ITEM #0603081A – STRUCTURAL STEEL REPAIRS (SITE NO. 1)

ITEM #0603082A – STRUCTURAL STEEL REPAIRS (SITE NO. 2)

Article 6.03.01 – Description is supplemented by the following:

This work shall consist of repairing portions of steel members as indicated and detailed on the Contract Plans and any additional areas identified in the field by the Engineer. The repairs shall include the installation of new steel plates and sections over deteriorated portions of beams. The Contractor shall bring to the attention of the Engineer any areas with substantial section loss (1/8" thick loss or greater) not identified on the plans.

This work shall also consist of removing and replacing cross frames as shown on the plans for Site No. 2, repair of masonry plates, field bolting, field welding and as otherwise shown on the plans.

This work shall also consist of the removal and disposal of existing rollers and associated hardware, and installation of new rollers and associated hardware beneath CNG's gas utility and installing new rollers. CNG shall provide up to 10 new rollers, including u-bolts and associated hardware, to be installed by the Contractor and CNG shall provide the locations at which the rollers are to be replaced.

All surface preparation of repair plates including the area around the repair shall be considered incidental to this work, and included in the price. The existing structural steel consists of weathering steel and the hazardous materials survey that was performed indicates that no lead based paint is present on the metal structural steel/metal bridge components (unpainted – rust) of Bridge Nos. 03912 and 03913. The Contractor is responsible to contain and properly dispose of all debris from the blast cleaning operation.

Any staging, scaffolding, or other work or items required to complete this work shall be considered incidental to this work, and included in the price. Temporary support of utilities and the debris shield for those utilities shall be paid under the item "Temporary Support of Utilities".

Article 6.03.02 – Materials are supplemented by the following:

All structural steel plates and sections for repairs shall conform to AASHTO M270 Grade 50 WT2.

All new high strength bolts, nuts and washers shall be AASHTO A490 (Type 3), A563 (Grade DH3) and F436 (Type 3), respectively.

Article 6.03.03 – Construction Method is supplemented by the following:

Bridge No. 03912

The Contractor shall blast clean the surfaces shown to be repaired on the Contract Plans, after which the Engineer will confirm and delineate limits of repairs. The Contractor shall then take detailed field measurements and develop shop drawings for the needed repairs. Shop drawings are to be provided with the field measurements.

With approval of the Engineer, repairs at multiple locations can be made at the same time, as long as traffic control and other requirements can be met and the repairs being made are not on the same continuous beam section. For traffic requirements, see "Maintenance and Protection of Traffic", "Maintenance Pedestrian Access" and "Section 1.08 - Prosecution and Progress".

Where there is a perforation in the bearing stiffener, those repairs shall be completed prior to drilling holes in the webs or flanges for the installation of the web repair plates. For bearing stiffeners with perforations, only remove one stiffener per beam at any one time.

Steel plates and sections shall have holes drilled in the shop, with proper planning for location of holes to meet field fit-up and spacing and clearance requirements shown on the plans. Holes in the existing webs, flanges and stiffeners shall be drilled using templates. All holes may be drilled at one time before the installation of bolts; however, bolts shall be installed as soon as they can after the repair plates and sections are set.

Caulk the perimeter of all plates and sections with a paintable caulk, approved by the Engineer, and paint the caulk to match the color of the existing beam (weathering steel).

Bridge No. 03913 – Masonry Plate Repairs

Masonry plates shall be repaired as shown in the Contract Plans. The Contractor shall take field measurements and submit sketches with shop drawings. Develop a repair procedure and submit to the Engineer for approval. Adjust plate dimensions as needed to facilitate field welding.

Bridge No. 03913 - Cross Frame Replacements

All existing cross frames noted on the Contract Plans shall be removed and replaced with new cross frames.

The Contractor shall submit a detailed work plan for the removal and installation of cross frames, providing anticipated equipment to access the cross frames, methods of removal and installation, which cross frames will be worked on at the same time, the order in which cross frames will be replaced, required lane outages for each cross frame, etc.

Cross frames that are immediately adjacent to one another, in a transverse line perpendicular to Route 71 traffic, may not be replaced at the same time. Additionally, no more than one cross

frame in any one bay may be replaced at the same time. All lanes of traffic on Route 72 may remain open during the replacement of the cross frames. Temporary cross frames shall be fully installed before removing the existing cross frame and cannot be removed until the new cross frame is entirely connected. Temporary cross frames shall be designed by the Contractor's Engineer for assumed loads shown on the plans and working drawings provided for review prior to the commencement of work.

Cross frames shall be removed in a controlled manner, protecting the structural steel girders, lateral bracing, the gas main and the roadway below. The gas main shall be protected with a debris shield, for which the work will be paid under the item "Temporary Support of Utilities".

New cross frames can be installed with the use of field drilling through the gusset plates to ensure proper fit up. The Contractor may elect to shop drill or shop weld some or all pieces. However, all responsibility of proper fit up is the Contractor's, and the detailed procedure must be submitted to the Engineer in advance for acceptance. At a minimum, field drilling through the existing girder connection plates is anticipated and for which a template shall be used.

For the removal of existing gusset plates "P1" currently welded to the bottom flanges and as shown on the plans, the fillet welds shall be ground off without damage or reduction in section to the girders' bottom flanges. After removal of the gusset plate, grind weld smooth to edge of bottom flange, without reducing the flange's width.

Bridge No. 03913 – Girder Strengthening

Field drilling for girder strengthening shall not start until all cross frames are replaced. Cleaning and other work for preparation of the girders for the strengthening can be done before cross frames are replaced.

Girders shown on the plans are being strengthened to meet current code requirements for strength and service. New structural steel plates and filler plates will be attached to the existing girders to provide additional capacity.

Girders are curved and as such the new cover plates and filler plates shall match the curvature of the existing girders. Field drill all holes in the bottom flange with a template. All holes in the cover and filler plates shall be shop drilled.

Girder strengthening can be accomplished with only shoulder closures on Route 72.

Bridge No. 03913 – Gas Utility Rollers

New rollers shall be provided by CNG, with associated hardware. Locations at which the rollers are to be replaced will be provided by CNG and the Engineer. Existing rollers and associated hardware at designated locations shall be removed and disposed by the Contractor. Up to 10 rollers for the gas main will be removed and replaced.

It is anticipated that the u-bolts at adjacent supports may have to be loosened to allow slack in the gas main and accommodate the removal and replacement of rollers at particular support locations. Provide temporary timber blocking at these locations, as needed to provide proper support for the gas main.

The debris shield and protection installed on and around the gas main to allow for the replacement of the cross frames shall be coordinated with the work for the roller replacements. Any removal and replacement of the debris shield and gas main protection to allow for installation of rollers shall be incidental to this work and shall be at no additional cost to the Department.

Submit full written procedure to CNG and gain approval prior to commencing any work. Coordinate all replacement operations with CNG with at least two weeks advance notice.

Article 6.03.04 – Method of Measurement is supplemented by the following:

This work will be measured for payment by the weight of steel installed, including bolts, nuts, washers and rollers.

Article 6.03.05 – Basis of Payment is supplemented by the following:

The quantity determined under the "Method of Measurement" section shall be paid for at the contract unit price per CWT of the Item "Structural Steel Repairs (Site No. X)". This payment shall constitute full compensation for all labor, staging, scaffolding, tools, materials, surface preparation, containment and collection of debris, field measuring, field drilling, field bolting, equipment, testing of welds, paintable caulk and all other incidentals necessary to perform the work as described herein and as shown in the Contract Drawings.

Pay Item	Pay Unit
Structural Steel Repairs (Site No. 1)	CWT
Structural Steel Repairs (Site No. 2)	CWT