

## **INSTRUCTIONS TO BIDDERS**

The Board of Education of the Warren City School District is seeking sealed bids from qualified contractors for furnishing all labor, materials, and equipment necessary to complete the Home Bleacher Repair and Renovation – Phase 1, as described herein. To be considered, bids must be submitted in accordance with these Instructions to Bidders. The Owner reserves the right to consider invalid any bids not prepared and submitted in accordance with the provisions contained herein.

### **1. General Information**

.1 Communications and submissions shall be directed to the Owner's Liaison:

John Lacy, Executive Director of Business Operations,  
105 High Street, NE, Warren, Ohio 44481

.2 A mandatory pre-bid meeting will be held on March 7, 2025 at 10:00 am at 105 High Street, NE, Warren, Ohio 44481.

### **2. Scope of Work.**

The precise scope of work is set forth in the plans, drawings, and specifications prepared by Barber & Hoffman, Inc., and attached hereto.

The Estimated cost of the work is \$375,000.00

### **3. Bidders Examination and Representation**

- .1 Before submitting a bid, each bidder should carefully examine the documents (including any previous documents) for the building and the construction site and inform itself with the limitations and conditions related to the Work covered by its bid, and shall include in the bid a sum to cover the cost of such items. Contractors will not be given extra payments for conditions that could have been determined by examining the site and documents.
- .2 It is the purpose and intent of the Contract Documents, that a fully complete job be accomplished. It shall be each bidder's responsibility to include costs necessary to provide labor and materials for that portion of the Work bid upon, including incidentals.
- .3 Each bidder by making its bid represents that it has read and understands the bidding documents.
- .4 Each bidder by making its bid represents that it has visited the site and if not has otherwise familiarized itself with the local conditions under which the Work is to be performed.

- .5 Each bid shall reflect the materials, systems, and equipment requested herein.

#### **4. Qualifications of Bidders**

- .1 At the time of the bid, and in addition to the other requirements of these Instructions to Bidders, the Bidder shall submit the following information:
  - a. Overall experience of the Bidder, including number of years in business under present and former business names;
  - b. Current Ohio Workers' Compensation Certificate;
  - j. If the Bidder is a foreign corporation, i.e., not incorporated under the laws of Ohio, a Certificate of Good Standing from the Secretary of State showing the right of the Bidder to do business in the State; or, if the Bidder is a person or partnership, the Bidder has filed with the Secretary of State a Power of Attorney designating the Secretary of State as the Bidder's agent for the purpose of accepting service of summons in any action brought under Section 153.05, ORC, or under Sections 4123.01 to 4123.94, inclusive, ORC.
- .2 The Owner shall have the right to take such steps as he deems necessary to determine the ability of the bidder to perform the Work, and the bidder shall furnish the Owner such data for this purpose as the Owner may request as part of its responsibility investigation.

#### **5. Clarification of Bidders' Questions**

- .1 Questions for this project shall be directed to the person identified in the general information section above.
- .2 Each bidder is responsible for calling to the attention of the Owner's Liaison ambiguities, inconsistencies, discrepancies, errors, or omissions which occur in the Contract Documents for his part of the Work. Failing to request clarification, the bidder will be expected to overcome such conditions without additions to bid Prices.
- .3 Oral interpretation of the meaning of the drawings and specifications shall not in any way alter the obligations of the bidders to provide services as called for in the above documents.
- .4 Where interpretation is required, the Owner's Liaison shall answer questions and requests for information and shall place such answers on the website along with the other bid documents. No questions or requests for information will be answered during the week prior to the bid due date.

## **6. Approval Before Bidding**

- .1 If a Contractor preparing bids for submission on the Work is in doubt as to the acceptability of a manufacturer's material or equipment, under the requirements as set forth in this instructions to bidders, he should require that representatives of the proposed manufacturer or supplier contact the Owner's Liaison and request a ruling on the acceptability of the material or equipment in question. The contact should be made in sufficient time, 10 days before the date scheduled for the closing of bids, so that an addendum can be issued to clarify the situation.
- .2 It is not possible to set the time allowance for every problem; however, it shall be not less than 10 days before bid closing. Each party requesting a ruling under this Article shall be responsible for the proper evaluation of the time involved and shall submit his request in ample time to process it.
- .3 Prior to receipt of bids the Owner's Liaison will consider proposals for substitution of materials, equipment, and methods only when such proposals are submitted in writing at least 10 days before date set for receipt of bids, and are accompanied by full and complete technical data and other information required by the Owner's Liaison to evaluate the proposed substitution.
- .4 Each bidder understands that past acceptance of products does not assure acceptance on this Project. Products not specifically specified require requests for approval prior to bid due date.

## **7. Addenda**

- .1 The Owner reserves the right (through the Owner's Liaison) to issue addenda changing, altering, or supplementing the Contract Documents, prior to the time set for receiving bids.
- .2 A copy of the addenda will be mailed or delivered to each bidder of record, and to each prospective bidder requesting a copy. Bidders who request and are sent documents by the Owner's Liaison are considered "Bidders of Record". Copies of addenda will be available for inspection.
- .3 Bidders are responsible for acquiring each issued addenda in time to incorporate them into their proposal.
- .4 In the event delivery of addenda to bidders is delayed, for reasons not the fault of the bidders, the Owner may be requested to allow a reasonable extension of time for the opening of bids, to permit inclusion of such addenda.
- .5 Each bidder shall enumerate in his bid each addenda he has received.

- .6 If an Addendum is issued within 72 hours prior to the published time for the opening of bids (excluding Saturdays, Sundays, and legal holidays), then the time of opening of bids shall be extended one week with no further advertising of bids required.
- .7 If a Bidder fails to indicate receipt of each Addenda through the last Addenda, issued by the Owner's Liaison, on its Bid Proposal Form, the bid of such Bidder will be deemed to be responsive only if:
  - a) The bid received clearly indicates that the bidder received the Addendum, such as where the Addendum added another item to be bid upon and the bidder submitted a bid on that item; or
  - b) The Addendum involves only a matter of form or is one which has either no effect or has merely a trivial or negligible effect on price, quantity, quality, or delivery of the item bid upon.

## **8. Alternates**

- .1 Omitted

## **9. Bidding Procedures**

- .1 Bids must be made on the forms provided herein, placed in sealed envelopes and plainly marked on the outside with the project name. Bidders are to use the forms as provided herein for the information requested by such forms. The statutory forms set forth in Chapter 153 of the Ohio Revised Code shall be used for bid security and/or performance bonds.
- .2 A bid is invalid if it has not been deposited at the designated location prior to the time and date for receipt of bids, or prior to the extension thereof issued to the bidders.
- .3 Telecommunicated bids will not be considered.
- .4 Bids that are not signed by the individuals making them shall have attached thereto a Power of Attorney evidencing authority to sign the bid in the name of the person for whom it is signed. Bids that are signed for a partnership shall be signed by the partners, or by an attorney-in-fact. If signed by an attorney-in-fact, there shall be attached to the bid a Power of Attorney evidencing authority to sign the bid, executed by the partners. Bids for a corporation shall be signed with the name typed below the signature. A bidder that is a corporation shall sign its bid with the legal name of the corporation followed by the name of the state of incorporation and the legal signature of an officer authorized to bind the corporation to a contract.

- .5 It is the bidder's responsibility to include in his bid the costs necessary for a completed and finished job for items of Work bid upon.
- .6 Timeline: The Owner anticipates the following timeline with respect to the bid process unless later modified in writing by addendum:
  - **February 27, 2025:** Advertisement of bids
  - **March 7, 2025 10:00am** Mandatory Meeting
  - **March 13, 2025 3:30pm:** Bid submission /public opening of bids
  - **March 25, 2025:** Award of contract

## 10. Bid Security

- .1 A bid security in the form of a certified check, cashier's check, or letter of credit pursuant to Chapter 1305 of the Ohio Revised Code in the amount of 10 percent of the total bid shall accompany each bid, or a bid guaranty bond in accordance with Chapter 153.54 of the Ohio Revised Code in the amount of 100 percent of the total bid shall accompany each bid.
- .2 The bid security of bidders, except the 3 selected best qualified in each category, may be returned within 7 days after the opening of bids at the Owner's or Owner's Liaison's option.
- .3 Bid security of the three selected qualified bidders may be held by the Owner, following the bid opening for a maximum of 60 days, unless the Owner and the bidders agree otherwise; except that in the event a qualified bidder has been awarded the Contract and has failed to execute same or furnish performance bond. Then the bid security of such bidder will be subject to forfeit and the next qualified bidder, if tendered the Contract, will be subject to the same provisions as herein before set forth. Should the award fall to the third qualified bidder because of a default of the previous two qualified bidders, the same condition will apply to the third bidder as herein set forth.
- .4 The bid security of the three selected bidders of each Contract category will be returned within 72 hours after the Form of Agreement has been executed.
- .5 In the event that the Owner should decide to reject every bid in connection with a given Contract or Contracts, the bid securities in connection with the Contracts will be returned within 72 hours following such decision.
- .6 Bid security is subject to forfeiture if a bid is withdrawn during the time period bids are to be held.
- .7 The Non-collusion Affidavit provided herein must be properly filled-in, signed and notarized, and included with the bid.

## **11. Identification and Submission of Bid Proposal**

- .1 Enclose bids in opaque, sealed envelope with bid security and other requested exhibits. The envelope shall have clearly marked in indelible material on its face, the following:

Name of Project  
Name of Bidder  
Bid Package  
Date and time of closing of bids

Envelopes shall be addressed to John Lacy, Executive Director of Business Operations, 105 High Street, NE, Warren, Ohio 44481.

## **12. Modification or Withdrawal of Bid Proposal**

- .1 A bidder may withdraw his bid prior to the scheduled time for the receipt of bids, without forfeiture of bid security. If a postponement of the time for receiving bids is made, the new time established therein shall be the time within the meaning of this Article.
- .2 Bids may be modified prior to bid closing Time.
- .3 After the pronouncement of the closing of bids, no Contractor may recall his bid.

## **13. Opening of Bids**

- .1 Sealed bids will be received by the Owner until 3:00pm local time, on March 13, 2025 and will be publicly opened and read immediately thereafter and a report thereof made to the Board of Education at their next meeting.
- .2 Bids received prior to the time of opening will be securely kept, unopened. The officer whose duty it is to open them will decide when the specified time has arrived, and no bid received thereafter will be considered.
- .3 No responsibility will be attached to an officer for the premature opening of a bid not properly addressed and identified.
- .4 Every bid received within the time fixed for the receiving of bids will be opened and read aloud, irrespective of irregularities therein. Bidders and other persons properly interested may be present, in person or by a representative.
- .5 The amounts involved in alternatives requested will be read or disclosed as part of the requirements of this Article. Voluntary alternates will not be read.

- .6 The Owner/Owner's Liaison reserves the right to delay the time for the opening of bids when, in their judgment, it is desirable or necessary.
- .7 When requested, bidders will be furnished a transcript of the bids made, as soon as convenient after the bid opening and the tabulation of the results.

#### **14. Disqualification**

- .1 The Owner reserves the right to reject each and every bid, reserves the right to reject each and every alternate, to waive informalities, irregularities, and minor defects in bidding, to accept and reject alternatives regardless of their order or sequence, unless otherwise called for on the Bid Proposal Form.
- .2 The right is reserved to reject bids where an investigation of the available evidence of information does not satisfy the Owner that the bidder is deemed sufficiently responsible to properly carry out the terms of the Contract Documents.
- .3 Bonafide bids in a definite stated amount, without special clauses governing price of labor and material increases, shall be the only ones that will be considered. No contract shall be entered into carrying what is commonly known as an "Escalator Clause."
- .4 Bids which contain qualifications or conditions that are contrary to the text or intent of the Contract Documents, and which are inserted in the bid for the purpose of limiting or otherwise qualifying the responsibility of the bidder, outside of the text or intent of the Contract Documents, will be subject to disqualification.
- .5 Failure to submit the requested information with the bid shall be grounds for rejecting the bid.
- .6 The Owner also reserves the right to reject the bid of a bidder who has previously failed to perform properly or to complete Contracts of a similar nature on time, who is not in a position to perform the Contract, or who has habitually, and without just cause neglected the payment of bills or otherwise disregarded his obligations to subcontractors, material suppliers, or employees.
- .7 The ability of the bidder to obtain or qualify for a performance bond or labor and material payment bond shall not be regarded as a sole test of such bidder's competence or responsibility.
- .8 The bidder acknowledges the right of the Owner to reject bids and to waive informalities and irregularities in bids received. In addition, the bidder recognizes the right of the Owner to reject a bid, if the bidder failed to furnish the required bid security, to submit the data required by the bidding documents, or if the bid is incomplete or irregular.

## **15. Determination of the Lowest Responsible Bid**

- .1 Subject to the right of the Owner to reject each and every bid, the Owner will award the Contract for the Work to the bidder submitting the lowest responsible bid. In determining if the lowest bid is from a responsible bidder, the Owner may conduct a responsibility investigation to determine the following criteria as it, in its discretion, deems appropriate and may give such weight thereto as it deems appropriate:
  - a) The bidder's financial ability to complete the Contract successfully without resorting to its Surety;
  - b) The bidder's prior experience with similar work on comparable or more complex projects;
  - c) The bidder's prior history for the successful and timely completion of projects;
  - d) The bidder's equipment and facilities;
  - e) The adequacy, in numbers and experience, of the bidder's workforce to complete the Contract successfully and on time;
  - f) The bidder's prior experience on other projects of the Owner, including the bidder's demonstrated ability to complete its work on these projects in accordance with the Contract Documents and on time;
  - g) The bidder's compliance with federal, state, and local laws, rules, and regulations.
  - h) Depending upon the type of the work, other essential factors.
- .2 The failure to submit requested information on a timely basis may result in the determination that the bidder is not responsible.
- .3 Affidavit as to Property Taxes
  - a) The successful bidder will be required to submit, with the bid, an affidavit in the form required by Section 5719.042, Ohio Revised Code, regarding the status of the lowest bidder's property taxes. A copy of the form of the affidavit is included herein.
  - b) Section 5719-042 of the Ohio Revised Code, effective September 21, 1982, requires the successful bidder(s) to furnish the Project Taxing District with a statement under oath that he or his company has or does not have any delinquent personal property taxes due and payable within the county of the Project, 22.2



(ORC) Sec. 5719.042. After the award by a taxing district of any contract let by competitive bid and prior to the time the contract is entered into, the person making a bid shall submit to the district's fiscal officer a statement affirmed under oath that the person with whom the contract is to be made was not charged at the time the bid was submitted with any delinquent personal property taxes on the general tax list of personal property of any county in which the taxing district has territory or that such person was charged with delinquent personal property taxes on any such tax list, in which case the statement shall also set forth the amount of such due and unpaid delinquent taxes and any due and unpaid penalties and interest thereon. If the statement indicates that the taxpayer was charged with any such taxes, a copy of the statement shall be transmitted by the fiscal officer to the County Treasurer within thirty days of date it is submitted. A copy of the statement shall also be incorporated into the contract, and no payment shall be made with respect to any contract to which this section applies unless such statement has been so incorporated as a part thereof.

- .4 A Contract shall be considered as awarded when the bidder receives a letter of intent to enter into a Contract from an agent or officer of the Owner authorized to give such notice.
- .5 A Contractor receiving an award will be required to furnish and execute the following within 10 days after the form of the Contract is presented for signature.
  - a. Contract for Construction, to be provided by Owner.
  - b. Performance Bond and Labor and Material Payment Bond in accordance with RC 153.54.
  - c. Insurance requirements as evidenced by a properly executed Certificate of Insurance.
  - d. Valid Workmen's Compensation Certificate
  - e. Within 10 days after execution of the Contract, the awarding Contractor shall provide Schedule of Values to the Owner's Liaison for application of progress payment on forms provided by Owner's Liaison for approval. The prices indicated shall be total erected and installed prices with overhead and profit prorated on each item.

## **16. Performance Bond and Labor and Material Payment Bond**

- .1 To satisfy the bond requirements the bidders who become the Contractors must have submitted a combination Bid Guaranty and Contract Bond as prescribed in Sections 153.54, 153.57, and 153.571 of the Ohio Revised Code or the following.

- .2 The bidders who become the Contractors, who submitted as a Bid Security, a certified check, cashier's check, or letter of credit, shall be required to provide a Performance Bond and Labor and Materials Payment Bond, covering the faithful performance of the contract and the payment of obligations arising thereunder in a penal sum equal to 100 percent of the amount of the contract sum. Said bonds shall remain in effect for 12 months after date established as start of one year guarantee period. Premiums shall be included and paid for by the Contractor.
  - a) The bidder shall deliver the required bonds to the Owner not later than the date of execution of the Contract.
- .3 The bond must be issued by a surety company authorized by the Ohio Department of Insurance to transact business in the State of Ohio. The bond must be issued by a surety capable of demonstrating a record of competent underwriting, efficient management, adequate reserves, and sound investments.
- .4 Bonds shall be signed by an authorized agent of an acceptable Surety Bonding Company and by the bidder. (Affix Corporate Seals to each copy.)
- .5 Surety Bonding Company bonds shall be supported by credentials showing the Power of Attorney of the agent, and a certificate showing the legal right of the bonding Company to do business in the State of Ohio, and a financial statement of the Surety.
- .6 The Bid Guaranty, as applicable, shall be in the name of or payable to the order of the Owner.
- .7 The name and address of the Surety and the name and address of the Surety's Agent should be typed or printed on each bond.

## **17. Execution of the Contract**

- .1 Subsequent to the award, and within 10 days after the prescribed Form of Agreement is presented for his signature, the Awardee shall execute and deliver them to the Owner, in such number of counterparts as the Owner may require.
- .2 The failure of the Awardee to execute the Contract and to supply the required bonds when the Agreement is presented for signature, or within such extended period as the Owner may grant, based upon reasons determined adequate by the Owner, shall constitute a default; and the Owner may either award the Contract to the next responsible bidder or readvertise for bids. In the event of a default, the Owner shall have the right to declare the amount of the bid security forfeited. It shall be a further condition that the Owner shall not collect more on a defaulted bid than the difference between the defaulted bid amount and the bid of the firm to which the award is made, after giving due weight and consideration to alternatives accepted.

- .3 In the event the bidder withdraws the bid or fails to execute a satisfactory Contract and furnish a satisfactory Contract Performance Bond and Labor and Material Payment Bond with a surety company in accordance with these Instructions To Bidders within 5 days after a contract has been awarded to such a bidder by the Owner, said Owner may declare such certified or cashier's check or bid bond forfeited to the Owner for extra costs incurred by reason of delay of the project and obtaining acceptable prices from another bidder.

## **18. Time of Commencement and Completion**

- .1 The Contractor shall commence Work within 5 days after the effective date of the Contract, or when notified in writing to proceed, and shall complete the Work within the time limitations established in the Contract.

## **19. Public Records**

- .1 Interested firms should be advised that the Owner is subject to Ohio's public records laws. The Owner cannot guarantee the confidentiality of statements, financial records, or business records that are submitted by a firm to the Owner. The Owner may be required to make such records publicly available. The law does provide for certain exemptions from disclosure requirements, including an exemption for confidential proprietary information and for bid submissions prior to acceptance. While this exemption may not always include a firm's financial and business records, we ask that you clearly stamp "Confidential and Proprietary Information" upon each page of each financial and/or business record that you believe to be confidential information. Such a stamp does not guarantee that your documents will be exempt from disclosure requirements, but will assist the Owner in responding to any public records requests.

## **20. Tax Exempt**

- .1 The Owner is a political subdivision of the State of Ohio. Building materials that the successful bidder purchases for incorporation into the Project will be exempt from state sales and use taxes if the successful bidder provides a properly completed sales tax exemption certificate, executed by the successful bidder and the Owner, to the vendors or suppliers when the materials are acquired. The Owner will execute properly completed certificates on request.

## **21. Contract Durations**

- .1 Each bidder and his proposed subcontractors shall have the ability to meet the Project Schedule. The final construction schedule will be issued by the Contractor. Established target dates, either material delivery and work completion, are to be met and the manpower and material required to meet these dates are to be included

in the Contractor's bid. This schedule will be further refined with Contractor's input after the Contract is awarded.

**22. Prevailing Wages**

- .1 Prevailing wages are not required for this Project.

**END OF INSTRUCTIONS**

STATE OF OHIO )  
 ) ss.  
COUNTY OF TRUMBULL )

Signed: \_\_\_\_\_

Notary Public (or Clerk or Judge)

My commission expires \_\_\_\_\_

**DELINQUENT PERSONAL PROPERTY TAX AFFIDAVIT**

STATE OF OHIO )  
 ) ss.  
COUNTY OF TRUMBULL )

I, \_\_\_\_\_, having affirmed under oath that at the time of bid for the **Home Bleacher Repair and Renovation – Phase 1** to be opened March \_\_, 2025 was submitted on \_\_\_\_\_, 2025, delinquent personal property taxes in the amount of \$\_\_\_\_\_ (Dollars) were due and unpaid to the County of Butler including interest in the amount of \$\_\_\_\_\_ (Dollars) and penalties in the amount of \$\_\_\_\_\_ (Dollars). This document when given to the County Auditor shall satisfy the requirements of ORC 5719.042.

\_\_\_\_\_  
(Name of Individual Company)

\_\_\_\_\_  
(Taxes Filed Under the Name of)

\_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(Complete Address)

\_\_\_\_\_  
(Telephone)

Before me, a Notary Public of the State of Ohio, personally came \_\_\_\_\_,  
\_\_\_\_ (title) \_\_\_\_\_, of \_\_\_\_\_ (name of company) \_\_\_\_\_, bidder herein, who said that he/she testifies that the above information is a true and accurate statement. In Testimony Whereof, I have hereunto subscribed my name and affixed my official seal on this \_\_\_\_\_ day of \_\_\_\_\_, 2025. An oath was administered.

Notary Public (or Clerk or Judge) \_\_\_\_\_

My commission expires \_\_\_\_\_

**WARREN COTY SCHOOLS**  
**HOME BLEACHER REPAIR AND RENOVATION – PHASE 1**  
**BID SUBMISSION FORM**

Contractor Name: \_\_\_\_\_

Owner Name: \_\_\_\_\_

Contractor Address: \_\_\_\_\_

Contact Person Name: \_\_\_\_\_

Contact Person Phone: \_\_\_\_\_

Contact Person Email: \_\_\_\_\_

Addenda Received: \_\_\_\_\_

**Base bid** \$ \_\_\_\_\_

GRAND TOTAL: \_\_\_\_\_ DOLLARS (\$ \_\_\_\_\_)

By signing below, the bidder acknowledges that it is a competent firm capable of providing the work requested, is properly licensed for providing the work specified, has read this ITB, understands it, and agrees to the terms and conditions. Bidder hereby agrees to furnish item(s), at the price proposed, pursuant to all requirements and specifications contained in this document, upon receipt of notification of award. Bidder further agrees that the language of this document shall govern in the event of a conflict with its bid. The undersigned, being duly authorized to sign bid documents and act on behalf of the bidder in an official capacity, certifies that the item offered in this Invitation for Bid meets or exceeds the specification, terms, and conditions as described herein without exceptions.

Name (printed): \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

**[END OF DOCUMENT]**



# WARREN G. HARDING HIGH SCHOOL

## HOME BLEACHER MAINTENANCE

### PHASE 1

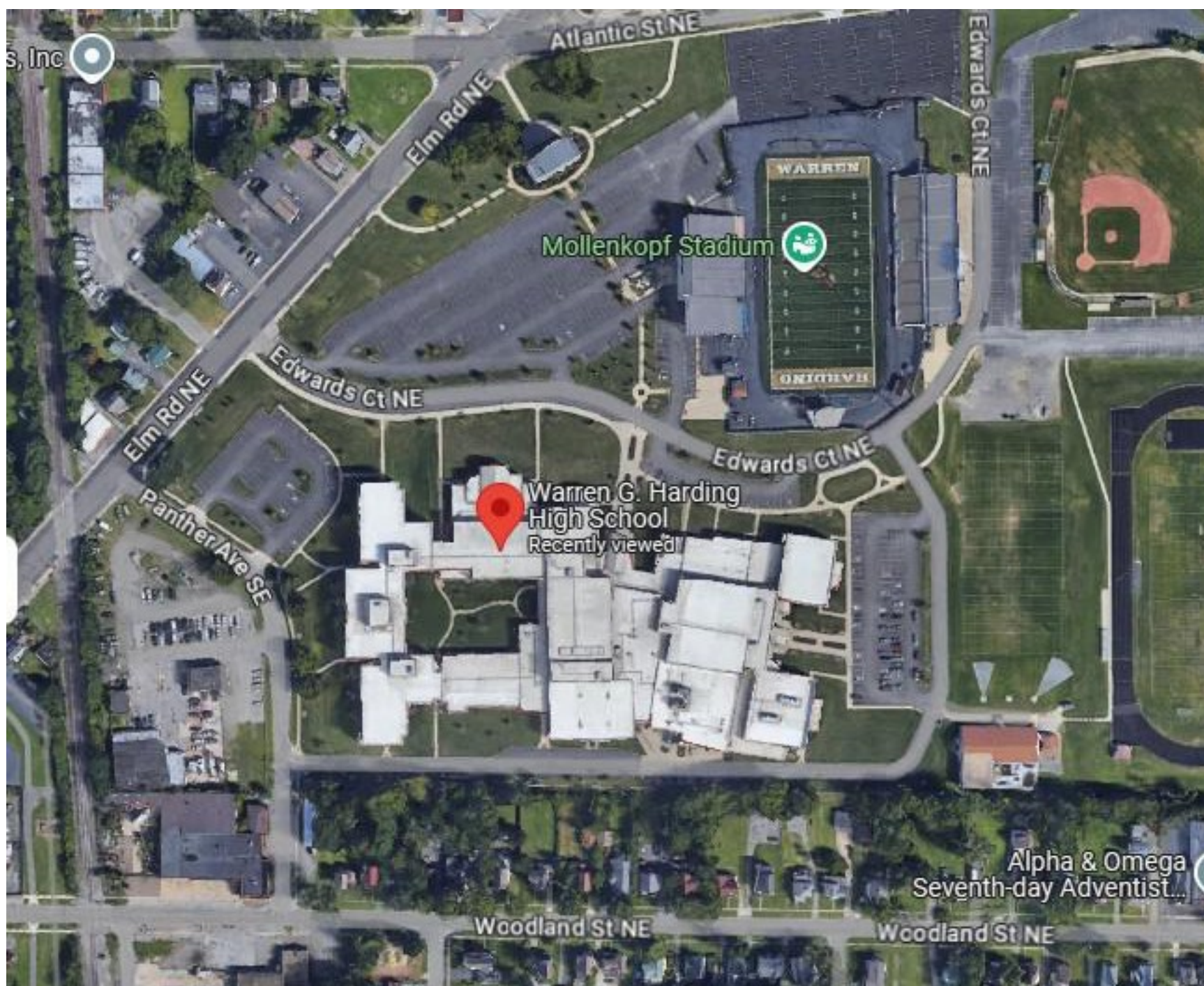
OWNER: WARREN CITY SCHOOL DISTRICT

LOCATION: 860 ELM ROAD NE  
WARREN, OHIO 44483

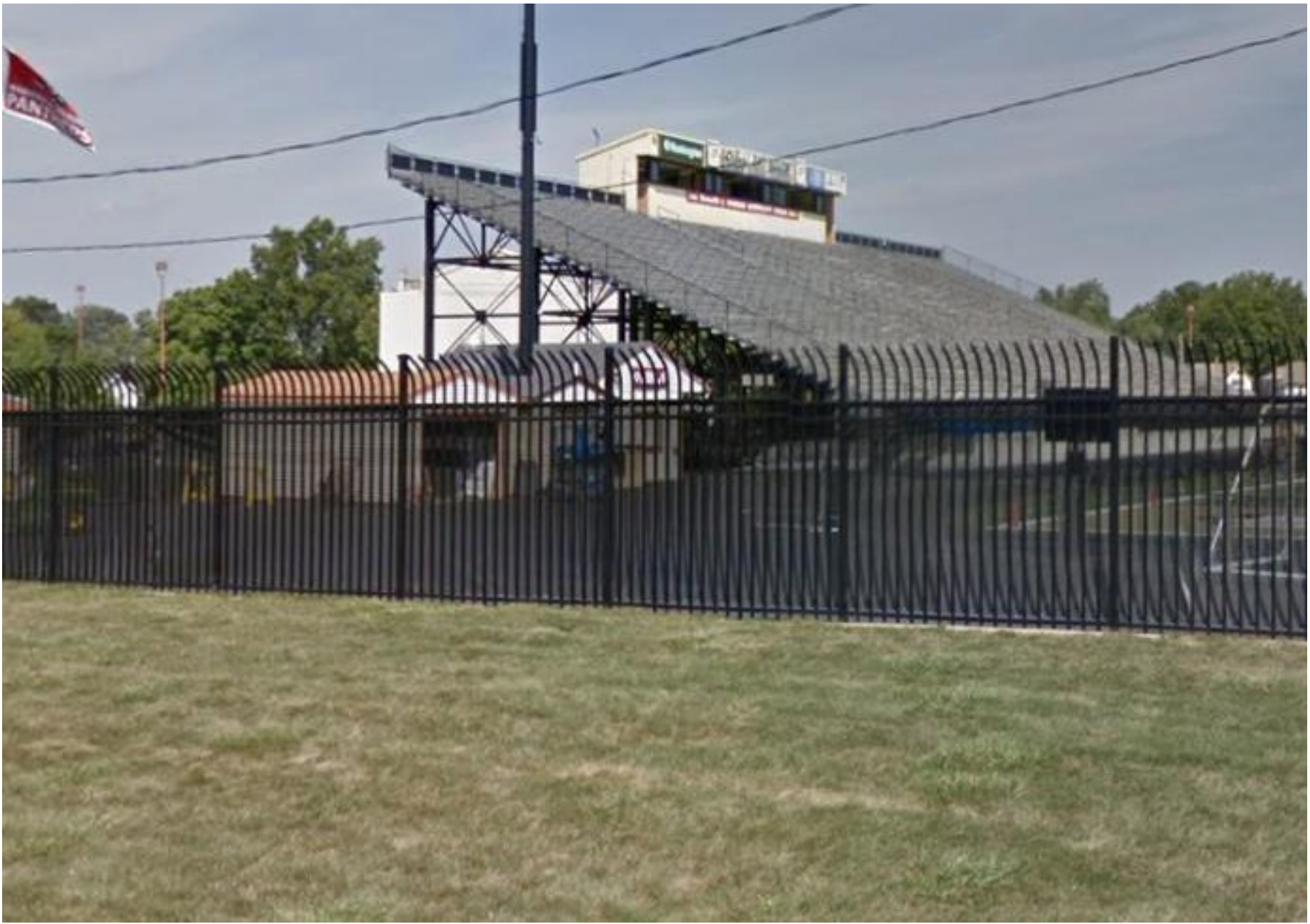
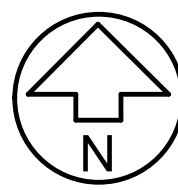
ISSUED FOR: PERMIT AND CONSTRUCTION  
FEBRUARY 20, 2025

#### INDEX OF DRAWINGS:

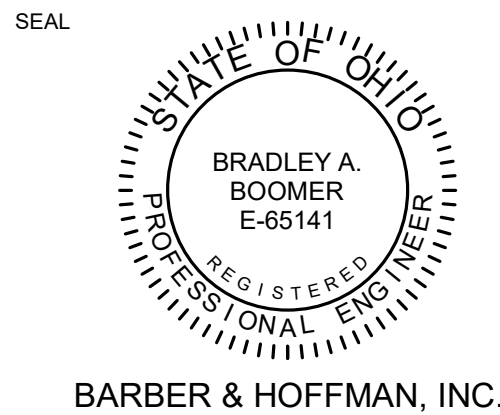
C1-01	COVER SHEET
S001	GENERAL NOTES
S100	CONCESSION AND RESTROOM CONCRETE REPAIR PLAN
S101	PRECAST STADIUM RISER REPAIR AND WATERPROOFING PLAN
S200	CONCRETE REPAIR DETAILS
S201	MASONRY, CURB, AND GUARDRAIL REPAIR DETAILS



LOCATION MAP



STREET VIEW



**BARBER & HOFFMAN, INC.**  
Consulting Engineers  
Cleveland, OH  
Columbus, OH  
Granberry Twp., PA  
2217 East 9th Street, Suite 350  
Cleveland, OH 44115-1257  
216-875-0100  
barberhoffman.com

PROJECT NAME  
**WARREN G. HARDING  
HS HOME BLEACHER  
MAINTENANCE -  
PHASE 1**

PROJECT ADDRESS  
**860 ELM ROAD NE  
WARREN, OHIO 44483**

No.	Date	Description
1	02/20/2025	FOR PERMIT AND CONSTRUCTION

DRAWN BY	Author
CHECKED BY	Checker
DRAWING SCALE	1/8" = 1'-0"
PROJECT NUMBER	24209

DRAWING TITLE  
**COVER SHEET**

DATE Issue Date

DRAWING NUMBER  
**C100**

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CODES AND STANDARDS

- New construction has been designed to, and shall be constructed in accordance with the following building codes and standards:
  - 2024 Ohio Building Code (OBC 2024)
  - 2024 Ohio Existing Building Code (OEB 2024)
  - ASCE 7-16, Minimum Design Loads and Associated Criteria for Buildings and Other Structures
- Unless explicitly modified in the Contract Drawings and Specifications, the Contractor shall comply with provisions of:
  - ACI 301-20, Specifications for Structural Concrete
  - ACI 318-19, Building Code Requirements for Structural Concrete
  - ACI 562-21, Code Requirements for Assessment, Repair, and Rehabilitation of Existing Concrete Structures
  - TMS 402-16, Building Code Requirements for Masonry Structures
  - TMS 602-16, Specification for Masonry Structures
  - ASCE 360-16, Specification for Structural Steel Buildings
  - AWS D1.1-15, Structural Welding Code - Steel

DESIGN LOADS

Floor live load (unless otherwise noted)

Bleachers	100 psf
Special loads	
Handrails and guards (OBC 1607.9)	50 plf or 200 lbs concentrated

DESIGN STRESSES

Concrete minimum compressive strength in 28 days:

Interior slabs and walls	$f_c = 4,000$ psi
Structural concrete subject to freezing and thawing	$f_c = 5,000$ psi
Reinforcing bars (ASTM A615, Grade 60)	$F_y = 60,000$ psi
Welded wire reinforcement (ASTM A1084)	$F_y = 70,000$ psi
Structural steel W, WT and S shapes (ASTM A992 or ASTM A572/50)	$F_y = 50,000$ psi
Structural steel other shapes (ASTM A36)	$F_y = 36,000$ psi
Anchor rods (ASTM F1554, Grade 55 weldable)	$F_y = 55,000$ psi
Hollow structural sections (ASTM A500, Grade C)	
Rectangular	$F_y = 50,000$ psi
Round	$F_y = 46,000$ psi
Masonry	$f_m = 2,000$ psi
Load-bearing CMU (ASTM C55 or C90)	
Brick (ASTM C216 Grade SW)	Type M or S
Mortar (ASTM C270)	
Grout (ASTM C476)	3,000 psi

STRUCTURAL TESTING AND SPECIAL INSPECTIONS

- Special structural testing and inspections are required. The Owner shall hire an approved independent testing agency. The agency shall be designated as the special inspector and shall provide structural testing and special inspections as required by chapter 17 of the building code and as noted in the Contract Documents. Reports of inspection and testing shall be sent to the Architect, Engineer, Owner, Contractor, and Building Department.
- Structural testing and special inspection shall include:
- Concrete: mix data, daily pour reports, cylinder tests, slump, entrained air tests, and temperature.
  - Reinforcement: placement, type, size, and grade of steel.
  - Structural steel: member size, welding, and bolting in the shop and field.
  - Masonry: use of proper masonry units, reinforcing (size, grade, and placement), mortar proportions, grout proportions, and grouting operations.

GENERAL

- All new construction shall comply with the Contract Documents and the Building Code.
- Typical details and general notes apply to all parts of the work except where specifically detailed or unless otherwise noted.
- The structural drawings illustrate structural members. Refer to architectural, mechanical, and electrical drawings for non-structural items which require special provisions during the construction of the structural members.
- Drawings are not to be scaled.
- The Contractor shall verify and be responsible for all dimensions and conditions which impact the work. Field verify sizes, elevations, hole locations, etc., prior to fabrication.
- The Contractor shall carefully review the drawings to identify the scope of work required, visit the site to relate the scope of work to existing conditions and determine the extent to which those conditions and physical surroundings will impact the work.
- The Contractor shall resolve any conflicts on the drawings or in the specifications with the Architect/Engineer before proceeding with the work.
- Any deviation, modification, or substitution from the approved set of structural drawings shall be submitted to the Owner, Architect, and Engineer for review/approval prior to its use or inclusion on the shop drawings.
- The Contractor shall provide all necessary shores, braces, and guys required to support all loads to which the building structure and components, soils, other structures, and utilities may be subjected during construction. Shoring systems shall be designed, signed, and sealed by a Professional Engineer licensed in the jurisdiction where the project is located.
- The Contractor shall provide means, method, techniques, sequence, and procedure of construction as required.
- The Contractor shall protect all work, materials, and equipment from damage and shall provide proper storage facilities for materials and equipment during construction.
- Site visits performed by the Architect/Engineer do not constitute inspections of means and methods of construction performed by the Contractor.
- Structural observations performed by the Architect/Engineer during construction are not the continuous and special inspection services and do not waive the responsibility for the inspections required of the Building Department inspector or the testing agency. Observations also do not guarantee the Contractor's performance and shall not be considered as supervision of construction.
- Existing conditions as shown on these plans are for reference only. The Contractor is required to field verify all existing conditions prior to construction.

CONCRETE CONSTRUCTION

- All concrete construction shall be in accordance with the latest Building Code Requirements for Structural Concrete ACI 318 and ACI Detailing Manual, except that construction and removal of forms and restoring shall be inspected by the Contractor's engineer.
- Reinforcing steel shall have the following minimum coverage in accordance with the following table. Place bars as near to the concrete surface as these minima permit wherever possible, unless noted otherwise:

Concrete Exposure	Member	Reinforcement	Specified cover, in.
Cast against and permanently in contact with ground	All	All	3
Exposed to weather or in contact with ground	All	No. 6 through No. 18 bars	2
		No. 11 bar and smaller	1 1/2
Not exposed to weather or in contact with ground	Slabs, joists and walls	No. 14 and No. 18 bars	1 1/2
	Beams, columns, pedestals, and tension ties	Primary reinforcement, stirrups, ties, spirals, and hoops	3/4

- Welded wire reinforcement for slabs on ground shall have a minimum top coverage of 1" and a maximum top coverage of 1 1/2", unless otherwise noted. Reinforcement shall be positively supported and maintained in this position during placement of concrete.
- Furnish bar supports where necessary during construction.
- Provide plastic-coated (not plastic-tipped) or stainless steel chairs in all concrete exposed to view in completed structure.
- Provide pipe sleeves and inserts in concrete work where required. See architectural and mechanical drawings.
- All exposed corners of concrete beams, columns, walls are to be chamfered 45". Minimum chamfer to be 1/2".
- Unless noted otherwise in project specifications or drawings, all exposed concrete subjected to freezing and thawing shall have a minimum cement content of 610 pounds per yard, a maximum water/cement ratio of 0.40, and 6%±1.5% of entrained air.
- At wall and footing corners, innermost reinforcing shall have 1'-0" long hook at far face. For outer reinforcing, provide corner bars with lap length of 36 bar diameters (2'-0" minimum).
- Provide foundation dowels for all walls, piers, and columns same size and spacing as vertical steel.
- Bar bends shall be made cold. Bars shall not be bent after any portion of the bar is encased in concrete.
- Splices (grade 60 deformed bars):
  - Lap all tension splices in accordance with the following tables. Provide Class B Tension Lap Splices unless noted otherwise.
- Increase tension or compression splice lengths by the following factors. Increases are Cumulative:
  - Epoxy-coated with clear cover less than 3 bar diameters or clear spacing less than 6 bar diameters: 1.5
  - Epoxy-coated other bars: 1.2
- Top bars are defined as horizontal bars with more than 12" of fresh concrete below.

Bar Size	Class B Tension Lap Splice					
	$f_c = 3,000$ psi		$f_c = 4,000$ psi		$f_c = 5,000$ psi	
	Top	Other	Top	Other	Top	Other
#3	28"	22"	24"	19"	22"	17"
#4	37"	29"	33"	25"	29"	23"
#5	47"	36"	41"	31"	36"	28"
#6	56"	43"	49"	37"	43"	34"

Bar Size	Class A Development Length, $l_d$					
	$f_c = 3,000$ psi		$f_c = 4,000$ psi		$f_c = 5,000$ psi	
	Top	Other	Top	Other	Top	Other
#3	22"	17"	19"	15"	17"	13"
#4	29"	22"	25"	19"	23"	17"
#5	36"	28"	31"	24"	28"	22"
#6	43"	33"	37"	29"	34"	26"

POST-INSTALLED ANCHORS

- Anchorage to hardened concrete or masonry shall include torque controlled expansion anchors and adhesive anchors of size, number and spacing as shown on the drawings.
- All anchors shall be installed in accordance with the Manufacturer's Printed Installation Instructions (MPI).
- Existing reinforcing bars in the concrete or masonry may conflict with specific anchor locations. Reinforcing bars shall not be cut unless specifically noted on the drawings or approved by the Engineer of Record. The contractor shall review the structural drawings and shall locate the position of reinforcing bars in the vicinity of the anchors, by ground penetrating radar (GPR), x-ray, or other means.
- Anchor rods shall be installed in holes drilled with a rotary impact hammer drill. Core drilling of holes is not permitted. Holes and anchor shall be thoroughly cleaned per the MPI prior to installation of the anchor.
- Stainless steel anchors shall be used at all exterior locations and where specifically noted on the drawings.
- Remove and replace misplaced or malfunctioning anchors. Patch failed anchor locations with high-strength non-shrink, non-metallic grout.
- Installed adhesive anchors shall be securely held in-place to prevent displacement while the adhesive cures.
- All anchors supporting structural elements shall be enclosed with a fire-resistance-rated envelope or protected by approved fire-resistance rated materials.
- Quality Control:
  - All anchors shall be periodically inspected to meet the requirements of MPI and the ICC-ES ESR report for the product.
  - All anchor installers shall be trained by the manufacturer or manufacturer's representative for each individual product being installed.
- Submittals:
  - Technical product literature, highlighting each anchor and size to be used on the project.
  - Manufacturer's Printed Installation Instructions (MPI) for each anchor type.
  - Engineering Design Data: For each substitution request, provide calculations substantiating specified design requirements, sealed by a professional engineer licensed in the jurisdiction where project is located.
- Where a specific type of anchorage is indicated on the drawings, substitution for a different type of anchorage shall meet the requirements of ACI 308.2Z Category 1 or ACI 308.4Z Category 1 for anchorage into concrete or shall have an ICC-ES ESR report for anchorage into masonry. Substitution shall not be permitted without prior written approval of the Engineer of Record.
- Anchor to hardened concrete shall be supplied as an entire system and shall be as follows:
  - Torque Controlled Anchors (Expansion Anchors) in cracked and un-cracked concrete as indicated on the drawings shall be HiTi KWIK Bolt T22 Expansion Anchor (ICC-ES Evaluation Report: ESR# 4266).
  - Adhesive anchors in cracked and un-cracked concrete indicated on the drawings shall be HiTi HIT-HY 200 V3 Safe Set Adhesive Anchoring System (ICC-ES Evaluation Report: ESR# 4868). The following anchor rods shall be used with the system:
    - Reinforcing bar meeting the requirements of ASTM A615/A706 Grade 60.
    - All-threaded rod shall be HiTi HIT-Z rod.
- Requirements and design parameters of post-installed anchors into hardened concrete:
  - Concrete shall have a minimum compressive strength of 2,500 psi and a minimum age of 21-days at the time of installation for adhesive anchors and 7-days for expansion anchors.
  - Concrete temperature at the time of installation of adhesive anchors shall be a minimum of 50°F.
  - Concrete may be water saturated or dry; water filled holes shall not be allowed.
  - Embedment depth and anchor projection shall be as detailed on the drawings. Unless otherwise noted, minimum embedment depths, spacing, and edge distance shall be by the table below.
- Anchors into masonry shall be supplied as an entire system and shall be as follows:
  - Torque Controlled Expansion Anchors (Expansion Anchors) in solid or grout filled masonry as indicated on the drawings shall be HiTi KWIK Bolt T22 Expansion Anchor (ICC-ES Evaluation Report: ESR# 4561).
  - Adhesive anchors in hollow, solid or grout filled masonry as indicated on the drawings shall be HiTi HIT-HY 270 Hybrid for Masonry Construction (ICC-ES Evaluation Report: ESR# 4143). Screen tubes shall be used for all connections to hollow masonry. The following anchor rods shall be used with the system:
    - All-threaded rod shall be HiTi HAS-E rod.
    - Stainless steel anchor rods shall be AISI Type 304 or 316.
- Requirements and design parameters of post-installed anchors into masonry:
  - Masonry grout shall have a minimum compressive strength of 2,000 psi and a minimum age of 21-days at the time of installation for adhesive anchors and 7-days for expansion anchors.
  - Masonry temperature at the time of installation of adhesive anchors shall be between 41°F, and 104°F.
  - Masonry may be water saturated or dry; water filled holes shall not be allowed.
  - Embedment depth and anchor projection shall be as detailed on the drawings. Unless otherwise noted, minimum embedment depths, spacing, and edge distance shall be by the table below.

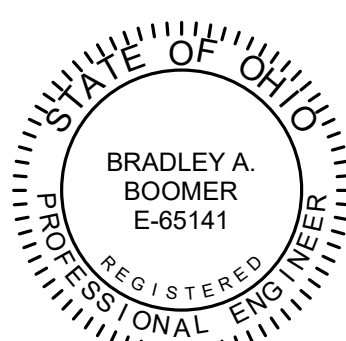
Post-installed Concrete Anchors						
Diameter	Torque-controlled Anchors			Adhesive Anchors		
	Minimum Embed.	Min. Edge Distance	Minimum Spacing	Minimum Embed.	Min. Edge Distance	Minimum Spacing
3/8" #3	2 1/2"	5"	6"	4 1/2"	4 1/2"	4 1/2"
1/2" #4	3 1/4"	6"	6"	6"	6"	6"
5/8" #5	4"	7"	7"	7 1/2"	7 1/2"	7 1/2"
3/4" #6	4 3/4"	12"	8"	8 1/2"	8 1/2"	8 1/2"
#7	-	-	-	10 1/2"	10 1/2"	10 1/2"
#8	-	-	-	12"	12"	12"
#9	-	-	-	13 1/2"	13 1/2"	13 1/2"

Diameter	Torque-controlled Anchors			Adhesive Anchors		
	Minimum Embed.	Min. Edge Distance	Minimum Spacing	Minimum Embed.	Min. Edge Distance	Minimum Spacing
3/8"	2 1/2"	12"	10"	3 1/2"	12"	13 1/2"
1/2"	3 1/4"	12"	13"	4 1/2"	12"	18"
5/8"	4"	20"	16"	5 3/4"	20"	22 1/2"
3/4"	4 3/4"	20"	19"	6 3/4"	20"	27"

STEEL CONSTRUCTION

- Steel detailing, fabrication, and erection shall conform to the AISC Specification for Structural Steel Buildings and Code of Standard Practice, and the AWS Structural Welding Code.
- All additional steel required for erection purposes shall be provided at no additional cost and shall be removed unless approved by the Owner in writing.
- Connections - welded or high strength bolted:
  - Bolts shall be ASTM F3125 and shall be installed in accordance with Specifications for Structural Joints Using High-Strength Bolts.
  - Provide slip critical bolts for all moment connections, wind connections, hangers, and other connections as noted on drawings.
  - Provide bearing type connections with thread included in the shear plane for all connections other than slip critical connections.
  - Provide hardened washers under nuts at all high-strength bolts, except where plate washers are used per AISC Specifications.
  - Unless snug tight connections are noted on the drawings as being permitted, all bolts should be tightened to full pretensioning load.
  - Use standard holes with the following exceptions: oversize holes are permitted when bolts are loaded in tension; short slotted holes are permitted for shear loading perpendicular to the slot.
  - Where minimum AISC fillet weld thickness requirement exceeds welds shown on details, or weld size is not specified, provide minimum AISC weld.
- Welding electrodes shall be E70XX except where other electrodes are required for compatibility with material being welded.
- All slip connections shall be provided with a means of preventing the nuts from unthreading.
- Shop drawings are required and shall note type of electrodes, size of all welds, and type and size of all bolts. Shop drawings shall be prepared under the supervision of a Professional Engineer licensed in the jurisdiction where the project is located.
- Primer, unless otherwise noted:
  - Clean surfaces to remove loose rust and mill scale and spatter, slag, or flux deposits. Prepare surfaces according to the following specifications and standards: SSPC-SP 2, "Hand Tool Cleaning".
  - Oil paint at slip critical connections and areas to be welded.
  - Interior steel: Provide chemically active, modified alkyl primer at 2.5 mils dry thickness.
  - Exterior steel: Provide fast-curing, two-component, moisture-cured, zinc-rich urethane primer for exterior steel at 3.0 mils dry thickness.
- See all contract drawings for miscellaneous steel requirements.
- All shop and field welding shall be performed by a recently certified welder.
- All welding and high strength bolting must be inspected by a qualified testing laboratory. Laboratory shall be approved by the Architect and/or Engineer.

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PROJECT NAME  
**WARREN G. HARDING  
HS HOME BLEACHER  
MAINTENANCE -  
PHASE 1**

PROJECT ADDRESS  
**860 ELM ROAD NE  
WARREN, OHIO 44483**

No.	Date	Description
1	02/20/2025	FOR PERMIT AND CONSTRUCTION

DRAWN BY	Author
CHECKED BY	Checker
DRAWING SCALE	1/2" = 1'-0"
PROJECT NUMBER	24209

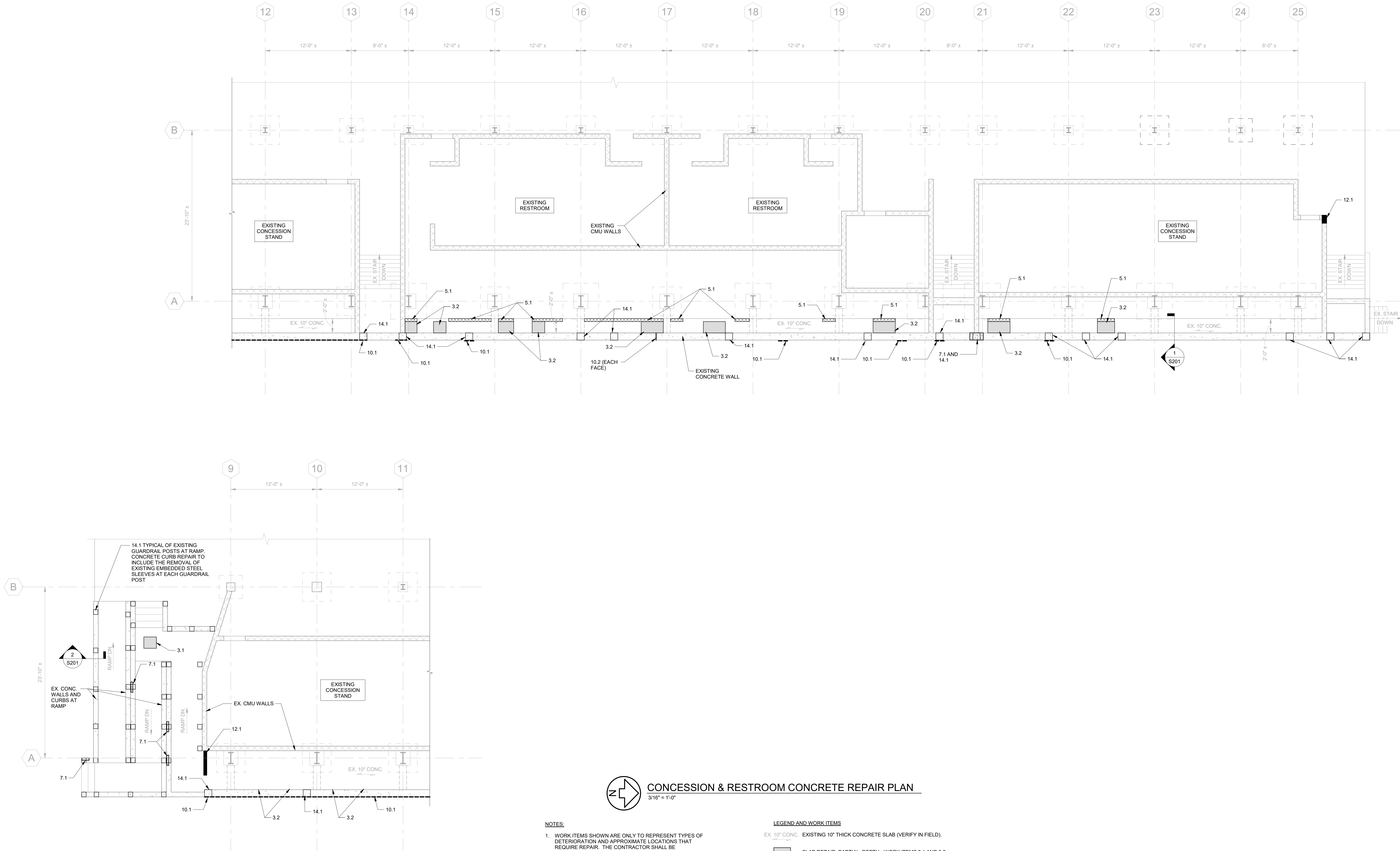
GENERAL NOTES

DATE Issue Date

DRAWING NUMBER

S001

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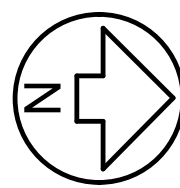


NOTES:

1. WORK ITEMS SHOWN ARE ONLY TO REPRESENT TYPES OF DETERIORATION AND APPROXIMATE LOCATIONS THAT REQUIRE REPAIR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING ACTUAL EXTENT AND LOCATION OF REPAIR AREA, SUBJECT TO VERIFICATION BY THE ENGINEER.
2. THE CONTRACTOR SHALL CONTACT THE ENGINEER IF EXISTING CONDITIONS VARY FROM CONSTRUCTION DOCUMENTS.
3. FIELD ASSESSMENT BY THE ENGINEER REVEALED DETERIORATION OF THE UNDERSIDE OF THE CONCRETE AISLE SLAB AT THE BASE OF THE BLEACHER DECK. THE CONTRACTOR SHALL SOUND THE FULL LENGTH OF TOP SIDE OF THE AISLE SLAB TO DETERMINE IF AREAS OF DELAMINATION ARE PRESENT.
4. SEE DETAILS FOR REPAIR INFORMATION OF EACH WORK ITEM AND REPAIR QUANTITIES.
5. REMOVE AND SALVAGE EXISTING GUARDRAIL WITH ATTACHED BASE PLATE. COORDINATE STORAGE LOCATION WITH OWNER. ALL GUARDRAIL POSTS TO BE REPAIRED AND REINSTALLED PER SECTIONS 1 AND 2/S201.
6. REMOVAL OF EXISTING GUARDRAIL MAY EXPOSE ADDITIONAL LOCATIONS OF ABANDONED EMBEDDED POST SLEEVES. CONTRACTOR TO REMOVE ALL LOCATIONS OF ABANDONED EMBEDDED PIPE SLEEVES AND REPAIR CURB PER WORK ITEM 14.1.
7. AS AN ALTERNATIVE TO INDIVIDUAL CURB REPAIR LOCATIONS PER WORK ITEM 14.1, THE CONTRACTOR MAY REMOVE AND REPLACE THE CONCRETE CURB IN ITS ENTIRETY. NOTIFY ARCHITECT AND ENGINEER IF THIS ALTERNATE IS SELECTED.

LEGEND AND WORK ITEMS

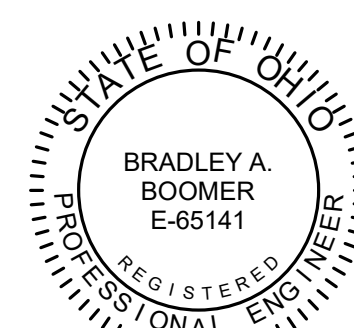
- EX. 10" CONC. EXISTING 10" THICK CONCRETE SLAB (VERIFY IN FIELD).
- SLAB REPAIR: PARTIAL DEPTH - WORK ITEMS 3.1 AND 3.2.
- CONCRETE BEAM REPAIR - WORK ITEM 5.1.
- CONCRETE WALL REPAIR - WORK ITEM 7.1.
- CONCRETE CRACK REPAIR - WORK ITEM 10.1.
- SPALLED CONCRETE REPAIR - WORK ITEM 12.1.
- CONCRETE CURB REPAIR - WORK ITEM 14.1.



CONCESSION & RESTROOM CONCRETE REPAIR PLAN

3/16" = 1'-0"

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DRAWN BY	Author
CHECKED BY	Checker
DRAWING SCALE	As indicated
PROJECT NUMBER	24209

DRAWING TITLE  
**CONCESSION &  
RESTROOM  
CONCRETE REPAIR  
PLAN**

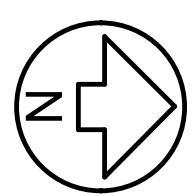
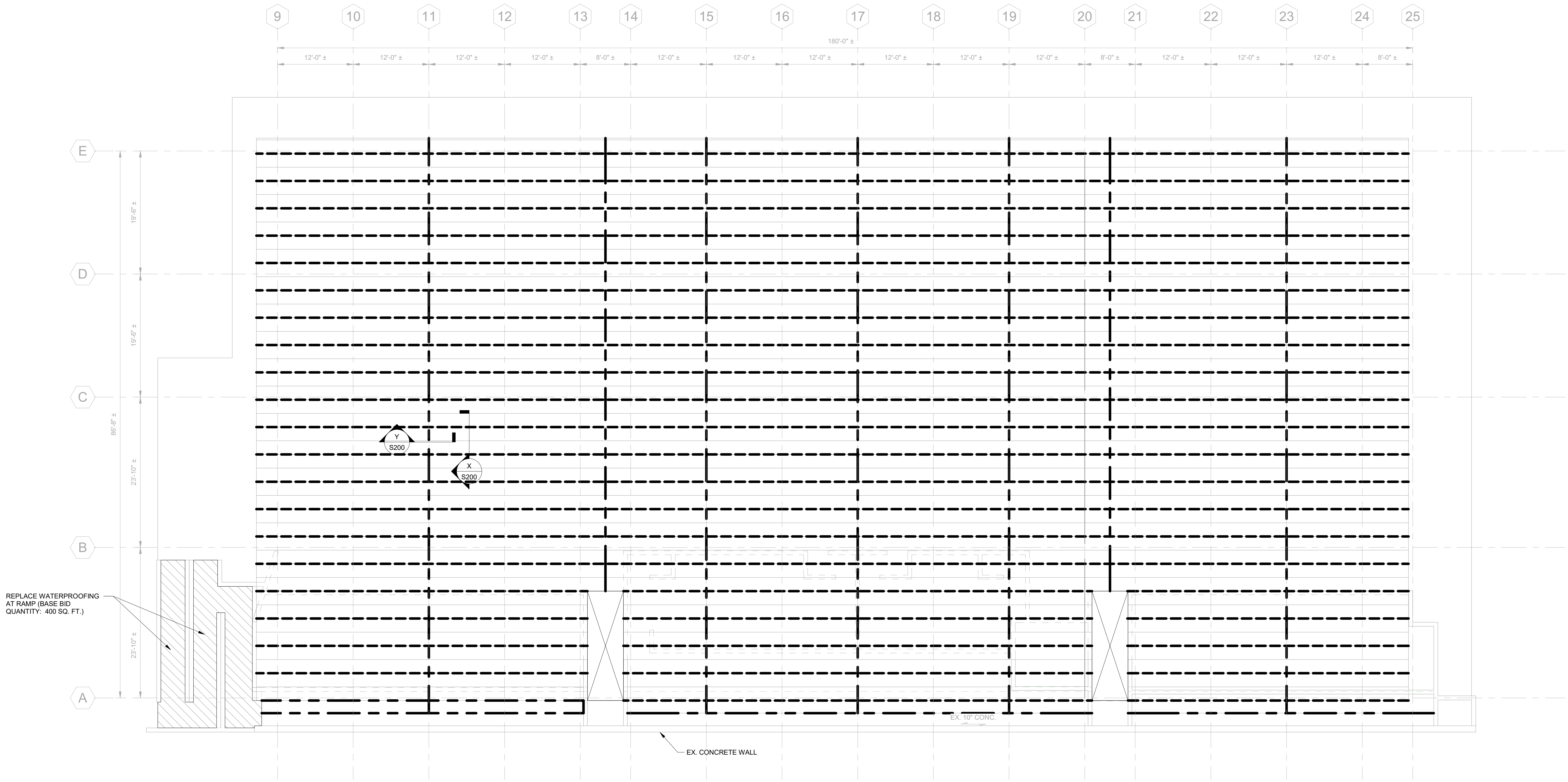
DATE Issue Date

DRAWING NUMBER

**S100**

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PRECAST STADIUM RISER REPAIR PLAN

1/8" = 1'-0"

SUGGESTED STADIUM RISER REPAIR SEQUENCE:

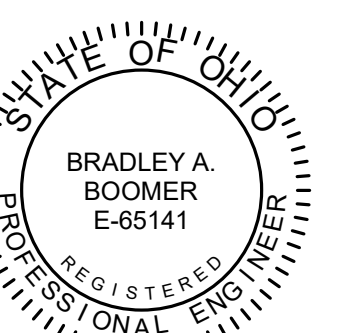
1. REMOVE EXISTING ALUMINUM SEATING, AND STORE FOR REINSTALLATION. DO NOT DAMAGE EXISTING ANCHORAGES. SALVAGE CONNECTION HARDWARE FOR REUSE.
2. RECORD THE LAYOUT OF EXISTING PAINT MARKINGS (AISLES AND STAIRS).
3. REMOVE EXISTING WATERPROOFING MEMBRANE DOWN TO THE PRECAST DECK.
4. REMOVE EXISTING SEALANTS.
5. PREPARE CONCRETE SURFACE FOR NEW WATERPROOFING MEMBRANE PER MANUFACTURER'S RECOMMENDATIONS.
6. INSTALL SEALANT IN HORIZONTAL JOINTS AND VERTICAL JOINTS PER WORK ITEMS 10.3 AND 10.2.
7. RE-COAT PRECAST STADIUM RISER DECK WITH NEW WATERPROOFING MEMBRANE. PROVIDE MANUFACTURER'S STANDARD, TRAFFIC-BEARING, SEAMLESS, COLD LIQUID APPLIED, POLYURETHANE, WATER-RESISTANT MEMBRANE SYSTEM WITH INTEGRAL WEARING SURFACE (TOP COAT) FOR PEDESTRIAN TRAFFIC, ACCORDING TO ASTM C957. COLOR SELECTED BY OWNER. ESTIMATED AREA FOR BIDDING = 25,000 SQUARE FEET.
8. PAINT NEW MARKINGS TO MATCH THE ORIGINAL LAYOUT OF MARKINGS RECORDED IN ITEM 2.
9. REINSTALL ALUMINUM SEATING ON EXISTING ANCHORAGES.

LEGEND:

--- VERTICAL SEALANT JOINT REPLACEMENT, WORK ITEM 10.3 (SECTION Y)

--- HORIZONTAL SEALANT JOINT REPLACEMENT, WORK ITEM 10.3 (SECTION X)

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PROJECT ADDRESS  
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WARREN, OHIO 44483**

No.	Date	Description
1	02/20/2025	FOR PERMIT AND CONSTRUCTION

DRAWN BY	Author
CHECKED BY	Checker
DRAWING SCALE	1/8" = 1'-0"
PROJECT NUMBER	24209

DRAWING TITLE  
**PRECAST STADIUM  
RISER REPAIR AND  
WATERPROOFING  
PLAN**

DATE Issue Date

DRAWING NUMBER

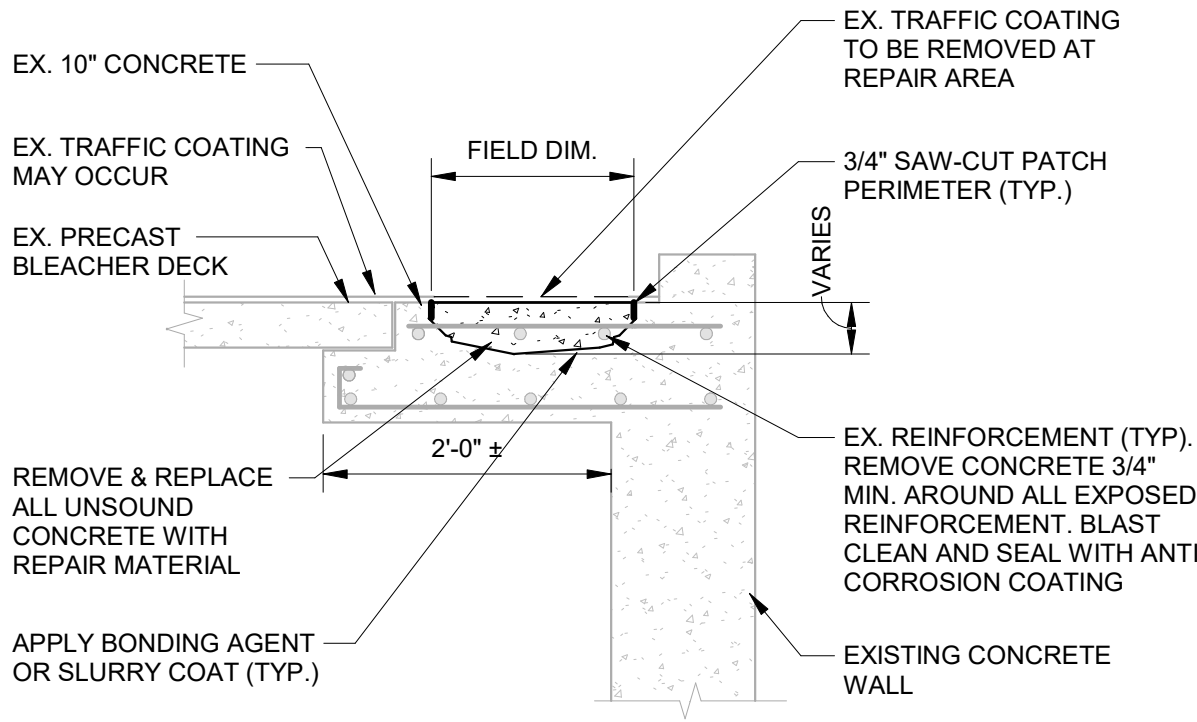
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SITE CONDITION



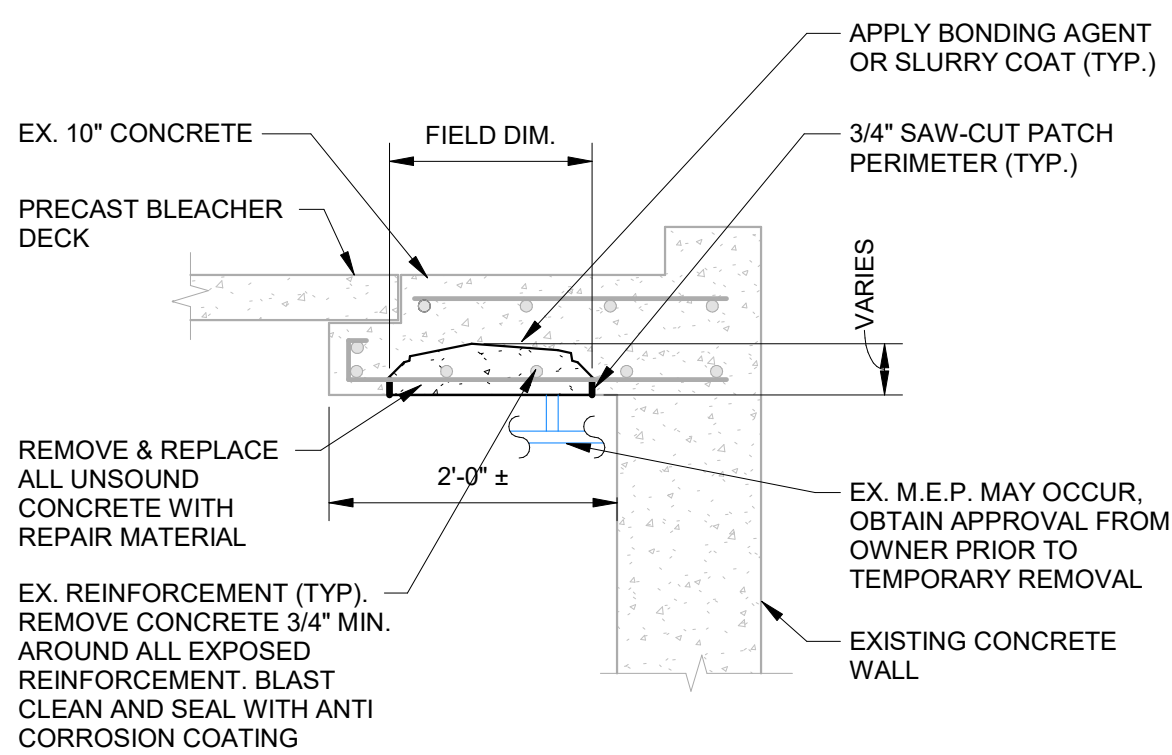
- NOTES:
1. CONTRACTOR IS RESPONSIBLE FOR DESIGN AND INSTALLATION OF SHORES (AS REQUIRED) PRIOR TO ANY CONCRETE REMOVAL.
  2. NUMBER AND LOCATION OF REINFORCEMENT SHOWN MAY DIFFER FROM ACTUAL FIELD CONDITIONS.
  3. ADDITIONAL REINFORCEMENT (OTHER THAN SHOWN IN DETAIL) TO BE ADDED AS DIRECTED BY THE ENGINEER.
  4. SEE SPECIFICATIONS FOR APPROVED MATERIALS AND ADDITIONAL REPAIR PROCEDURES.
  5. SEE PRODUCT MANUFACTURER'S TECHNICAL DATA SHEETS FOR MIXING, SURFACE PREPARATION, APPLICATION PROCEDURES, AND CURING.
  6. ALL REINFORCING TO BE GALVANIZED.
  7. REINFORCING BARS OR TIES WHICH HAVE LOST MORE THAN 15% OF ORIGINAL CROSS SECTIONAL AREA SHALL BE SUPPLEMENTED AS ENGINEER DIRECTS.

3.1 CONCRETE SLAB - TOPSIDE REPAIR (PARTIAL DEPTH)  
3/4\" = 1'-0\"

BASE BID QUANTITY: 10 SQUARE FEET



SITE CONDITION



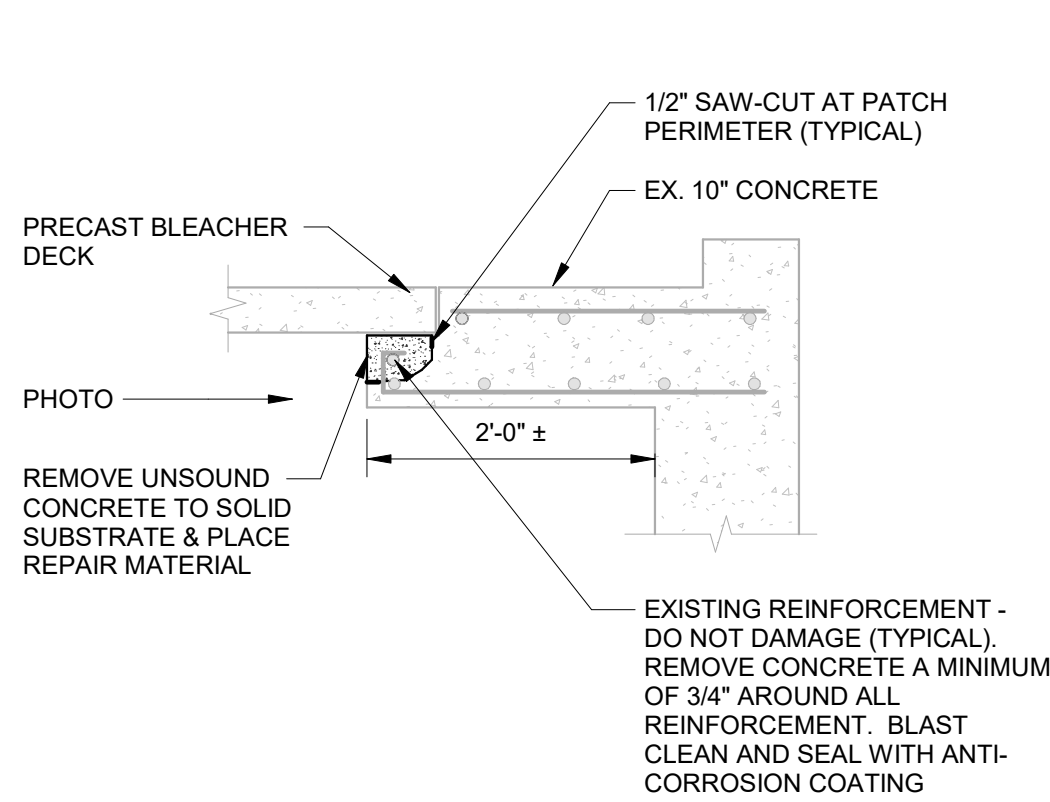
- NOTES:
1. CONTRACTOR IS RESPONSIBLE FOR DESIGN AND INSTALLATION OF SHORES (AS REQUIRED) PRIOR TO ANY CONCRETE REMOVAL.
  2. NUMBER AND LOCATION OF REINFORCEMENT SHOWN MAY DIFFER FROM ACTUAL FIELD CONDITIONS.
  3. ADDITIONAL REINFORCEMENT (OTHER THAN SHOWN IN DETAIL) TO BE ADDED AS DIRECTED BY THE ENGINEER.
  4. SEE SPECIFICATIONS FOR APPROVED MATERIALS AND ADDITIONAL REPAIR PROCEDURES.
  5. SEE PRODUCT MANUFACTURER'S TECHNICAL DATA SHEETS FOR MIXING, SURFACE PREPARATION, APPLICATION PROCEDURES, AND CURING.
  6. ALL REINFORCING TO BE GALVANIZED.
  7. REINFORCING BARS OR TIES WHICH HAVE LOST MORE THAN 15% OF ORIGINAL CROSS SECTIONAL AREA SHALL BE SUPPLEMENTED AS ENGINEER DIRECTS.

3.2 CONCRETE SLAB - UNDERSIDE REPAIR (PARTIAL DEPTH)  
3/4\" = 1'-0\"

BASE BID QUANTITY: 90 SQUARE FEET



SITE CONDITION



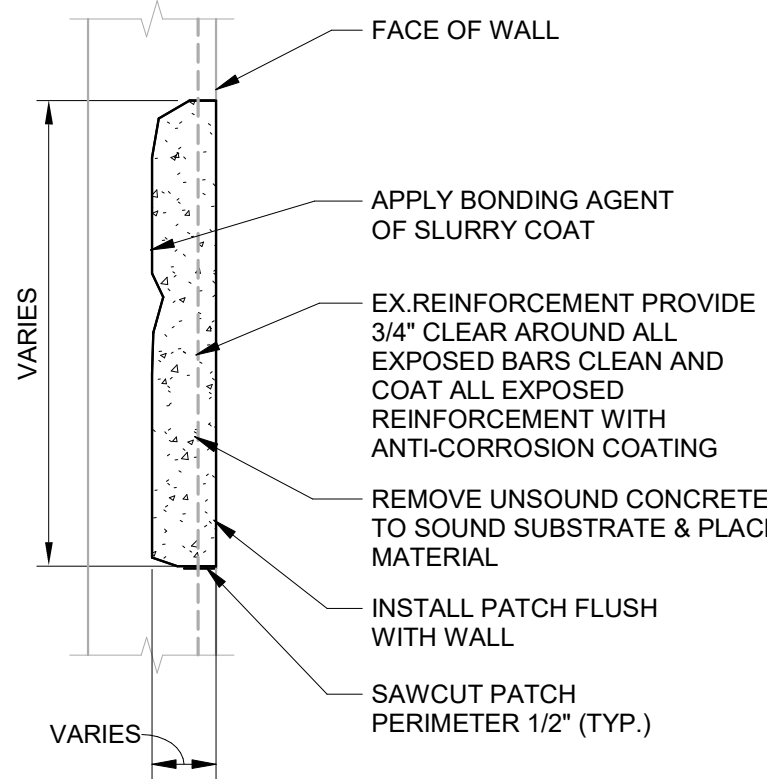
- NOTES:
1. CONTRACTOR IS RESPONSIBLE FOR DESIGN AND INSTALLATION OF SHORES (AS REQUIRED) PRIOR TO ANY CONCRETE REMOVAL.
  2. NUMBER AND LOCATION OF REINFORCEMENT SHOWN MAY DIFFER FROM ACTUAL FIELD CONDITIONS.
  3. ADDITIONAL REINFORCEMENT (OTHER THAN SHOWN IN DETAIL) TO BE ADDED AS DIRECTED BY THE ENGINEER.
  4. SEE SPECIFICATIONS FOR APPROVED MATERIALS AND ADDITIONAL REPAIR PROCEDURES.
  5. SEE PRODUCT MANUFACTURER'S TECHNICAL DATA SHEETS FOR MIXING, SURFACE PREPARATION, APPLICATION PROCEDURES, AND CURING.
  6. REINFORCING BARS OR TIES WHICH HAVE LOST MORE THAN 15% OF ORIGINAL CROSS SECTIONAL AREA SHALL BE SUPPLEMENTED AS ENGINEER DIRECTS.

5.1 CONCRETE SLAB - EDGE REPAIR  
3/4\" = 1'-0\"

BASE BID QUANTITY: 75 LINEAL FEET



SITE CONDITION



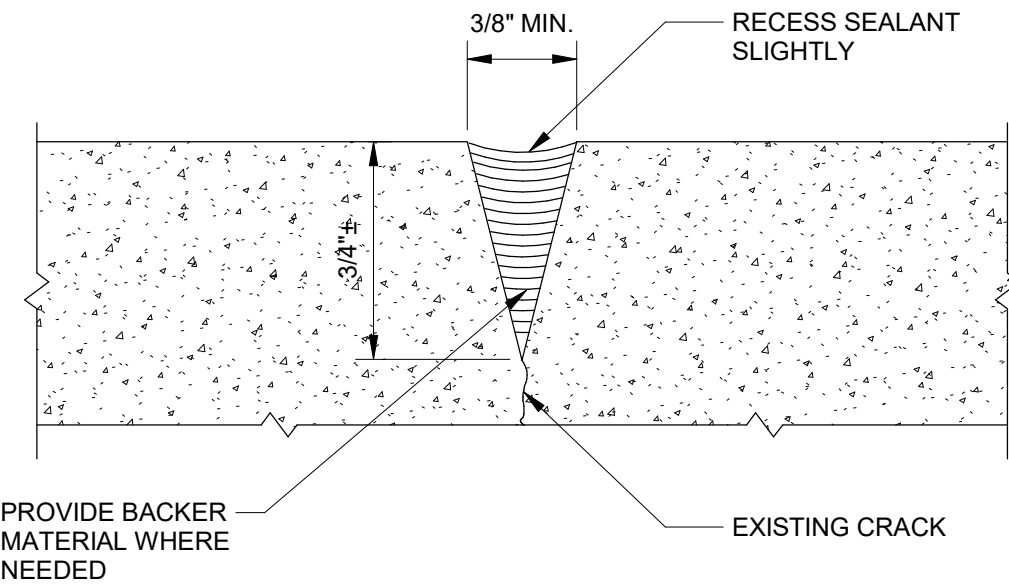
- NOTES:
1. CONTRACTOR IS RESPONSIBLE FOR DESIGN AND INSTALLATION OF SHORES (AS REQUIRED) PRIOR TO ANY CONCRETE REMOVAL.
  2. NUMBER AND LOCATION OF REINFORCEMENT SHOWN MAY DIFFER FROM ACTUAL FIELD CONDITIONS.
  3. ADDITIONAL REINFORCEMENT (OTHER THAN SHOWN IN DETAIL) TO BE ADDED AS DIRECTED BY THE ENGINEER.
  4. SEE SPECIFICATIONS FOR APPROVED MATERIALS AND ADDITIONAL REPAIR PROCEDURES.
  5. SEE PRODUCT MANUFACTURER'S TECHNICAL DATA SHEETS FOR MIXING, SURFACE PREPARATION, APPLICATION PROCEDURES, AND CURING.
  6. REINFORCING BARS OR TIES WHICH HAVE LOST MORE THAN 15% OF ORIGINAL CROSS SECTIONAL AREA SHALL BE SUPPLEMENTED AS ENGINEER DIRECTS.
  7. AFTER REPAIRS ARE COMPLETED, REPAIR AREAS SHALL BE PAINTED TO MATCH THE SURROUNDING EXISTING SURFACE. PRIOR TO PAINTING OF ALL REPAIR AREAS, ONE MOCKUP AREA SHALL BE PREPARED FOR OWNER'S APPROVAL.

7.1 CONCRETE WALL REPAIR  
NOT TO SCALE

BASE BID QUANTITY: 25 SQUARE FEET



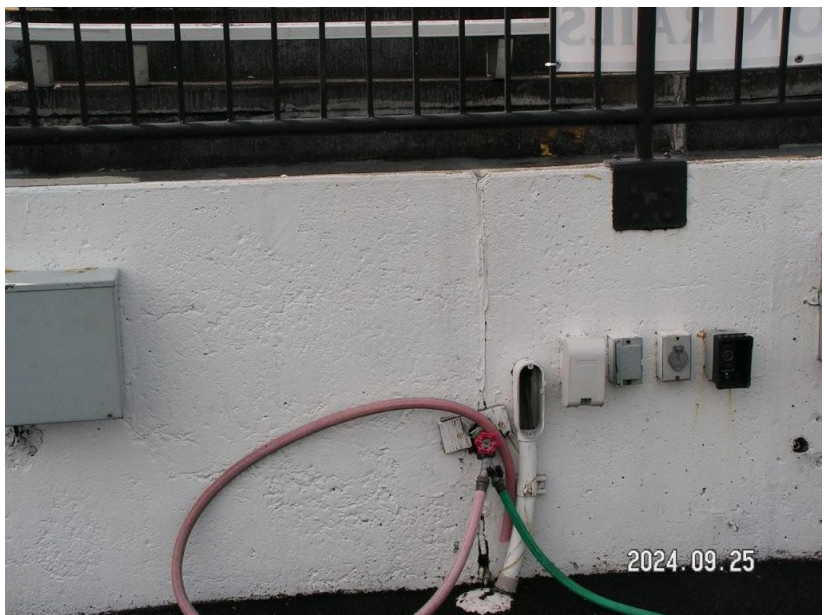
SITE CONDITION



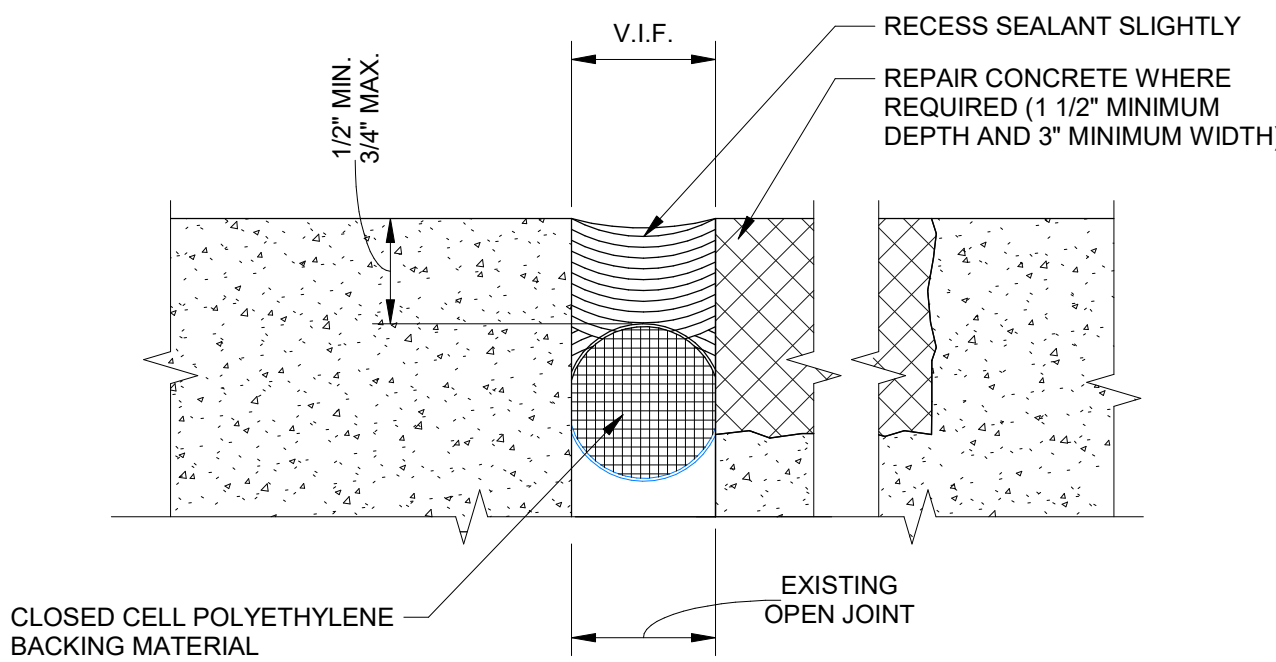
- NOTES:
1. PROVIDE V-SHAPED SAW CUT ALONG THE CENTER OF CRACK. (DO NOT CUT EXISTING REINFORCEMENT).
  2. SEE PRODUCT MANUFACTURER'S TECHNICAL DATA SHEETS FOR SURFACE PREPARATION, APPLICATION PROCEDURES, AND JOINT SIZE LIMITATIONS.

10.1 ROUT AND SEAL RANDOM CRACKS  
NOT TO SCALE

BASE BID QUANTITY: 120 LINEAL FEET



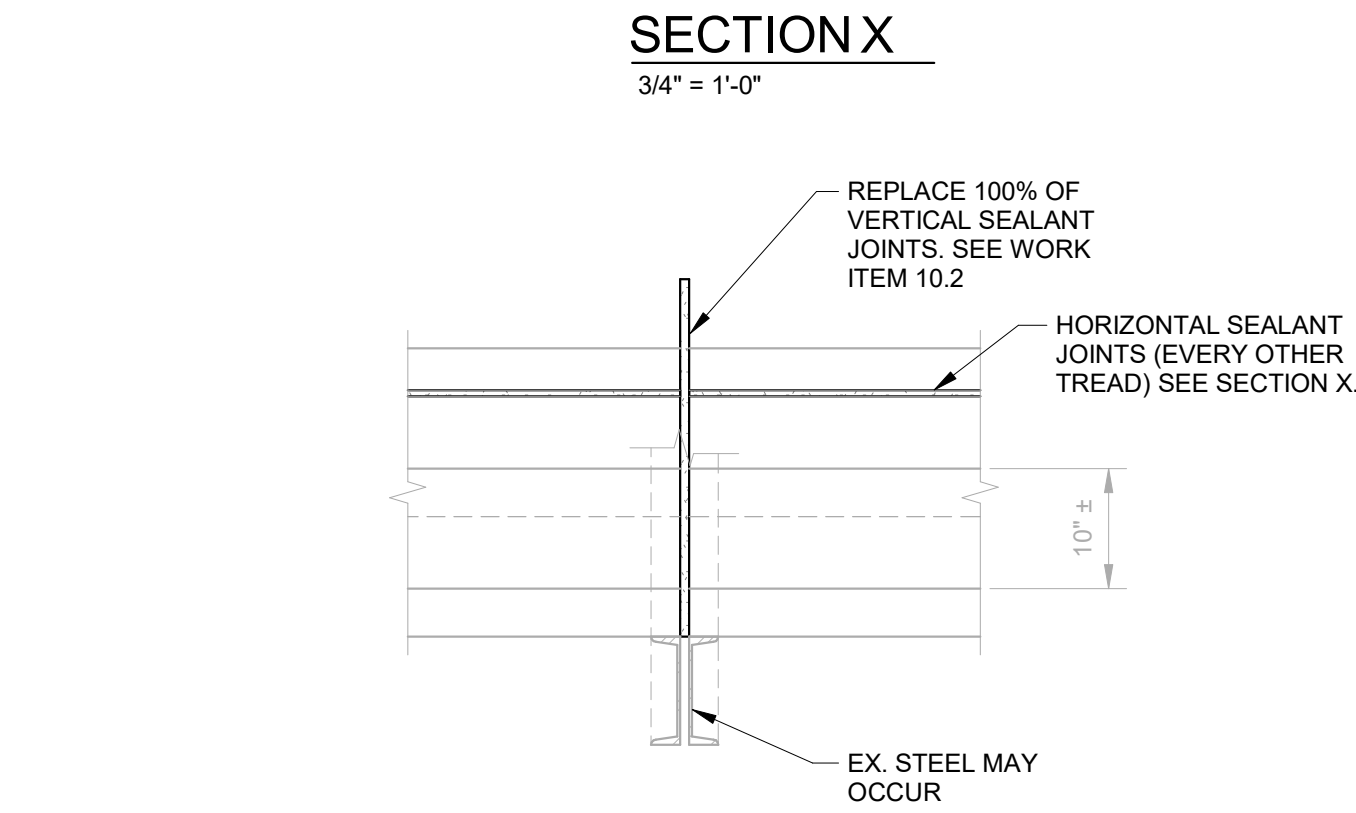
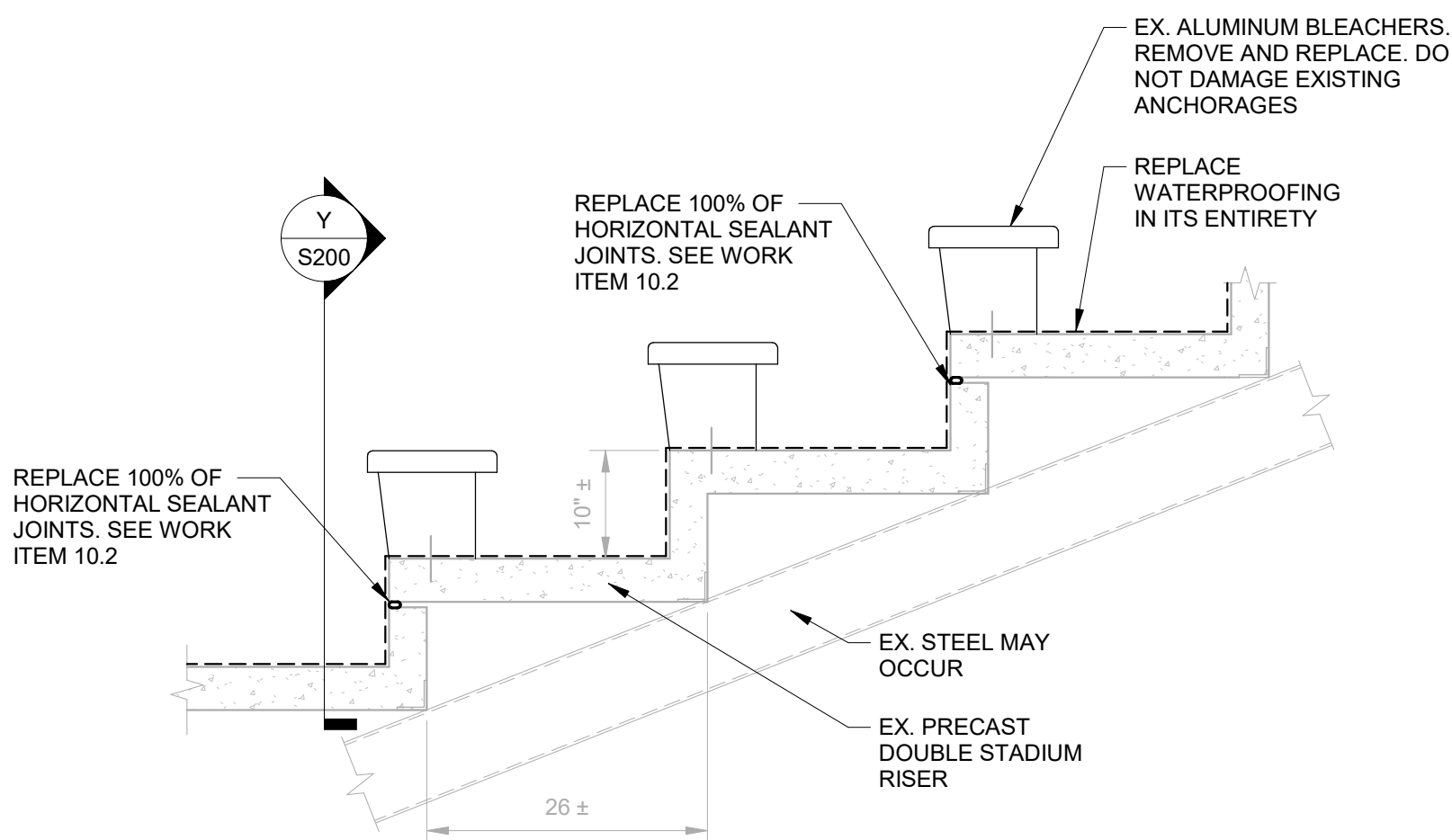
SITE CONDITION



- NOTES:
1. REMOVE EXISTING SEALANT MATERIALS. GRINDING OR SANDBLASTING MAY BE REQUIRED TO EXPOSE CLEAN, SOUND, VIRGIN CONCRETE SURFACES.
  2. PREPARE AND PRIME SURFACES.
  3. INSTALL NEW BACKING MATERIAL TO PROPER AND CONSISTENT DEPTH.
  4. INSTALL URETHANE SEALANT MATERIAL, ASTM C920, TYPE S, GRADE NS, CLASS 100/50, USE 1.
  5. SEE SPECIFICATIONS & PRODUCT MANUFACTURER'S TECHNICAL DATA SHEETS FOR SURFACE PREPARATION, APPLICATION PROCEDURES, AND JOINT SIZE LIMITATIONS.

10.2 JOINT SEALANTS (REMOVE & REPLACE)  
NOT TO SCALE

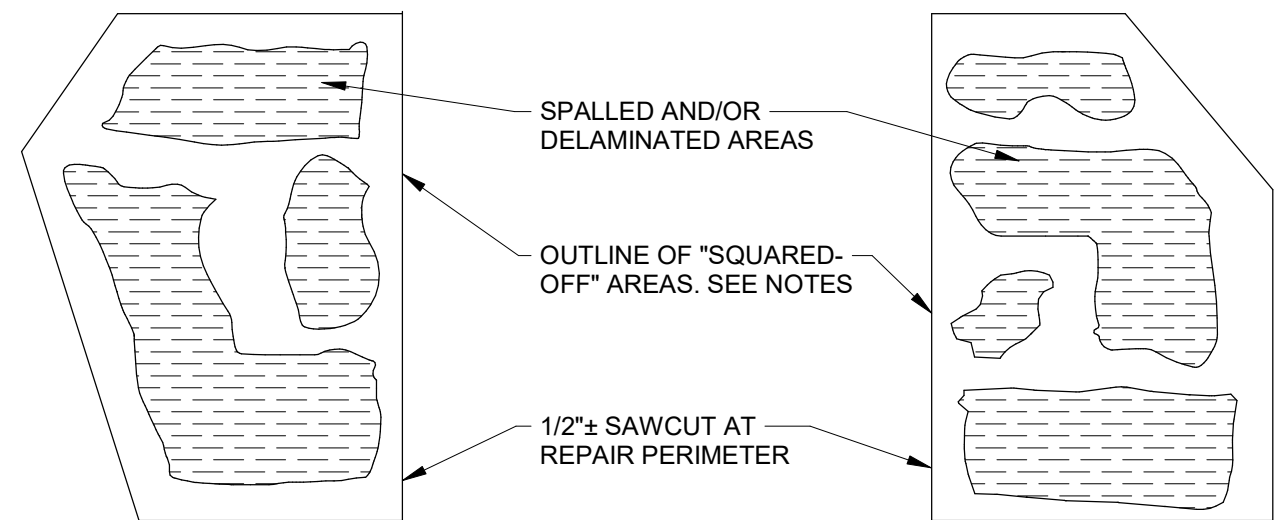
BASE BID QUANTITY: 10 LINEAL FEET



SECTION Y  
3/4\" = 1'-0\"

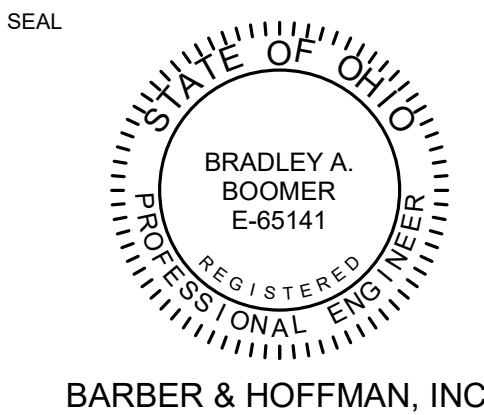
10.3 PRECAST RISER JOINT SEALANT (REMOVE & REPLACE)  
NOT TO SCALE

BASE BID QUANTITY: 4,500 LINEAL FEET HORIZONTAL JOINTS  
1,000 LINEAL FEET VERTICAL JOINTS



- RECOMMENDED PROCEDURE:
1. SOUND THE CONCRETE SURFACES TO LOCATE DELAMINATED AREAS VIA CHAIN DRAGGING, TAPPING WITH A HAMMER, OR OTHER METHODS DESCRIBED IN ASTM D4580.
  2. MARK THE PERIMETER OF THE REPAIR AREAS:
    - A. PREFERABLE LAYOUT CONSISTS OF SIMPLE GEOMETRIC SHAPES (SQUARES OR RECTANGLES) WITH 90° CORNERS.
  3. SAWCUT THE PERIMETER:
    - A. TO AVOID DAMAGING REINFORCEMENT, THE SAWCUT SHOULD NOT EXTEND DEEPER THAN THE COVER MATERIAL OVER THE REINFORCEMENT.
    - B. IF THE DELAMINATION IS CAUSED BY CORROSION BUT THE AREA OF CORRODED REINFORCEMENT ISN'T APPARENT, USE CHIPPING HAMMERS TO EXPOSE THE REINFORCEMENT UNTIL AREAS OF UNCORRODED BARS ARE FOUND.
  4. PERFORM INITIAL CONCRETE REMOVAL:
    - A. 15 - 30 LBS. JACKHAMMERS ARE RECOMMENDED PER ACI RAP BULLETIN No. 7.
  5. IF EXPOSED BARS ARE CORRODED, CONCRETE SURROUNDING THE BAR SHOULD BE FULLY REMOVED TO EXPOSE THE CORRODED BAR, REGARDLESS OF HOW MUCH OF THE BAR IS CORRODED.
    - A. CLEARANCE AROUND THE BAR TO BE A MINIMUM OF 3/4\"/>
  6. IF CORRODED BARS ARE FOUND AND CONTAIN AREAS OF SECTION LOSS, NOTIFY THE STRUCTURAL ENGINEER OF RECORD FOR POTENTIAL ADDITION OF SUPPLEMENTAL REINFORCEMENT.
  7. FINAL CLEANING OF EXPOSED REINFORCEMENT AND CONCRETE IS REQUIRED.
    - A. USE OF HIGH-PRESSURE WATER OR ABRASIVE BLASTING IS REQUIRED TO REMOVE LOOSE AND BOND-INHIBITING MATERIALS.

PROCEDURES TO LOCATE & PREPARE REPAIR AREAS  
WITHIN CONCRETE SLABS



BARBER & HOFFMAN, INC.



BARBER & HOFFMAN, INC.  
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PROJECT NAME  
WARREN G. HARDING  
HS HOME BLEACHER  
MAINTENANCE -  
PHASE 1

PROJECT ADDRESS  
860 ELM ROAD NE  
WARREN, OHIO 44483

No.	Date	Description
1	02/20/2025	FOR PERMIT AND CONSTRUCTION

DRAWN BY	LJP
CHECKED BY	MDH
DRAWING SCALE	As indicated
PROJECT NUMBER	24209

DRAWING TITLE  
CONCRETE REPAIR  
DETAILS

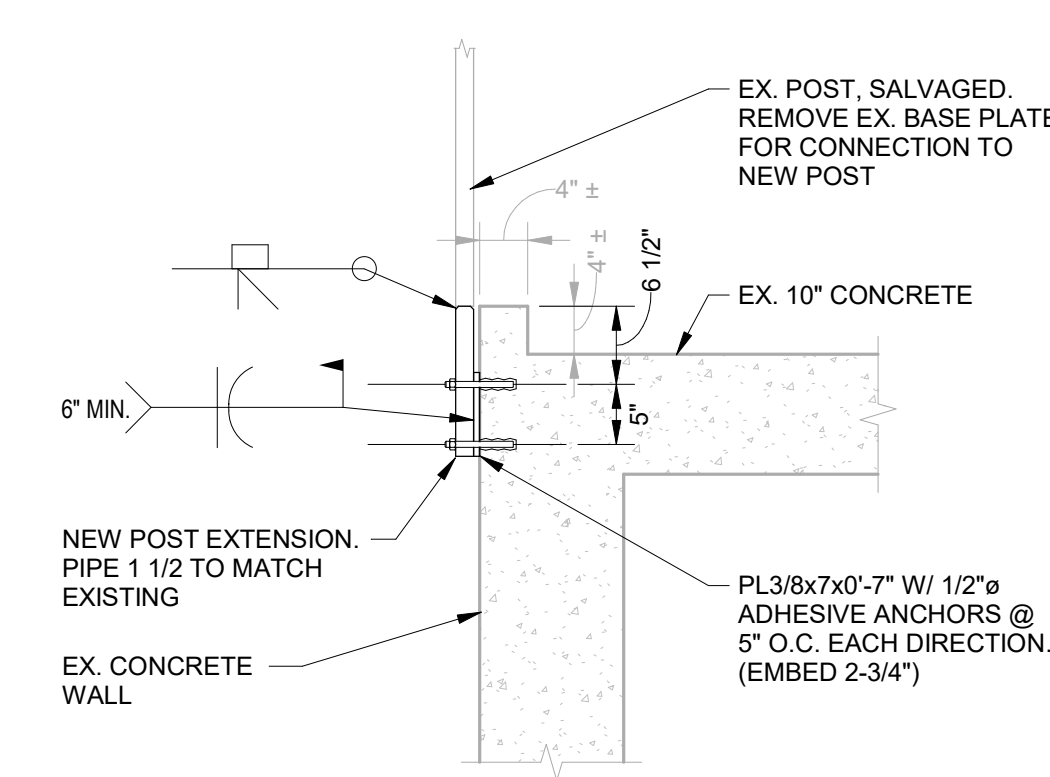
DATE Issue Date

DRAWING NUMBER

S200

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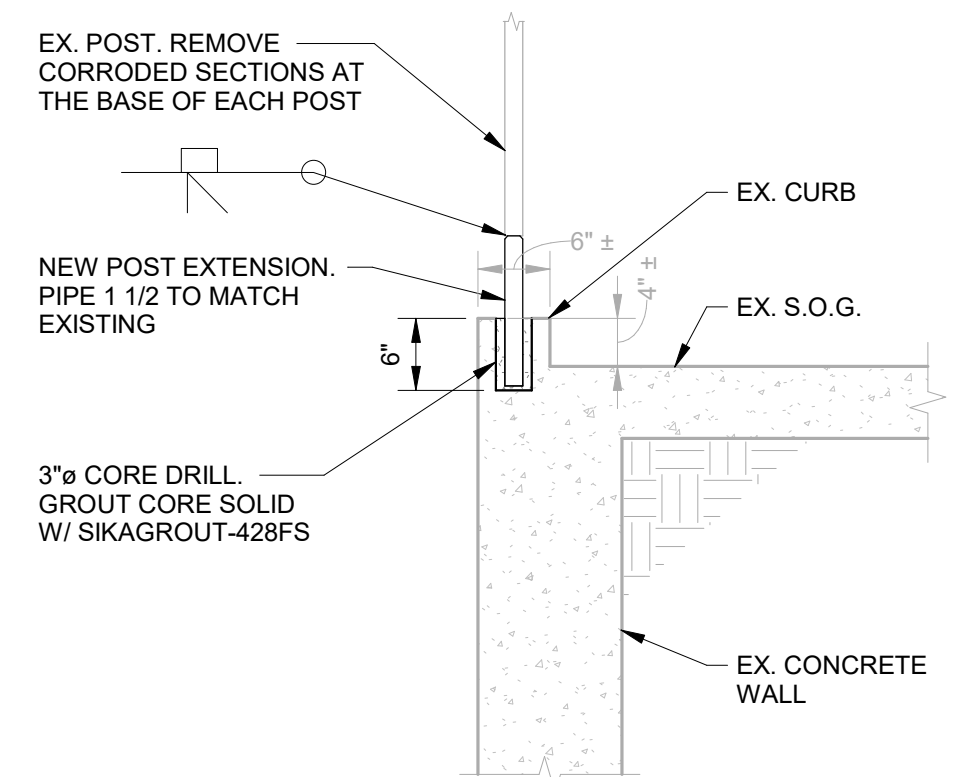




TYPICAL GUARDRAIL REPAIR AT BLEACHERS

BASE BID QUANTITY: 41 GUARDRAIL POSTS

SECTION 1  
3/4" = 1'-0"

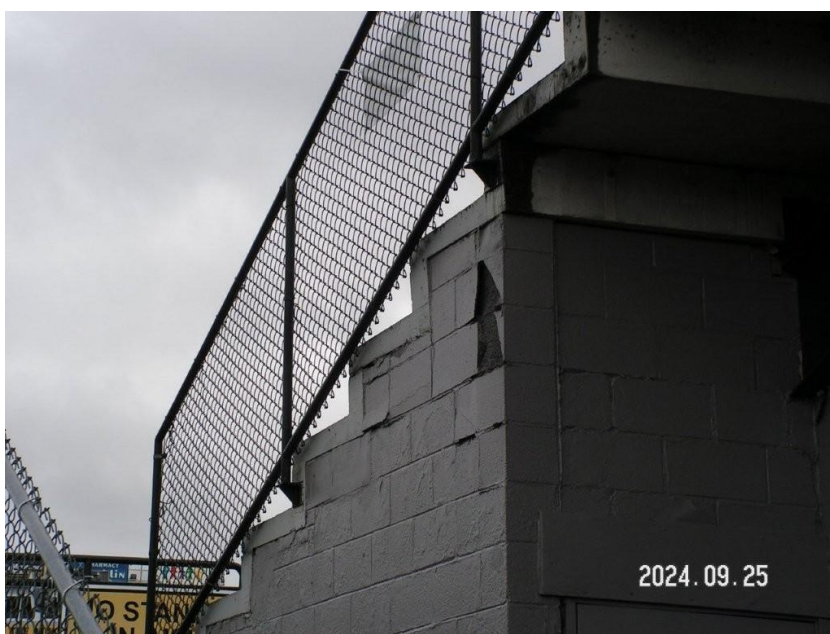


TYPICAL GUARDRAIL REPAIR AT RAMP

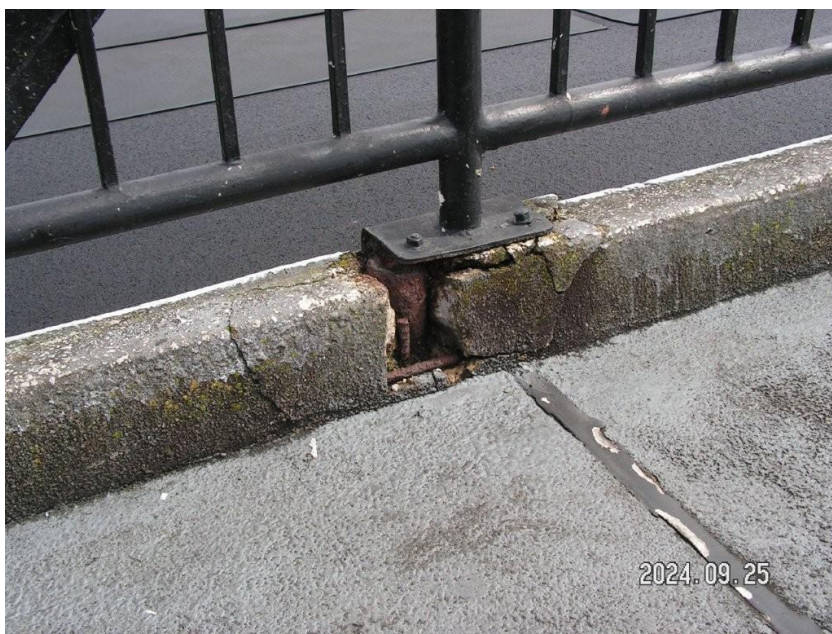
BASE BID QUANTITY: 37 GUARDRAIL POSTS

SECTION 2  
3/4" = 1'-0"

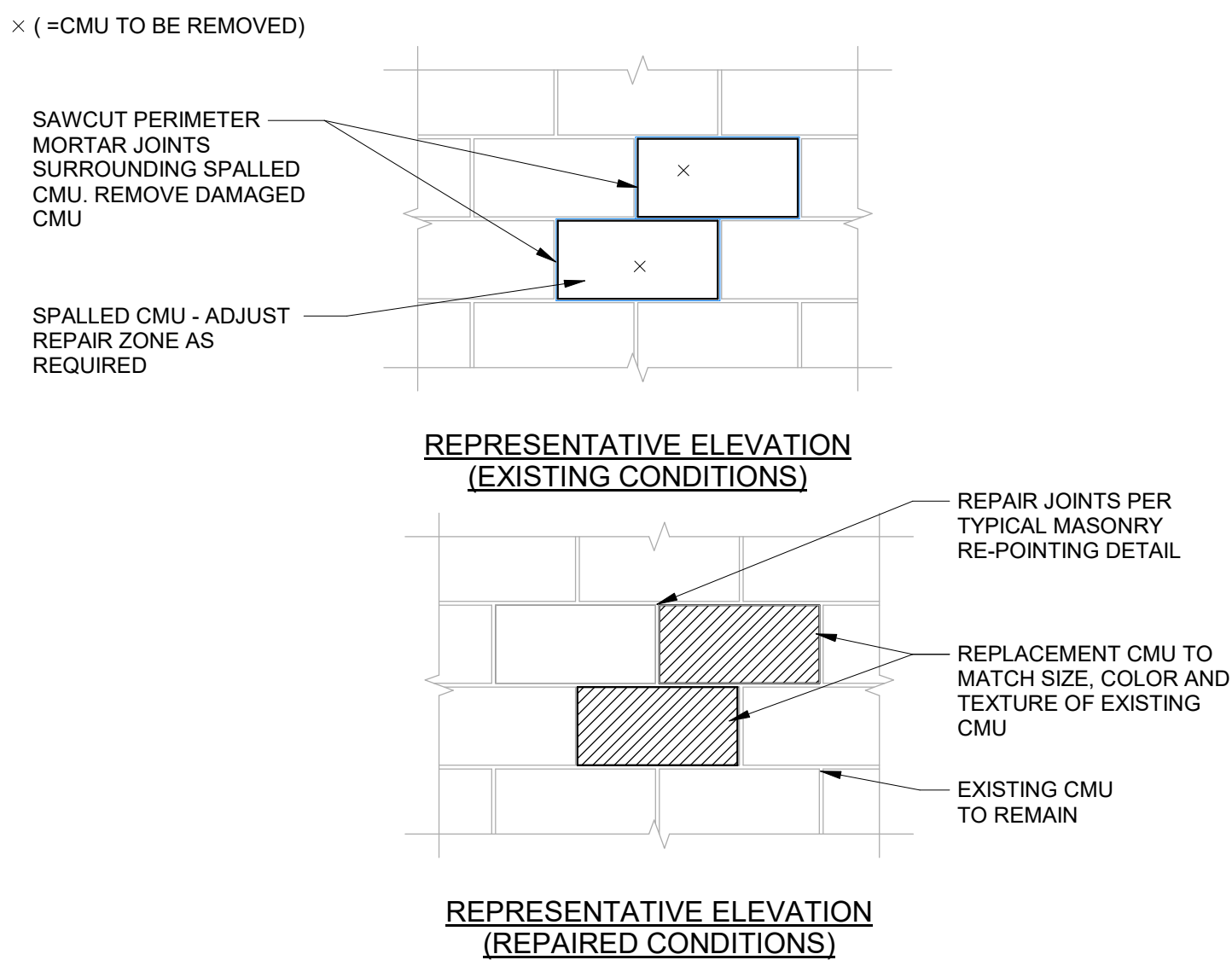
NOTE:  
BID QUANTITIES FOR GUARDRAIL POSTS SHOWN ARE AN ESTIMATE. DESIGN INTENT IS TO REPAIR AND/OR MODIFY ALL EXISTING GUARDRAIL POSTS AT HOME-SIDE BLEACHERS.



SITE CONDITION

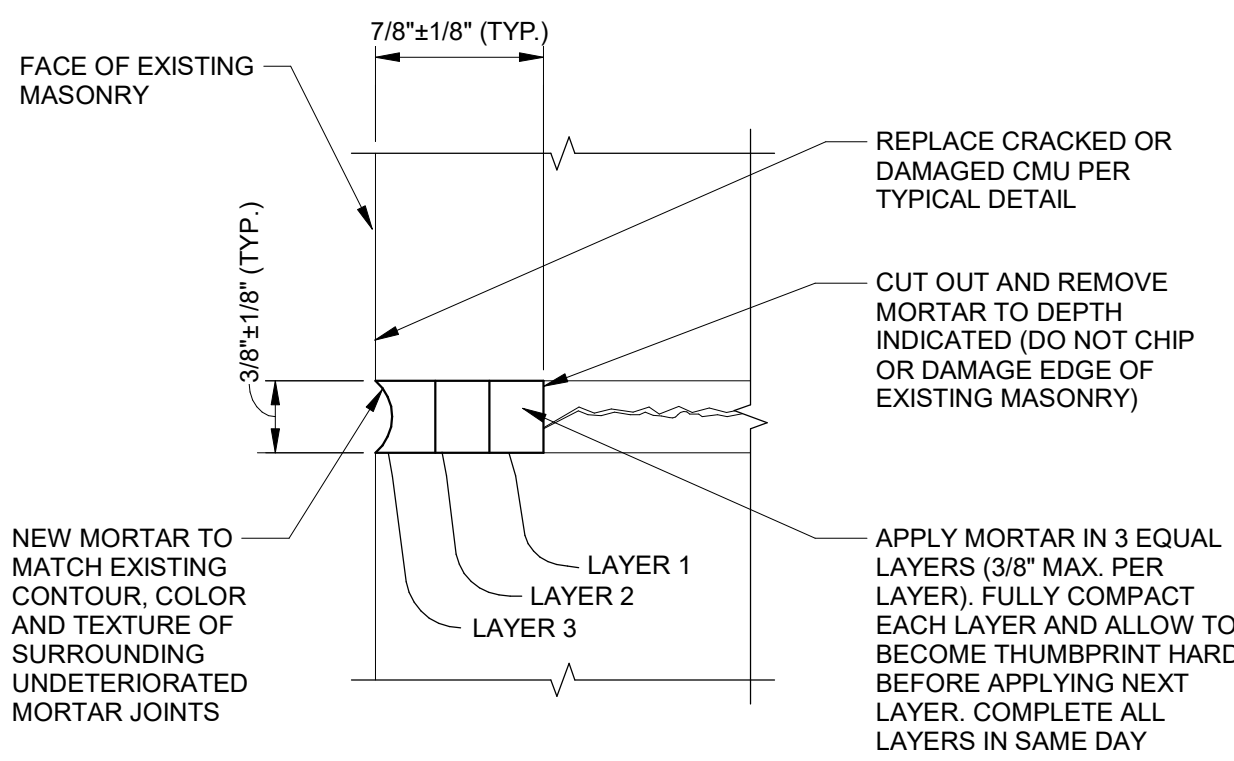


SITE CONDITION



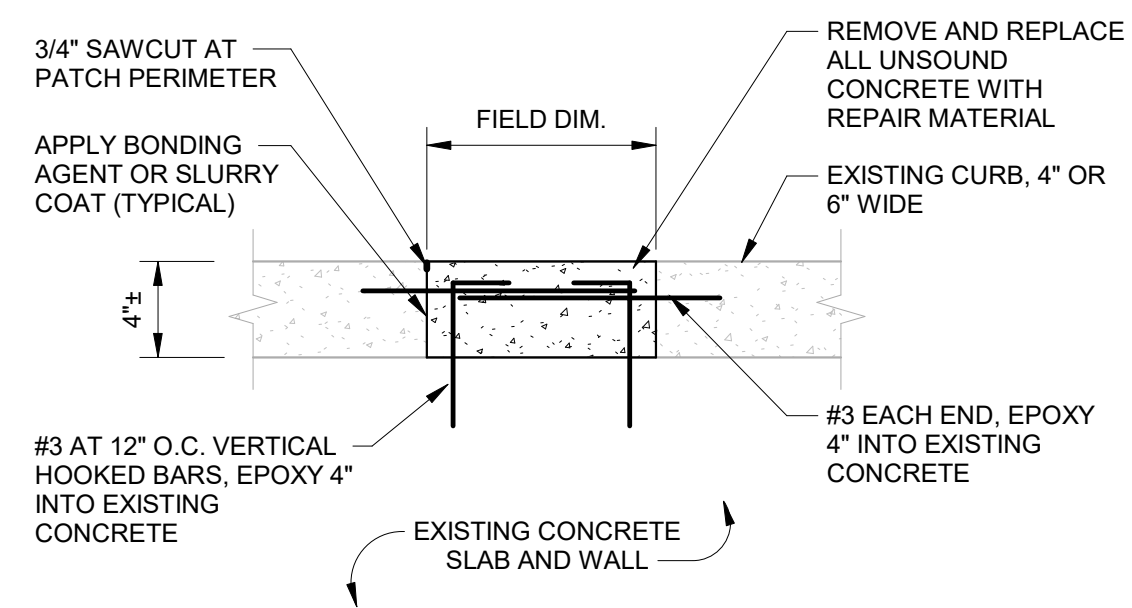
12.1 SPALLED CMU REPLACEMENT DETAIL  
NOT TO SCALE

BASE BID QUANTITY: 15 SQUARE FEET



NOTES:  
1. SEE PRODUCT MANUFACTURER'S TECHNICAL DATA SHEETS FOR SURFACE PREPARATION, APPLICATION PROCEDURES, AND JOINT SIZE LIMITATIONS.

12.2 MASONRY RE-POINTING  
NOT TO SCALE

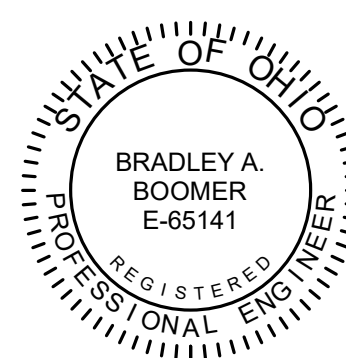


NOTES:  
1. CONTRACTOR IS RESPONSIBLE FOR DESIGN AND INSTALLATION OF SHORES (AS REQUIRED) PRIOR TO ANY CONCRETE REMOVAL.  
2. NUMBER AND LOCATION OF REINFORCEMENT SHOWN MAY DIFFER FROM ACTUAL FIELD CONDITIONS.  
3. ADDITIONAL REINFORCEMENT (OTHER THAN SHOWN IN DETAIL) TO BE ADDED AS DIRECTED BY THE ENGINEER.  
4. SEE SPECIFICATIONS FOR APPROVED MATERIALS AND ADDITIONAL REPAIR PROCEDURES.  
5. SEE PRODUCT MANUFACTURER'S TECHNICAL DATA SHEETS FOR MIXING, SURFACE PREPARATION, APPLICATION PROCEDURES, AND CURING.  
6. ALL REINFORCING TO BE GALVANIZED.  
7. REINFORCING BARS OR TIES WHICH HAVE LOST MORE THAN 15% OF ORIGINAL CROSS SECTIONAL AREA SHALL BE SUPPLEMENTED AS ENGINEER DIRECTS.

14.1 CONCRETE CURB REPAIR

BASE BID QUANTITY: 80 LINEAL FEET

SEAL



BARBER & HOFFMAN, INC.



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PROJECT NAME  
**WARREN G. HARDING  
HS HOME BLEACHER  
MAINTENANCE -  
PHASE 1**

PROJECT ADDRESS  
**860 ELM ROAD NE  
WARREN, OHIO 44483**

No.	Date	Description
1	02/20/2025	FOR PERMIT AND CONSTRUCTION

DRAWN BY	Author
CHECKED BY	Checker
DRAWING SCALE	As indicated
PROJECT NUMBER	24209

DRAWING TITLE  
**MASONRY, CURB,  
AND GUARDRAIL  
REPAIR DETAILS**

DATE Issue Date

DRAWING NUMBER

**S201**

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## SECTION 012200 - UNIT PRICES

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. Section includes administrative and procedural requirements for unit prices.
- B. Related Requirements:
  - 1. Section 012100 "Allowances" for procedures for using unit prices to adjust quantity allowances.
  - 2. Section 012600 "Contract Modification Procedures" for procedures for submitting and handling Change Orders.
  - 3. Section 014000 "Quality Requirements" for field testing by an independent testing agency.

#### 1.3 DEFINITIONS

- A. Unit price is an amount incorporated into the Agreement, applicable during the duration of the Work as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, added to or deducted from the Contract Sum by appropriate modification, if the scope of Work or estimated quantities of Work required by the Contract Documents are increased or decreased.

#### 1.4 PROCEDURES

- A. Unit prices include all necessary material, plus cost for delivery, installation, insurance, applicable taxes, overhead, and profit.
- B. Measurement and Payment: See individual Specification Sections for work that requires establishment of unit prices. Methods of measurement and payment for unit prices are specified in those Sections.
- C. Owner reserves the right to reject Contractor's measurement of work-in-place that involves use of established unit prices and to have this work measured, at Owner's expense, by an independent surveyor acceptable to Contractor.
- D. List of Unit Prices: A schedule of unit prices is included in Part 3. Specification Sections referenced in the Part 3 "Schedule of Unit Prices" Article contain requirements for materials described under each unit price.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF UNIT PRICES

- A. Unit Price No. 1: Concrete Slab Topside Repair (Partial Depth).
  - 1. Description: This Work consists of furnishing all labor, materials, equipment, supervision and incidentals necessary to locate existing spalls, locate and remove delaminated and unsound concrete, prepare remaining surfaces to install patching material to restore concrete slab surface to original condition and appearance.
  - 2. Unit of Measurement: Square Foot (SF).
- B. Unit Price No. 2: Concrete Slab Underside Repair (Partial Depth).
  - 1. Description: This Work consists of furnishing all labor, materials, equipment, supervision and incidentals necessary to locate existing spalls, locate and remove delaminated and unsound concrete, prepare remaining surfaces to install patching material to restore concrete slab to original condition and appearance.
  - 2. Unit of Measurement: Square Foot (SF).
- C. Unit Price No. 3: Concrete Slab Edge Repair.
  - 1. Description: This Work consists of furnishing all labor, materials, equipment, supervision and incidentals necessary to locate existing spalls, locate and remove delaminated and unsound concrete, prepare remaining surfaces to install patching material to restore concrete slab edge to original condition and appearance.
  - 2. Unit of Measurement: Lineal Foot (LF).
- D. Unit Price No. 4: Concrete Wall Repair.
  - 1. Description: This Work consists of furnishing all labor, materials, equipment, supervision and incidentals necessary to locate existing spalls, locate and remove delaminated and unsound concrete, prepare remaining surfaces to install patching material to restore concrete walls to original condition and appearance.
  - 2. Unit of Measurement: Square Foot (SF).
- E. Unit Price No. 5: Rout and Seal Random Cracks.
  - 1. Description: This Work consists of furnishing all labor, materials, equipment, supervision and incidentals necessary to locate, prepare and seal random cracks in concrete surfaces according to Drawings and Specifications.
  - 2. Unit of Measurement: Lineal Foot (LF).
- F. Unit Price No. 6: Joint Sealants
  - 1. Description: This Work consists of furnishing all labor, materials, equipment, supervision and incidentals necessary to locate and mark failed joint sealant, remove existing sealant, prepare edges, prepare edges, install backer rod and reseal joints.
  - 2. Unit of Measurement: Lineal Foot (LF).
- G. Unit Price No. 7: Spalled CMU Replacement
  - 1. Description: This Work consists of furnishing all labor, materials, equipment, supervision and incidentals necessary to locate and remove delaminated and unsound masonry block,

Warren G. Harding High School  
**Home Bleacher Repair and Renovation – Phase 1**

prepare remaining block and install patching material to restore the masonry to original condition and appearance according to Drawings and Specifications.

2. Unit of Measurement: Square Foot (SF).

H. Unit Price No. 8: Masonry Re-pointing

1. Description: This Work consists of furnishing all labor, materials, equipment, supervision and incidentals necessary to locate deterioration in masonry mortar joints, remove deteriorated mortar, clean/prepare substrate and point the joints with fresh mortar to match original color, texture and profile.
2. Unit of Measurement: Lineal Foot (LF).

I. Unit Price No. 9: Concrete Curb Repair.

1. Description: This Work consists of furnishing all labor, materials, equipment, supervision and incidentals necessary to locate existing spalls, locate and remove delaminated and unsound concrete, prepare remaining surfaces to install patching material to restore concrete curbs to original condition and appearance.
2. Unit of Measurement: Lineal Foot (LF).

END OF SECTION 012200



SECTION 030130 – REPAIR OF STRUCTURAL CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Work on the project shall conform to all requirements of ACI 563-18 “Specifications for Repair of Concrete in Buildings” published by the American Concrete Institute, Farmington Hills, Michigan, except as specifically modified by the Contract Documents.

1.2 SUMMARY

- A. Section Includes:
  - 1. Removal of deteriorated concrete and subsequent replacement and patching including shoring requirements.
  - 2. Reinforcement used in concrete repairs.
  - 3. Construction Sequencing

1.3 ALLOWANCES

- A. Field quality-control testing is part of testing and inspecting allowance.
- B. Quantity Allowance: Include 500 pounds of additional galvanized reinforcement for structural repairs as directed by the engineer.
- C. Lump-Sum Allowance: Include \$5,000 for miscellaneous electrical work as required for facilitating concrete repairs.
- D. Contingency Allowance: Include a contingency allowance of 15% of total base bid construction cost for use according to Owner's written instructions.

1.4 UNIT PRICES

- A. Work of this Section is affected by unit prices specified in Section 012200 "Unit Prices."
  - 1. Unit prices apply to authorized work covered by estimated quantities.
  - 2. Unit prices apply to authorized additions to and deletions from the Work as authorized by Change Orders.
- B. General: Unit prices include the cost of preparing existing construction to receive the work indicated and costs of field quality control required for units of work completed.

1.5 PREINSTALLATION MEETINGS

A. Preinstallation Conference.

1. Review methods and procedures related to concrete repairs including, but not limited to, the following:
  - a. Verify concrete-repair specialist's personnel, equipment, and facilities needed to make progress and avoid delays.
  - b. Materials, material application, sequencing, tolerances, and required clearances.
  - c. Quality-control program.
  - d. Coordination with building occupants.
  - e. Cold and hot weather procedures.

1.6 ACTION SUBMITTALS

A. Submittals: As defined in ACI 563.

B. Product Data: For each type of product.

1. Include construction details, material descriptions, chemical composition, physical properties, test data, and mixing, preparation, and application instructions.

1.7 INFORMATIONAL SUBMITTALS

A. Qualification Data: For concrete-repair specialist.

B. Material Certificates: For reinforcement and each type of portland cement and aggregate supplied for mixing or adding to products at Project site.

C. Product Test Reports: For each manufactured bonding agent, cementitious patching mortar and crack-injection adhesive, for tests performed by manufacturer and witnessed by a qualified testing agency.

D. Cold and hot weather concreting procedures.

E. Written procedures for each work item indicated.

F. Field quality-control reports.

G. Quality-Control Program: Submit before work begins.

H. Meeting minutes: Contractor shall record minutes of all meetings, and provide typed minutes distributed to all parties concerned within 5 days of the meeting.

1.8 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Each manufactured product listed manufacturer shall employ factory-authorized service representatives who are available for consultation and Project-site inspection and on-site assistance.
- B. Concrete-Repair Specialist Qualifications: Engage an experienced concrete-repair firm that employs installers and supervisors who are trained and approved by manufacturers to apply packaged patching-mortar and each manufactured product listed to perform work of this Section. Firm shall have completed work similar in material, design, and extent to that indicated for this Project with a record of successful in-service performance. Experience in only installing or patching new concrete is insufficient experience for concrete-repair work.
  - 1. Field Supervision: Concrete-repair specialist firm shall maintain experienced full-time supervisors on Project site during times that concrete-repair work is in progress.
- C. Quality-Control Program: Prepare a written plan for concrete repair to systematically demonstrate the ability of personnel to properly perform repair work, including each phase or process, protection of surrounding materials during operations, and control of debris and runoff during the Work. Describe in detail materials, methods, equipment, and sequence of operations to be used for each phase of the Work.
- D. Documents required on site:
  - 1. Copies of ACI 563-18 “Specifications for Repair of Concrete in Buildings”.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Comply with manufacturers’ written instructions for minimum and maximum temperature requirements and other conditions for storage.
- B. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage. Avoid damaging coatings on steel reinforcement.
- C. Store cementitious materials off the ground, under cover, and in a dry location.
- D. Store aggregates covered and in a dry location; maintain grading and other required characteristics and prevent contamination.

1.10 FIELD CONDITIONS

- A. Environmental Limitations for Epoxies: Do not apply when air and substrate temperatures are outside limits permitted by manufacturer.
- B. Cold-Weather Requirements for Concrete: Comply with ACI 563 and ACI 306.1.
- C. Cold-Weather Requirements for Proprietary Cementitious and Polymer Repair Material: Comply with Manufacturer’s requirements.

- D. Hot-Weather Requirements for Concrete: Comply with ACI 563 and ACI 305.1.
- E. Hot-Weather Requirements for Proprietary Cementitious and Polymer Repair Material: Comply with Manufacturer's requirements.

#### 1.11 WARRANTY

- A. The contractor shall furnish a written performance warranty that the repaired areas will be free of defects related to workmanship or material deficiency for a two-year period from the date of completion. Spalls, delamination, cracks, and scaling shall be specifically covered under the warranty.

### PART 2 - PRODUCTS

#### 2.1 MANUFACTURERS

- A. Source Limitations: For repair products, obtain each color, grade, finish, type, and variety of product from single source and from single manufacturer with resources to provide products of consistent quality in appearance and physical properties.
- B. Proprietary Cementitious and Polymer Repair Material products shall be manufactured by one of the following:
  - 1. Master Builders Solutions; an MBCC company
  - 2. ChemMasters, Inc.
  - 3. Euclid Chemical Company (The); an RPM company
  - 4. MAPEI Corporation
  - 5. Sika Corporation

#### 2.2 STEEL REINFORCEMENT

- A. Reinforcing Bars: ASTM A 615, Grade 60, deformed.
- B. Low-Alloy-Steel Reinforcing Bars: ASTM A 706, deformed.
- C. Galvanized Reinforcing Bars: ASTM A 615, Grade 60, deformed bars, ASTM A 767, Class II zinc coated after fabrication and bending.
- D. Galvanized-Steel Welded-Wire Reinforcement: ASTM A 1064, plain, fabricated from galvanized-steel wire into flat sheets.

#### 2.3 REINFORCEMENT ACCESSORIES

- A. Zinc Repair Material: ASTM A 780.
- B. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded-wire reinforcement in place. Manufacture bar supports from steel

wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:

1. For concrete surfaces exposed to view, where legs of wire bar support contact forms, use CRSI Class 1 plastic-protected steel wire or CRSI Class 2 stainless-steel bar supports.
  2. For zinc-coated reinforcement, use galvanized wire bar supports.
- C. Existing reinforcement and embedment's corrosion-protection material:
1. Corrosion-Inhibiting Cementitious Mortar: Single component mortar based on polymers in water dispersion, cement binders and corrosion inhibitors.

## 2.4 CURING MATERIALS

- A. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.
- B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- C. Water: Potable.
- D. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, dissipating.

## 2.5 BONDING AGENTS

- A. Epoxy-Modified, Cementitious Bonding and Anticorrosion Agent: Manufactured product that consists of water-insensitive epoxy adhesive, portland cement, and water-based solution of corrosion-inhibiting chemicals that forms a protective film on steel reinforcement.
- B. Epoxy Bonding Agent: ASTM C881, bonding system Type V and free of VOCs.
- C. Scrub Coat: Mix per repair material manufacturer recommendations.

## 2.6 PROPRIETARY CEMENTITIOUS AND POLYMER REPAIR MATERIAL

- A. Proprietary Cementitious and Polymer Repair Material (Repair Materials) Requirements:
  1. Only use repair materials that are recommended by manufacturer for each applicable horizontal, vertical, or overhead use orientation
  2. Only use repair materials that are recommended by manufacturer for each application method, hand applied, form-and-pour, and form-and-pump.
  3. Color and Aggregate Texture: Provide repair materials and aggregates of colors and sizes necessary to produce repair material that matches existing, adjacent, exposed concrete. Blend several aggregates if necessary to achieve suitable matches.
  4. Coarse Aggregate for Repair Material: ASTM C33, washed aggregate. Add to repair material mix only as permitted by repair material manufacturer.
- B. Cementitious Repair Material: Packaged, dry mix for repair of concrete.

1. Compressive Strength: Not less than 5000 psi at 28 days when tested according to ASTM C109.
- C. Rapid-Strengthening, Cementitious Repair Material: Packaged, dry mix, ASTM C928 for repair of concrete.
- D. Polymer-Modified, Silica-Fume-Enhanced, Cementitious Repair Material: Packaged, dry mix for repair of concrete and that contains silica fume complying with ASTM C1240 and a non-redispersible latex additive as either a dry powder or a separate liquid that is added during mixing.
  1. Compressive Strength: Not less than 5000 psi at 28 days when tested according to ASTM C109.

## 2.7 MISCELLANEOUS MATERIALS

- A. Portland Cement: ASTM C150, Type I, II, or III unless otherwise indicated.
- B. Silica Fume: ASTM 1240.
- C. Water: Potable.

## 2.8 MIXES

- A. General: Mix products in clean containers, according to manufacturer's written instructions.
  1. Do not add water, thinners, or additives unless recommended by manufacturer.
  2. When practical, use manufacturer's premeasured packages to ensure that materials are mixed in proper proportions. When premeasured packages are not used, measure ingredients using graduated measuring containers; do not estimate quantities or use shovel or trowel as unit of measure.
  3. Do not mix more materials than can be used within time limits recommended by manufacturer. Discard materials that have begun to set.
- B. Scrub Coat: Mix dry ingredients with enough water to provide consistency of thick cream, as directed by the repair material manufacturer.
- C. Concrete: Design Mixtures shall meet the requirements of ACI 563 and the following requirements:
  1. Sulfate Resistance Exposure Category: S0.
  2. Freezing-and-thawing Exposure Category: F3.
  3. Low-permeability concrete Exposure Category: W1.
  4. Chloride Exposure Category: C2.
  5. Maximum Water-Cementitious Materials Ratio: 0.40.
  6. Minimum Silica Fume: 5% of Cementitious Materials.
  7. Minimum Compressive Strength: 5,000 psi.
  8. Minimum Bond Strength: 175 psi.

## PART 3 - EXECUTION

### 3.1 CONCRETE REPAIRS

- A. Have concrete-repair work performed only by qualified concrete-repair specialist.
- B. Work only in areas permitted by the Owner and within the Owner approved schedule.
- C. Comply with manufacturers' written instructions for surface preparation and product application.

### 3.2 EXAMINATION

- A. Notify Engineer seven days in advance of dates when areas of deteriorated or delaminated concrete and deteriorated reinforcing bars will be located.
- B. Locate areas of deteriorated or delaminated concrete using hammer or chain-drag sounding and mark boundaries. Mark areas for removal by simplifying and squaring off boundaries as indicated on the drawings. At columns and walls make boundaries level and plumb unless otherwise indicated.
- C. Pachometer Testing: Locate at least three reinforcing bars using a pachometer, and drill test holes to determine depth of cover. Calibrate pachometer using depth of cover measurements and verify depth of cover in removal areas using pachometer.
- D. Perform surveys as the Work progresses to detect hazards resulting from concrete-repair work.

### 3.3 PREPARATION

- A. Ensure that supervisory personnel are on-site and on duty when concrete repair work begins and during its progress.
- B. Protect persons, motor vehicles, surrounding surfaces of building being repaired, building site, plants, and surrounding buildings from harm resulting from concrete repair work.
  - 1. Comply with each product manufacturer's written instructions for protections and precautions. Protect against adverse effects of products and procedures on people and adjacent materials, components, and vegetation.
  - 2. Use only proven protection methods appropriate to each area and surface being protected.
  - 3. Provide temporary barricades, barriers, and directional signage to exclude public from areas where concrete repair work is being performed.
  - 4. Erect temporary protective covers over walkways and at points of pedestrian and vehicular entrance and exit that must remain in service during course of concrete repair work.
  - 5. Contain dust and debris generated by concrete repair work and prevent it from reaching the public or adjacent surfaces.

6. Use water-mist sprinkling and other wet methods to control dust only with adequate, approved procedures and equipment that ensure that such water will not create a hazard or adversely affect other building areas or materials.
  7. Protect floors and other surfaces along haul routes from damage, wear, and staining.
  8. Protect adjacent surfaces and equipment by covering them with heavy polyethylene film and waterproof masking tape. If practical, remove items, store, and reinstall after potentially damaging operations are complete.
  9. Neutralize and collect alkaline and acid wastes for disposal off Owner's property.
  10. Dispose of debris and runoff from operations by legal means and in a manner that prevents soil erosion, undermining of paving and foundations, damage to landscaping, and water penetration into building interiors.
- C. Existing Drains: Prior to the start of work in an area, test drainage system to ensure that it is functioning properly. Notify Owner immediately of inadequate drainage or blockage. Do not begin work in an area until the drainage system is in working order.
1. Prevent solids such as aggregate or mortar residue from entering the drainage system. Clean out drains and drain lines that become sluggish or blocked by sand or other materials resulting from concrete repair work.
  2. Protect drains from pollutants. Block drains or filter out sediments, allowing only clean water to pass.
- D. Preparation for Concrete Removal: Examine construction to be repaired to determine best methods to safely and effectively perform concrete repair work. Examine adjacent work to determine what protective measures will be necessary. Make explorations, probes, and inquiries as necessary to determine condition of construction to be removed in the course of repair.
1. Verify that affected utilities have been disconnected and capped.
  2. Inventory and record the condition of items to be removed for reinstallation or salvage.
  3. Provide and maintain shoring, bracing, and temporary structural supports as required to preserve stability and prevent unexpected or uncontrolled movement, settlement, or collapse of construction being demolished and construction and finishes to remain. Strengthen or add new supports when required during progress of removal work.
    - a. Comply with ACI 563 for design, installation, and removal of shoring, bracing and reshoring.
      - 1) Design shoring and bracing for dead load and minimum construction load of 20 pounds per square foot over the floor area of member being repaired. Where vehicular traffic is to be maintained on portions of the structure being shored, a minimum live load of 40 pounds per square foot shall be used in the design of the shoring and bracing.
- E. Reinforcement and Embedment Preparation: Remove loose and flaking rust from exposed reinforcement and metal embedment by abrasive blast cleaning or wire brushing until only tightly adhered light rust remains.
1. Do not remove any reinforcement unless directed to by the Engineer.
  2. Where section loss of reinforcing bars is more than 15 percent, add supplemental reinforcement as indicated on Drawings.
  3. Where embedments are damaged, or corroded beyond repair, replace to match existing.



4. Remove additional concrete as necessary to provide at least 3/4-inch clearance at existing and replacement bars.
5. Splice replacement bars to existing bars according to ACI 318 by lapping, or using mechanical couplings.
6. Coat cleaned and exposed reinforcement and metal embedments with Corrosion-protection material per manufacturer's recommendations.
7. Means of cleaning corrosion from reinforcement and metal embedments shall be per the Corrosion-protection material manufacturer's recommendations.

### 3.4 REMOVAL OF CONCRETE

- A. Do not overload structural elements with debris.
- B. Saw-cut perimeter of areas indicated for removal to a depth of at least 3/4 inch. Make cuts perpendicular to concrete surfaces and no deeper than cover on reinforcement.
- C. Remove deteriorated and delaminated concrete by breaking up and dislodging from reinforcement.
- D. Remove additional concrete if necessary to provide a depth of removal of at least 1/2 inch over entire removal area.
- E. Where half or more of the perimeter of reinforcing bar is exposed, bond between reinforcing bar and surrounding concrete is broken, or reinforcing bar is corroded, remove concrete from entire perimeter of bar and to provide at least 3/4-inch clearance around bar.
- F. Test areas where concrete has been removed by tapping with hammer and remove additional concrete until unsound and disbonded concrete is completely removed.
- G. Roughen surface of concrete to produce a minimum surface profile matching CSP 6 according to ICRI 310.2. At columns and walls, make top and bottom surfaces level.
- H. Thoroughly clean removal areas of loose concrete, dust, debris, and bond-inhibiting materials.
- I. Concrete Column Limitations:
  1. Do not remove concrete behind column vertical reinforcement beyond one tie spacing without consulting the Engineer.
  2. Do not remove concrete in front of column vertical reinforcement beyond two tie spaces if column ties are deteriorated more than 25 percent of area without consulting the Engineer.

### 3.5 APPLICATION OF BONDING AGENT OR SCRUB COATS

- A. Epoxy Bonding Agent: Apply to concrete by brush, roller, or spray according to manufacturer's written instructions, leaving no pinholes or other uncoated areas. Place repair material or concrete while epoxy is still tacky. If epoxy dries, recoat before placing repair material or concrete.

B. Scrub Coat for Repair Materials:

1. Place scrub coat as specified in this article unless otherwise recommended in writing by the manufacturer.
2. Wet substrate thoroughly and then remove standing water, for a surface saturated dry condition.
3. Scrub neat repair material mixed with latex bonding agent into substrate, filling pores and voids.
4. Do not allow the scrub coat to dry.

3.6 INSTALLATION OF REPAIR MATERIALS

A. Installation by Hand Application:

1. The contractor shall familiarize themselves with ACI RAP-6 “Vertical and Overhead Spall Repair by Hand Application”.
2. Place repair material as specified in this article unless otherwise recommended in writing by manufacturer.
3. Pretreatment: Apply specified bonding agent or scrub coat as recommended by the repair material manufacturer.
4. General Placement: Place repair material as recommended by the repair material manufacturer.
5. Vertical and Overhead Patching: Place material in lifts of not more than or less than as recommended by the repair material manufacturer. Do not feather edge.
6. Consolidation: After each lift is placed, consolidate material and screed surface.
7. Multiple Lifts: Where multiple lifts are used, score surface of lifts to provide a rough surface for placing subsequent lifts. Allow each lift to reach final set before placing subsequent lifts.
8. Finishing: Allow surface to become firm and then finish to a Surface finish-2.0 (SF-2.0) per ACI 563.
9. Curing: Cure repair material as recommended by the repair material manufacturer.

B. Installation by Form-and-Pour Application:

1. The contractor shall familiarize themselves with ACI RAP-4 “Surface Repair Using Form-and-Pour Techniques”.
2. Place repair material as specified in this article unless otherwise recommended in writing by manufacturer.
3. Forming: Provide forms as necessary to confine patch to required shape.
4. Pretreatment: Apply specified bonding agent or scrub coat as recommended by the repair material manufacturer.
5. General Placement: Place and consolidate repair material as recommended by the repair material manufacturer.
6. At unformed surfaces, screed repair material to produce a surface that when finished will match required profile and surrounding concrete.
7. Finishing:
  - a. Finish unformed surface to match adjacent concrete and per ACI 563.
  - b. Finish formed surfaces to a Surface finish-2.0 (SF-2.0) per ACI 563.

8. Curing: Cure repair material as recommended by the repair material manufacturer.

C. Installation by Form-and-Pump Application:

1. The contractor shall familiarize themselves with ACI RAP-5 “Surface Repair Using Form-and-Pump Techniques”.
2. Place repair material as specified in this article unless otherwise recommended in writing by manufacturer.
3. Forming:
  - a. Provide forms as necessary to confine patch to required shape.
  - b. Design and construct forms to resist pumping pressure in addition to weight of wet repair material. Seal joints and seams in forms and where forms abut existing concrete.
4. Pretreatment: Apply specified bonding agent or scrub coat as recommended by the repair material manufacturer.
5. General Placement: Pump and consolidate repair material as recommended by the repair material manufacturer.
6. Finish formed surfaces to a Surface finish-2.0 (SF-2.0) per ACI 563.
7. Curing: Cure repair material as recommended by the repair material manufacturer.

### 3.7 CONCRETE PLACEMENT

A. Installation by Form and Pour Application:

1. The contractor shall familiarize themselves with ACI RAP-4 “Surface Repair Using Form-and-Pour Techniques”.
2. Forming: Provide forms as necessary to confine patch to required shape.
3. Pretreatment: Apply epoxy-modified, cementitious bonding and anticorrosion agent or epoxy bonding agent to concrete substrate.
4. General Placement: Place concrete according to ACI 563 and as specified in this article.
  - a. Consolidate concrete according to ACI 563.
5. At unformed surfaces, screed concrete to produce a surface that when finished will match required profile and surrounding concrete.
6. Finishing:
  - a. Finish unformed surface to match adjacent concrete and per ACI 563.
  - b. Finish formed surfaces to a Surface finish-2.0 (SF-2.0) per ACI 563.
7. Curing: Wet-cure concrete for not less than seven days by leaving forms in place or other means per ACI 563.

B. Installation by Form and Pump Application:

1. The contractor shall familiarize themselves with ACI RAP-5 “Surface Repair Using Form-and-Pump Techniques”.
2. Forming:

- a. Provide forms as necessary to confine patch to required shape.
  - b. Design and construct forms to resist pumping pressure in addition to weight of wet concrete. Seal joints and seams in forms and where forms abut existing concrete.
3. Pretreatment: Apply epoxy-modified, cementitious bonding and anticorrosion agent or epoxy bonding agent to concrete substrate.
4. General Placement: Place concrete according to ACI 563 and as specified in this article.
  - a. Pump concrete into place from bottom to top, releasing air from forms as repair material is introduced. When formed space is full, close air vents and pressurize to a minimum of 14 psi.
  - b. Consolidate concrete according to ACI 563.
5. Finish formed surfaces to a Surface finish-2.0 (SF-2.0) per ACI 563.
6. Curing: Wet-cure concrete for not less than seven days by leaving forms in place or other means per ACI 563.

### 3.8 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
- B. Perform the following tests and inspections:
  1. Packaged, Cementitious Repair Material: **Three** randomly selected sets of samples for each type of material required, tested according to ASTM C928.
  2. Job-Mixed Patching Mortar: Three randomly selected sets of samples for each type of mortar required, tested for compressive strength according to ASTM C109.
  3. Concrete: As specified in ACI 563.
    - a. Tests shall be randomly selected once per day or for every 50 cu/yd of concrete.
  4. Bond strength verification: Per ICRI 210.3, “Guide to Using In-Situ Tensile Pull-Off Test to Evaluate Bond of Concrete Surface Materials” or ASTM C1583 “Standard Test Method for Tensile Strength of Concrete Surfaces and the Bond Strength or Tensile Strength of Concrete Repair and Overlay Materials by Direct Tension (Pull-off Method).
    - a. A minimum of two tests for each repair material and concrete mix used in a form-and-pour or form-and-pump application.
- C. Product will be considered defective if it does not pass tests and inspections.
- D. Prepare test and inspection reports.
- E. Manufacturers Field Service: Engage manufacturers' factory-authorized service representatives for consultation and Project-site inspection and to provide on-site assistance when requested by Engineer.
  1. Have manufacturers' factory-authorized service representatives perform the following number of Project-site inspections to observe progress and quality of the Work,

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distributed over the period of product installation, regardless of on-site assistance requested by Engineer:

- a. Bonding-Agent and Repair Material Installation: Three inspections.
- b. Crack-Injection-Adhesive Preparation and Installation: Three inspections.

END OF SECTION 030130