



**Addendum No. 1
State of Indiana
Department of Administration
For
Department of Natural Resources
Lake Manitou Dam
Outlet Structure and Dam Repair
Project No. E06-0068
September 7, 2016**

TO: All Holders of the Contract Documents for the above referenced project.

The items listed in this Addendum are to become a part of the Original Contract Documents as if included therein. Only the noted items are affected and the remainder of the Original Contract Documents are to remain unchanged in their entirety.

1. Supplemental Unit Prices

Please replace the Supplemental Unit Prices with the enclosed Supplemental Unit Prices dated September 7, 2016.

2. Detailed Specifications:

- a. Replace the Table of Contents with the enclosed revised Table of Contents dated September 7, 2016.
- b. Replace page DS-9 with the enclosed revised page DS-9 dated September 7, 2016.
- c. Replace page DS-20 with the enclosed revised page DS-20 dated September 7, 2016.
- d. Add pages DS-35 through DS-41 to the specifications. These pages contain the specifications for Work Item No. 18 – Concrete Repair and Rehabilitation.

3. Plan Sheets:

Replace Sheet 5 and Sheet 6 with the attached Sheets containing the noted revisions for this Addendum.

LAWSON-FISHER ASSOCIATES P.C.


Sky K. Medors, P.E., CFM
Senior Civil Engineer

A signed copy of this Addendum No. 1 must accompany Bid.

Contractor

Date

SUPPLEMENTAL UNIT PRICES

The Contractor shall prepare his lump sum bid based on the estimated dimensions and quantities provided in the Plans and Specifications. The Contractor agrees to accept the following unit prices to adjust the amount, more or less, of the contract, if actual quantities required differ from that which was estimated. Any net additional to the contract amount shall be applied against the amount defined in Section 4.7.1 of the Supplementary Conditions.

Item No. 6	Deep Injection of HPD Stabilization and Lift of Pavement Structures, Underground Infrastructures and Soil Compaction (Est. 700 C.F.).....	\$ _____/CF
Item No. 18	Deep Concrete Surface Repair (Est. 25 S.F.)	\$ _____/SF
	Shallow Concrete Surface Repair (Est. 25 S.F.).....	\$ _____/SF
	Crack Repair (Est. 100 L.F.)	\$ _____/LF
	Joint Repair (Est. 50 L.F.)	\$ _____/LF

COMPANY NAME: _____

SIGNATURE OF BIDDER _____

DATE: _____

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4. Laser levels or dial indicator devices capable of monitoring movement at the surface of the slab to verify that the injected base and sub-base soils have been properly densified.
5. A portable Dynamic Cone Penetrometer (DCP) for on-site soils investigation to assist in location of weak sub-base soils and determination of injection pattern through tubes to densify weak soils.
6. All necessary light towers, electric generators, compressors, heaters, hoses, containers, valves and gauges to efficiently conduct and control the work.

CONSTRUCTION REQUIREMENTS

The Contractor shall provide documentation of 10 prior Deep Injection projects (injecting expandable materials into soils through more than one entry point while monitoring at the surface) including 5 prior Deep Injection projects with flowing water present, minimum of 5 years of experience and have a paid engineer on staff.

The Contractor shall provide a slab profile from laser level measurements of each area where the slab structure requires attention. Each profile shall be reviewed by the Engineer prior to performing the work at the project location.

Dynamic cone penetrometer testing may be required as directed by the Engineer on each project line to confirm existing sub-grade soil conditions.

For soil densification and compaction or unconsolidated base soils, stabilization of the concrete slab, a series of 5/8" – 3/4" holes (as required for tube placement) shall be drilled at approximately 4 foot spaced intervals through the pavement above the area requiring soil remediation. The polyurethane material shall then be injected through injection tubes inserted into the drilled holes to the proper depth or depths as required. Densification of 4 feet of soil is required. The exact location, spacing, hole size and depth shall be selected by the Contractor and reviewed by the Engineer. The rate and amount of material injected shall be determined by the Contractor to obtain proper densification of the base and sub-base soils and fill all voids under the existing slab.

The manufacturer's recommendations for installation temperature shall be followed.

Continuous laser level or dial indicator micrometer reading shall be in place and monitored by the Contractor during injection to determine sufficient material usage, soils densification, and voids filled as indicated by slab movement of 1/4" or 6 mm. The Monitoring Plan shall be submitted by the Contractor for review by the Engineer.

MEASUREMENT AND PAYMENT

Deep injection of HDP will be measured by the cubic yard. The estimated volume used for bidding assumes 3 inch voids under 80% of the slab plus deep injection.

The accepted quantities of HDP shall be paid for at the contract unit price per cubic yard of deep injection of HDP.

The mobilization and demobilization shall be paid for under Work Item No. 1 and not this work item.

Mat Length: The ACB mats shall have the ability for fabrication in various lengths, widths, and in combinations of length and/or widths. Special mats are a combination of two opposing dimensions either in the longitudinal or transverse direction of the mats. The special mats are available in various dimensions that allow for a custom fit to a site-specific project. Obstructions, such as manholes, pipe outfalls, or other fixed structures, will be accommodated to the extent that accurate information is provided about them prior to the preparation of mat layout drawings.

CONSTRUCTION REQUIREMENTS

A. Foundation Preparation

General. Areas on which filter fabric and ACBs are to be placed shall be constructed to the lines and grades shown on the Contract Drawings and to the tolerances specified in the Contract Documents, and approved by the Engineer. All subgrade preparation shall be performed in accordance with ASTM D 6884, Standard Practice for Installation of Articulating Concrete Block (ACB) Revetment Systems, as updated and amended.

Grading. The slope shall be graded to a smooth plane surface to ensure that intimate contact is achieved between the slope face and the geotextile (filter fabric). All slope deformities, roots, grade stakes, and stones which project normal to the local slope face must be re-graded or removed. No holes, "pockmarks", slope board teeth marks, footprints, or other voids greater than 1.0 inch in depth normal to the local slope face shall be permitted. No grooves or depressions greater than 0.5 inches in depth normal to the local slope face with a dimension exceeding 1.0 foot in any direction shall be permitted. Where such areas are evident, they shall be brought to grade by placing compacted homogeneous material. The slope and slope face shall be uniformly compacted, and the depth of layers, homogeneity of soil, and amount of compaction shall be as required by the Engineer.

Excavation and preparation for anchor trenches, side trenches, and toe trenches or aprons shall be done in accordance to the lines, grades and dimensions shown in the Contract Drawings. The anchor trench hinge-point at the top of the slope shall be uniformly graded so that no dips or bumps greater than 0.5 inches over or under the local grade occur. The width of the anchor trench hinge-point shall also be graded uniformly to assure intimate contact between all ACBs and the underlying grade at the hinge-point.

Inspection. Immediately prior to placing the filter fabric and ACB, the prepared subgrade shall be inspected by the Engineer as well as the owner's representative. No fabric or blocks shall be placed thereon until that area has been approved by each of these parties.

B. Placement of Geotextile Filter Fabric, Drainage Medium and Geosynthetic Mesh

General. Filter Fabric, or filtration geotextile, as specified elsewhere, shall be placed within the limits shown on the Contract Drawings. All placement and preparation should be performed in accordance with ASTM D 6884, Standard Practice for Installation of Articulating Concrete Block (ACB) Revetment Systems, as updated and amended.

Placement. The filtration geotextile shall be placed directly on the prepared area, in intimate contact with the subgrade, followed by a 6-inch thick granular drainage layer consisting of INDOT No. 8 Coarse Aggregate. The geotextile shall be free of folds or wrinkles prior to placement of the granular drainage layer. The geotextile will not be walked on or disturbed when the result is a loss of intimate contact between the ACB and the geotextile or between the geotextile and the subgrade.

WORK ITEM NO. 18 – CONCRETE REPAIR AND REHABILITATION

DESCRIPTION

The Contractor shall provide all labor, materials, equipment, and incidentals as shown, specified, and required to repair or rehabilitate, as required, all existing concrete shown or indicated in the Contract Documents as being repaired or rehabilitated.

Review installation procedures under this and other Work Items and coordinate the work that must be installed with or before repair and rehabilitation of concrete.

MATERIALS

Standards referenced in this Section are:

1. ASTM C109/C109M, Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50-mm] Cube Specimens).
2. ASTM C882/C882M, Test Method for Bond Strength of Epoxy-Resin Systems Used with Concrete by Slant Shear.
3. ASTM D3574, Test Methods for Flexible Cellular Materials – Slab, Bonded, and Molded Urethane Foams.

Repair Mortar:

- A. Product Description: Repair mortar shall be prepackaged, cement-based product specifically formulated for repairing concrete surface defects.
- B. Products and Manufacturers: Provide one of the following:
 1. SikaTop 122 Plus, SikaTop 123 Plus, or SikaTop 126 Plus, by Sika Corporation.
 2. DuralTop Gel, DuralTop Flowable Mortar by Euclid Chemical Company.
 3. Or approved equal.
- C. Materials:
 1. Provide a two-component, polymer-modified, Portland cement, fast-setting, trowel-grade mortar. Repair mortar shall be enhanced with penetrating corrosion inhibitor, and shall have the following properties:

Physical Property	Value	ASTM Standard
Minimum Compressive Strength at One Day	2,000 psi	C109
Minimum Compressive Strength at 28 Days	6,000 psi	C109
Minimum Bond Strength at 28 Days	1,800 psi	C882*
* Modified for use with repair mortars.		

2. Where the least dimension of the placement in width or thickness exceeds four inches, extend repair mortar by adding aggregate as recommended by repair mortar manufacturer.

Crack Injection Materials:

- A. Structural Crack Repair System:
 1. Epoxy for injection shall be low-viscosity, high-modulus moisture insensitive type.
 2. Products and Manufacturers: Provide one of the following:
 - a. Sikadur 35, Hi-Mod L.V. and Sikadur 31, Hi-Mod Gel, by Sika Corporation.
 - b. Eucopoxy Injection Resin, by Euclid Chemical Company.
 - c. Or approved equal.
- B. Non-structural Crack Repair System:
 1. Hydrophobic Polyurethane Chemical Grout:
 - a. Provide hydrophobic polyurethane that forms a flexible gasket.
 - b. Products and Manufacturers: Provide one of the following:
 - 1) SikaFix HH LV, by Sika Chemical Company.
 - 2) Hydro Active Flex SLV, by De Neef Construction Chemicals, Inc.
 - 3) Or approved equal.
 - c. Shrinkage limit shall not exceed 4.0 percent in accordance with ASTM D1042.
 - d. Minimum elongation of 250 percent in accordance with ASTM D3574.
 - e. Minimum tensile strength of 150 psi in accordance with ASTM D3574.
 2. Hydrophilic Acrylate-Ester Resin:
 - a. Hydrophilic crack repair system shall be acrylate-ester resin that forms a flexible gasket and increase in volume by at least 50 percent when in contact with water.
 - b. Products and Manufacturers: Provide one of the following:
 - 1) Duroseal Multigel 850, manufactured by BBZ USA, Inc.
 - 2) Or approved equal.

SUBMITTALS

- A. Action Submittals: Submit the following:
 1. Product Data: Information on all products proposed for use, including manufacturer's brochures, technical data, specifications, and other applicable data.
 2. Manufacturer's Instructions: Manufacturer's recommended procedures for installing materials proposed for use.

CONSTRUCTION METHODS

Inspection:

- A. Examine areas and conditions under which the repair Work is to be installed and notify ENGINEER in writing of conditions detrimental to proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions have been corrected.
- B. Engineer will inspect all surfaces and determine initial location and extents of all concrete repairs and rehabilitations. Contractor shall coordinate with Engineer with regard to scheduling inspections. Inspections will be conducted after the area is dewatered.

Preparation:

- A. Surface Preparation:
 - 1. Initial Surface Preparation: Remove by chipping, abrasive blasting, or hydro blasting all laitance, foreign material, and unsound concrete from entire area to be repaired. Further roughen surface as specified in this Section. Where non-shrink grout or repair mortar is used, perform additional surface preparation, if any, recommended by product manufacturer.
 - 2. Wetting Procedure: Where repair concrete, shotcrete, or cement grout is used, and bonding agent is not required, or where repair mortar or non-shrink grout manufacturer recommends wet or saturated surface, perform the following:
 - a. Continuously apply water for at least four hours to surface being repaired. Where large surface areas are to be repaired, use fog-spray nozzles, mounted on stands, in sufficient number so that entire surface to be repaired is contacted by fog spray cloud.
 - b. Prevent concrete from drying until after repair is completed. Re-wet surfaces not yet repaired using water sprays at least a daily; should more than four days elapse without re-wetting surfaces not yet repaired, repeat the original saturating procedure.
 - c. Remove standing water in areas to be repaired before placing repair material. Provide means to remove excess water from structure.
 - 3. Preparation for Epoxy Bonding Agent: Where repair material manufacturer recommends use of epoxy-bonding agent, conform to recommendations of both repair material manufacturer and bonding agent manufacturer.

Installation, General:

- A. Care shall be taken to fully consolidate repair material, completely filling all portions of space to be filled.

- B. Bring surface being repaired into alignment with adjacent surfaces, providing uniform, even surface. Surface repaired shall match adjacent existing surfaces in texture and shall receive coatings or surface treatments, if any, provided for the existing surface adjacent to repaired surface.
- C. Curing:
 - 1. Curing of repair mortar and non-shrink grout shall be in accordance with manufacturer's recommendations, except that minimum cure period shall be three days.
 - 2. Curing of other materials shall be in accordance with requirements of Work Item No. 14 – Portland Cement Concrete.

Repair of Surface Defects:

- A. Surface defects are depressions in a concrete surface that do not extend all the way through the concrete. Surface defects can result from removal of an embedded item, removal of an intersecting concrete member, physical damage, or unrepaired rock pockets created during original placement. For spalls that result from corroded reinforcing steel or other embedment refer to REPAIR OF DETERIORATED CONCRETE in Work Item.
- B. Preparation: Perform the following in addition to requirements of PREPARATION of this Section:
 - 1. Remove by chipping all loose, damaged concrete to sound material.
 - 2. Where existing reinforcing is exposed, remove concrete to minimum of one-inch around exposed bars. If existing bars are cut through, cracked, or cross sectional area is reduced by more than 25 percent from original, immediately notify Engineer.
 - 3. Score-cut perimeter of area to be repaired to minimum depth of 1/2-inch and maximum depth that will not cut existing reinforcing steel. Chip out existing concrete to the score line so that minimum thickness of repair mortar will be 1/2-inch.
- C. Repair Material:
 - 1. Completely fill the surface defect with specified repair material, in accordance with material manufacturer's instructions and the Contract Documents.
 - 2. Perform, with repair mortar, repairs of surface defects in concrete normally in contact with water or soil, and interior surfaces of structures that contain water.
 - 3. Repair of other surface defects may be by applying repair mortar, repair concrete, shotcrete, or cement grout, as appropriate.

Repair of Deteriorated Concrete:

- A. This Article pertains to deteriorated concrete which has been damaged due to corrosion of reinforcing steel, physical damage due to abrasion, or damage due to chemical attack. Use repair mortar, as specified in this Article, for repairing deteriorated concrete.

- B. Surface Preparation: In addition to requirements of the PREPARATION section, perform the following surface preparation:
 - 1. Remove loose, broken, softened, and acid-contaminated concrete by abrasive blasting and chipping to sound, uncontaminated concrete.
 - 2. Upon completion of removal of deteriorated concrete, notify ENGINEER in writing. Allow one week for ENGINEER to evaluate the surface, perform testing for acid contamination if required, determine if additional concrete shall be removed, and to develop special repair details (if any) required. Should ENGINEER determine that additional concrete be removed to reach sound, uncontaminated concrete, allow another one-week period for further evaluation and testing following the additional removal.
 - 3. Surface preparation shall conform to recommendations of repair mortar manufacturer.
 - 4. Repair and rehabilitate isolated areas of exposed reinforcing bars in accordance the REPAIR OF SURFACE DEFECTS section. If extensive areas of reinforcing steel are uncovered after removal of deteriorated concrete, ENGINEER will determine the repair methods required.

- C. Repair Mortar Placing:
 - 1. Conform to manufacturer's recommended procedures for mixing and placing repair mortar.
 - 2. After initial mixing of repair mortar, addition of water is not allowed.
 - 3. Minimum Thickness:
 - a. Install repair mortar to not less than minimum thickness recommended by manufacturer, and not less than 1/2-inch.
 - b. Where removal of deteriorated concrete results in repair thickness of less than minimum required thickness to return to original concrete surface in isolated areas totaling less than ten percent of total repair surface area, remove additional concrete to obtain at least the required minimum thickness.
 - c. Where surface area with repair thickness less than minimum required thickness exceeds ten percent of total repair area, notify ENGINEER.
 - d. Provide repair mortar so that minimum cover over existing reinforcing steel is two inches. Do not place repair mortar creating locally raised areas.

- e. Where transitioning to or from wall surfaces not requiring repair, do not feather-out repair mortar at transition. Instead, form the transition by saw cutting a score line to not less than minimum required repair mortar depth and chip out concrete to the saw cut line. Do not cut or otherwise damage reinforcing steel.
4. Place repair mortar to an even, uniform plane to restore concrete member to its original surface. Out-of-plane tolerance shall be such that the gap between 12-inch long straight edge and repair mortar surface does not exceed 1/8-inch, and gap between a four-foot long straight edge and repair mortar surface shall not exceed 1/4-inch. Tolerances specified in this paragraph apply to straight edges placed in any orientation at any location.
- D. Finishing:
1. Provide smooth, steel trowel finish to repair mortar.
 2. When completed, there shall be no sharp edges. Provide exterior corners, such as at penetrations, one-inch radius. Interior corners shall be square.

Crack Injection:

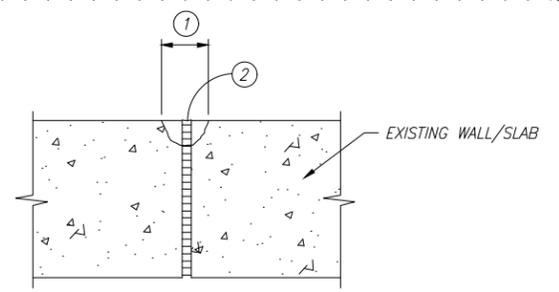
- A. Examine areas under which injection Work will be installed and locate cracks that require injection. Identify and inject cracks greater than 0.010-inch wide in structures that retain or contain water, wastewater, or similar liquid.
- B. Install injection material in accordance with crack injection manufacturer's requirements.
- C. After injecting and curing, verify that injected material penetrated the crack adequately and that there is no visible leakage through the crack. After injecting, if crack continues to leak, re-inject crack at no additional cost to OWNER until structure is watertight.
- D. If proper penetration of crack cannot be achieved, submit to ENGINEER a proposed alternate approach for modifying the specified injection procedure to properly seal the crack. In concrete cracked as a result of CONTRACTOR's operations, perform modifications to crack injection procedure and fully repair the crack without additional cost to OWNER or extension of the Contract Times.

MEASUREMENT AND PAYMENT

Deep Concrete Surface Repair and Shallow Concrete Surface Repair shall be measured by the square foot at the exposed surface of the concrete repair. Crack Repair and Joint Repair shall be paid for by the linear foot.

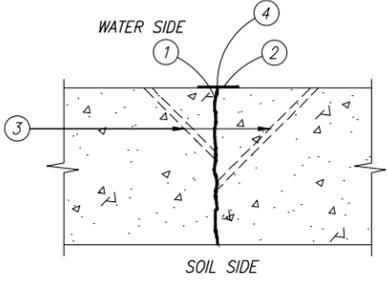
The accepted quantities of Deep Concrete Surface Repair and Shallow Concrete Surface Repair shall be paid for at the contract unit price per square foot. Crack Repair and Joint Repair shall be paid for at the contract unit price per linear foot.

The estimated volumes shown on the plans shall be used for to determine the unit price per pay item listed above. The mobilization and demobilization shall be paid for under Work Item No. 1 and not this work item.



- ① RECONSTRUCTED CONCRETE AND JOINT FILLER MATERIAL (FOLLOW REQUIREMENTS OF SHALLOW CONCRETE SURFACE REPAIR ON SHEET 6)
- ② JOINT FILLER

TYPICAL CONCRETE JOINT REPAIR
DETAIL 3
SCALE: NONE



- ① LEAKING CRACK
- ② APPLY GEL EPOXY SEALER PRIOR TO INJECTING CRACK INJECTION MATERIAL. REMOVE GEL EPOXY SEALER AFTER SEALING WORK IS COMPLETE
- ③ INJECTION PORTS FOR HYDROPHILIC CRACK INJECTION MATERIAL
- ④ INJECTION PORT FOR EPOXY CRACK INJECTION MATERIAL SHALL BE DIRECTLY INTO CRACK

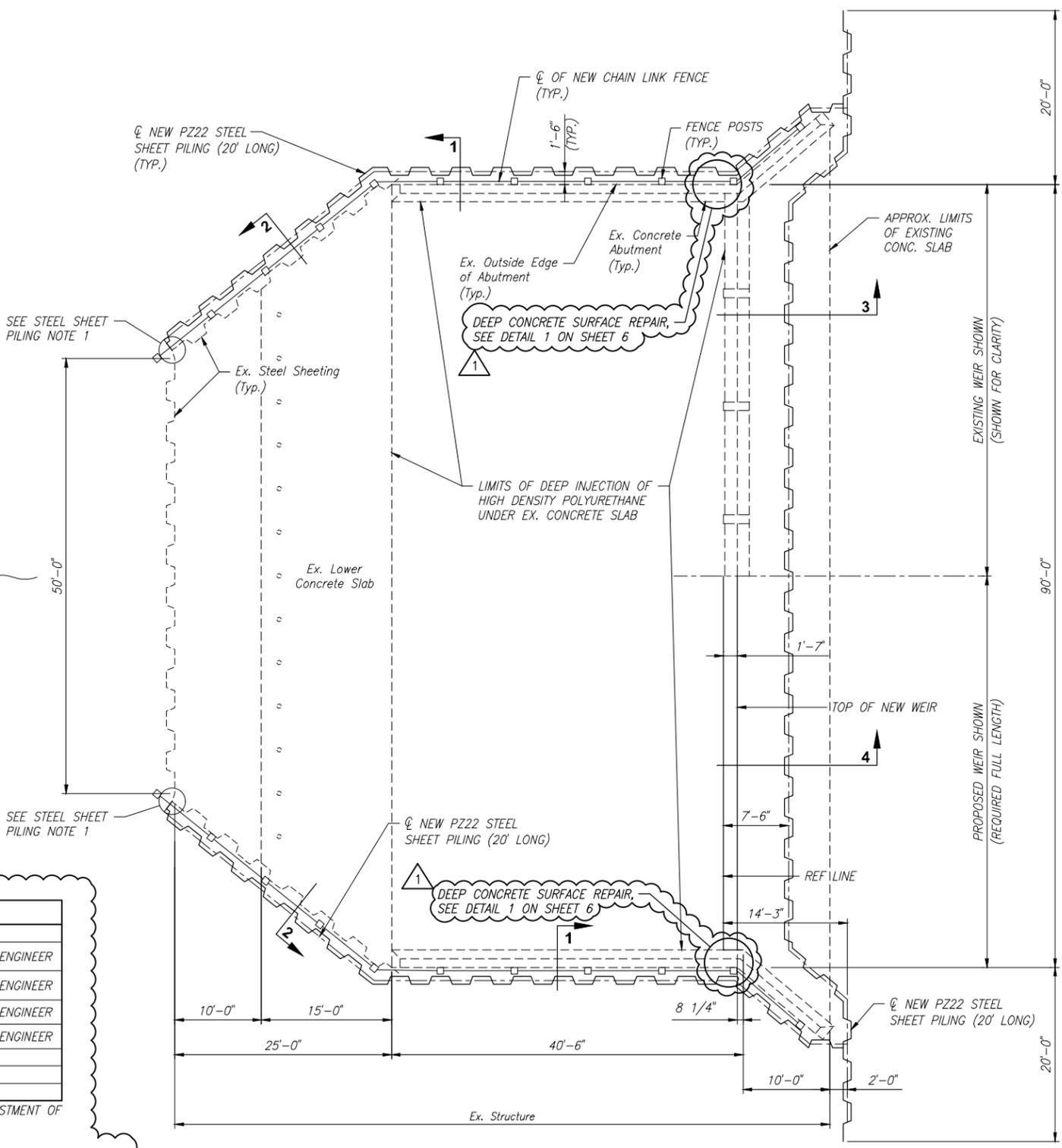
TYPICAL CRACK REPAIR
DETAIL 4
SCALE: NONE

STRUCTURAL REPAIR SCHEDULE				
REPAIR TYPE	DET. REF. NO.	BID QUANTITY		NOTES
DEEP CONCRETE SURFACE REPAIR	DETAIL 1 & 5	25	SF	AS DIRECTED BY ENGINEER
SHALLOW CONCRETE SURFACE REPAIR	DETAIL 2 & 5	25	SF	AS DIRECTED BY ENGINEER
CRACK REPAIR	DETAIL 4	100	LF	AS DIRECTED BY ENGINEER
JOINT REPAIR	DETAIL 3	50	LF	AS DIRECTED BY ENGINEER

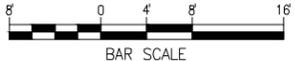
REFER TO SPECIFICATION WORK ITEM NO. 18, MEASUREMENT AND PAYMENT, FOR THE FINAL ADJUSTMENT OF UNIT PRICE BASED BID QUANTITIES.

REPAIR SCHEDULE NOTES:

1. REFER TO WORK ITEM NO. 18, MEASUREMENT AND PAYMENT, FOR PAYMENT OF STRUCTURAL REPAIR TYPES DETAILED ON SHEET 5 AND 6.
2. ENGINEER MAY DIRECT CONTRACTOR TO PERFORM REPAIR WORK THAT IS GREATER OR LESS THAN THE ESTIMATED QUANTITIES IDENTIFIED ON THE BID FORM. CONTRACTOR SHALL BE PAID FOR ACTUAL QUANTITY OF REPAIRS.



OUTLET STRUCTURE
SCALE: 1/8"=1'-0"



STEEL SHEET PILING NOTE:
WELD A NEW 3/8" THICK PLATE TO THE NEW STEEL SHEET PILING PERPENDICULAR TO THE STEEL SHEET PILING ALIGNMENT. DRIVE THE NEW STEEL SHEETING WITH THE 3/8" THICK PLATE TIGHT AGAINST THE EXISTING SHEETING.

HIGH DENSITY POLYURETHANE (HDP) NOTES:

1. CONSTRUCTION SHALL CONFORM TO APPLICABLE PROVISIONS OF THE SPECIFICATIONS AND THE STANDARD PROCEDURES FOR DEEP INJECTION OF HDP.
2. THE HDP SHALL BE INSTALLED AS NOTED IN THE SPECIFICATIONS.
3. DEEP INJECTION OF HDP SHALL START NEAR THE WEIR AND CONTINUE DOWNSTREAM.
4. AN ESTIMATE VOLUME OF 700 FT.³ OF MATERIAL NEEDED BASED UPON AN ASSUMED 3 IN. VOID UNDER 80% OF THE EXISTING SLAB WITHIN THE LIMITS SHOWN.
5. HDP INJECTIONS SHALL BE PERFORMED BEFORE CONCRETE REPAIRS TO THE EXISTING SLAB.

CONCRETE NOTES:

1. THE CONCRETE SHALL HAVE A 28 DAY COMPRESSIVE STRENGTH (f_c) OF 4,000 PSI, AIR CONTENT SHALL BE 6% (±1%).
2. ALL REINFORCING STEEL SHALL BE GRADE 60 (f_y = 60,000 PSI).
3. ALL EXPOSED CONCRETE EDGES SHALL HAVE A 3/4" CHAMFER.
4. ALL WELDING OF REINFORCING STEEL SHALL BE IN ACCORDANCE WITH AWS D1.4.
5. ALL CONCRETE COVER SHALL BE 2" UNLESS NOTED.

NOTES:

1. SEE SHEET 3 FOR GENERAL NOTES AND SURVEY INFORMATION.
2. ALL DIMENSIONS ARE APPROXIMATE AND SHALL BE FIELD VERIFIED BY THE CONTRACTOR.
3. SEE SHEET 6 FOR DETAILS.
4. SEE SHEETS 4 & 8 FOR RIPRAP LIMITS.
5. CONCRETE REPAIRS TO THE EXISTING SLAB SHALL BE PERFORMED AFTER THE HDP INJECTIONS.

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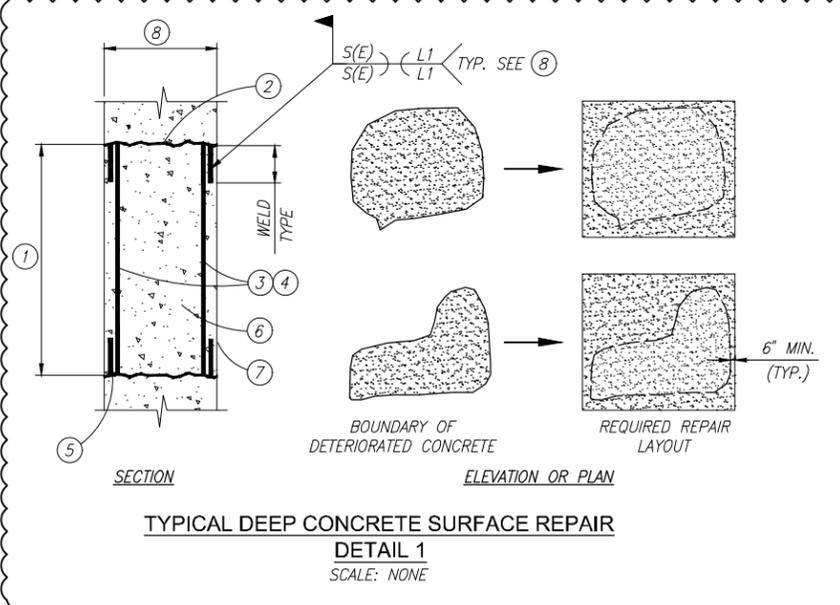
SKY K. MEDDORS
REGISTERED PROFESSIONAL ENGINEER
No. 10100889
STATE OF INDIANA

Shy K. Meddors 08/22/16
SIGNATURE DATE
Thomas J. McNichols 08/22/16
SIGNATURE DATE

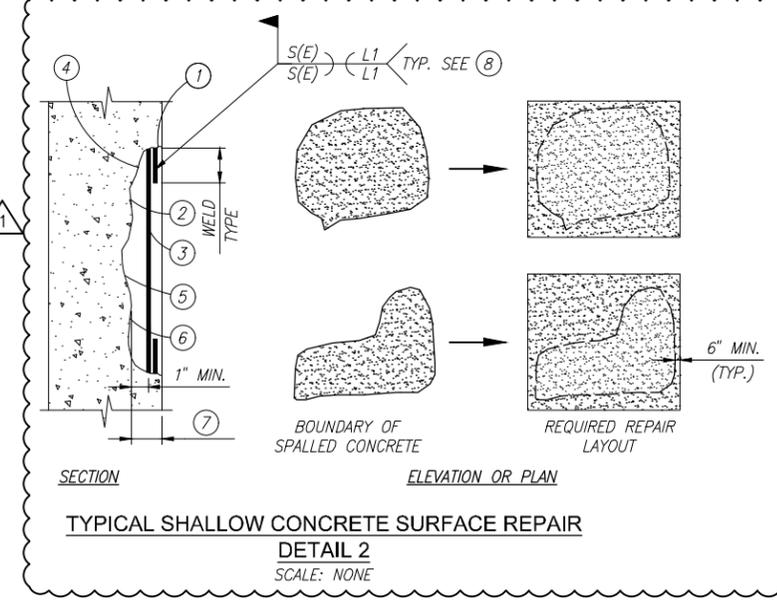
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INDIANA DEPARTMENT OF NATURAL RESOURCES
LAKE MANITOU
OUTLET STRUCTURE AND DAM
OUTLET STRUCTURE PLAN

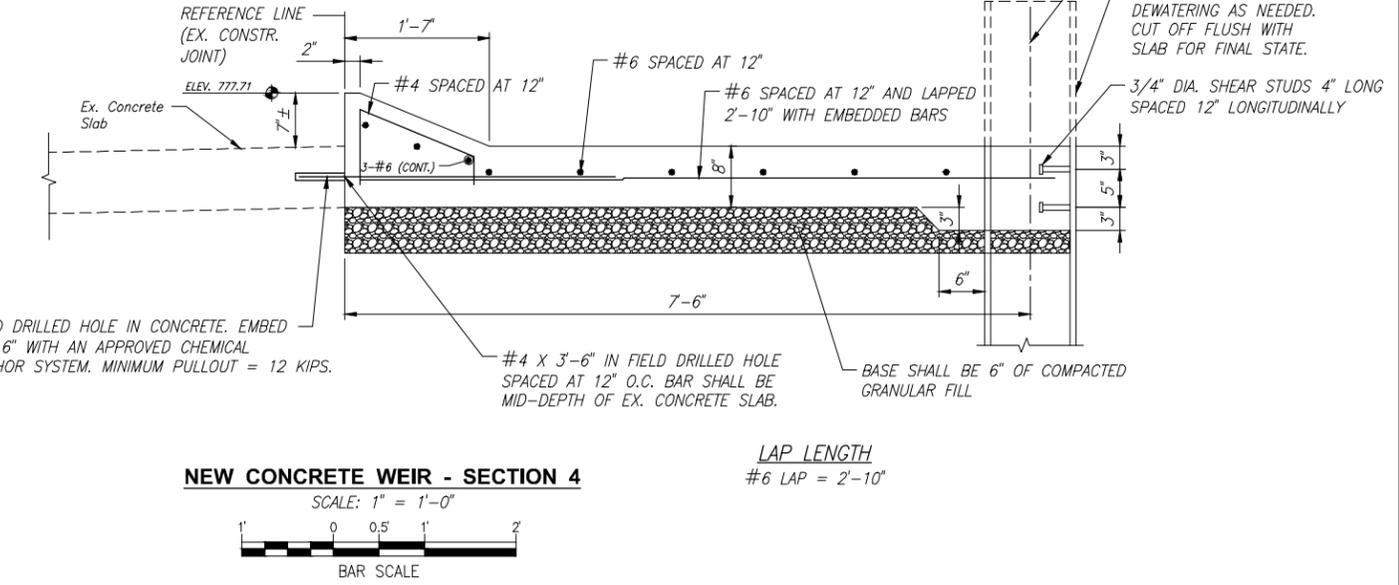
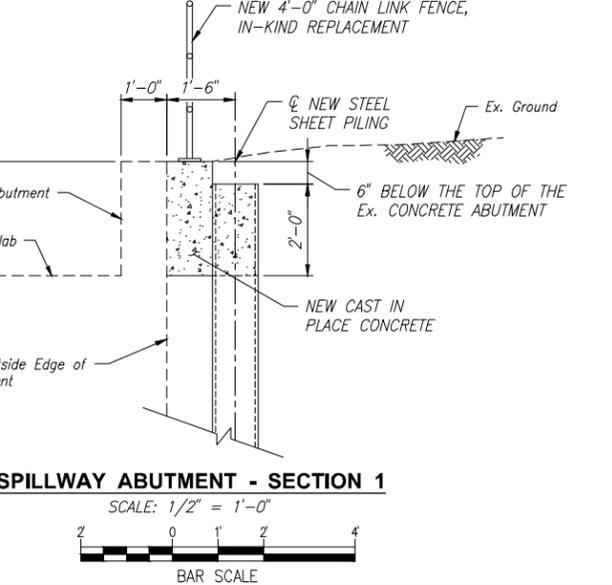
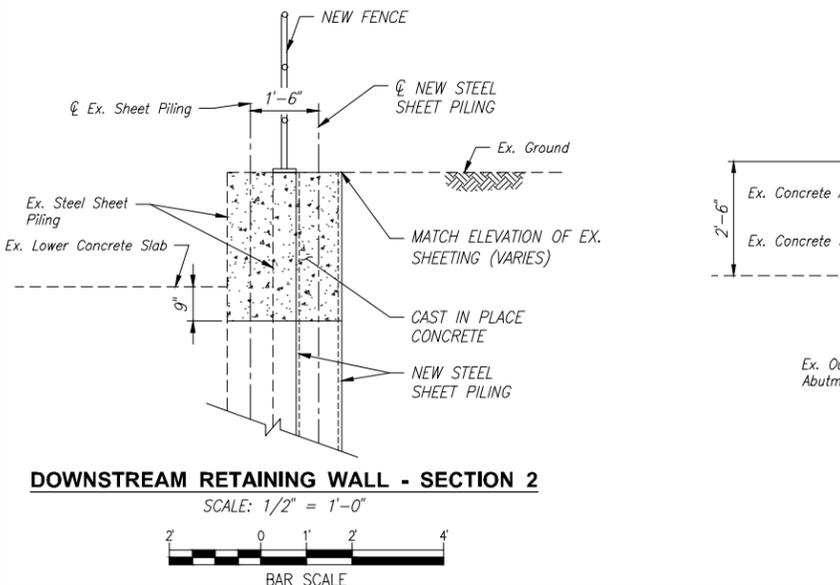
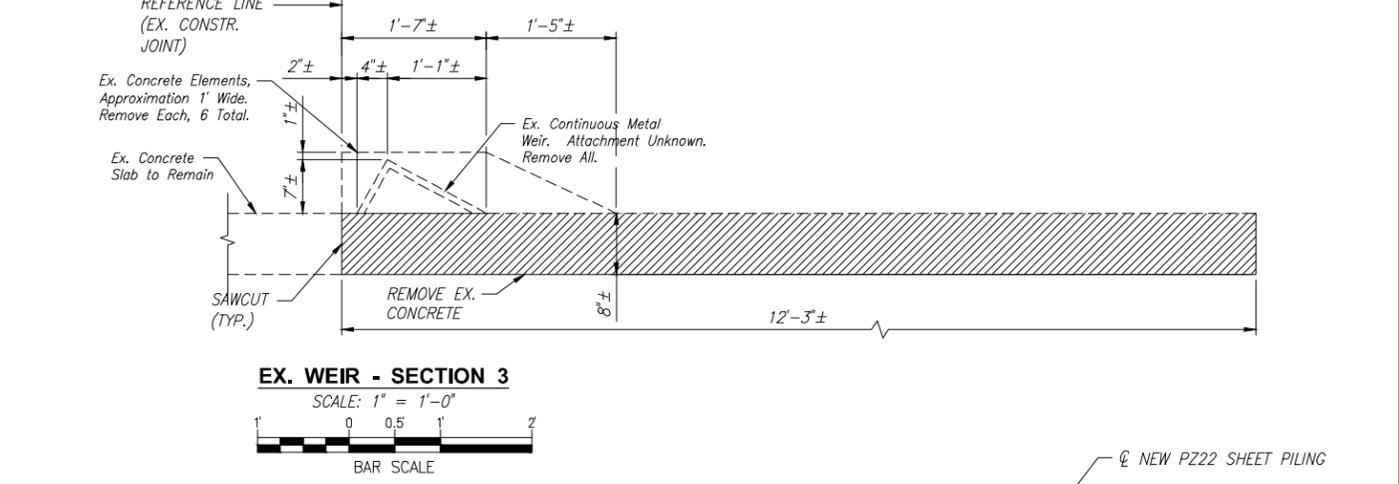
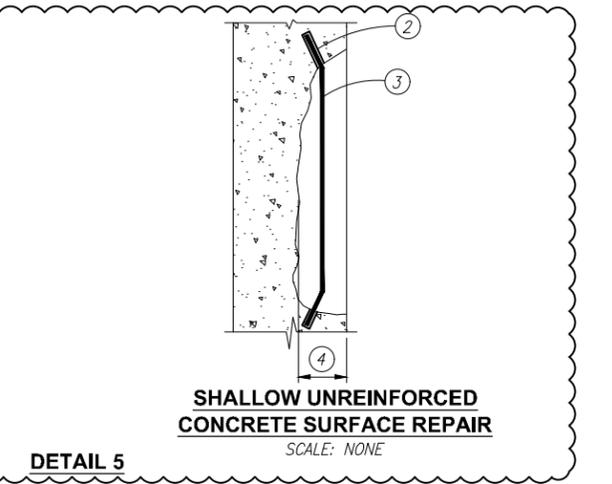
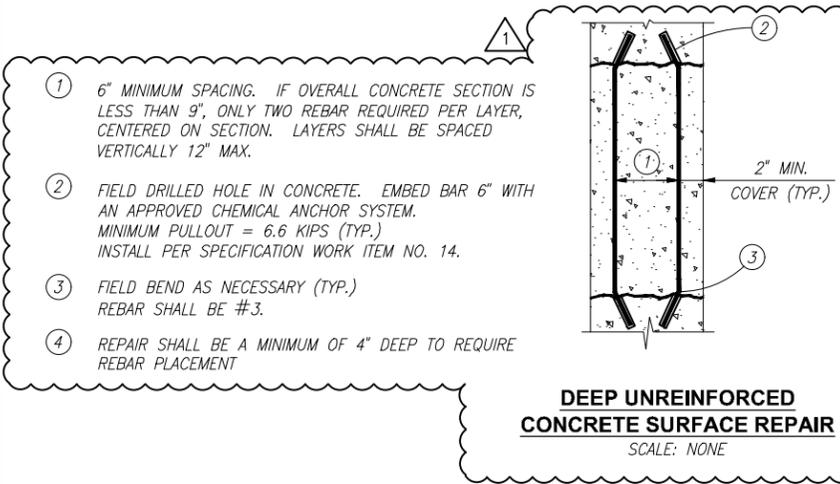
REVISIONS ① ADDENDUM #1 9/7/16	HORIZONTAL SCALE NOTED VERTICAL SCALE	PROJECT NUMBER E06-0068
DRAWN: BJT CHECKED: SKM	SURVEY BOOK DATE AUGUST 2016	SHEETS 5 OF 10



- 1 REMOVE EXISTING CONCRETE USING HAND CHIPPING METHODS AS REQUIRED. DO NOT CUT OR DAMAGE EXISTING REINFORCING DURING CONCRETE REMOVAL PROCESS.
- 2 REMOVE ALL DETERIORATED CONCRETE TO SOUND CONCRETE. PREPARE CONCRETE SUBSTRATE TO OBTAIN A SURFACE PROFILE OF 1/8" IN DEPTH WITH A NEW FRACTURED AGGREGATE SURFACE.
- 3 WHERE REINFORCING STEEL IS PRESENT AND WITH ACTIVE CORROSION ENCOUNTERED, ENGINEER WILL REVIEW CONDITION OF CORRODED REBAR PRIOR TO REPAIR. REPLACEMENT IS REQUIRED WHERE LOSS ON REBAR CROSS SECTION IS OVER 25%. AFTER REPAIR WHERE REINFORCING REMAINS, CLEAN REINFORCING STEEL TO REMOVE ALL CONTAMINANTS AND RUST.
- 4 IF REINFORCING REPLACEMENT IS REQUIRED, CUT EXISTING CORRODED REINFORCING BAR AS REQUIRED AND WELD NEW REBAR OF SAME SIZE, AS SHOWN. IF REBAR IS NOT PRESENT, PLACE NEW #3 REBAR IN FIELD DRILLED HOLE IN CONCRETE WITH AN APPROVED CHEMICAL ANCHOR SYSTEM ACCORDING TO DETAIL 5.
- 5 SURFACE PREPARATION SHALL COMPLY WITH REPAIR MORTAR MANUFACTURER'S INSTRUCTIONS.
- 6 INSTALL CONCRETE PER PROJECT SPECIFICATION WORK ITEM NO. 14
- 7 FOR BID PURPOSES, TOTAL DEPTH OF REPAIR IS EQUAL TO MEMBER DEPTH.
- 8 S, (E) AND L1 DEFINITIONS CORRESPOND TO ANSI/AWS D1.4 MINIMUM L1 FOR BIDDING PURPOSES IS 3".



- 1 DO NOT CUT REINFORCING UNLESS NECESSARY TO REMOVE ALL DETERIORATED CONCRETE.
- 2 REMOVE ALL DETERIORATED CONCRETE TO SOUND CONCRETE. CHIP CONCRETE SUBSTRATE TO OBTAIN A SURFACE PROFILE OF 1/8" IN DEPTH WITH A NEW FRACTURED AGGREGATE SURFACE.
- 3 WHERE REINFORCING STEEL IS PRESENT AND WITH ACTIVE CORROSION ENCOUNTERED, ENGINEER WILL REVIEW CONDITION OF CORRODED REBAR PRIOR TO REPAIR. REPLACEMENT IS REQUIRED WHERE LOSS ON REBAR CROSS SECTION IS OVER 25%. AFTER REPAIR WHERE REINFORCING REMAINS, CLEAN REINFORCING STEEL TO REMOVE ALL CONTAMINANTS AND RUST. REMOVE CONCRETE TO A DEPTH OF 1" MINIMUM BEHIND BAR AS SHOWN.
- 4 IF REINFORCING REPLACEMENT IS REQUIRED, CUT EXISTING CORRODED REINFORCING BAR AS REQUIRED AND WELD NEW REBAR OF SAME SIZE, AS SHOWN. IF REBAR IS NOT PRESENT, PLACE NEW #3 REBAR IN FIELD DRILLED HOLE IN CONCRETE WITH AN APPROVED CHEMICAL ANCHOR SYSTEM ACCORDING TO DETAIL 5.
- 5 SURFACE PREPARATION SHALL COMPLY WITH REPAIR MORTAR MANUFACTURER'S INSTRUCTION.
- 6 INSTALL REPAIR MORTAR PER THE MANUFACTURER'S REQUIREMENTS
- 7 FOR BID PURPOSES, ASSUME TOTAL DEPTH OF REPAIR IS 4"
- 8 S, (E) AND L1 DEFINITIONS CORRESPOND TO ANSI/AWS D1.4 MINIMUM L1 FOR BIDDING PURPOSES IS 3".



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INDIANA DEPARTMENT OF NATURAL RESOURCES
LAKE MANITOU
OUTLET STRUCTURE AND DAM

Professional Engineer stamps for **SKY K. MEDORS** and **Thomas J. Nicholas**, dated 08/22/16.

INDIANA DEPARTMENT OF NATURAL RESOURCES
LAKE MANITOU
OUTLET STRUCTURE AND DAM
DETAILS

REVISIONS	HORIZONTAL SCALE	PROJECT NUMBER
1 ADDENDUM #1 9/7/16	NOTED VERTICAL SCALE	E06-0068
DRAWN: BJT	SURVEY BOOK	SHEETS
CHECKED: SKM	DATE	6 OF 10
	AUGUST 2016	