A d d e n d u m

Iowa Department of Transportation
Office of Contracts

Date of Letting: April 25, 2017
Date of Addendum: April 11, 2017

B.O.	Proposal ID	Proposal Work Type	County	Project Number	Addendum
001	82-0741-197	BRIDGE – STEEL GIRDER	SCOTT	IM-NHS-074-1(197)5--03-82	25APR001A05

Make the following changes to the PROPOSAL SPECIAL PROVISIONS LIST & TEXT:

Replace SP-150179 for Maintenance Water Line with attached SP-150179a

Make the following changes to the PLAN:

Replace SHEET J.1 with attached SHEET J.1.

Note: Removed allowable lane closure times from Tab 108-23A

SP-150179a
(Replaces SP-150179)

SPECIAL PROVISIONS
FOR
MAINTENANCE WATER LINE

Scott County
IM-NHS-074-1(197)5--03-82
IM-NHS-074-1(198)5--03-82

Effective Date
April 25, 2017

THE STANDARD SPECIFICATIONS, SERIES 2015, ARE AMENDED BY THE FOLLOWING MODIFICATIONS AND ADDITIONS. THESE ARE SPECIAL PROVISIONS AND THEY SHALL PREVAIL OVER THOSE PUBLISHED IN THE STANDARD SPECIFICATIONS.

150179a.01 DESCRIPTION.
The Work consists of furnishing and installing all piping, valves, water hammer arrestors, expansion fittings, piping supports, devices and all the components for installation of a maintenance water line for the I-74 approach spans bridges to make it an integrated and functional system as per the contact documents. The main intent of the Work is to provide hose outlets to facilitate washing the bridge surface.

150179a.02 MATERIALS.

A. General.

1. Manufacturer's equipment used as basis of design is indicated in these Special Provisions and/or the contract documents. If no manufacturer is listed, basis of design is industry standard indicated.

2. Each major component piece of equipment shall have the manufacturer's name and address as well as model number, capacity rating serial number, labels of tested compliances and other pertinent data on a nameplate securely affixed in a conspicuous place. The nameplates of the distributing agent will not be acceptable. ASME Code Rating, or other pertinent data which is die-stamped into the surface of the equipment shall be in an easily visible location that is accessible to service personnel**.**

3. Where needed for proper identification, operation, maintenance or safety, provide appropriate signs of engraved plastic-laminate. Where appropriate for normal operating and maintenance information, tags of plasticized card stock may be provided in lieu of signs.

B. Piping.

1. Provide pipe and tube of type, joint type, grade, size and weight (wall thickness or Class) indicated for each service. Where type, grade or class is not indicated, provide proper selection as determined by installer for installation requirements, and comply with governing regulations and industry standards.

2. **Galvanized Steel Pipe.**
   Hot dipped, Carbon steel, Schedule 40 Galvanized Steel Pipe conforming to ASTM A 53. Each length of pipe shall be legibly identified at the mill by paint, stenciling or raised symbols identifying manufacturer and class of pipe.

C. Pipe/Tubing Fittings.

1. Provide factory-fabricated fittings of type, materials, grade, class, and pressure rating indicated for each service and pipe size. Provide sizes and types matching pipe, tube, and valve or equipment connection in each case. Where not otherwise indicated, comply with governing regulations and industry standards for selections and pipe manufacturer's recommendations where applicable.

2. Fittings for Steel Pipe:
   a. Malleable Iron Threaded Fittings: ANSI B16.3, galvanized, 150 Psig
   b. Malleable Iron Threaded Unions: ANSI B16.39, selected by installer for proper piping fabrication and service requirements, including style, end connections, and metal-to-metal seats, galvanized, 150 Psig
   c. Threaded Pipe Plugs: ANSI 16.14.
   d. Steel Flanges/Fittings: ANSI B16.5, including bolting and gasketing of following material group, end connection, and facing except as otherwise indicated:
      1) Material Group: Group 1.1.
      2) End Connections: Threaded.
      3) Facings: Raised face.
   e. Pipe Nipples: Fabricated from same pipe as used for connected pipe, except do not use less than Schedule 80 pipe where length remaining unthreaded is less than 1 1/2 inches, where pipe size is less than 1 1/2 inches, and do not thread nipples full length (no close nipples).
   f. 4 inch pipes may be joined by rigid grooved couplings designed for use with galvanized steel pipe, in lieu of threaded connections. The couplings shall be galvanized.

3. Cold galvanize the threads of piping after the connections with the fittings have been made.

D. Miscellaneous Piping Materials/Products.
Gaskets for Flanged Joints: ANSI B16.21; full faced for cast iron flanges, raised face for steel flanges unless otherwise indicated.

E. Quick Hose Connecting Fitting (Adapters and Fill Cap).

1. Aluminum Cam and Groove Adapters shall be manufactured in accordance with ASTM F 1122 and A-A-59326 (MIL-C-27487).

2. Adapters shall be of high pressure Cam and Groove type.

3. Handles and Pin shall be 316 Stainless Steel.

4. Face seal gaskets are long lasting BUNA-N.

5. Working pressure 750 psi.

6. Size of adapters and caps (non-lockable) for bridge washing hose connections: 1 1/2 inch by 1 1/2 inch (Note: The Contractor shall coordinate with the Engineer before ordering the type to ensure the selected type is compatible with the Engineer's requirements.)

7. Size of lockable fill caps at Abutment 1 and Pier 16: 4 inch by 4 inch. (Note: The Contractor shall coordinate with the Engineer before ordering the type to ensure the selected type is compatible with the Engineer's requirements.)

8. **Manufacturers.**
   a. OPW
   b. Dixon "Andrews"
   c. Balflex

F. Expansion Loop.

1. Flexible loop shall consist of two flexible sections of hose and braid, two galvanized 90 degree elbows and a galvanized 180 degree return, for pipe size 4 inches.

2. Loop shall have a drain plug and support bracket.

3. Loop shall have flanged ends.

4. Fittings shall be SCH 40, carbon steel, galvanized.

5. Hose and Braids shall be Series 300 Stainless Steel.

6. **Manufacturers:**
   a. Flexicraft Industries, MLF80400
   b. Metraflex Company
   c. Senior Flexonics

G. Flexible Hose Connector.

1. Flexible Hose Connector shall be doubled braided type female pipe coupling as the end fitting with flanges.

2. Inner corrugated hose and outer braid shall be type 304 stainless steel.

3. Hose size 2 inches, length 10 inches.

4. Flexible Hose Connector shall comply with the following:
   a. Working pressure at 70°F = 250 psig.
   b. Test pressure at 70°F = 400 psig.
   c. Burst pressure at 70°F = 1000 psig.

5. **Manufacturers.**
   a. Metraflex Company, Model SST
   b. Flexicraft Industries
   c. Senior Flexonics

H. Pipe Sleeves.

1. General: Concrete Slab Sleeves for piping shall be standard weight galvanized steel pipe with bottom end flush with surface, top end extended 1 inch above slab, caulked.

2. Piping Sleeves shall be fabricated from 16 gauge galvanized sheet steel and shall be 2 inches larger inside diameter than pipe. Sleeves shall be length required for a 4 inches wide collar (waterstop) welded to the sleeve, placed on top of structural slab. Caulk sleeves in place, watertight with silicone sealant.

I. Valves.

1. General.

a. Factory-fabricated valves recommended by manufacturer for use in service indicated.
b. Types and pressure ratings indicated.
c. End connections, which properly mate with pipe, tube, and equipment connections.
d. Where more than one type indicated, selection is Contractor's option.
e. Sizes: Unless otherwise indicated, provide valves of same size as upstream pipe size.

2. Operators.

a. Hand wheels fastened to valve stem for valves other than 1/4 turn.
b. Lever handle for 1/4 turn valves 6 inches and smaller, other than ball valves.
c. Gear operators for 1/4 turn valves 8 inches and larger.

3. Valve Features: Provide valves with features indicated and, where not otherwise indicated, provide proper valve features as determined by Contractor for installation requirements.
a. ASME B31.9 for building services piping and ASME B31.1 for power piping.
b. Bypass: MSS SP-45, and except as otherwise indicated, manufacturer's standard bypass piping and valving.
c. Drain: MSS SP-45, threaded pipe plugs.
d. Flanged: Valve flanges comply with ANSI B16.1 (cast iron), ANSI B16.5 steel) or ANSI B16.24 (bronze).
e. Threaded Valve Ends: ANSI B1.20.1.
f. Butt Welded Valve Ends: ANSI B16.25.
g. Socket Welded Valve Ends: ANSI B16.18.
h. Flangeless Valve Bodies: Fit between flanges complying with ANSI B16.1 (cast iron), ANSI B16.5 (steel) or ANSI B16.24 (bronze).

J. Gate Valves.

1. Manufacturers.

a. Stockham Valves and Fittings.
b. NIBCO, Inc.
c. Milwaukee Valve Company, Inc.
d. Or equal.

2. ASTM B 62 Class 125, bronze, screw-in bonnet, rising stem, ASTM B 62 solid bronze wedge.
a. Threaded Ends: Stockham Figure B-100, or equal.
b. Solder Ends: Stockham Figure B-109, or equal.

K. Combination Air Valves.

1. Manufacturers.

a. Golden – Anderson Industries, Figure 945.
b. APCO Valves.
c. Or equal.

2. The combination air valve shall consist of a kinetic air and vacuum valve and an air release valve contained in a single body housing. The valve shall be designed to exhaust large amounts

of air during filling, to release small amounts of accumulated air during operation and to admit large amounts of air upon impending vacuum during draining.

3. The inlet shall be the nominal size of the valve and the outlet shall be the same size as the inlet. Body and cover shall be of cast iron conforming ASTM A 126, Class B. The Air and Vacuum portion of the valve shall be designed to exhaust air at up to sonic velocity without blowing shut. The floats shall be spherical and shall be capable of withstanding a test pressure of 1000 psi. The Air Release portion shall have a stainless steel leverage mechanism and float. The small orifice shall be stainless steel and have a rubber seat.

4. Inlet shall have a surge check.

5. Valve body to be fusion bond epoxy lined and coated.

L. Ball Valves (Drain Valves).

1. Manufacturers.
- **a.** Jamesbury, Model 4A-2236XT/36" SE.
- **b.** NIBCO, Inc.
- **c.** Stockham Valves and Fittings.
- **d.** Or equal.

2. Carbon Steel Construction:
Two piece valves, 2 inch and smaller: ASTM A 216 carbon steel body, 1500 psi stainless steel standard port ball and stem, reinforced TFE packing and seats, stainless steel trim.
- **a.** Threaded Ends: Conbraco "Apollo" 73-100 Series, or equal.
- **b.** 36 inch stem extension and lever operator comply ANSI B1.20.1 for end connection.

3. MSS Compliance: MSS SP-72.

M. Water Hammer Arrestor.

1. Manufacturers.
- **a.** Flexicraft Model MHY320500, Style Hydropad.
- **b.** Metraflex Company.
- **c.** Or equal.

2. Water Hammer Arrestor shall consist of a diaphragm-type stainless steel bellows unit enclosed by an outer shell. Bellows shall be of multiple-type diaphragms, and heli-arc welded at inner and outer peripheries. Bellows shall be exposed internally to line pressure and all material in contact with line fluid shall be 316L stainless steel. Unit shall have sufficient volume between outer steel shell to limit maximum surge to desired pressure. Unit shall be filled on site with nitrogen gas between bellows and steel shell. Nitrogen gas pressure shall be 3 to 5 psig below the normal line pressure at point of installation. All Hydropads shall be designed and welded to meet ASME unfired pressure vessel codes.

N. Surge Relief Valve.

1. Manufacturers.
- **a.** Golden – Andrewson Industries Figure 6625
- **b.** APCO Valves.
- **c.** Or equal.

2. Main valve body shall be long radius elbow pattern of cast iron conforming to ASTM A126 Class B. The valve body shall be inherently self-cleaning and have a net flow area through the valve

no less than the area of its normal pipe size. The body shall have a removable 316 stainless steel body liner. The valve disc shall be aluminum. The spring chamber shall be aluminum. Valve shall be fusion bond epoxy lined and coated. The valve shall be factory tested and set to open at a pressure of 110 psi. Springs shall permit field adjustment from near zero to 10% above factory setting.

3. The surge relief valve shall quickly open when the system pressure exceeds its setting, remain open as long as the pressure exceeds this setting, and slowly close drop tight when the pressure subsides below the spring setting.

O. Pipe Support Systems.

1. Manufacturers.
- **a.** Anvil.
- **b.** PHD Manufacturing.
- **c.** ERICO.

2. 2 inch Water Branch Hangers.
- **a.** Carbon steel.
- **b.** Galvanized.
- **c.** Anvil Figure 212.

3. 4 inch Water Branch Hangers.
- **a.** Carbon steel.
- **b.** Galvanized.
- **c.** Anvil Figure 181.

4. Vertical Pipe Supports.
- **a.** Carbon steel clamp and bracket.
- **b.** Galvanized.
- **c.** Anvil Figure 103.

5. Beam Clamps.
- **a.** Carbon steel.
- **b.** Galvanized.
- **c.** Anvil Figure 134.

6. Concrete Insert.
- **a.** All concrete inserts in bridge deck shall be epoxy coated.
- **b.** Malleable iron.
- **c.** Galvanized.
- **d.** Anvil Figure 282.

P. References.

Where indicated, comply with requirements and recommendations of the standards or publications listed, except where more detailed and stringent requirements are required by other regulations.

- Building Codes of the City of Bettendorf, and the State of Iowa.
- American National Standards Institute.
- American Society of Mechanical Engineers.
- American Society of Plumbing Engineers.
- American Society for Testing Materials.
- American Water Works Association.
- American Welding Society.
- Association of Safety Engineers.

- Environmental Protection Agency.
- Manufacturers Standardization Society of the Valve and Fitting Industry.
- Mechanical Contractors Association of America.
- National Institute of Standards and Testing.
- National Electrical Contractor Association.

Q. Submittals.

1. Product Data: Submit installation instructions. Submit manufacturer's catalog cuts, product specifications, and technical product data, including installation instructions. For each type and size of valve include pressure drop curve or chart. Submit valve schedule showing manufacturer's figure number, size, service rating, and valve features for each required valve.

2. Piping schedule showing manufacturer, pipe or tube weight, fitting type, and joint type for piping system.

3. Welding Certifications: Submit reports as required for Work.

4. Shop Drawings.

a. Submit manufacturer's assembly type (exploded view) shop drawings for each type of valve indicating dimensions, weights, materials, and methods of assembly of components.

b. Prepare shop drawings to an accurate scale except where diagrammatic representations are specifically indicated by the Engineer as being acceptable. For critical locations, show clearance dimensions.

5. Operation and Maintenance Manuals.

a. Submit maintenance data and spare parts lists for each type of valve, include product data and Shop Drawings.

b. Submit manufacturer's operating instructions for items of mechanical equipment. Supplement operating instructions with Project application instructions. Instructions are to be in typewritten form.

c. Submit operating and maintenance instructions for the system as a whole, including as-built schematic drawings, volume of water required to fill the system and estimated volume of water to purge to system of air, requirements for clarity of water to prevent sediment accumulation in lines, sequence for opening and closing valves when filling, purging and draining system with each use, etc.

d. The Contractor shall prepare and deliver to the Engineer six copies of "Installation, Operating and Maintenance Manuals and Parts Lists" for all items of mechanical equipment furnished under this item of Work. Each manual shall contain all information pertinent to the equipment and essential for good preventative maintenance practice. Include information about efficient replacement of all expendable components, such as data covering model, type, serial numbers, capacities, and maintenance schedules. Operation instructions shall cover all phases of items installed.

e. Manuals shall be compiled in three ring binders and shall be furnished complete with a typed index.

f. Manuals shall be prepared by the original equipment manufacturer and shall be complete in all necessary details of information to permit the proper installation, operating and maintenance of the equipment. Manuals shall refer only to the actual equipment provided and all references to alternative equipment shall be deleted. Critical points of the operation and hazardous limits shall be boldly underscored and emphasized.

g. Generally, the manuals shall include the items listed below and other features as may be recommended by the manufacturers:

- Catalog information of the unit installed.
- Capacity and installation details.

- Special valves and control devices.
- All points requirement lubrication and type of lubricant.
- Frequency of lubrication.
- Operating pressures and temperatures.
- Relief devices and settings.

h. In addition to the six hard copies of the manuals described above, submit an electronic copy in pdf format, including all the data included in the hard copy. Wherever possible, the text shall be searchable.

R. Quality Assurance.

1. Products shall comply with the specified requirements and shall provide a quality no less than that of the manufacturer's standard products, as specified by their published product data. Off-the-shelf conditions should not be assumed to comply with specified requirements. Do not purchase any materials and equipment until the review of submittals by the Engineer that might affect the purchase.

2. Except as otherwise indicated, provide new products. All products shall be free of defects and harmful deterioration.

3. Provide each product complete with trim, accessories, finishes, guards, safety devices, and similar components recognized as integral to the product or required by governing regulations.

4. Unless otherwise indicated, complete the fabrication, assembly, finishing and testing of products prior to delivery to the site.

5. Contractor Qualifications: Installation and alterations of equipment, specialties and accessories, and repair and servicing of equipment shall be performed only by a qualified Contractor. The term qualified means experienced in such work. The Contractor shall have successfully completed a minimum of five projects in the past similar in size and scope to this Project. The Contractor shall be familiar with all precautions required and shall comply with all the requirements of the authority having jurisdiction, and upon request, submit evidence of such qualifications to the Engineer.

6. Manufacturer Qualifications: Components shall be produced by companies regularly engaged and specializing in manufacturing of pipe, tube, fittings, valves and devices of types and sizes required whose products have been in satisfactory use in similar service for not less than 5 years.

7. Valve Types: Provide valves of same type by same manufacturer to greatest extent possible.

8. Valve and Rating Identification: Provide valves with manufacturer's name (or trademark) and pressure rating clearly marked on valve body.

9. Codes and Standards.

a. MSS Compliance: Mark valves in accordance with MSS SP-25.

b. ANSI Compliance: For face-to-face and end-to-end dimensions of flanged or welded end valve bodies, comply with ANSI B16.10.

S. Delivery, Storage and Handling.

1. Deliver products properly identified with names, model numbers, types, grades and compliance labels. Products shall be adequately packaged or protected to prevent deterioration during shipment, storage and handling. Except where prepared and protected specifically for exterior storage, store in a dry and well ventilated indoor space.

2. Delivery, storage and handling of valves:
- **a.** Preparation For Transport: Prepare valves for shipping as follows:
  - **1)** Ensure valves are dry and internally protected against rust and corrosion.
  - **2)** Protect valve ends against damage to threads, flange faces, and weld-end preps.
  - **3)** Set valves in best position for handling. Set globe and gate valves closed to prevent rattling, set ball and plug valves open to minimize exposure of functional surfaces; set butterfly valves closed or slightly open; and block swing check valves in either closed or open position.
- **b.** Storage: Use the following precautions during storage:
  - **1)** Do not remove valve end protectors unless necessary for inspection; then reinstall for storage.
  - **2)** Protect valves from weather. Store valves indoors. Maintain valve temperature higher than the ambient dew point temperature. If outdoor storage is necessary, support valves off the ground or pavement in watertight enclosures.
- **c.** Handling: Use a sling to handle valves whose size requires handling by crane or lift. Rig valves to avoid damage to exposed valve parts. Do not use handles or stems as lifting or rigging points.

3. Delivery, storage and handling of pipe, tube and fittings:
- **a.** Provide factory-applied basic protection and caps on each length of pipe and tube, except for hub-and-spigot pipe. Maintain end caps through shipping, storage, and handling to prevent pipe end damage and eliminate dirt and moisture from inside of pipe and tube.
- **b.** Where possible, store pipe and tube inside and protected from weather. Where necessary to store outside, elevate above grade and enclose with durable, waterproof wrapping.
- **c.** Protect flanges and fittings from moisture and dirt by inside storage and enclosure, or by packaging with durable, waterproof wrapping.

T. Special Requirements.

1. Field Measurements: Before proceeding with the fabrication of the work, the Contractor shall verify all dimensions and take such measurements as are required for proper fabrication and erection of the Work.

2. Coordination: The Contractor shall coordinate this work with adjacent work of other trades.

U. Extra Materials and Spare Parts.

1. Where spare parts or extra materials are called for in any specification section they shall be supplied.

2. The contractor shall turn over to the Engineer all spare parts and extra materials in the original factory packaging.

3. The Contractor shall supply spare parts as recommended by the various equipment manufacturers. These shall be of the types and quantities shown in the operation and maintenance manuals.

150179a.03. CONSTRUCTION.

A. Product Installation General.

1. Except where more stringent requirements have jurisdiction, comply with manufacturer's installation instructions and recommendations regarding but not limited to: handling, anchorage, assembly, connections, cleaning, testing, charging, lubrication, start-up and shut-down of equipment within the scope of this work.

2. The plans serve as working plans for the general layout of the various items. However, the layout of equipment, accessories, specialties, and piping systems shown are diagrammatic and do not necessarily indicate every required valve, fitting, trap, elbow, and so forth. Provide such items as required for proper and complete installation of the work.

3. Where new work is to be applied to existing surfaces, removals and patching shall produce surfaces that are suitable for the new work. Patching shall be performed in a neat manner. Finished surfaces of patched area shall be flush with adjacent existing surfaces and shall match the existing adjacent surfaces in texture and finish.

4. Provide a union ahead of each screwed valve, trap, or strainer, and on each piece of equipment and wherever needed to dismantle piping.

5. Changes in pipe sizes shall be made with the proper size-reducing fittings, reducing elbows, or reducing tees. Bushings are not permitted.

B. Installation of Pipe, Tube, Fittings, Expansion Loops, Supports and Sleeves.

1. General.
- **a.** Install pipe, fittings and all other specified items in accordance with recognized industry practices achieving permanently leak proof piping systems, capable of performing each indicated service without piping failure.
- **b.** Install each run with minimum joints and couplings, but with adequate and accessible unions for disassembly, maintenance or replacement of valves and equipment.
- **c.** Reduce sizes (where indicated) by use of reducing fittings.
- **d.** Align piping accurately at connections, within 1/16 inch misalignment tolerance.
- **e.** Comply with ANSI B31.1 - Code for Pressure Piping.

2. Piping Arrangements.
- **a.** Locate piping runs, as indicated, vertically and horizontally (pitched to drain).
- **b.** Locate runs as shown or described by diagrams, details, and notations.

3. Piping System Joints.
- **a.** Provide joints of type indicated in each piping system.
- **b.** Thread pipe in accordance with ANSI B1.20.1; cut threads full and clean using sharp dies. Ream threaded ends to remove burrs and restore full inside dia. Apply pipe joint compound or pipe joint tape (Teflon) where recommended by pipe/ fitting manufacturer, on male threads at each joint, and tighten joint to leave not more than three threads exposed.

4. Flanged Joints: Match flanges within piping system and at connections with valves and equipment. Clean flange faces and install gaskets. Tighten bolts to provide uniform compression of gaskets.

5. Pipe supports.
- **a.** Fabricate and install pipe supports of type and location as shown on structural design plans and also on mechanical design plans.
- **b.** Locate pipe supports at maximum spacing of 10 feet. Locate at least one support for each length of pipe at each change of direction and at each valve.

6. Sleeves.
- **a.** Set sleeves in position in formwork. Provide reinforcing around sleeves.
- **b.** Size sleeves large enough to allow for movements due to expansions and contractions.

7. Piping Tests:
- **a.** Test pressure piping in accordance with ANSI B31.1.

b. Repair piping systems sections which fail required piping test, by disassembly and reinstallation, using new materials to extent required to overcome leakage.
c. Drain test water from piping systems after testing and repair work has been completed.

C. Installation of Valves, Gate Valves, Combination Air Valves, Ball Valves (Drain Valves) and Water Hammer Arrestor.

1. Except as otherwise indicated, comply with following requirements.
a. Install valves where required for proper operation of piping and equipment, include valves in branch lines where necessary to isolate sections of piping. Locate valves so accessible and separate support can be provided when necessary.
b. Install valves with stems pointed up, in vertical position where possible, but in no case with stems pointed downward from horizontal plane unless unavoidable.

2. Install water hammer arrestor as close to valves as possible.

3. Valve Adjustment: After piping systems have been tested and put into service, but before final testing, adjusting, and balancing; inspect each valve for possible leaks. Adjust or replace packing to stop leaks. Replace valve if leak persists.

4. Cleaning: Clean factory finished surfaces. Repair marred or scratched surfaces with manufacturer's touch-up paint.

D. Coordination with Other Work.

1. Before making any installation, make necessary and proper arrangement for changes required to avoid interference with or improper effect on operation of other systems.

2. No additional cost shall be charged for any part of the Contractor's coordination of work.

3. If any work is installed so that project work that will be installed later will not have required clearances or will interfere with finished design, the Contractor shall make such changes in their Work as directed by the Engineer to permit the proper installation of all work under the contract.

4. Where, in the opinion of the Engineer, there are pre-installation changes that are deemed necessary to avoid interferences, the Contractor shall make these changes.

5. For locations where several elements of mechanical or structural Work shall fit into an available space, prepare coordination shop plans showing accurate physical dimensions. Submit these plans to the Engineer for approval prior to purchase, fabrication, and installation of work.

E. Coordination.

1. Piping shall be positioned straight, true and aligned with other work.

2. Give right-of-way to piping that shall slope for drainage. Arrange Work to facilitate maintenance, repair, or replacement of equipment. Locate operating and control equipment and devices for easy access.

3. All unions, valves, meters, gauges or other equipment requiring frequent readings, adjustments, inspections, repairs, replacements or removals shall be conveniently and accessibly located.

4. Piping shall be installed with sufficient clearances to allow for proper servicing.

5. In no case shall any pipe, conduit, duct, or item of equipment be installed where it is supported on, or suspended from, another pipe, conduit, duct, or equipment.

6. Accessibility:
   a. Install mechanical work to permit removal (without damage to other parts) of pumps, and other parts requiring periodic replacement or maintenance.
   b. Arrange pipes, and equipment to permit ready access to valves, motors, control components, and to clear the openings of swinging and utility access covers.

F. Mechanical Symbols.

Mechanical Contract plans are diagrammatic and show requirements by the use of symbols. In general, these are recognized symbols of the industry and of the engineering profession. Most of the symbols used to show mechanical work are from the ASHRAE Handbook of Fundamentals.

G. Cutting and Patching.

1. Except under detailed written instructions signed by the Engineer, do not cut structural members intended to withstand stress. Cut openings through concrete (for pipe penetrations and similar services) by core drilling or sawing.

2. All cutting and patching and repair of damaged areas of work shall be done in a neat and workmanlike manner.

3. Restore the cut work in every respect, including the elimination of visual defects in exposed finishes.

H. Expansion and Contraction.

1. All piping shall be installed throughout the Project with due regard for expansion or contraction to prevent damage to the equipment piping. Provide anchors or offsets where required for the accurate control of movement.

2. All loops or offsets, shall be supplemented with adequate guides as close as possible to preserve alignment and pitch.

I. Tools.

On completion of the work, the Contractor shall furnish and deliver to the Engineer, any special tools that may be required for the proper servicing of any equipment that the Contractor has been furnished on the project.

J. Pressure Tests.

1. Each piping system shall be tested by the trade responsible for the work, under the supervision of either the Engineer or their authorized representative, or both.

2. Provide all necessary pumps, gauges, instruments, test equipment and personnel required for performing the tests. Drain all piping systems and remove all testing equipment after completion and acceptance of tests.

3. All defective material or defects in quality that develop during the tests shall be corrected in an approved manner and the subject piping retested.

4. All piping and connections shall be subjected to a pressure test.

5. Test may be made on isolated portions of such piping as will facilitate general progress of the installation. Any revision made in the piping system subsequently will necessitate retesting of such affected portion of the piping systems.

6. The test pressure shall be not less than 150 psi unless otherwise specified.

K. Piping System Cleaning.
Piping systems and equipment shall be thoroughly cleaned, after pressure testing.

150179a.04 METHOD OF MEASUREMENT.
Maintenance Water Line will be measured as a lump sum item.

150179a.05 BASIS OF PAYMENT.
The Contractor will be paid the lump sum contract price for Maintenance Water Line. This payment shall be full compensation for furnishing all materials, tools and labor for the performance of all work as described in the contract documents.

108-23A
08-01-08

TRAFFIC CONTROL PLAN

Traffic is to be maintained on I-74 mainline and ramps per Roadway Projects IM-NHS-74-1(205)5--03-82, IM-NHS-74-1(206)5--03-82, and Illinois Project No. 64C08.
Temporary barrier rail, pavement markings, and traffic control devices included in the Roadway Projects will be maintained by the Roadway Contractors.
The Bridge Contractor (197) shall not remove, relocate, or alter these devices without approval from the Engineer.

Pedestrian traffic on the Mississippi River Trail will be impacted during certain times of the bridge construction. During these times, the trail shall be detoured by the Contractor. For Trail Detour and Signage, see Sheet J.2. When the trail is not impacted by bridge construction activities, the trail will be open and the Contractor shall cover detour signs and move barricades to provide access.

Closures on the existing I-74 bridges will not be allowed with active traffic

108-26A
08-01-08

STAGING NOTES

Summary of I-74 Corridor-Wide Staging Milestones
Pre-Stage Milestone Completion Date Tuesday, November 21, 2017
Applies to Illinois Contract 64C08 only: plug fill earthwork near Illinois bank of the Mississippi River in place to allow settlement time. All work is off alignment. (During the Pre-Stage, traffic is on existing alignments.)

Stage 1 Milestone Completion Date Tuesday, November 20, 2018
Applies to Project IM-NHS-074-1(205)5—03-82 and Illinois Contracts 64C08 and 64E26 only: in Iowa, storm sewer installation and shoulder strengthening on I-74 north of Mississippi Boulevard; in Illinois, I-74 mainline reconstruction south of Avenue of the Cities and local road work in Moline to be completed for use as alternate routes in Stage 2. All other work is off alignment. (During the Stage 1, traffic is on existing alignments, except for I-74 lane shifts north of Mississippi Boulevard and south of the Avenue of the Cities, and in Illinois, local road detours to accommodate the work described above.)

Stage 2 Milestone Completion Date Tuesday, November 26, 2019
Westbound I-74 mainline and ramp work to be completed to open to traffic. (During Stage 2 WB I-74 is closed from Avenue of the Cities in Moline to Middle Road in Bettendorf; the existing bridge over the Mississippi River remains open for local crossing only.)

Winter Stage Completion Date Tuesday, March 31, 2020
Applies to Project No. IM-NHS-074-1(206)5—03-82 and Illinois Contracts 64C08 and 64E26 only: crossovers and an EB exit in Moline to be completed to shift EB I-74 to counterflow lanes on new Westbound I-74. (During the Winter Stage, new WB I-74 mainline and ramps are open to traffic, while EB I-74 traffic remains on the existing alignment.)

Stage 3 Milestone Completion Date Tuesday, November 24, 2020
Eastbound I-74 mainline and ramp work to be completed to open to traffic. (During Stage 3 WB I-74 and EB I-74 traffic are both on counterflow lanes of new WB I-74.)

113-2
10-18-11

SIDEWALK CLOSURES

Refer to TC Plans.

*Assumes 6 foot wide barricade.
Closures may need to be removed and re-established.

Location	Side	Type III Barricades* No.	Remarks
Mississippi River Trail, west of I-74		2	See J.2 for location
Mississippi River Trail, east of I-74		2	See J.2 for location

PLAN VIEW COLOR LEGEND OF TRAFFIC CONTROL AND STAGING SHEETS

LINE WORK	Design Color No.		
Green	(2)		Existing Topographic Features and Labels
Magenta	(5)		Pavement Marking Call Outs
Blue	(1)		Proposed Alignment, Stationing, Tic Marks, and Alignment Annotation
Yellow	(4)		Pavement Markings, Yellow
Off White	(254)		Pavement Markings, White

SHADING	Design Color No.		
Green, Light	(225)		Existing Pavement Shading
Blue, Light	(230)		Proposed Pavement Shading
Red	(3)		Proposed Bridge & Sign Truss Shading by Others
Gray, Light	(48)		Previously Constructed Pavement or Structure Shading
Lavender	(9)		Temporary Pavement Shading

111-01
04-17-12

COORDINATED OPERATIONS

Other work in progress during the same period of time will include the construction of the projects listed. Coordinate operations with those of other contractors working within the same area.

Project	Type of Work
2017	
IMN-74-1(254)5-0E-82	Bridge Repair
IMN-74-1-(223)5--0E-82	Bridge Cleaning
IMN-74-1(228)0--0E-82	PCC Patching
IM-NHS-074-1(199)5--03-82	Bridge - Unspecified
IM-074-1(260)1--13-82	Grading
IM-74-1(226)5--13-82	PCC Pavement - Grade & Replace
64C08	Illinois DOT Road and Bridge
2018	
Project Number Unknown	Bridge Repair
IMN-74-1(240)5--0E-82	Bridge Cleaning
IMN-74-1(239)0--0E-82	PCC Patching
IM-NHS-074-1(199)5--03-82	Bridge - Unspecified
IM-074-1(260)1--13-82	Grading
Im-74-1(205)5--13-82	Pavement - Grade & Replace
64C08	Illinois DOT Road and Bridge
64E26	Illinois DOT Road and Bridge
2019	
IMN-74-1-(249)5--0E-82	Bridge Cleaning
IMN-74-8(248)5--0E-82	PCC Patching
IM-NHS-074-1(199)5--03-82	Bridge - Unspecified
IM-074-1(260)1--13-82	Grading
IM-74-1(205)5--13-82	Pavement - Grade & Replace
IMN-74-1(208)5--0E-82	Lighting
IMN-74-1(209)5--0E-82	Lighting
IMN-74-1(235)5--0E-82	Lighting
IM-74-1(206)5--13-82	Pavement - Grade & Replace
IM-74-1(219)5--13-82	Traffic Signals
IM-74-1(255)5--13-82	Pedestrian Bridge

111-01
04-17-12

COORDINATED OPERATIONS

Other work in progress during the same period of time will include the construction of the projects listed. Coordinate operations with those of other contractors working within the same area.

Project	Type of Work
IM-NHS-074-1(200)5--03-82	Bridge, New - Steel Girder
ITS-074-1(221)5--05-82	ITS Deployment and Integration
ITS-074-1(222)5--05-82	Fiber Optics
64C08	Illinois DOT Road and Bridge
64E26	Illinois DOT Road and Bridge
2020	
IM-NHS-074-1(200)5--03-82	Bridge, New - Steel Girder
IM-74-1(206)5--13-82	Pavement - Grade & Replace
IM-74-1(207)5--13-82	Pavement - Grade & Replace
IM-74-1(220)5--13-82	Traffic Signals
IM-74-1(255)5--13-82	Pedestrian Bridge
IM-74-1(210)5--13-82	Bridge Removal
IM-74-1(214)5--13-82	Bridge Removal
IMN-74-1(256)5--0E-82	Bridge Cleaning
IMN-74-1(257)5--0E-82	PCC Patching
IMN-074-1(241)5--0E-82	PCC Patching
64C08	Illinois DOT Road and Bridge
64E26	Illinois DOT Road and Bridge