Wisconsin Department of Transportation

Division of Transportation Systems Development
Bureau of Project Development
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October 31, 2017

NOTICE TO ALL CONTRACTORS:

Proposal #14:

1100-34-70, WISC 2017 509
IH 894
84th St to National Avenue
IH 894
Milwaukee County

2030-04-75, WISC 2017 510
South 108th Street
Howard Avenue to Beloit Road
STH 100
Milwaukee County

Letting November 14, 2017

This is Addendum No. 01, which provides for the following:

Special Provisions:

Revised Special Provisions	
Article No.	Description
3	Prosecution and Progress
10	Information to Bidders, U.S. Army Corps of Engineers Section 404 Permit
75	Catch Basins, Manholes, and Inlets
108	Polyester Polymer Concrete Overlay with Milling and Trial Overlay, Item SPV.0035.4010

Added Special Provisions	
Article No.	Description
178	Crash Cushions Permanent Low Maintenance and Crash Cushions Temporary

Schedule of Items:

Revised Bid Item Quantities					
Bid Item	Item Description	Unit	Old Quantity	Revised Quantity	Proposal Total
608.0312	Storm Sewer Pipe Reinforced Concrete Class III 12-Inch	LF	1,201	11	1,212
608.0315	Storm Sewer Pipe Reinforced Concrete Class III 15-Inch	LF	1,128	131	1,259
608.0412	Storm Sewer Pipe Reinforced Concrete Class IV 12-Inch	LF	365	11	376
611.0420	Reconstructing Manholes	EACH	3	2	5

Added Bid Item Quantities					
Bid Item	Item Description	Unit	Old Quantity	Revised Quantity	Proposal Total
611.0430	Reconstructing Inlets	EACH	0	1	1

Plan Sheets:

Revised Plan Sheets – ID 1100-34-70	
Plan Sheet	Plan Sheet Title (brief description of changes to sheet)
506	Miscellaneous Quantities (added 2 items, 611.0420 Reconstructing Manholes and Item 611.0430 Reconstructing Inlets)
512	Miscellaneous Quantities (revised information shown on drainage table for pipe PE238)
535	Miscellaneous Quantities (revised quantity for Item 608.0312 Storm Sewer Pipe Reinforced Concrete Class III 12-inch and Item 608.0315 Storm Sewer Pipe Reinforced Concrete Class III 15-Inch, added Item 608.0412 Storm Sewer Pipe Reinforced Concrete Class IV 12-Inch)
536	Miscellaneous Quantities (revised location/station of Item 614.0805 Crash Cushions Permanent Low Maintenance on RAMP NE to reflect location shown on plan detail sheet)

The responsibility for notifying potential subcontractors and suppliers of these changes remains with the prime contractor.

Sincerely,

Mike Coleman

Proposal Development Specialist
Proposal Management Section

ADDENDUM NO. 01

1100-34-70 & 2030-04-75

October 31, 2017

Special Provisions

3. Prosecution and Progress

Delete paragraph two that states "Do not begin construction on Stage 3 until the Section 404 permit has been approved. The department anticipates approval of this permit December 15, 2017."

10. Information to Bidders, U.S. Army Corps of Engineers Section 404 Permit

Replace entire article language with the following

The department has obtained a U.S. Army Corps of Engineers Section 404 permit. Comply with the requirements of the permit in addition to requirements of the special provisions. A copy of the permit is available from the regional office by contacting Laci Kazan at 414-322-1429.
stp-107-054 (20080901)

75. Catch Basins, Manholes, and Inlets

*Delete paragraph six that states "*Provide bolted covers for drainage structure cover types J Special, V. "

Delete paragraph 16 that states "Cost for providing bolted cover types J special, Type V are considered incidental to cover type. "

Delete paragraph 17 that states "Welding covers and removing welds as directed by the engineer are paid under separate bid items."

108. Polyester Polymer Concrete Overlay with Milling and Trial Overlay, Item SPV.0035.4010

Replace entire article language with the following

A Description
This special provision describes furnishing and applying a polyester polymer concrete overlay with a high molecular weight methacrylate (HMWM) resin prime coat, to the limits shown on the plans. Minimum thickness of finished overlay thickness is shown on plans.

Provisions in standard spec 509 for concrete masonry overlays apply unless otherwise specified herein.

B Materials
The polyester polymer concrete system shall consist of a polyester resin binder and aggregate, and a compatible primer.

B.1 Primer
The primer shall be a HMWM resin that is low viscosity, wax free, low odor, and shall meet the following requirements:

Property	Requirements	Test Method
Viscosity [A B]	≤ 25 cps	ASTM D 2196 – Brookfield RVT
Specific Gravity [A B]	>0.90	ASTM D 1475
Flash Point [B]	≥ 180°F	ASTM D 3278
Tack-free Time [A]	≤ 400 minutes	California Test Method 551
Vapor Pressure [A B]	≤ 0.04-in Hg	ASTM D 323
Volatile Content [B]	< 30%	ASTM D 2369
PCC Saturated Surface Dry Bond Strength [C]	≥ 500 psi (24hrs)	California Test Method 551

[A] Value based on specimens or samples cured or aged and tested at 77°F

[B] Test performed prior to adding the initiator

[C] Value based on specimens or samples stored at 70±1ºF

The initiator for the methacrylate shall consist of a metal drier and peroxide. These materials must be stored separately and in a manner which will not allow the materials to contact each other if spilled or if the packaging leaks.

B.2 Resin

The resin shall be an unsaturated isophthalic polyester-styrene co-polymer with the following properties:

Property	Requirements	Test Method
Viscosity [A B]	75-200 cps	ASTM D 2196 – Brookfield RVT
Specific Gravity [A B]	1.05-1.10	ASTM D 1475
Absorption	≤ 1 percent (24 hr)	ASTM D 570
Tensile Elongation	35-80 percent (7 days)	ASTM D 638
Tensile Strength	≥ 2,500 psi (7 days)	ASTM D 638
Styrene Content [B]	40-50 percent by weight	ASTM D2369
Silane Coupler	> 1 percent by weight of resin	
PCC Saturated Surface Dry Bond Strength [C]	≥ 500 psi (24 hrs)	California Test Method 551
Permeability to Chloride ion	≤ 100 coulombs (28 days)	AASHTO T 277

A Values are based on specimens or samples cured or aged and tested at 77°F

B Test performed prior to adding initiator

C Values are based on specimens or samples cured or aged and tested at 70ºF

The silane coupler shall be an organsilane ester, gammamethacryloxypropyltrimethoxysilane. The promoter/hardener shall be compatible with methyl ethyl ketone peroxide and cumene hydroperoxide initiators.

B.3 Aggregates

For mixing with the polyester polymer resin, furnish natural or synthetic aggregates that have a proven record of performance in applications of this type. Furnish aggregates that are non-polishing; clean; free of surface moisture; fractured or angular in shape; and free from silt, clay, asphalt, or other organic materials. The fine aggregate shall be natural sand. The aggregate gradation shall meet either of the following gradation requirements:

Sieve Size	% Passing by Weight	% Passing by Weight
1/2-in	100	100
3/8-in	100	83-100
No. 4	62-85	65-82
No. 8	45-67	45-64
No. 16	29-50	27-48
No. 30	16-36	12-30
No. 50	5-20	6-17
No. 100	0-7	0-7
No. 200	0-3	0-3

The coarse aggregate shall have a Moh's hardness of 7.0 or greater. The percent wear shall not exceed 50%, and the weighted soundness loss shall not exceed 12% per ASTM C131and C88, respectively.

Aggregates shall have an absorption not to exceed 1% and the moisture content shall not exceed one half of the aggregate absorption. Aggregates retained on the No. 8 sieve shall have a maximum of 45% crushed particles when tested in accordance with AASHTO Test Method T335.

The finishing sand aggregate shall be commercial quality dry blast sand with an average absorption of no more than 1%. 95% of the sand shall pass the No. 8 sieve and at least 95% shall be retained on the No. 20 sieve.

B.4 Required Properties of Overlay System

The required properties of the overlay system are listed in the table below:

Property	Requirements[A]	Test Method
Minimum Compressive Strength	2,000 psi (8 hrs) 5,000 psi (24 hrs)	ASTM C 579 Method B, Modified [B]
Set Time	30-120 minutes	ASTM C 266
Minimum Pull-off Strength	500 psi (24 hrs)	ACI 503R, Appendix A

A Based on samples cured or aged and tested at 75°F

B Plastic inserts that will provide 2-in by 2-in cubes shall be placed in the oversized brass molds.

B.5 Approval of Bridge Deck Polymer Overlay System

A minimum of 15 working days prior to the pre-construction meeting, submit to the engineer for approval the product data sheets and specifications from the manufacturer, product history/reference projects report, and a certified materials report from an independent testing laboratory. The engineer may request samples of the primer, resin, and/or aggregate prior to application for the purpose of acceptance testing by the department.

The product history/reference projects report shall consist of a minimum of 3 bridge/roadway locations where the proposed overlay system has been applied, by the contractor, in Wisconsin or in locations with similar climate. Include contact names for the facility owner, current phone number and e-mail address, and a brief project description. These projects must have been open to traffic for at least 1

year. Product data sheets and specifications from the manufacture consists of literature from the manufacturer showing general instructions, application recommendations/methods, product properties, and any other applicable information.

B.6 Approval of Overlay Placement Plan

A minimum of 15 working days prior to the pre-construction meeting, submit to the engineer for approval an overlay placement plan including the following:

1. Schedule of overlay work and testing for each bridge
2. Anticipated concrete deck repair locations and repair method
3. Staging plan describing overlay placement sequence including:
   a. Construction joint locations. Longitudinal construction joints between passes shall be located along the centerline or edge of travel lanes.
   b. Sequence of placement
   c. Placement widths
   d. Anticipated placement lengths
   e. Placement direction
   f. Joint locations
   g. Location of proposed trial overlay(s)
4. Description of equipment used for:
   a. Surface preparation including grinding and shot blasting
   b. Applying HMWM Primer resin
   c. Measuring, mixing, placing, and finishing the PPC
   d. Applying surface finish sand
5. Method of protecting and finishing inlets and bridge drains
6. Method for isolating expansion joints
7. Method for measuring and maintaining overlay thickness and profile
8. Cure time for PPC
9. Procedure for disposal of excess HMWM resin, PPC, and containers
10. Procedure for cleanup of mixing and placement equipment

B.7 Material Safety Plan

Prior to arrival of the product on the job site, provide a product shipping, storage, and use safety plan to detail how the product will be delivered and stored on site in a manner that will not allow the constituent components to come in contact with each other in the event of a spill or container leakage. This plan must also include a description of the safety training workers applying the product have received regarding the product's use, and list any and all safety precautions which must be taken during application of the product.

C Construction

C.1 General

C.1.1 Pre-Installation Conferences

Conduct a pre-installation conference with the engineer and manufacturer's representative prior to initial construction to establish procedures for maintaining optimum working conditions and coordination of work. Furnish the engineer with a copy of the contractor's personnel experience record, recommended procedures, the manufacturer's instructions, and the polyester polymer overlay mix design including the recommended initiator percentages for the expected application temperature.

If issues arise during a single placement operation, hold an additional pre-installation conference prior to beginning subsequent overlay application operations within the project limits. The contractor is to notify the engineer of any changes in: personnel, procedures, manufacturer's instructions, or the polyester polymer overlay mix design including the recommended initiator percentages for the expected application temperature.

A manufacturer's representative familiar with the overlay system installation procedures shall be present at all times during pre-installation conferences, surface preparation, and overlay placement to provide quality assurance that the work is being performed properly.

C.1.2 Contractor Personnel Requirements
Experienced personnel are required to be actively present during the overlay application according to the following:

Experience and qualifications of crew foreman: Must be employee of the current company for at least one year in good standing with experience performing a minimum 2 applications of polyester polymer concrete overlays to highway bridge decks.

Experience and qualifications of crew/laborers: At least one laborer per 3 crew members must be an employees of the current company for at least one year in good standing with experience performing a minimum 2 applications of polyester polymer concrete overlays to highway bridge decks. In addition, laborers finishing the material in place must have at least 2 years of experience finishing concrete.

The engineer will accept or reject the contractor's personnel experience record. If the contractor does not provide personnel with the required experience and qualifications, the contractor will not be authorized to proceed with any work until replacement personnel are reviewed and accepted by the engineer. The engineer may suspend work if the contractor substitutes unqualified personnel for accepted personnel during construction.

C.1.3 Material Storage Store resin materials in their original containers in a dry area. Store and handle materials according to the manufacturer's recommendations. Store all aggregates in a dry environment and protect aggregates from contaminants on the job site.

C.1.4 Trial Overlay
Place trial overlay(s) on a properly prepared concrete base within the project limits to determine the initial set time and to demonstrate the effectiveness of the surface preparation, mixing, placing, and finishing equipment and techniques. Each trial overlay shall be the width and thickness of the proposed placement on the bridge and at least 50 ft long. The trial overlay(s) shall be tined in the same manner as the deck overlay. Construct trial overlay(s) in similar weather conditions as those expected during the construction of the deck overlay and at a similar time of day unless directed otherwise by the engineer. Use the same equipment and laborers/operators, including deck preparation equipment, as that which will be used for the deck overlay.

Perform tensile bond strength test on the trial overlay at three locations selected by the engineer per section C.3.3. Conduct all tests in the presence of the engineer. At the direction of the engineer, the contractor may leave trial overlay in place if acceptable.

The number of trial applications required shall be as many as necessary to demonstrate the contractor's ability to construct an acceptable overlay and competency to perform the work to the satisfaction of the engineer. If, after two trial applications, the engineer is not satisfied with the trial placements, hold another pre-installation conference, as described in Section C1.1. Do not proceed with deck overlay work prior to receiving the engineer's approval of the trial overlay(s).

Remove and dispose of all materials used in the trial overlay(s), including the concrete base, if necessary.

C.2 Deck Surface Preparation
Clean the entire surface of the bridge deck, sidewalk, and paving blocks receiving the polyester polymer concrete overlay using a suitable mechanical scarifyer. Accomplish this in a way that prevents hooking or tearing the reinforcing steel and that removes any existing polymer overlay as well as at

least the minimum thickness of concrete from the deck surface shown on plans, but not more than the maximum depth approved by the engineer.

As specified on the plans, use material designed for concrete deck patching that is compatible with the polyester polymer concrete or Portland cement based patch mix to fill in deck repair areas for Preparation Deck Type 1, Preparation Deck Type 2, and Full Depth Deck Repair as defined by standard spec 509.3.4 and 509.3.8 respectively. Patching materials with magnesium phosphate shall not be used when the bridge is receiving a polyester polymer concrete overlay. Polyester polymer concrete shall not be used in full depth deck repair areas with a plan area larger than 10 ft by 10 ft or when the total amount of patching in a given span exceeds 10% of the deck area. All existing asphalt, magnesium phosphate, and epoxy patches, and any unsound concrete patches must be fully removed to sound concrete as part of the deck preparation process.

If polyester polymer concrete material is used to fill in deck repair areas, place patches after surface is prepared via shot blasting and cleaning as described below. Prime patch area as described in Section C.3.1 of this specification and place polyester polymer concrete material in patch areas a minimum of 1 hour before placing remainder of overlay or per the manufacturer's recommendation for placing deck patches of polyester polymer concrete, as approved by the engineer. If a Portland cement based patch mixed is to be used for deck repairs, the overlay cannot be placed until patches have cured for 28 days.

Determine an acceptable shotblasting machine operation (size of shot, flow of shot, forward speed, and/or number of passes) that provides a surface a profile meeting CSP 5 according to the International Concrete Repair Institute Technical Guideline No. 03732. Test the tensile bond strength according to ACI 503R, Appendix A of the ACI *Manual of Concrete Practice*. The surface preparation will be considered acceptable if the tensile bond strength is greater than or equal to 250 psi or if there is a failure into the substrate where more than 50% of the core area has failed deeper than 1/4-in. Continue adjustment of the shotblasting machine and necessary testing until the surface is acceptable to the engineer or a passing test result is obtained. Test the tensile bond strength of the prepared concrete substrate at a minimum of 2 locations in the first 500 SF and a minimum of 1 location every additional 5000 SF, as determined by the engineer. Perform all tests in the presence of the engineer.

The engineer may consider alternate surface preparation methods per the overlay system manufacturer's recommendations. The engineer must approve the final surface profile and deck cleanliness prior to the contractor placing the polyester polymer concrete overlay.

Prepare the entire deck (or portion of the deck to be overlaid in one placement when staged construction is being employed) using the final accepted adjustments to the shotblasting machine as determined above. Blasting shall remove all dirt, oil, asphalt, rubber, curing compound, paint, carbonation, grease, slurry, membranes, striping, rust, weak surface mortar, laitance, and other foreign or potentially detrimental materials. Thoroughly blast clean with hand-held equipment any areas inaccessible by the shotblasting equipment. Do not perform surface preparation more than 24 hours prior to the application of the primer. Blasted surface shall not be exposed to vehicular or pedestrian traffic other than that required for overlay placement.

Prepare the vertical or nearly vertical concrete surfaces adjacent to the deck a minimum of 2-in above the overlay according to SSPC-SP 13 by sand blasting, using wire wheels, or other approved method.

Just prior to overlay placement, clean all dust, debris, and concrete fines from the deck surface including vertical faces of curbs and barrier walls up to a height of 2-in above the overlay with compressed air. The air stream must be free of oil and moisture. Any grease, oil, or other foreign matter that rests on or has absorbed into the concrete shall be removed completely.

Protect drains, expansion joints, access hatches, or other appurtenances on the deck from damage by the shot and sand blasting operations and from material adhering and entering. Tape or form all construction joints to provide a clean straight edge.

C.3 Application of the Overlay System

Apply the overlay system in accordance with the manufacturer's instructions.

Do not apply the overlay system if any of the following is true:

- Ambient air temperature is below or expected to drop below 50°F, or the manufacturer's recommended temperature, within 8 hours
- Deck surface temperature is below 50°F or above 100°F
- Moisture content in the deck exceeds 4.5% when measured by an electronic moisture meter or shows visible moisture after 2 hours when measured in accordance with ASTM D4263
- Rain is forecasted by the National Weather Service with a greater than 39% chance to occur within 4 hours of completion or it has rained within the last 24 hours
- Materials component temperatures are below 50°F or above 100°F
- Concrete age is less than 28 days, unless approved by the engineer
- Gel time is 10 minutes or less at predicted high air temperature for the day
- The relative humidity is greater than 85%

C.3.1 Application of the Primer

Apply primer to the deck surface within 5 minutes of mixing at approximately 1 gallon per 100 square feet or the rate specified by the manufacturer. Use a squeegee, roller, broom, low pressure sprayer, etc. to distribute the material uniformly and to completely cover the area receiving the overlay. Remove excess buildup and re-prime any areas that appear dry from absorbing material. Wait a minimum of 15 minutes or as recommended by the manufacturer before placement of the overlay. If the primed surface becomes contaminated, clean and re-prime it.

C.3.2 Application of the Overlay

Perform the handling and mixing of the polymer resin and hardening agent in a safe manner to achieve the desired results according to the manufacturer's instructions. Mix polyester polymer concrete using a plant/mixer calibrated according to the manufacturer's recommendations. Calibrate the plant/mixer in the presence of the engineer.

The polyester concrete shall be placed within 15-120 minutes after the primer has been applied, or per the manufacturer's recommendation.

The polyester concrete shall contain approximately 12% polyester resin by weight of dry aggregate; the exact percentage will be determined by the engineer during placement to enable proper finishing and texturing of the overlay surface.

The amount of initiator used in polyester concrete shall be sufficient to produce an initial set time between 30-90 minutes, or per manufacturer's recommendation, during placement, as determined using an initial-setting time Gillmore needle per ASTM C266.

If initial set does not occur within 30-90 minutes, the material must be removed and replaced at no additional cost.

Place the polyester polymer concrete before gelling or within 15 minutes of adding the initiator, whichever comes first, or within a more restrictive range if recommended by the manufacturer. Discard any polyester polymer concrete not placed within this time limit at no additional cost.

Consolidate and finish to the required grade and cross-section per standard spec 509. Taper at drains and expansion joints as specified by the manufacturer or as indicated on the plans. Terminating edges of the overlay may require application and finishing by hand trowel. Finishing and texturing equipment shall be fitted with vibrators and tines or other means of consolidating and texturing the polyester concrete to a compaction no less than 97% or as recommended by the manufacturer. A vibratory screed may be used for placement lengths less than 300 ft. A roller type screed is not allowed. If a vibratory screed is used, the surface shall be tested in accordance with standard spec 415.3.10.

If the overlay is placed with a paving machine which incorporates tines, apply the finishing sand immediately after texturing. Otherwise, apply the finishing sand immediately before texturing or as directed by the manufacturer. The finishing sand must be applied before gelling occurs.

The finish sand shall be applied by either mechanical or hand dispersion immediately after strike-off, before gelling occurs. Apply at approximately 15 to 20 lbs per 100 ft^2 or until saturation as determined by the engineer.

Texture the overlay surface by longitudinal grooving as soon as the condition of the polyester polymer concrete will permit. Use a steel tined tool or a finned float with a single row of fins. Grooves shall be approximately 3/16-in wide at 3/4- to 1-in on center with a depth of approximately 1/8-in. Do not tine within 1 ft of gutters. Tining may be performed manually provided that the finish obtained is satisfactory to the engineer.

The completed polyester polymer concrete overlay surface shall be free of any smooth areas. Any surface defects shall be repaired by the contractor to the satisfaction of the engineer at no additional cost.

Allow material to fully cure to a firm, hard surface before allowing traffic on the overlay. Cure times will vary depending on product and ambient temperature; refer to manufacturer's recommendation. Before opening to traffic, a properly calibrated Schmidt hammer must register a value not less than 25. The overlay shall be protected from moisture while it cures.

Prior to opening to traffic, clean expansion joints and joint seals of all debris and polymer. All working deck joints shall be extended through the overlay and sealed according to plan details. If required by the engineer, a minimum of 3 days following opening to traffic, remove loosened aggregates from the deck, expansion joints, and approach pavement.

If the overlay is not completed within the work period (including if staged construction is used), the polyester polymer overlay edges shall be tapered unless directed otherwise by the engineer. Taper the edges at a 1:1 slope. Provide the transverse edge with a 1/2-in lip at the top of the taper so a feather edge is not required for the completion pour. Tapering is not necessary if there is less than a 3/4-in height difference in the elevation of the overlay section and the adjacent pavement. Prime the tapered portion and the vertical faces of butt joints of the previously placed overlay before placing the next portion of the overlay.

C.3.3 Acceptance Testing

C.3.3.1 Bond Strength

Between 24 and 48 hours after overlay placement, conduct two tensile bond tests per pour as specified in ACI 503R in the presence of the engineer and at locations specified by the engineer. Drill cores through the overlay and into the existing concrete a minimum of 1/4in but no more than 1/2-in. A passing test will have a tensile strength greater than 250 psi, or a failure into the substrate where more

than 50% of the core area has failed deeper than 1/4-in. Immediately patch test core holes by blowing out with oil- and moisture-free compressed air and filling with polyester polymer concrete per manufacturer's instructions.

C.3.3.2 Smoothness Quality

Test the pavement surface at engineer-selected locations with a 10-foot straightedge or other engineer-specified device. The engineer may direct the contractor to mark and grind down areas showing high spots greater than 1/8 inch but not exceeding 1/4 inch in 10 feet. Grind until there are no deviations greater than 1/8 inch when retested with the straightedge. The engineer may direct the contractor to remove and replace areas with deviations greater than 1/4 inch in 10 feet.

C.4 Repair of Polyester Polymer Concrete Overlay

Repair all areas determined by the engineer to be unbonded, uncured, segregated, or damaged at no cost to the Department. Submit repair procedures from the manufacturer to the engineer for approval. Absent manufacturer's repair procedures and with the approval of the engineer, complete repairs according to the following: Cut the limits of the area to the top of the concrete; remove the overlay by scarifying, grinding, or other approved methods; shot blast or sand blast and air blast the concrete surface prior to placement of overlay material; and place the polyester polymer concrete overlay according to C.3.

D Measurement

The department will measure Polyester Polymer Concrete Overlay With Milling and Trial Overlay bid item in volume by the cubic yard acceptably completed. The department will not measure wasted material or material used for trial overlays.

E Payment

The department will pay for measured quantities at the contract unit price under the following bid item:

ITEM NUMBER	DESCRIPTION	UNIT
SPV.0035.4010	Polyester Polymer Concrete Overlay with Milling and Trial Overlay	CY

Payment for Polyester Polymer Concrete Overlay with Milling and Trial Overlay is full compensation for preparing the surface including milling of existing deck; for tensile bond testing; providing, hauling, placing, finishing, curing, and protecting the overlay; for cleanup; for sweeping/vacuuming and disposing of excess and waste materials; for materials needed for and construction, removal and disposal of trial overlay(s); and for the presences of the manufacturer's representative on the site, and for all required document submittals.

If Portland cement concrete is used for patching, the department will pay for that concrete under a separate bid item.

178. Crash Cushions Permanent Low Maintenance and Crash Cushions Temporary.

Complete work in accordance with Section 614 of the standard specifications.

Replace section 614.2.7 with the following:

Use Model SCI 100GM Crash Attenuator from Smart Cushion Innovations (SCI) Products for permanent and temporary crash cushions.

Schedule of Items
Attached, dated October 31, 2017, are the revised Schedule of Items Pages 10, 11, and 36.

Plan Sheets
The following 8½ x 11-inch sheets are attached and made part of the plans for this proposal:
ID 1100-34-70
Revised: 506, 512, 535, 536

END OF ADDENDUM

ADJUSTING DRAINAGE STRUCTURES

STAGE	LOCATION	STATION	OFFSET FT	EXISTING RIM* ELEVATION	TO	PROPOSED RIM* ELEVATION	611.8110** ADJUSTING MANHOLE COVERS EACH	611.8115 ADJUSTING INLET COVERS EACH	611.9705 SALVAGED MANHOLE COVERS EACH
2	**IH 894**								
		120NS+03	2' LT	762.34	--	762.94	---	1	---
		120NS+03	3' RT	762.43	--	762.88	---	1	---
3	**IH 894**								
		77NS+61	52' LT	756.67	--	756.75	1	---	1
		78NS+12	52' LT	756.51	--	756.66	1	---	1
		84NS+52	52' LT	768.52	--	768.61	1	---	1
		84NS+53	52' RT	768.36	--	768.53	1	---	1
		89NS+93	71' LT	769.47	--	768.90	1	---	1
		90NS+03	52' LT	768.11	--	768.09	1	---	1
		92NS+53	52' LT	761.13	--	761.07	1	---	1
		95NS+02	52' LT	754.31	--	754.13	1	---	1
		96NS+83	51' LT	750.97	--	751.00	1	---	1
		97NS+29	51' LT	750.78	--	750.81	1	---	1
		97NS+72	51' LT	751.02	--	751.09	1	---	1
		105NS+72	55' RT	771.56	--	771.67	1	---	1
		106NS+54	52' RT	774.16	--	774.20	1	---	1
		114NS+76	59' LT	773.47	--	773.58	1	---	1
		118NS+03	59' LT	764.65	--	764.93	1	---	1
		118NS+70	51' RT	763.72	--	763.86	1	---	1
		119NS+53	51' LT	762.94	--	763.04	1	---	1
		120NS+03	50' LT	762.89	--	762.91	1	---	1
		120NS+53	51' LT	762.87	--	763.00	1	---	1
3	**RAMP ES**								
		200RES+01	21' LT	737.64	--	737.83	1	---	1
	TOTALS						20	2	20

* EXISTING RIM ELEVATIONS ARE BASED ON FIELD SURVEY. PROPOSED RIM ELEVATIONS ARE FROM THE ROADWAY MODEL WHICH IS BASED ON PLANIMETRICS. ADJUST PROPOSED RIM ELEVATIONS BASED ON ACTUAL FIELD CONDITIONS DURING CONSTRUCTION IN COORDINATION WITH THE RESIDENT ENGINEER.
** ADDITIONAL QUANTITIES LISTED ELSEWHERE IN PLAN

DRAIN SLOTTED VANE LONGITUDINAL

STAGE	ROADWAY	STATION UPSTREAM END	OFFSET UPSTREAM END	INVERT AT UPSTREAM END	CONNECT TO STORM SEWER STRUCTURE	SPV.0090.8030 DRAIN SLOTTED VANE LONGITUDINAL LF
3	**IH 894**					
		104NS+04	63' RT	765.28	H496	100
		122NS+25	65' RT	763.41	H251	75
		127NS+05	63' RT	770.34	H223	100
		131NS+05	63' RT	775.29	H199	200
		134NS+30	59' RT	778.84	H179	125
		193NS+75	66' RT	777.28	Z2011	50
		195NS+74	62' RT	772.91	Z2024	150
		198NS+49	62' RT	766.91	Z2042	100
3	**IH 894**					
		69EW+54	59' LT	735.94	H3011	100
		71EW+78	60' LT	739.75	H3080	150
		71EW+78	59' RT	739.64	H3096	150
		75EW+62	59' RT	746.72	H3064	25
		75EW+87	59' LT	747.46	H3054	50
		78EW+57	64' LT	752.40	H3038	50
		81EW+30	62' RT	757.22	H3113	50
		83EW+10	63' RT	760.90	H3120	100
		86EW+60	65' RT	771.08	H3131	50
	TOTAL					1,625

RECONSTRUCTING DRAINAGE STRUCTURES

LOCATION	611.0420 RECONSTRUCTING MANHOLES EACH	611.0430 RECONSTRUCTING INLETS EACH
UNDISTRIBUTED	2	1
TOTALS	2	1

1

Addendum No. 01
ID 1100-34-70
Revised Sheet 506
October 31, 2017

ALL ITEMS CATEGORY 1000

Addendum No. 01
ID 1100-34-70
Revised Sheet 512
October 31, 2017

3

3

STORM SEWER STRUCTURES												STORM SEWER PIPES													
ROADWAY	STRUCTURE NO.	STRUCTURE STAGE	STATION	OFFSET (FT)	LOCATION	RIM OR FLOW ELEV	STRUCTURE TYPE	INLET/MANHOLE COVERS TYPE	DEPTH[1] (FT)	BACKFILL SLURRY CY	STRUCTURE COMMENTS	PIPE ID	STAGE	FROM STR	TO STR	INLET ELEV	DISCH ELEV	SLOPE[A] %	PIPE LENGTH[B] (FT)	PLAN LENGTH[C] (FT)	PIPE CLASS	PIPE SIZE (INCH)	BACKFILL SLURRY CY	PIPE COMMENTS	SPV.0035.8001 BACKFILL SLURRY CY
IH 894	H229	2	126NS+00.12	1.0	LT	770.72	MANHOLES 8-FT DIAMETER	27-M	10.26	38	---	P230	2	H229	H233	760.46	759.02	1.00	144	150	III	36	106	---	144
IH 894	H231	2	124NS+50.00	1.0	RT	768.74	MANHOLES 5-FT DIAMETER	27-M	5.27	11	---	P232	2	H231	H233	763.47	763.45	1.00	2	7	III	15	1	---	12
IH 894	H233	2	124NS+50.00	1.0	LT	768.74	MANHOLES 5-FT DIAMETER	27-M	9.72	30	---	P234	2	H233	H243	759.02	757.60	2.88	142	147	III	36	105	---	135
IH 894	H235	3	123NS+02.65	60.0	LT	766.02	INLETS 4-FT DIAMETER	HM	4.45	8	---	P236	3	H235	HE237	761.57	761.53	2.88	2	6	III	12	1	---	9
IH 894	HE237	---	123NS+02.64	52.0	LT	766.20	---	---	---	---	---	PE238	---	HE237	HE239	---	---	---	---	---	---	12	---	EXIST PIPE INTERPOL ELEV	---
IH 894	H241	2	123NS+02.66	1.0	RT	766.42	MANHOLES 5-FT DIAMETER	27-M	5.27	10	---	P242	2	H241	H243	761.15	761.13	1.00	2	7	III	12	1	---	11
IH 894	H243	2	123NS+02.66	1.0	LT	766.42	MANHOLES 5-FT DIAMETER	27-M	9.02	26	---	P244	2	H243	H247	757.40	756.56	0.86	98	103	III	36	72	---	98
IH 894	H245	2	122NS+00.00	1.0	RT	764.80	MANHOLES 5-FT DIAMETER	27-M	5.27	11	---	P246	2	H245	H247	759.53	759.51	1.00	2	7	III	15	1	---	12
IH 894	H247	2	122NS+00.00	1.0	LT	764.80	MANHOLES 5-FT DIAMETER	27-M	8.24	24	---	P248	2	H247	H255	756.56	755.74	0.86	96	103	III	36	71	---	95
IH 894	H249	3	121NS+52.94	72.2	RT	762.84	INLETS MEDIAN 1 GRATE	MS	2.83	7	---	P250	3	H249	H251	760.01	759.85	3.00	6	9	III	12	1	---	8
IH 894	H251	3	121NS+47.81	66.8	RT	763.74	INLETS 4-FT DIAMETER	HM	4.08	9	CONNECT VANE DRAIN	PE252	---	H251	H253	759.66	756.69	---	---	---	---	12	---	EXIST PIPE INTERPOL ELEV	9
IH 894	H253	2	121NS+05.14	1.1	RT	763.38	MANHOLES 5-FT DIAMETER	27-M	7.19	12	ROTATE STRUCTURE & CASTING 90°	P254	2	H253	H255	756.19	756.11	1.50	5	12	III	18	1	---	13
IH 894	HE254A	---	120NS+02.67	2.6	RT	762.88	---	V	---	---	CONNECT SLOTTED DRAINS, ADJUST & INSTALL NEW COVER	PE254B	---	HE254A	HE254C	---	---	---	---	---	---	12	---	EXIST PIPE INTERPOL ELEV	---
IH 894	HE254C	---	120NS+02.67	12.0	RT	763.07	---	---	---	---	---	PE254D	---	HE254C	HE254E	---	---	---	---	---	---	12	---	EXIST PIPE INTERPOL ELEV	---
IH 894	HE254E	---	120NS+52.67	12.0	RT	763.15	---	---	---	---	---	PE254F	---	HE254E	H254G	---	757.09	---	---	---	---	12	---	EXIST PIPE INTERPOL ELEV	---

[1]DEPTH = RIM OR FLOW ELEV - LOWEST PIPE INVERT ELEVATION

[A] SLOPE CALCULATED BASED ON PIPE LENGTH. PIPE LENGTH REPRESENTS LENGTH OF PIPE MEASURED FROM INSIDE FACE OF STRUCTURE TO INSIDE FACE OF STRUCTURE

[B]PIPE LENGTH SHOWN FOR SLOPE CALCULATION ONLY. NOT INTENDED FOR PAY QUANTITY.

[C]PLAN LENGTH SHOWN FOR PAY QUANTITY.

3

3

STORM SEWER STRUCTURE SUMMARY

611.2004 MANHOLES 4-FT DIAMETER EACH	611.2005 MANHOLES 5-FT DIAMETER EACH	611.2006 MANHOLES 6-FT DIAMETER EACH	611.2007 MANHOLES 7-FT DIAMETER EACH	611.2008 MANHOLES 8-FT DIAMETER EACH	611.3004 INLETS 4-FT DIAMETER EACH	611.3901 INLETS MEDIAN 1 GRATE EACH	611.3902 INLETS MEDIAN 2 GRATE EACH	611.0535 MANHOLE COVERS TYPE J SPECIAL EACH	611.0612 INLET COVERS TYPE C EACH	611.0627 INLET COVERS TYPE HM EACH	611.0642 INLET COVERS TYPE MS EACH	611.0654 INLET COVERS TYPE V EACH	SPV.0060.8050 INLET COVERS TYPE 27-M EACH
3	165	4	7	2	73	7	2	4	1	51	11	28	172

STORM SEWER PIPE SUMMARY

608.0312* STORM SEWER PIPE REINFORCED CONCRETE CLASS III 12-INCH LF	608.0315* STORM SEWER PIPE REINFORCED CONCRETE CLASS III 15-INCH LF	608.0318* STORM SEWER PIPE REINFORCED CONCRETE CLASS III 18-INCH LF	608.0321* STORM SEWER PIPE REINFORCED CONCRETE CLASS III 21-INCH LF	608.0324 STORM SEWER PIPE REINFORCED CONCRETE CLASS III 24-INCH LF	608.0330 STORM SEWER PIPE REINFORCED CONCRETE CLASS III 30-INCH LF	608.0336 STORM SEWER PIPE REINFORCED CONCRETE CLASS III 36-INCH LF	608.0354 STORM SEWER PIPE REINFORCED CONCRETE CLASS III 54-INCH LF	608.0412 STORM SEWER PIPE REINFORCED CONCRETE CLASS IV 12-INCH LF (1)
927	1244	204	9	4156	1231	503	760	11

(1)

*ADDITIONAL QUANTITIES LISTED ELSEWHERE IN PLAN

Addendum No. 01
ID 1100-34-70
Revised Sheet 535
October 31, 2017

ALL ITEMS CATEGORY 1000

Addendum No. 01
ID 1100-34-70
Revised Sheet 536
October 31, 2017

3

BASE PATCHING

CATEGORY	LOCATION	390.0403 BASE PATCHING CONCRETE SHES SY	SPV.0180.0001 BASE PATCHING CONCRETE SHES SPECIAL SY	416.0610 DRILLED TIE BARS EACH	416.0620 DRILLED DOWEL BARS EACH
1000	UNDISTRIBUTED	2,800	2,800	1,080	3,600
	TOTALS	2,800	2,800	1,080	3,600

TRAFFIC CONTROL

CATEGORY	STAGE	LOCATION	643.0100.0001 TRAFFIC CONTROL 1100-34-70 EACH
1000	ALL	PROJECT	1
		TOTAL	1

FINISHING ROADWAY

CATEGORY	STAGE	LOCATION	213.0100.0001 FINISHING ROADWAY 1100-34-70 EACH
1000	ALL	PROJECT	1
		TOTAL	1

DUST CONTROL SURFACE TREATMENT

CATEGORY	STAGE	LOCATION	623.0200 DUST CONTROL SURFACE TREATMENT SY
1000	1	PROJECT	100,537
		TOTALS	100,537

MOBILIZATION

CATEGORY	STAGE	LOCATION	619.1000 MOBILIZATION EACH
1000	ALL	PROJECT	0.98
		TOTAL	0.98

WATER

CATEGORY	STAGE	LOCATION	624.0100 WATER MGAL
1000	ALL	PROJECT-BASE AGGREGATE	66
		PROJECT- EXCAVATION	0
		TOTALS	66

CPM SCHEDULE ITEMS

CATEGORY	LOCATION	SPV.0060.0001 BASELINE CPM PROGRESS SCHEDULE EACH	SPV.0060.0002 MONTHLY CPM PROGRESS SCHEDULE UPDATES EACH
1000	UNDISTRIBUTED	1	12
	TOTALS	1	12

MOBILIZATIONS EMERGENCY PAVEMENT REPAIR

CATEGORY	LOCATION	SPV.0060.0405 MOBILIZATIONS EMERGENCY PAVEMENT REPAIR EACH
1000	UNDISTRIBUTED	20
	TOTALS	20

BEAM GUARD ITEMS

CATEGORY	STAGE	ROADWAY	STATION	TO	STATION	LOCATION	614.2500 MGS THRIE BEAM TRANSITION LF	614.2610 MGS GUARDRAIL TERMINAL EAT EACH	614.0805 CRASH CUSHIONS PERMANENT LOW MAINTENANCE EACH
		RAMPS							
1000	2	RAMP SN	218RSN+55	-	219RSN+45	LT	39.4	1	--
		RAMP EN	50RENA+36	-	51RENA+25	RT	39.4	1	--
		RAMP ES	197RES+18	-	198RES+08	RT	39.4	1	--
		SUBTOTALS					118.2	3	--
		MAINLINE							
1000	3	IH-894 NB	93NS+74	-	94NS+62	RT	39.4	1	--
			117NS+68	-	118NS+44	RT	39.4	1	--
			146NS+63	-	147NS+53	RT	39.4	1	--
			185NS+57	-	186NS+36	RT	39.4	1	--
		IH 894 SB	92NS+49	-	93NS+41	LT	39.4	1	--
			98NS+55	-	99NS+45	LT	39.4	1	--
			121NS+57	-	122NS+47	LT	39.4	1	--
			153NS+22	-	154NS+14	LT	39.4	1	--
		IH-894/IH 43 EB	79EW+30	-	80EW+20	RT	39.4	1	--
		IH-894/IH 43 WB	72EW+19	-	73EW+09	LT	39.4	1	--
			103EW+72	-	104EW+62	LT	39.4	1	--
		RAMPS							
		RAMP NS	47RNS+20	-	48RNS+10	RT	39.4	1	--
		RAMP NE	50RNE+28	-	51RNE+15	RT	39.4	1	--
			34RNE+00			RT	--	--	1
		RAMP EN	35RENA+00	-	35RENA+90	LT	39.4	1	--
			44RENA+45			RT	--	--	1
			50RENA+34	-	51RENA+24	LT	39.4	1	--
		SUBTOTALS					591.0	15	2
		TOTALS					709	18	2

1

3

PROJECT NO: 1100-34-70	HWY: IH 894	COUNTY: MILWAUKEE	MISCELLANEOUS QUANTITIES	SHEET: 536	E

Proposal ID: 20171114014 **Project(s):** 1100-34-70, 2030-04-75

Federal ID(s): WISC 2017509, WISC 2017510

SECTION: 0001 Contract Items

Alt Set ID: **Alt Mbr ID:**

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price	Bid Amount
0258	603.1156 Concrete Barrier Type S56 **P**	1,551.000 LF	_____.____	_____.____
0260	603.1242 Concrete Barrier Type S42A **P**	4,368.000 LF	_____.____	_____.____
0262	603.1256 Concrete Barrier Type S56A **P**	89.000 LF	_____.____	_____.____
0264	603.3111 Concrete Barrier Transition Type NJ32SF to S32	4.000 EACH	_____.____	_____.____
0266	603.3113 Concrete Barrier Transition Type NJ32SF to S36	21.000 EACH	_____.____	_____.____
0268	603.3535 Concrete Barrier Transition Type S36 to S42	22.000 EACH	_____.____	_____.____
0270	603.3559 Concrete Barrier Transition Type S42 to S56	13.000 EACH	_____.____	_____.____
0272	603.8000 Concrete Barrier Temporary Precast Delivered	65,945.000 LF	_____.____	_____.____
0274	603.8125 Concrete Barrier Temporary Precast Installed	89,317.000 LF	_____.____	_____.____
0276	604.0400 Slope Paving Concrete	11.000 SY	_____.____	_____.____
0278	606.0200 Riprap Medium	28.000 CY	_____.____	_____.____
0280	608.0312 Storm Sewer Pipe Reinforced Concrete Class III 12-Inch	1,212.000 LF	_____.____	_____.____
0282	608.0315 Storm Sewer Pipe Reinforced Concrete Class III 15-Inch	1,259.000 LF	_____.____	_____.____
0284	608.0318 Storm Sewer Pipe Reinforced Concrete Class III 18-Inch	234.000 LF	_____.____	_____.____

Proposal ID: 20171114014 **Project(s):** 1100-34-70, 2030-04-75

Federal ID(s): WISC 2017509, WISC 2017510

SECTION: 0001 Contract Items

Alt Set ID: **Alt Mbr ID:**

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price	Bid Amount
0286	608.0321 Storm Sewer Pipe Reinforced Concrete Class III 21-Inch	24.000 LF	_____.____	_____.____
0288	608.0324 Storm Sewer Pipe Reinforced Concrete Class III 24-Inch	4,156.000 LF	_____.____	_____.____
0290	608.0330 Storm Sewer Pipe Reinforced Concrete Class III 30-Inch	1,231.000 LF	_____.____	_____.____
0292	608.0336 Storm Sewer Pipe Reinforced Concrete Class III 36-Inch	510.000 LF	_____.____	_____.____
0294	608.0354 Storm Sewer Pipe Reinforced Concrete Class III 54-Inch	760.000 LF	_____.____	_____.____
0296	608.0412 Storm Sewer Pipe Reinforced Concrete Class IV 12-Inch	376.000 LF	_____.____	_____.____
0298	608.0415 Storm Sewer Pipe Reinforced Concrete Class IV 15-Inch	22.000 LF	_____.____	_____.____
0300	611.0420 Reconstructing Manholes	5.000 EACH	_____.____	_____.____
0302	611.0530 Manhole Covers Type J	2.000 EACH	_____.____	_____.____
0304	611.0535 Manhole Covers Type J-Special	4.000 EACH	_____.____	_____.____
0306	611.0612 Inlet Covers Type C	1.000 EACH	_____.____	_____.____
0308	611.0624 Inlet Covers Type H	6.000 EACH	_____.____	_____.____
0310	611.0627 Inlet Covers Type HM	51.000 EACH	_____.____	_____.____
0312	611.0642 Inlet Covers Type MS	11.000 EACH	_____.____	_____.____
0314	611.0654 Inlet Covers Type V	28.000 EACH	_____.____	_____.____

Proposal ID: 20171114014 **Project(s):** 1100-34-70, 2030-04-75

Federal ID(s): WISC 2017509, WISC 2017510

SECTION: 0001 Contract Items

Alt Set ID: **Alt Mbr ID:**

Proposal Line Number	Item ID Description	Approximate Quantity and Units	Unit Price	Bid Amount
1016	611.0430 Reconstructing Inlets	1.000 EACH	_____.____	_____.____

Section: 0001 **Total:** _____.____

Total Bid: _____.____