SECTION D: SPECIAL PROVISIONS

MARSTON AVENUE AND SHERMAN AVENUE PEDESTRIAN BRIDGE RESTORATION WORK AT TENNEY PARK CONTRACT NO. 7129

It is the intent of these Special Provisions to set forth the final contractual intent as to the matter involved and shall prevail over the Standard Specifications and plans whenever in conflict therewith. In order that comparisons between the Special provisions can readily be made, the numbering system for the Special provisions is equivalent to that of the Specifications.

Where these Special Provisions refer to the "Standard Specifications", it shall be taken to refer to the City of Madison Standard Specifications for Public Works Construction and Supplements thereto.

Where the State of Wisconsin Department of Transportation Standard Specifications for Highway and Structure Construction, as referenced in these Special Provisions, refers to the "Department", it shall be taken to refer to the City of Madison.

ARTICLE 101–DEFINITIONS AND TERMS

Relationship Between the City and Strand Associates, Inc.® Strand Associates, Inc.® has been hired by the City to prepare drawings and specifications for this project. Additionally, Strand will assist the City by providing shop drawing review, responding to questions that may arise during construction, and provide limited on-site resident engineering services. The City will provide contract administration and is referred to as the City and/or Engineer in the Contract Documents.

Strand Associates, Inc.® will not supervise, direct, control or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or safety precautions and programs incidental thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the furnishing or performance of the Work. Strand Associates, Inc.® will not be responsible for Contractor's failure to perform or furnish the Work in accordance with the Contract Documents. Strand Associates, Inc.® will not be responsible for the acts or omissions of Contractor or of any subcontractor, any supplier, or of any person or organization performing or furnishing any of the Work.

During construction, the duties and responsibilities of Strand Associates, Inc.® include the following:

1. Attend one preconstruction meeting with City and Contractor. Attend up to two other construction-related meetings, as necessary.

2. Conduct limited on-site observation of the work.

3. Review Contractor product submittals.

4. Report to City when clarifications and interpretations of the Contract Documents are needed. Consider, evaluate, and report to City the Contractor's requests for modification.

5. Maintain orderly records, keep a log for days visiting site, and furnish periodic reports to City of the progress of the Work.

Strand Associates, Inc.® shall not:

1. Authorize any deviation from the Contract Documents or substitutions of materials or equipment.

2. Exceed limitations of Engineer's authority as set forth in the Contract Documents.

3. Undertake any of the responsibilities of Contractor, Subcontractor, Suppliers or Contractor's superintendent.

4. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences, or procedures of construction.

5. Advise on, issue directions regarding, or assume control over safety precautions and programs in connection with the Work.

6. Accept shop drawing or sample submittals from anyone other than Contractor.

7. Authorize the City to occupy the Project in whole or in part.

8. Participate in specialized field or laboratory tests or inspections conducted off-site by others except as specifically authorized by City.

SPECIAL PROVISIONS. Add the following to the end of the definitions of **SPECIAL PROVISIONS**:

SPECIAL PROVISIONS include Bid items 90001 through 90014 bound at the end of this document.

ARTICLE 102.9–BIDDER'S UNDERSTANDING

Article 102.9 is amended as follows:

In the preparation of Drawings and Specifications, Strand Associates, Inc.® relied upon the following reports of explorations and tests of materials at the Site which are attached as an appendix at the end of the **SPECIAL PROVISIONS**:

Report dated _____ 2013, prepared by CGC, Inc., of Madison, Wisconsin, entitled:_____, consisting of __ pages. *(This report is forthcoming).*

The technical data in the above report, upon which Contractor may rely, consists of sampling methods, laboratory test methods and results, and sampling locations all as of the date made. Engineer accepts no responsibility for accuracy of the technical data in the report.

ARTICLE 104.4–INCREASED OR DECREASED QUANTITIES

Add the following paragraph to the end of Article 104.4:

Contractor shall note that some bid item quantities may increase or decrease based on what is encountered in the field. If the actual field conditions vary from the plan quantity, no additional compensation shall be given for increasing or decreasing quantities. Any overruns shall be paid for under the appropriate bid item(s) without any penalty or change to the bid price for the associated bid item. Contractor shall not be reimbursed for any deletions to the contract. No change to the unit bid price will be allowed for changes to the quantities.

ARTICLE 104.9–OLD MATERIAL

Replace the first paragraph of Article 104.9 with the following:

All old material including fill, concrete, asphalt, etc. that is removed and not used as part of the new work shall be disposed of off-site at the expense of Contractor.

ARTICLE 105.6–CONTRACTOR'S RESPONSIBILITY FOR WORK

Add the following paragraph to the end of Article 105.6:

Contractor shall keep at the Site at all times during the progress of the Work a competent person to comply with OSHA trenching and excavation requirements. The competent person shall be one who is capable of identifying existing and predictable hazards in the surroundings, or working conditions which are unsanitary, hazardous or dangerous to employee`s, and who has authorization to take prompt corrective measures to eliminate them.

ARTICLE 105.7–CONTRACT DRAWINGS

Add the following paragraph to the end of Article 105.7:

Contractor shall keep one record copy of all specifications, drawings, addenda, modifications, and shop drawings at the site in good order and shall record on the drawings all changes made during the construction process. The daily record of changes shall be the responsibility of Contractor's field superintendent. No arbitrary mark-ups shall be permitted. Contractor shall submit his marked up record documents to Engineer **prior** to final payment.

ARTICLE 105.12–COOPERATION BY THE CONTRACTOR

Add the following paragraph to the end of Article 105.12:

Contractor shall use care while working adjacent to existing structures and utilities. Damage to these items during construction shall be repaired or replaced at Contractor's expense. No trees shall be cut without the approval of Engineer and the City Forester. Contractor shall restore any and all areas damaged as a result of construction operations, including but not limited to, existing pavements and lawn areas. Damaged items shall be restored to their condition prior to

construction. Cost of restoration shall be incidental to the contract and shall be at no cost to the City.

ARTICLE 105.17–PROGRESS SCHEDULE

Article 105.17 is added as follows:

Within ten days after delivery of the Notice to Proceed, Contractor shall submit to the Owner, for approval, an estimated progress schedule indicating the starting and completion dates of the various stages of work, and a preliminary schedule of shop drawing submissions.

Progress schedule shall be updated prior to each construction meeting and an updated schedule submitted with each payment application.

ARTICLE 105.18–PRECONSTRUCTION CONFERENCE

Article 105.18 is added as follows:

Before starting the work at the project sites, a conference will be held to review schedules, to establish procedures for handling shop drawings and other submissions and for processing Applications for Payment, to review list of proposed subcontractors, to establish a working understanding between the parties as to the project, and to discuss project details. Present at the conference will be representatives of the City of Madison, Strand Associates, Inc.®, and Contractor.

ARTICLE 106.6–SUBSTITUTE MATERIALS OR EQUIPMENT

Article 106.6 is added as follows:

Whenever in any of the Contract Documents an article, material, or equipment is defined by describing a proprietary product, or by using the name of a manufacturer or vendor, the term "or equal," if not inserted, shall be implied. The specific article, material, or equipment mentioned shall be understood as indicating the type, function, minimum standard of design, efficiency, and quality desired, and shall not be construed in such a manner as to exclude manufacturer's products of comparable quality, design and efficiency. If Contractor wishes to furnish or use a proposed substitute, he shall make written application to Strand Associates, Inc.® for approval of such a substitute certifying, in writing, that the proposed substitute will perform adequately the functions called for by the general design, be similar and of equal substance to that specified and be suited to the same use and capable of performing the same function as that specified; stating whether or not its incorporation in or use in connection with the project is subject to the payment of any license fee or royalty; and identifying all variations of the proposed substitute from that specified and indicating available maintenance service. No substitute shall be ordered or installed without the written approval of Strand Associates, Inc.®, who will be the judge of equality and may require Contractor to furnish such other data about the proposed substitute as he considers pertinent. No substitute shall be ordered or installed without such performance guarantee and bonds as the City may require which shall be furnished at Contractor's expense.

ARTICLE 107.1–PUBLIC CONVENIENCE AND SAFETY

Add the following to the end of Article 107.1:

In order to abate objectionable noise to the extent feasible, motorized construction equipment shall not be operated between the hours of 7:00 P.M. and 7:00 A.M. without the prior written approval of Engineer.

Contractor shall provide and maintain suitable construction fencing as required to secure the construction site during construction.

ARTICLE 107.3–INDEMNIFICATION

Add the following to the end of Article 107.3:

Consultant, as included under Article 107.3 of the General Conditions shall include Strand Associates, Inc.®

ARTICLE 107.4–CONTRACTOR'S LIABILITY INSURANCE

Article 107.4(j) is added as follows:

On all insurance policies required to be provided by Contractor, the policies shall include the City of Madison and Strand Associates, Inc.®, as their interests may appear and their employees and agents as additional insured.

Contractor shall purchase and maintain liability insurance, as described above, naming the additional insured's using Additional Insurance Endorsement Form CG 20 26 07 04, CG 81 11 05 06, CG 20 10 07 04, or equivalent form. General liability policies shall also be endorsed with Form CG 20 37 07 04 to include the "products-completed operations hazard."

Endorsements or General Liability policy shall not exclude supervisory or inspection services.

Contractor shall also provide an Additional Insured Endorsement for the automobile policy.

ARTICLE 109.2–PROSECUTION OF THE WORK

Add the following to the end of Article 109.2:

Contractor shall not begin work prior to ____, 2014, and all work shall be completed by ___, 2014. *(Dates to be coordinated with City).*

Work shall begin only after the start work letter is received. Work shall not be performed on holidays or weekends without prior approval by the Engineer.

ARTICLE 110.2–PARTIAL PAYMENTS

Add the following to the end of Article 110.2:

No advanced payment for shop drawing preparation will be made. Shop drawing costs will be paid when materials are delivered and suitably stored and protected on the site.

All stored materials for which payment is requested shall have two copies of invoices included with the pay request.

Payment for stored material on the site shall not exceed the invoiced amount for each item, less the contract retainage. The overhead and profit for the stored items shall not be invoiced until the item is installed.

BID ITEM 90001–EXCAVATION

A. Description. The work includes all excavation required for all new work not covered elsewhere in these specifications.

B. (Not Used)

C. Construction Methods. Excavation shall be performed as shown on the drawings and as specified in Article 201 of the Standard Specifications. All old material including fill, concrete, asphalt, etc. that is removed and not used as part of the new work shall be disposed of off-site at the expense of Contractor.

D. Method of Measurement. The City will measure Excavation as a single lump sum unit.

E. Basis of Payment. Excavation shall be paid for according to the contract unit price. Price bid shall include materials, labor, and equipment necessary for complete removal and disposal of all structures shown on the plans to be removed.

BID ITEM 90002–REMOVAL OF EXISTING STRUCTURES

A. Description. The work shall consist of removing portions of existing structures where shown on the drawings, and disposing of resulting materials.

B. (Not Used)

C. Construction Methods. All portions of existing structures shown on the drawings to be removed shall be entirely removed within the limits shown. When retaining a portion of the existing structure, avoid damaging that portion during construction operations. Do not use any equipment or devices that might damage structures, facilities, or property to be preserved and retained. Complete all operations necessary to remove portions of existing structures and that might endanger the new construction before constructing new work.

D. Method of Measurement. The City will measure Removal of Existing Structures as a single lump sum unit.

E. Basis of Payment. Removal of Existing Structures shall be paid for according to the contract unit price. Price bid shall include materials, labor, and equipment necessary for complete removal and disposal of portions of all structures shown on the plans to be removed.

BID ITEM 90003–COFFERDAMS AND DEWATERING

A. Description. The work shall consist of providing and installing cofferdams and dewatering, if required, to facilitate new construction as shown on the drawings. Contractor is required to obtain any necessary permits from the DNR prior to the start of any dewatering activities. All dewatering permitting, as required by the DNR, shall be paid for and coordinated by the Contractor.

B. Materials. Materials shall conform to Section 206 of the State of Wisconsin Standard Specifications for Highway and Bridge Construction, 2014 Edition.

C. Construction Methods. The installation of cofferdams and subsequent dewatering shall be constructed as specified in Section 206 of the State of Wisconsin Standard Specifications for Highway and Bridge Construction, 2014 Edition.

D. Method of Measurement. The City will measure the Cofferdams and Dewatering bid item as a single lump sum unit.

E. Basis of Payment. Cofferdams and Dewatering shall be paid for according to the contract unit price. Price bid shall include providing cofferdams, cribs, sheeting, shoring, bracing, pumping, and dewatering as necessary including all materials, equipment and labor for a complete installation as required. Price bid shall also include all DNR dewatering permitting that may be necessary.

BID ITEM 90004–CEMENT-BASED WATERPROOFING COATING

A. Description. The work includes providing and installing a cement-based waterproofing coating to the underside of both concrete arch bridges as shown on the drawings.

B. Materials. Cement-based waterproofing coating shall be Thoroseal, by BASF, or equal. The finished color shall be the manufacturer's standard gray finish.

C. Construction Methods. Cement-based waterproofing coating shall be applied after all other concrete repair work has been completed. Apply two coats (40 mils minimum) in accordance with the manufacturer's recommendations. Coating shall be applied to all concrete surfaces above the normal high water mark on the underside of both arch bridges.

D. Method of Measurement. The City will measure the Cement-Based Waterproofing Coating bid item by the square yard acceptable completed.

E. Basis of Payment. Cement-Based Waterproofing Coating shall be paid for according to the contract unit price. Price bid shall include materials, labor, and equipment necessary for a complete installation.

BID ITEM 90005–CONCRETE SURFACE REPAIR - UNDERSIDE OF BRIDGES

A. Description. The work shall consist of concrete surface repairs on the existing exposed concrete on the underside of both concrete arch bridges above the normal high water elevation as shown on the drawings. Before any work included in this bid item begins, Contractor and Engineer shall agree on the extent of work.

B. Materials. Repair mortar shall be HB2 Repair Mortar by BASF Building Systems, or equal. It shall be a two-component, polymer-modified, high-build, lightweight repair mortar consisting of cement, graded aggregate, shrinkage-compensating agents, and additives including an integral corrosion inhibitor.

Reinforcing bar primer shall be Zinc-Rich Rebar Primer by BASF Building Systems, or equal. It shall be a one component zinc-rich primer for steel reinforcement.

Polymer Liquid shall be MBT® Polymer Liquid by BASF Building Systems, or equal.

Applicator qualifications: Company with a minimum of 5 years of experience in application of specified product on projects of similar size and scope, and is acceptable to the product manufacturer.

Contractor shall submit manufacturer's technical bulletins on each product to be used as a part of this bid item.

C. Construction Methods. Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact. Store tightly sealed materials off ground and away from moisture, direct sunlight, extreme heat, and freezing temperatures.

Project Conditions: Ensure that substrate surface and ambient air temperature are minimum of 40 degrees F and rising at application time and remain above 40 degrees F for at least 24 hours after application. Ensure that frost or frozen surfaces are thawed and dry. Do not apply material if snow, rain, fog, and mist are anticipated within 12 hours after application. Allow surfaces to attain temperature and conditions specified before proceeding with underlayment application.

Remove spalled and unsound concrete from the underside of the concrete arch bridges, and replace those portions with specified repair material. Take necessary precautions while removing deteriorated concrete to not cut any existing reinforcing steel. Clean, realign, and retie existing reinforcing steel, as the Engineer considers necessary. Remove concrete to sound concrete or to one inch behind the existing reinforcing steel, whichever depth is greater, at locations the plans show or as the Engineer directs. Make a 1/2-inch deep saw cut at the limits of the concrete surface repair before removal of the deteriorated concrete to avoid "feathering" the edges of the repair material. Existing reinforcing shall be cleaned and coated with reinforcing bar primer prior to placement of repair mortar in accordance with manufacturer's instructions.

Install repair material in accordance with the manufacture's recommendations. The repair material shall be mixed using polymer liquid in accordance with the manufacturer's instructions. Allow proper curing of repair mortar, conducted per ACI 308 "Standard Practice for Curing Concrete." Do not use concrete curing compounds on the material.

Clean up and properly dispose of debris remaining on project site related to application. Remove temporary coverings and protection from adjacent work areas.

D. Method of Measurement. The City will measure Concrete Surface Repair - Underside of Bridges by the cubic foot acceptably completed. Prior to the start of any work under this bid item, Contractor and Engineer shall agree upon an acceptable method to track quantities. The Contractor is to keep detailed records of the amount of material used, e.g. number of bags of repair material, so that repair work is easily quantified.

E. Basis of Payment. Concrete Surface Repair - Underside of Bridges shall be paid for according to the contract unit price. Payment for Concrete Surface Repair - Underside of Bridges is full compensation for removing and disposing of deteriorated concrete; for cleaning reinforcing steel and concrete substrate; and for forming, furnishing, hauling, placing, curing, and protecting all materials.

BID ITEM 90006–PENETRATING CORROSION INHIBITOR

A. Description. The work includes providing and applying a penetrating corrosion inhibitor to all exposed exterior surfaces of concrete on the bridges, including the underside of the arches.

B. Materials. Penetrating corrosion inhibitor shall be MCI 2020 V/O, by Coretec, or equal. It shall not adversely affect the concrete bond strength of either the cement-based waterproofing coating or the concrete sealer. Contractor shall provide a written statement from the manufacturer indicating that the penetrating corrosion inhibitor will not inhibit bonding of the cement-based waterproofing coating nor the concrete sealer

C. Construction Methods. Penetrating corrosion inhibitor shall be applied in accordance with the manufacturer's recommendations after all other concrete repair work has been completed but prior to application of cement-based waterproofing coating and concrete sealer. At the underside of the bridges, the cement based waterproofing coating shall be applied after the application of the penetrating corrosion inhibitor. At other surfaces, the concrete sealer shall be applied after the application of the penetrating corrosion inhibitor. Apply penetrating corrosion inhibitor at a dosage rate that is in accordance with the manufacturer's recommendations. Coating shall be applied to all exposed concrete surfaces above the normal high water mark on both arch bridges, including the underside of the arches. Rinse and/or wash any residual penetrating corrosion inhibitor material that remains on the concrete surfaces after the material has been applied and has penetrated the concrete in accordance with the manufacturer's recommendations so as not to adversely affect bond strength of the cement-based waterproofing coating and concrete sealer.

D. Method of Measurement. The City will measure the Penetrating Corrosion Inhibitor bid item by the square yard acceptable completed.

E. Basis of Payment. Penetrating Corrosion Inhibitor shall be paid for according to the contract unit price. Price bid shall include materials, labor, and equipment necessary for a complete installation.

BID ITEM 90007–REINFORCED CONCRETE

A. Description. The work includes new concrete work on the Marston Avenue pedestrian bridge. Contractor is encouraged to reference the testing report prepared by CGC, Inc., that includes a petrographic analysis of the existing concrete in accordance with ASTM C856, included as an appendix to these specifications.

A.1 Qualifications. The Contractor performing the work under this section shall demonstrate to Engineer that they are qualified to complete the work in accordance with the following minimum qualifications:

- Contractor shall have a minimum of 10-years of experience completing similar type restoration work.
- Contractor shall have successfully completed a minimum of 5 projects of similar or greater size and complexity to specified work.
- Contractor shall have successfully completed a minimum of 2 historical restoration projects similar or greater in size and complexity listed on either the national or state register of historic places.

The minimum requirements listed above must be submitted to Engineer for review prior to any work within this specification section being started.

B. Materials.

B.1 Submittals. Submit the following information:

- Gradation of fine and coarse aggregate–ASTM C33.
- Specific gravity and dry rodded density of each aggregate.
- Test of deleterious substances in fine and coarse aggregate–ASTM C33.
- Design mix of each individual concrete mix to be used.
- Previous test results or trial batch results with 7- and 28-day compressive strengths for each concrete mix proposed.
- Certified mill test results for cement identifying brand, type, and chemistry of cement to be used.
- Brand, type, principal ingredient, and amount of each admixture to be used.

It is important that the above data be submitted to ENGINEER well in advance of anticipated concreting operations to avoid any delay in construction.

B.2 Concrete. The Contractor is required to develop a mix design that closely matches the composition of the original concrete. Mechanical properties of the new concrete, such as coefficient of thermal expansion and strength, shall closely match that of the original concrete. Aesthetic properties, such as aggregate size, distribution and color shall also closely match that of the original concrete.

All cement used shall be Portland cement and shall conform to ASTM C150 and shall be Type I or Type III. All cement shall be the product of one reputable manufacturer and mill.

All fly ash, if used, shall be Class C or F conforming to the requirements of ASTM C618.

All aggregates shall be washed and shall consists of natural sand, gravel, or crushed rock and shall have clean, hard, durable, uncoated grains of strong minerals. The amounts of deleterious

substances present in the aggregates expressed in percentages by weight shall not exceed the following:

	Aggregate	
Deleterious Substance	Fine	Coarse
Clay Lumps and Friable Particles	3.0	3.0
Coal and Lignite	0.5	0.5
Mineral finer than No. 200 sieve	3.0	
Soft Fragments	3.0	3.0
Chert*	-	5.0
Sum of Chert and Clay Lumps		5.0

* Material classified as chert and having a bulk specific gravity of less than 2.45. The percentage of chert shall be determined on the basis of the weight of chert in the sample retained on a 3/8-inch sieve divided by the weight of the total sample.

The combined amount of all deleterious substances in an aggregate shall not exceed 5% of the weight of the aggregate.

Sodium sulfate soundness test shall be performed on the aggregate in accordance with ASTM C88. When the aggregate is subjected to 5 cycles, the weight loss shall not exceed 12%. Samples of proposed aggregates shall be submitted to an independent laboratory for testing in advance of concrete work. All testing shall be performed in accordance with ASTM C33. Certified test results shall be submitted to Engineer confirming that aggregate complies with all stated specifications. Report shall identify source of aggregate and absorbed water.

Aggregate must be allowed to drain for at least 12 hours before being used. The ground upon which aggregates are stored must be hard, firm, well-drained, and free from all vegetable matter. Various sizes of aggregates must be stored separately, and if they have become contaminated or merged with each other, they shall not be used.

Fine aggregate shall be similar to the fine aggregate used in the original concrete and shall be reasonably well-graded. The fineness modulus shall be not less than 2.3 or more than 3.1. Contractor is responsible for selecting a suitable fine aggregate type and gradation so that new concrete closely matches the mechanical and aesthetic properties of the original concrete. Fine aggregate size, distribution and color shall closely match the original concrete mix.

Course aggregate shall be similar to the course aggregate used in the original concrete and shall be reasonably well-graded. Contractor is responsible for selecting a suitable course aggregate type and gradation so that new concrete closely matches the mechanical and aesthetic properties of the original concrete. Course aggregate size, distribution and color shall closely match the original concrete mix.

Water used in mixing concrete shall be clean and free from injurious amounts of oil, alkali, organic matter, or other deleterious substances.

Bonding agent shall be Thorobond by BASF, or equal.

A water reducing admixture may be used in the concrete. Water reducing admixture shall be Pozzolith 200N by BASF Admixtures, Inc., Daracem 19 by Grace, or equal. Water reducing

admixture shall conform to ASTM C494, Type A and Type F. Water reducing admixture shall not reduce durability, shall not affect the appearance, shall increase strength 10%, and shall not affect bleeding characteristics over reference mix. A qualified representative of the manufacturer shall be available to assist in proportioning the concrete, advise on the proper addition of the admixture to the concrete, and advise on adjustments of concrete proportions to suit job conditions.

An air-entraining admixture shall be used in all concrete except at patches. Air content shall be tested by the pressure method as outlined in ASTM C231 and shall be between 4 to 7% by volume. Air-entraining admixture shall be equal to MB AE90 Standard by BASF Admixtures, Inc., Darex by Grace Construction Products, or equal. Air-entraining admixture shall conform to ASTM C260.

Mineral pigments shall be used in the new concrete, as required, to match the color of the existing concrete. Mineral pigments shall be by Davis Colors, or equal. Mineral pigments shall be commercially pure and shall not fade or reduce the strength of the concrete over time. The amount of the mineral pigments added to the design mix shall not exceed 10-percent by weight of the cementitious material content of the mix.

No other admixtures will be allowed without the written approval of the Engineer. All admixtures shall be compatible with cement, aggregate, and water used.

The proportions of aggregate to cement and amount of admixtures shall be such as to produce a workable mixture that can be thoroughly compacted and that will work readily in the forms and around reinforcement without permitting materials to segregate or excess water to collect on the surfaces. Contractor is responsible for proportioning the aggregates and admixtures so that new concrete closely matches the mechanical and aesthetic properties of the original concrete. All aggregates shall be measured by weight.

The slump for all concrete shall be 3 inches and concrete with a slump within the range of 2 to 4 inches will be acceptable unless otherwise stated.

Contractor shall submit to Engineer compressive strength of concrete cylinder test results for the same concrete mixes proposed on a previous project. If this information is not available, a one cubic yard trial batches of each individual mix proposed for use shall be made prior to use in the work. Four test cylinders shall be made for each trial batch, two to be tested at 7 days and two at 28 days. The trial batches shall be made preceding actual placement operations so that the results of the 7-day tests can be obtained. All costs for material, equipment, and labor incurred during design of concrete mixes shall be borne by Contractor.

B.3 Steel Reinforcement. Uncoated and epoxy-coated high strength bar steel reinforcement shall conform to Section 505 of the State of Wisconsin Standard Specifications for Highway and Bridge Construction, 2014 Edition.

B.4 Adhesive Anchors. Adhesive anchors shall conform to the requirements of Section 502 of the State of Wisconsin Standard Specifications for Highway and Bridge Construction, 2014 Edition for Type L or S anchors.

C. Construction Methods. The reinforced concrete shall be constructed as shown on the drawings and as specified below.

C.1 Mockup. Prior to starting any reinforced concrete work, the Contractor shall prepare a mockup of reinforced concrete work to demonstrate the aesthetic effects and qualities of materials and execution. The mockup shall either be prepared at the project site adjacent to the Marston Avenue bridge or on the bridge itself where concrete repair work is required. Minimum size of mockup shall be 24" x 24". Contractor shall remove all mockups not acceptable to the Engineer at Contractor's expense. Mockup shall include application of penetrating corrosion inhibitor and concrete sealer prior to acceptance by Engineer. No work shall be started on the bridge until the Engineer has approved a mockup.

C.2 Mixing. Ready-mixed concrete shall be batched, mixed, and delivered in accordance with ASTM C94 and ACI 304R. In general, concrete shall be mixed 50 revolutions at plant, 20 upon arrival at site, and 20 each time water is added; maximum of 110 revolutions at mixing speed. Concrete shall be delivered and discharged within 1 1/2 hours or before the drum has revolved 300 times after introduction of water to the cement and aggregates or the cement to the aggregates. Truck mixers shall be equipped with drum revolution counters. In no event shall concrete that has taken its initial set be allowed to be used. Retempering of concrete is not permitted.

No water shall be added on the job unless required by Contractor and with the knowledge of Engineer; the amount of water, if added, shall be recorded on all copies of the delivery tickets. If water is added, Contractor shall verify that the required water-cement ratio is not exceeded.

Concrete shall have a temperature not less than 60°F nor more than 80°F as delivered to the jobsite.

With each load of concrete Contractor shall obtain delivery tickets and shall make these tickets available for review by ENGINEER. Delivery tickets shall provide the following information:

- Date.
- Name of ready-mix concrete plant, job location, and Contractor.
- Type of cement and admixtures, if any.
- Specified cement content in sacks per cubic yard of concrete and approved concrete mix number or designation.
- Amount of concrete in load, in cubic yards.
- Water-cement ratio.
- Water added at job, if any.
- Truck number and time dispatched.
- Number of mixing drum revolutions.

For job-mixed concrete, all concrete materials shall be mixed in a machine batch mixer for at least 1 1/2 minutes after all ingredients are in the mixer and shall continue until there is a uniform distribution of the materials and the mass is uniform in color and homogeneous. The mixer shall not be loaded beyond the capacity given by the manufacturer and shall be rotated at the speed recommended by the manufacturer. The mixer is to be provided with positive timing device that will positively prevent discharging the mixture until the specified mixing time has elapsed.

C.3 Bonding to Existing Concrete. When placing new concrete adjacent to existing concrete, the existing concrete shall be thoroughly roughened, cleaned, and saturated with water 24 hours before pouring new concrete. At time of new pour, remove any standing water and

apply bonding agent. Bonding agent shall be applied in accordance with manufacturer's recommendations.

C.4 Placing Concrete. Before placing concrete, all equipment, forms, reinforcements, and other surfaces with which the concrete will come in contact are to be thoroughly cleaned of all debris, ice, and water.

After reinforcement is placed and before concrete is placed over it, Engineer shall be allowed sufficient time to observe the reinforcing.

Unless otherwise authorized by Engineer, all concrete shall be placed in the presence of Engineer.

Concrete shall be conveyed from the mixer to the place of final deposit as rapidly as practicable by methods that will prevent the segregation or loss of materials. Chuting for conveying purposes must be accomplished in such a manner as to prevent segregation or loss of materials. Receiving hoppers shall be installed at the chute discharge and at no point in its travel from the mixer to place of final deposit shall the concrete pass through a free vertical drop of more than 3 feet. Elephant trunks or tremies shall be used in all wall pours to prevent coating of forms and reinforcing bars.

Care shall be taken to avoid an excess of water on the concrete surface. Excess water shall be drained or otherwise removed from the surface. Dry cement or a mixture of cement and sand shall not be sprinkled directly on the surface to absorb water.

Concrete in wall pours shall be deposited in approximately horizontal layers not to exceed 18 inches in thickness. Each layer shall be well worked into the preceding layer while both layers are still soft.

Concrete shall be deposited as nearly as practicable in its final position to avoid segregation from rehandling or flowing. The maximum allowable lateral movement of the concrete after being deposited is 3 feet. Once concreting is started, it shall be carried on as a continuous operation until the placing of the section or panel is completed.

All concrete shall be placed with the aid of mechanical vibrating equipment in accordance with ACI 309. In congested areas, vibration shall be supplemented by hand spading adjacent to the forms. Vibration should secure the desired results within 5 to 15 seconds at intervals of 18 inches apart maximum. The vibrator shall penetrate the preceding layer of concrete. Vibrators shall have a frequency of not less than 10,000 impulses per minute when in operation submerged in concrete.

A sufficient number of spare vibrators shall be kept in ready reserve to assure adequate vibration in case of breakdown of those in use.

C.5 Finishing. Because formed concrete surfaces normally develop a sheen that will not match the surface texture of the existing concrete, forms must be removed before the new concrete has fully set. The surface of the concrete must be finished to match the existing concrete surfaces. A brush or wet sponge may be used to help "wash out" the new concrete paste to aid in matching the exposed aggregate of the existing concrete. Contractor is

responsible for determining a suitable way to finish the new concrete to closely match the finish appearance of the existing concrete.

Holes left by form ties shall be patched to match the new concrete.

C.6 Moist Curing. All concrete shall be maintained in a moist condition for at least 7 days after being deposited except that for high-early strength concrete, a 3-day period will be sufficient. Moist curing shall be accomplished by one of the following methods:

- Use of plastic film. Plastic film shall have a minimum thickness of 4 mils. It shall be placed over the wet surface of the fresh concrete as soon as possible without marring the surface and shall be weighted so that it remains in contact with all exposed surfaces of the concrete. All joints and edges shall be lapped and weighted. Any tears in the film shall be immediately repaired.
- Application of wet coverings weighing 9 ounces per square yard such as burlap, cotton mats, or other moisture-retaining fabrics. The covering system shall include two layers and shall be kept continuously moist so that a film of water remains on the concrete surface throughout the curing period.
- Use of an approved waterproof curing paper. Edges of adjacent sheets shall be overlapped several inches and tightly sealed.
- Ponding of water or continuous sprinkling of water is permitted. Sprinkling at intervals will not be permitted.

The use of moist earth, sand, hay, or another method that may discolor hardened concrete will not be permitted.

C.7 Hot Weather Concreting. When the atmospheric temperature exceeds 80-degrees F during concrete placement, the methods described in ACI 305 shall apply in addition to all other sections of this specification.

C.8 Cold Weather Concreting. When placing concrete in cold weather, the methods described in ACI 306 shall apply in addition to all other sections of this specification. Cold weather is defined as a period when, for more than 3 successive days, the average daily temperature drops below 40-degrees F. When temperatures above 50-degrees F occur during more than half of any 24-hour period, the period will no longer be regarded as cold weather. The average daily temperature is the average of the highest and lowest temperature during the period from midnight to midnight.

C.9 Testing and Sampling. The following tests of fresh concrete shall be performed by Contractor.

Contractor shall prepare, protect, transport, and have tested all cylinders at his expense.

Sampling of concrete for slump tests, air tests, temperature tests, and for making concrete test cylinders shall be performed in accordance with ASTM C172.

Slump Test: Contractor shall make one slump test near the beginning of all pours with two tests being made for all pours in excess of 25 yards or as requested by Engineer. Slump tests shall conform to ASTM C143.

Air Test: When air-entrained concrete is used, the air content shall be checked by Contractor near the beginning of all pours with at least two checks being made for all pours in excess of 25 cubic yards or as requested by Engineer.

The air contents shall be checked using the pressure method in accordance with ASTM C231. The pocket-sized alcohol air indicator shall not be used unless it is first used in conjunction with the pressure method test.

Cylinders: Three test cylinders shall be made for each pour. Concrete for cylinders shall be collected near the middle of the load or as requested by Engineer.

Cylinders shall be made and tested in accordance with ASTM C31 and ASTM C39, respectively. The cylinders must be kept moist and at temperatures between 60°F and 80°F and shall remain undisturbed and stored in a location free from vibration. In hot weather, the cylinders shall be covered with wet burlap and stored in a shaded area. It is Contractor's responsibility to provide a suitable protected location for storing cylinders on the job site.

After 24 hours, the cylinders shall be transferred to an independent testing laboratory acceptable to Engineer. The cylinders shall be packed in sawdust or other cushioning material for transit to avoid any bumping or jarring of the cylinders.

Cylinders shall be broken at 7 and 28 days or as requested by Engineer. Test results shall be mailed immediately and directly to Engineer. Test data shall include date and location of pour and concrete mix used.

All costs of additional testing and sampling of fresh or hardened concrete needed because of suspected or actual violation of the specifications shall be borne by Contractor.

C.10 Records. A record is to be kept of all concrete work. The record shall include the date, location of pour, concrete mix, slump, air content, test cylinder identification, concrete temperature, and ambient air temperature. In addition, for cold weather concreting the record shall include the daily maximum-minimum thermometer readings of all thermometers during the entire curing period for all concrete pours. The project representative will keep this record, and Contractor shall assist in obtaining needed information.

D. Method of Measurement. The City will measure Reinforced Concrete by the cubic yard acceptably completed. The City will not measure work or material for forms, falsework, cofferdams, pumping, bracing or other incidentals necessary to complete the work as required in these specifications.

E. Basis of Payment. Reinforced Concrete shall be paid for according to the contract unit price. Price bid shall include materials, labor, and equipment necessary for a complete installation as shown and specified including providing forms and falsework; for furnishing, placing, finishing, curing, and protecting concrete, and reinforcing; for adhesive anchoring work; and for measuring and evaluating concrete strength including fabricating and testing cylinders, and evaluating maturity.

BID ITEM 90008–CONCRETE TOPPING

A. Description. The work includes providing and installing a 1.5-inch thick concrete topping to the entire top surface of the existing Marston Avenue bridge concrete arch as shown on the drawings.

B. Materials. Materials shall conform to Section 509 of the State of Wisconsin Standard Specifications for Highway and Bridge Construction, 2014 Edition for concrete overlay. Concrete shall be grade E. Alternatively, Contractor may use a proprietary concrete topping material, such as SikaTop-122 Plus, or equal, but must be approved by Engineer prior to use.

C. Construction Methods. The concrete topping shall be constructed as shown on the drawings and as specified for concrete overlay in Section 509 of the State of Wisconsin Standard Specifications for Highway and Bridge Construction, 2014 Edition. Prior to installing concrete topping, the existing concrete arch shall be cleaned by pressure washing to remove all loose particles. Finish of concrete topping shall be smooth to provide a suitable bearing surface for waterproofing membrane system.

D. Method of Measurement. The City will measure the Concrete Topping bid item by the square yard acceptably completed.

E. Basis of Payment. Concrete Topping shall be paid for according to the contract unit price. Price bid shall include materials, labor, and equipment necessary for a complete installation.

BID ITEM 90009–WATERPROOFING MEMBRANE SYSTEM

A. Description. The work includes providing and installing a self-adhering rubberized, asphalt/polyethylene sheet membrane waterproofing system on the top of concrete topping on the Marston Avenue bridge deck as shown on the drawings.

B. Materials. Waterproofing membrane system shall be by W.R. Grace & Co., or equal.

B.1 Sheet Membrane Waterproofing. Bituthene 3000/Low Temperature Membrane; a self-adhesive, cold applied composite sheet consisting of a thickness of 0.056 inches of rubberized asphalt and 0.004 inches of cross-laminated, high density polyethylene film. Provide rubberized asphalt membrane covered with a release sheet, which is removed during installation. No special adhesive or heat shall be required to form laps.

B.2 Prefabricated Drainage Composite. Hydroduct 660. Drainage composite shall be designed to promote positive drainage while serving as a protection course.

B.3 Miscellaneous Materials. Primer, mastic, liquid membrane, tape and accessories shall be provided by or acceptable to the membrane manufacturer.

C. Construction Methods.

C.1 Examination. Examine surfaces to receive waterproofing membrane system for conditions that may be detrimental to the proper completion of the work. Do not commence work until all defects are remedied.

C.2 Preparation. Waterproofing membrane system shall be installed in accordance with the manufacturer's recommendations, including but not limited to, the following: Clean contaminants from surface of concrete topping. Apply primer at the rate recommended by manufacturer. Recoat areas not waterproofed if contaminated by dust. Mask and protect adjoining exposed finish surfaces to protect those surfaces from excessive application of primer. Delay application of membrane until primer is completely dry. Dry time will vary with weather conditions. Seal daily terminations with troweled bead of mastic.

C.3 Installation. Substrates shall be prepared as recommended by manufacturer. Surfaces shall be structurally sound and free of voids, loose aggregate and sharp protrusions. Remove contaminants such as grease, oil, and wax from exposed surfaces. Remove dust, dirt, loose stone, and debris. Use repair materials and methods which are acceptable to the manufacturer of sheet membrane waterproofing. Treat joints and terminations and install flashings as recommended by waterproofing manufacturer.

C.4 Cleaning and Protection. Remove any masking materials after installation. Protect completed membrane waterproofing from subsequent construction activities as recommended by the manufacturer.

D. Method of Measurement. The City will measure the Waterproofing Membrane System bid item by the square yard acceptably completed.

E. Basis of Payment. Waterproofing Membrane System shall be paid for according to the contract unit price. Price bid shall include materials, labor, and equipment necessary for a complete installation.

BID ITEM 90010–REPOINTING

A. Description. The work includes repointing existing deteriorated above-grade mortar joints on the Sherman Avenue pedestrian bridge. Contractor is encouraged to reference the testing report prepared by CGC, Inc., that includes an ASTM C1324 analysis of the existing mortar, included as an appendix to these specifications. Before any work included in this bid item begins, Contractor and Engineer shall agree on the extent of work.

A.1 Qualifications. The Contractor performing the work under this section shall demonstrate to Engineer that they are qualified to complete the work in accordance with the following minimum qualifications:

- Contractor shall have a minimum of 10-years of experience completing similar type work.
- Contractor shall have successfully completed a minimum of 5 projects of similar or greater size and complexity to specified work.
- Contractor shall have successfully completed a minimum of 2 historical masonry restoration projects similar or greater in size and complexity listed on either the national or state register of historic places.

The minimum requirements listed above must be submitted to Engineer for review prior to any work within this specification section being started.

B. Materials. All mortar used for repointing shall conform to ASTM C270 Type O and shall closely match the appearance of the original mortar used on the bridge. Mortar sand shall comply with ASTM C144, unless otherwise indicated or approved by the Engineer. The Contractor shall not use color additives to achieve a color match for the existing mortar. The Contractor shall match the size, texture, and gradation of the existing mortar sand as closely as possible, or shall blend several sands if necessary to achieve a suitable match.

Potable water shall be used to mix mortar. When mixing mortar, the cementitious materials and sand shall be measured in a dry condition by volume or equivalent weight. The Contractor shall use a known measure and shall not measure by shovel or other approximate method. Materials shall be mixed in a clean, mechanical batch mixer. Mortar materials shall be prepared according to ASTM C270 and the manufacturer's instructions.

When mixing pointing mortar, the Contractor shall thoroughly mix the cementitious materials and sand prior to adding any water. Water shall then be added in quantities sufficient to produce a damp, workable mix that will retain its form when pressed into a ball. The dampened mortar shall be maintained in this condition for 15 to 30 minutes. The remaining water shall then be added in small amounts until the desired consistency has been reached. The mortar shall be used within one hour of final mixing. The Contractor shall not use retempered or partially hardened material.

The Contractor shall supply to the Engineer product data for each product used on site prior to its use. This submittal shall include the manufacturer's recommendations for application, use, storage, and any special product concerns.

C. Construction Methods.

The Contractor shall rake out and repoint existing mortar joints if any of the following conditions are met:

- Joints in which mortar is missing.
- Joints containing holes.
- Joints containing cracks that can be penetrated 0.25" by a knife blade 0.027" thick.
- Joints containing cracks that are 0.125" in width, regardless of depth.
- Joints that sound hollow when tapped by a metal object.
- Joints that are worn back 0.25" or more from surface.
- Joints that are deteriorated to a point that mortar can easily be removed by hand.
- Joints that have been filled with substances other than mortar.
- Joints that have been repointed in the past with mortar that does not match the original mortar.

Prior to starting any repointing work, the Contractor shall perform a field survey to determine an estimated total length of mortar joints that meet any of the above conditions and inform Engineer of that estimated quantity. Contractor shall not commence with repointing work until Engineer indicates it is acceptable.

Prior to starting any repointing work, the Contractor shall prepare a mockup of repointing restoration work to demonstrate the aesthetic effects and qualities of materials and execution. The mockup shall be prepared using an area approximately 24-inches high by 24-inches wide on

the existing bridge where repointing is required. Contractor shall remove all mockups not acceptable to the Engineer at Contractor's expense. Mockup shall include application of masonry sealer prior to acceptance by Engineer. No work shall be started on the bridge until the Engineer has approved a mockup.

The Contractor shall rake out joints to a minimal depth of 1-inch or not less than required to expose sound, unweathered mortar. All mortar shall be removed from stonework surfaces within raked-out joints to provide reveals with flush joints to remove dirt and loose debris.

Existing horizontal mortar joints that are filled with a hard Portland cement mortar may be raked out using a diamond blade that is narrower than the joint width. The middle one-third of the mortar joint may be cut using a rotary power saw. The remaining mortar shall be removed from the joints by hand, using masonry chisels or pneumatic carving tools powered by air.

The Contractor SHALL NOT rake out vertical joints with rotary power saws. All vertical joints shall be removed by hand-tools. Existing mortar shall be removed using only small-headed chisels that are no wider than half the width of the existing masonry joints. Pneumatic air carving chisels shall not be permitted.

The Contractor shall use caution so as not to spall the edges of the stone units or widen any joints. Damaged stone shall be patched or replaced at no additional cost to the City as directed by the Engineer.

The Contractor shall brush, vacuum, blow-out, or flush joints with water to remove all dirt and loose debris, working from the top to the bottom of the wall.

The Contractor shall notify the Engineer of unforeseen detrimental conditions including voids in joints, cracks, loose stones, and other deteriorated items.

Ten minutes prior to repointing, the Contractor shall presoak the walls with water. The exposed surface of brick or stone adjacent to the joint shall be wet prior to repointing. The Contractor shall maintain a water sprayer on site at all times during the repointing process.

The Contractor shall rinse the stone joint with water to remove dust and loose mortar particles. The joint rinsing shall be timed such that any excess water has run or evaporated off prior to the time of repointing.

Where the joints are deeper than 1.25-inches, the Contractor shall point in layers or "lifts". Layers shall be applied in depths not less than 0.25-inch, and not more than 1/2 the depth of the joint. Layers shall be added until a uniform depth is reached. Each layer shall be thoroughly compacted and allowed to become thumbprint hard prior to adding subsequent layers.

If there are isolated areas where mortar has been removed to a greater depth than the surrounding mortar, the Contractor shall apply pointing mortar to fill the low areas to the same depth as the surrounding mortar. The joint shall then be repointed in the manner described above. When the final layer of mortar is thumbprint hard, the Contractor shall tool the joint to match the original appearance of joints. The walls shall be misted with water for at least 3-minutes at the end of the day after initial installation. Excess mortar shall be removed from the edges of the joint by brushing.

Care shall be taken to avoid spreading mortar over edges onto exposed stone surfaces or to featheredge the mortar. When the existing stone has worn or rounded edges, the mortar shall be slightly recessed below the face of the stone to avoid a widened joint face.

The mortar shall be cured by maintaining a thoroughly damp condition for a minimum of 72 hours after initial installation, including weekends and holidays. Curing methods shall be such that the pointing mortar is damp throughout its depth without eroding the surface mortar. Acceptable methods include covering the area with wet burlap and plastic sheeting; hand misting the area a minimum of 3 times per day (morning, noon, evening); or using a periodic mist system of pipes, mist heads, and timers.

Repointing shall be completed prior to cleaning masonry surfaces.

No work shall be completed on the stone or stone joints when the ambient temperature or the temperature of the masonry units is below 40-degrees F, as per ACI 530.1 requirements. Additionally, no work shall occure when the ambient air temperature is greater than 100-degrees F, or the ambient temperature is greater than 90-degrees F with a wind speed velocity greater than 8 MPH.

The job site shall be cleaned after all repointing work is complete. The adjacent pavement and grounds shall be raked and swept to remove all mortar and debris.

D. Method of Measurement. The City will measure the Repointing bid item by the lineal foot acceptably completed.

E. Basis of Payment. Repointing shall be paid for according to the contract unit price. Price bid shall include materials, labor, and equipment necessary for a complete installation including removing damaged mortar as necessary, cleaning all mortar joints, preparing mortar joints for repointing, repointing mortar joints, properly curing mortar, and cleanup.

BID ITEM 90011–STONE RESTORATION

A. Description. The work includes using epoxy crack injection to repair any existing above-grade stones that are cracked on the Sherman Avenue pedestrian bridge. Before any work included in this bid item begins, Contractor and Engineer shall agree on the extent of work.

A.1 Qualifications. The Contractor performing the work under this section shall demonstrate to Engineer that they are qualified to complete the work in accordance with the following minimum qualifications:

- Contractor shall have a minimum of 10-years of experience completing similar type work.
- Contractor shall have successfully completed a minimum of 5 projects of similar or greater size and complexity to specified work.
- Contractor shall have successfully completed a minimum of 2 historical masonry restoration projects similar or greater in size and complexity listed on either the national or state register of historic places.

The minimum requirements listed above must be submitted to Engineer for review prior to any work within this specification section being started.

B. Materials. The epoxy-based stone repair adhesive shall be a commercially available, two component, moisture insensitive, high modulus, low viscosity, epoxy resin-formulated for penetrating deep into thin masonry cracks, Akepox 1005 or 1006 by Akemina, or equal. The epoxy crack injection shall match the stone color and shall be installed in accordance with the manufacturer's recommendations.

C. Construction Methods. Install stone repair adhesive in accordance with manufacturer's instructions. Thoroughly clean dust, dirt and debris from crack. Thoroughly and completely mix the resin and hardener. Mix at low speeds to minimize entrapped air. Blend the epoxy adhesive to match color matrix of adjacent stone by adding color limestone dust or pigment. Mask stone surfaces adjacent to crack to prevent staining of the limestone during repair operation. After mixing, inject epoxy into cracks with a syringe and allow to seep in. Continue to apply material until crack is full. Sprinkle limestone dust on epoxy adhesive to mask crack.

Prior to starting any stone restoration work, the Contractor shall perform a field survey to determine an estimated total length of stone cracks that need repair and inform Engineer of that estimated quantity. Contractor shall not commence with stone restoration work until Engineer indicates it is acceptable to do so.

Prior to starting any stone restoration work, the Contractor shall prepare a mockup of stone restoration work to demonstrate the aesthetic effects and qualities of materials and execution. The mockup shall be prepared using an existing cracked stone (minimum length of 4-inches) on the bridge. Contractor shall remove all mockups not acceptable to the Engineer at Contractor's expense. Mockup shall include application of masonry sealer prior to acceptance by Engineer. No work shall be started on the bridge until the Engineer has approved a mockup.

D. Method of Measurement. The City will measure the Stone Restoration bid item by the lineal foot, acceptably completed.

E. Basis of Payment. Stone Restoration shall be paid for according to the contract unit price. Price bid shall include materials, labor, and equipment necessary for a complete installation.

BID ITEM 90012–CONCRETE SURFACE REPAIR-VERTICAL SURFACES

A. Description. The work shall consist of vertical concrete surface repairs on the existing exposed concrete surfaces of the Marston Avenue bridge above the normal high water elevation as shown on the drawings. Before any work included in this bid item begins, Contractor and Engineer shall agree on the extent of work. The Contractor performing this work shall be the same Contractor performing the work under Bid Item 90007-Reinforced Concrete.

B. Materials. Concrete used for concrete surface repair-vertical surfaces shall be as specified in Section B.2 for Bid Item 90007-Reinforced Concrete, except that concrete shall not be air-entrained and a patching additive shall be added to the mix to improve bond.

Reinforcing bar primer shall be Zinc-Rich Rebar Primer by BASF Building Systems, or equal. It shall be a one component zinc-rich primer for steel reinforcement.

Patching additive shall be Acryl 60 by BASF Building Systems, or equal.

Project Conditions: Ensure that substrate surface and ambient air temperature are minimum of 40 degrees F and rising at application time and remain above 40 degrees F for at least 24 hours after application. Ensure that frost or frozen surfaces are thawed and dry. Do not apply material if snow, rain, fog, and mist are anticipated within 12 hours after application. Allow surfaces to attain temperature and conditions specified before proceeding with underlayment application.

Contractor shall submit manufacturer's technical bulletins on each product to be used as a part of this bid item.

C. Construction Methods.

C.1 Mockup. Prior to starting any concrete surface repair work under this bid item, the Contractor shall prepare a mockup of concrete surface repair work to demonstrate the aesthetic effects and qualities of materials and execution. The mockup shall either be prepared at the project site adjacent to the Marston Avenue bridge or on the bridge itself where concrete surface repair work is required. Minimum size of mockup shall be 24" x 24". Contractor shall remove all mockups not acceptable to the Engineer at Contractor's expense. Mockup shall include application of penetrating corrosion inhibitor and concrete sealer prior to acceptance by Engineer. No work shall be started on the bridge until the Engineer has approved a mockup.

C.2 Surface Repair Preparation. Remove spalled and unsound concrete. Take necessary precautions while removing deteriorated concrete to preserve all existing reinforcing steel. Clean, realign, and retie existing reinforcing steel, as the Engineer considers necessary. Remove concrete to sound concrete or to one inch behind the existing reinforcing steel, whichever depth is greater, at locations the plans show or as the Engineer directs. Make a 1/2-inch deep saw cut at the limits of the concrete surface repair before removal of the deteriorated concrete to avoid "feathering" the edges of the repair material. Mechanically abrade the existing concrete surface to remove all bond inhibiting materials and to provide additional mechanical bond. Install new adhesive anchored stainless steel headed anchors, as required, to aid in anchoring new repair patches to existing concrete. Existing reinforcing steel that is incorporated into new work shall be coated with specified reinforcing bar primer prior to placing concrete repair material.

C.3 Mixing. Mix concrete used for concrete surface repairs in accordance with Bid Item 90007-Reinforced Concrete.

C.4 Bonding to Existing Concrete. Use methods described in Bid Item 90007-Reinforced Concrete.

C.5 Placing Concrete Surface Repairs. Use a bond coat to obtain maximum bond for hand-trowel applications. Thoroughly scrub a thin layer of mixed repair material into the clean, saturated surface with a stiff-bristled brush. Do not dilute the bond coat with water. Apply the coat immediately before the application of the bulk of the repair material. Do not apply more of the bond coat than can be covered with repair material before the bond coat dries. Do not retemper this material. After the bond coat has been applied, firmly place the mixed material onto the repair area with a trowel.

C.6 Finishing. The surface of the concrete repair must be finished to match the existing concrete surfaces. A brush or wet sponge may be used to help "wash out" the new concrete paste to aid in matching the exposed aggregate of the existing concrete. Contractor is

responsible for determining a suitable way to finish the new concrete repair to closely match the finish appearance of the existing concrete.

C.7 Moist Curing. Use methods described in Bid Item 90007-Reinforced Concrete.

D. Method of Measurement. The City will measure Concrete Surface Repair-Vertical Surfaces by the square foot acceptably completed. Prior to the start of any work under this bid item, Contractor and Engineer shall agree upon an acceptable method to track quantities.

E. Basis of Payment. Concrete Surface Repair-Vertical Surfaces shall be paid for according to the contract unit price. Payment for Concrete Surface Repair is full compensation for removing and disposing of deteriorated concrete; and for cleaning reinforcing steel and concrete substrate; for forming, furnishing, hauling, placing, curing, and protecting all materials.

BID ITEM 90013–CLEANING EXISTING CONCRETE AND MASONRY

A. Description. The work includes cleaning all exposed to view concrete and masonry surfaces on both bridges. The underside of the bridges are not required to be cleaned in accordance with this bid item. The work under this bid item shall occur prior to any new concrete or repointing work being performed so that the cleaned appearance of both bridges can be used as a reference to match the new work to.

B. Materials. Cleaning solution shall be biologically based, biodegradable, and shall remove stains originating from mold, algae, mildew, and lichens. It shall be effective on both concrete and masonry. It shall be non-mutagenic, contain no carcinogenic compounds, and be considered non-toxic. Cleaning solution shall be D/2 Biological Solution, or equal. Other cleaning methods may be proposed by Contractor, but must be reviewed by Engineer prior to any cleaning work is completed. Sand blasting will not be approved for use as a cleaning method.

C. Construction Methods. Cleaning solution shall be used in accordance with the manufacturer's instructions. Contractor is responsible for determining a suitable method for cleaning bridges.

Prior to starting any cleaning work, the Contractor shall perform a spot test sample on a section of each bridge approximately 24" x 24" in size to demonstrate the aesthetic effects and qualities of materials and execution. Engineer must approve proposed cleaning method prior to use of proposed cleaning method to clean remaining surfaces of bridges.

D. Method of Measurement. The City will measure the Cleaning Existing Concrete and Masonry bid item by the square yard acceptable completed.

E. Basis of Payment. Cleaning Existing Concrete and Masonry shall be paid for according to the contract unit price. Price bid shall include materials, labor, and equipment necessary for a complete installation.

BID ITEM 90014–CONCRETE AND MASONRY SEALER

A. Description. The work includes applying concrete and masonry sealer to all exposed concrete and masonry surfaces of the bridges. The underside of the bridges are not required to be sealed in accordance with this bid item. The work under this bid item shall occur after all other work associated with the bridges has been completed.

B. Materials. Concrete and masonry sealer shall be Baracade Silane 40 by The Euclid Chemical Company, or equal. Concrete and masonry sealer shall be a breathable, ready-to-use, colorless, non-staining, non-yellowing, deep penetrating concrete and masonry water repellent compound that meets the performance requirements of NCHRP 244.

C. Construction Methods. Concrete and masonry sealer shall be applied in accordance with the manufacturer's instructions. Apply two coats at a dosage rate recommended by the manufacturer.

Prior to starting any sealer work, the Contractor shall perform a spot test sample on a section of each bridge approximately 24" x 24" in size to demonstrate the aesthetic effects and qualities of materials and execution. Engineer must approve proposed sealer application prior to use of proposed sealer on remaining surfaces of bridge.

D. Method of Measurement. The City will measure the Concrete and Masonry Sealer bid item by the square yard acceptable completed.

E. Basis of Payment. Concrete and Masonry Sealer shall be paid for according to the contract unit price. Price bid shall include materials, labor, and equipment necessary for a complete installation.

MARSTON AVENUE PEDESTRIAN BRIDGE PHOTOS

Marston Avenue and Sherman Avenue Pedestrian Bridge Restoration Work at Tenney Park

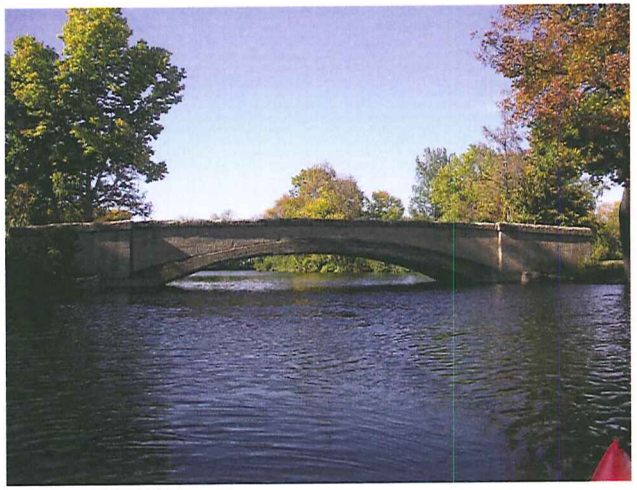
City of Madison Parks Division
Madison, WI

Prepared by:

STRAND ASSOCIATES, INC.®
910 West Wingra Drive
Madison, WI 53715
www.strand.com

Photos taken on October 10, 2013

STRAND ASSOCIATES®

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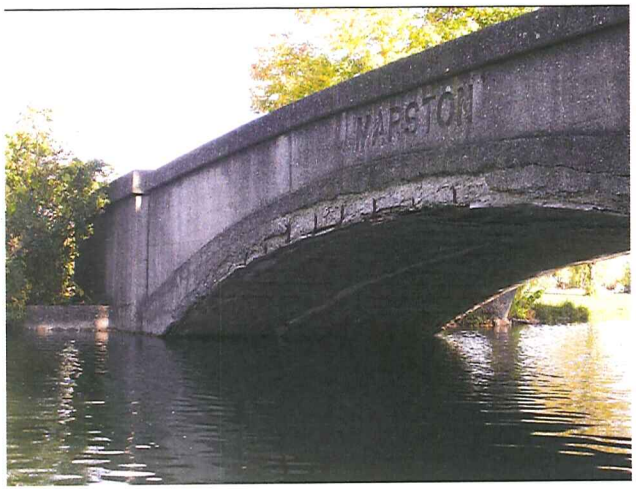
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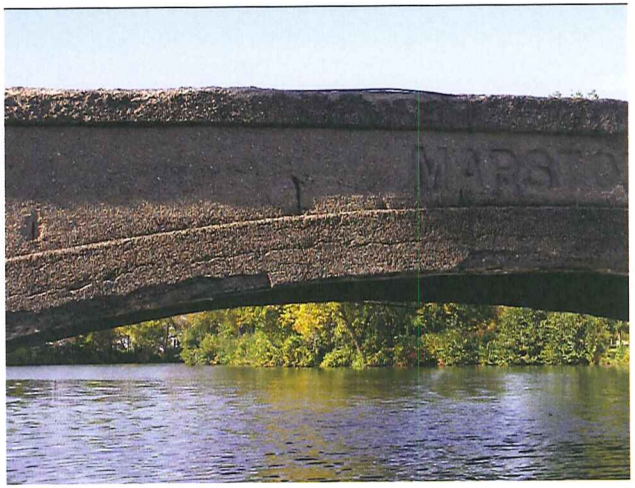
MARS

SHERMAN AVENUE PEDESTRIAN BRIDGE PHOTOS

Marston Avenue and Sherman Avenue Pedestrian Bridge Restoration Work at Tenney Park

City of Madison Parks Division
Madison, WI

Prepared by:

STRAND ASSOCIATES, INC.®
910 West Wingra Drive
Madison, WI 53715
www.strand.com

Photos taken on October 10, 2013

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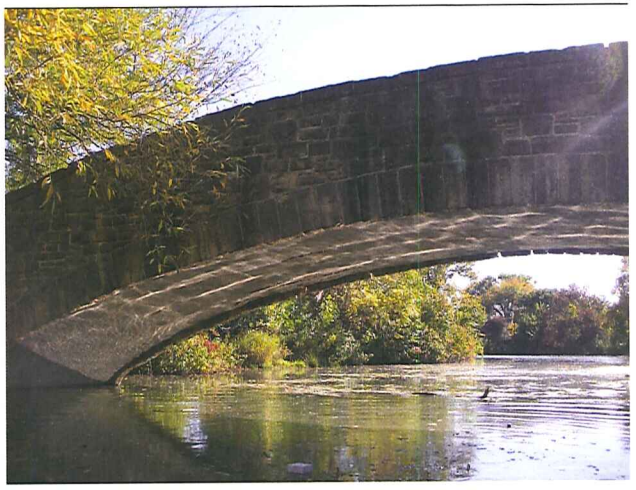
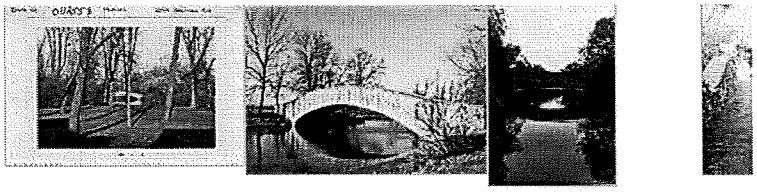


WISCONSIN HISTORICAL SOCIETY PREVIEW SITE

PROPERTY RECORD

Tenney Park Lagoon near Sherman Ave.

Architecture and History Inventory



NAMES

Historic Name: **Yahara River Parkway - A.G. Zimmerman bridge**
Other Name: **Yahara River Parkway - A.G. Zimmerman bridge**
Contributing: **Yes**
Reference Number: **112557**

PROPERTY LOCATION

Location (Address): **Tenney Park Lagoon near Sherman Ave.**
County: **Dane**
City: **Madison**
Township/Village:
Unincorporated Community:
Town:
Range:
Direction:
Section:
Quarter Section:
Quarter/Quarter Section:

PROPERTY FEATURES

Year Built: **1929**
Additions:
Survey Date:**1999**
Historic Use: **concrete bridge**
Architectural Style: **NA (unknown or not a building)**
Property Type: **Structure**
Structural System: **Concrete Arch**
Wall Material: **Limestone**
Architect:
Other Buildings On Site: **0**
Demolished?: **No**
Demolished Date:

DESIGNATIONS

National/State Register Listing Name: **Tenney Park/Yahara River Parkway**
National Register Listing Date: **1999-09-17**
State Register Listing Date: **1999-04-29**
National Register Multiple Property Name:

NOTES

Additional Information: 1999 - Reinforced concrete bridge with a rock-faced random ashlar limestone veneer. A course of smooth-faced limestone outlines the arch. Excellent local example of a Rustic bridge, with excellent integrity. Named in honor of Judge Arthur Zimmerman who helped finance its construction.
Bibliographic References: National Register of Historic Places Registration Form, Tenney Park / Yahara River Parkway, 1999.

RECORD LOCATION ▸

Wisconsin Architecture and History Inventory, Division of Historic Preservation-Public History, Wisconsin Historical Society, Madison, Wisconsin

Help Update This Record

Do you have an update, correction or addition to this AHI record?

Contact Joe De Rose by email and include the following information in your update request: AHI number, information to be added or changed, and your source information.

Email Joe De Rose

When providing information about a historical fact, such as the story of a historic event or the name of an architect, be sure to list your sources. We will only create or update a property record if we can verify that your submission is factual and accurate.

How to Cite

For the purposes of a bibliography entry or footnote, follow this model:

Wisconsin Architecture and History Inventory Citation

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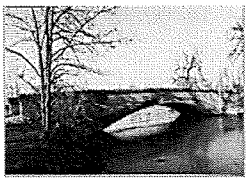
WISCONSIN HISTORICAL SOCIETY PREVIEW SITE

PROPERTY RECORD

Tenney Park Lagoon near Marston Ave

Architecture and History Inventory



NAMES

Historic Name: **Yahara River Parkway - Marston Ave. bridge**
Other Name:
Contributing: **Yes**
Reference Number: **143178**

PROPERTY LOCATION

Location (Address): **Tenney Park Lagoon near Marston Ave**
County: **Dane**
City: **Madison**
Township/Village:
Unincorporated Community:
Town:
Range:
Direction:
Section:
Quarter Section:
Quarter/Quarter Section:

PROPERTY FEATURES

Year Built: **1912**
Additions:
Survey Date:**1999**
Historic Use: **concrete bridge**
Architectural Style:
Property Type: **Structure**
Structural System:
Wall Material: **Concrete**
Architect:**John Icke**
Other Buildings On Site:
Demolished?: **No**
Demolished Date:

DESIGNATIONS

National/State Register Listing Name: **Tenney Park/Yahara River Parkway**
National Register Listing Date: **1999-09-17**
State Register Listing Date: **1999-04-29**
National Register Multiple Property Name:

NOTES

Additional Information: 1999- Oldest footbridge in Tenney Park. "Simple, utilitarian bridge with excellent integrity." Walls feature concrete pattern that emphasizes the shape of the arch.

Bibliographic References: National Register of Historic Places Registration Form, Tenney Park / Yahara River Parkway. 1999.

RECORD LOCATION ›

Wisconsin Architecture and History Inventory, Division of Historic Preservation-Public History, Wisconsin Historical Society, Madison, Wisconsin

Help Update This Record

Do you have an update, correction or addition to this AHI record?

Contact Joe De Rose by email and include the following information in your update request: AHI number, information to be added or changed, and your source information.

Email Joe De Rose

When providing information about a historical fact, such as the story of a historic event or the name of an architect, be sure to list your sources. We will only create or update a property record if we can verify that your submission is factual and accurate.

How to Cite

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