed, the area cleaned to the satisfaction of the Engineer, and the affected areas repainted with the primer coat. The new steel shall then be painted with the rest of the paint system

Uncoated Steel:

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A – Primer Coat Application: After the uncoated steel has been installed the surface shall be prepared in accordance with the requirements of this special provision. The primer coat application shall be in accordance with the requirements listed under Painting of Existing Steel.

B - Top Coat Application: The top coat application shall be in accordance with the requirements listed under Painting of Existing Steel.

Method of Measurement: This item, being paid for on a lump sum basis for each bridge site, will not be measured for payment.

Basis of Payment: This work will be paid for at the contract lump sum price for “Abrasive Blast Cleaning and Field Painting of Structure (Site No.)”, which price shall include all materials, equipment, abrasive blast cleaning and surface preparation, painting, coating of inaccessible areas, overspray containment enclosure, heating devices, tools, labor, and services of the technical advisor. No direct payment will be made for the cost of storage or hauling the paint and other materials to and from the bridge site, but the cost thereof shall be included in the lump sum price as noted above.

The containment and collection of surface preparation debris shall be paid for under the item “Class 1 - Containment and Collection of Surface Preparation Debris (Site No.)”.

Disposal of spent abrasive contaminated by lead shall be paid for under the item, “Disposal of Lead Debris From Abrasive Blast Cleaning”.

Installation of steel plates shall be paid for under “Structural Steel”

| <u>Pay Item</u> | <u>Pay Unit</u> |
|---|-----------------|
| Abrasive Blast Cleaning and Field Painting of Structure (Site No.) | L.S. |

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