RFB NO. 322005

CONSTRUCTION DOCUMENTS
PROJECT MANUAL

DANE COUNTY DEPARTMENT OF ADMINISTRATION,
PUBLIC WORKS DIVISION

PUBLIC WORKS ENGINEERING DIVISION
1919 ALLIANT ENERGY CENTER WAY
MADISON, WISCONSIN 53713

REQUEST FOR BIDS NO. 322005
2022 CONCRETE RESTORATION - PHASE I
DANE COUNTY CAPITOL SQUARE SOUTH PARKING RAMP
113 SOUTH HENRY STREET
MADISON, WISCONSIN

ISSUED FOR BIDS: MARCH 1, 2022

Due Date / Time: **TUESDAY, APRIL 5, 2022 / 2:00 P.M.**

Location: **PUBLIC WORKS OFFICE**

Performance / Payment Bond: **100% OF CONTRACT AMOUNT**

Bid Deposit: **5% OF BID AMOUNT**

FOR INFORMATION ON THIS REQUEST FOR BIDS, PLEASE CONTACT:

ERIC URTES, AIA, PROJECT MANAGER
TELEPHONE NO.: 608/266-4798
FAX NO.: 608/267-1533
E-MAIL: urtes.eric@countyofdane.com

SECTION 00 01 07

SEALS PAGE

BID NO. 322005
PROJECT: 2022 CONCRETE RESTORATION – PHASE I
DANE COUNTY CAPITOL SQUARE SOUTH PARKING RAMP

STRUCTURAL ENGINEER
I hereby certify that this drawing, specification or report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Wisconsin.

Preston Baker - Registration No. 46297-6
Dated: March 1, 2022

SECTION 00 01 10

TABLE OF CONTENTS

DRAWINGS

Plot drawings on 22” x 34” (ANSI D) paper for correct scale or size.

S0.1	TITLE SHEET
S1.1	LEVEL 1 FLOOR PLAN
S1.2	LEVEL 1 OVERHEAD PLAN
S2.1	LEVEL 2 FLOOR PLAN
S2.2	LEVEL 2 OVERHEAD PLAN
S3.1	LEVEL 3 FLOOR PLAN
S3.2	LEVEL 3 OVERHEAD PLAN
S4.1	LEVEL 4 FLOOR PLAN
S4.2	LEVEL 4 OVERHEAD PLAN
S5.1	LEVEL 5 FLOOR PLAN
S5.2	LEVEL 5 OVERHEAD PLAN
S6.1	LEVEL 6 FLOOR PLAN
S6.2	LEVEL 6 OVERHEAD PLAN
S7.1	LEVEL 7 FLOOR PLAN
S8.1	CONCRETE REPAIR DETAILS
S8.1	CONCRETE REPAIR DETAILS
S9.1	DAS TYPE F ANODE LAYOUT PLAN
S9.2	TYPICAL DAS ANODE BOUNDARY PLACEMENT
S9.3	GALVASHIELD DAS ANODE TYPE F
S9.4	TYPICAL STRUCTURE CONNECTIONS
S9.5	STRUCTURE LAYOUT PLAN
S9.6	TYPICAL GALVASHIELD XP4 ANODE BOUNDARY PLACEMENT
S9.7	TYPICAL GALVANIC ANODE REPLACEMENT DETAILS
S9.8	GALVASHIELD XP4 CONNECTION NOTES
S9.9	GALVASHIELD XP4 CONNECTION INSTALL STEPS
S9.10	GALVASHIELD XP4 CONNECTION SECTIONS & DETAILS
S9.11	ANODE SPACING & QUANITITY SCHEDULES

SECTION 01 11 16

INVITATION TO BID

LEGAL NOTICE

Dane County Dept. of Administration, Public Works Division, 1919 Alliant Energy Center Way, Madison, WI 53713, will receive sealed Bids until:

2:00 P.M., TUESDAY, APRIL 5, 2022

RFB NO. 322005

2022 CONCRETE RESTORATION – PHASE I

DANE COUNTY CAPITOL SQUARE SOUTH PARKING RAMP

113 SOUTH HENRY STREET, MADISON, WI

Dane County is inviting Bids for construction services to provide parking ramp repair at Capitol Square South Parking Ramp. Only firms with capabilities, experience & expertise with similar projects should obtain this Request for Bids (RFB) document & submit Bids.

RFB document may be obtained after **2:00 p.m., March 1, 2022** from bids-pwht.countyofdane.com. Call Eric Urtes, AIA - Project Mgr., 608/266-4798, or email urtes.eric@countyofdane.com with any questions.

Bidders must be qualified as Best Value Contractor before Bid Due Date / Time. Complete Application at publicworks.countyofdane.com/bvc or call 608/267-0119.

Pre-bid facility tour will be Tuesday March 15, 2022 at 10:30 a.m. at the Dane County Capitol Square South Parking Ramp. Bidders are strongly encouraged to attend. See RFB for mandatory disease transmission prevention practices.

PUBLISH: MARCH 1 & MARCH 8, 2022 - WISCONSIN STATE JOURNAL

FEBRUARY 28 & MARCH 7, 2022 - THE DAILY REPORTER

END OF SECTION

SECTION 00 21 13

INSTRUCTIONS TO BIDDERS

TABLE OF CONTENTS

1. GENERAL

A. Before submitting Bid, bidder shall thoroughly examine all Construction Documents. Successful Bidder shall be required to provide all the Work that is shown on Drawings, set forth in Specifications, or reasonably implied as necessary to complete Contract for this project.

B. Bidder shall visit site to become acquainted with adjacent areas, means of approach to site, conditions of actual site and facilities for delivering, storing, placing, and handling of materials and equipment.

C. Pre-bid meeting is scheduled on March 15, 202 at 10:30 a.m., at Dane County Capitol Square South Parking Ramp, 113 South Henry Street, Madison. Attendance by all bidders is optional, however bidders and subcontractors are strongly encouraged to attend.

D. Safe distancing & face masks are required for all tour attendees. Tours will be limited to 10 people; please limit number of attending staff & subcontractors. If there are more than 10 people, group will be split & there will be two or more tours. Allow sufficient time if you do not make it in to first tour group. Do not visit the site if you are or have recently been ill.

E. Failure to visit site or failure to examine any and all Construction Documents will in no way relieve successful Bidder from necessity of furnishing any necessary materials or equipment, or performing any work, that may be required to complete the Work in accordance with Drawings and Specifications. Neglect of above requirements will not be accepted as reason for delay in the Work or additional compensation.

2. DRAWINGS AND SPECIFICATIONS

A. Drawings and Specifications that form part of this Contract, as stated in Article 1 of General Conditions of Contact, are enumerated in Document Index of these Construction Documents.

B. Complete sets of Drawings and Specifications for all trades will be available to all Bidders, irrespective of category of work to be bid on, in order that all Bidders may be familiar with work of other trades as they affect their bid.

3. INTERPRETATION

A. No verbal explanation or instructions will be given in regard to meaning of Drawings or Specifications before Bid Due Date. Bidders shall bring inadequacies, omissions or conflicts to Owner or Architect / Engineer's attention at least ten (10) calendar days before Bid Due Date. Prompt clarification will be available to all bidders by Addendum.

B. Failure to so request clarification or interpretation of Drawings and Specifications will not relieve successful Bidder of responsibility. Signing of Contract will be considered as implicitly denoting that Contractor has thorough understanding of scope of the Work and comprehension of Construction Documents.

C. Owner or Engineer will not be responsible for verbal instructions.

4. QUALIFICATIONS OF BIDDER (CONTRACTOR AND SUBCONTRACTOR)

A. Before award of Contract can be approved, Owner shall be satisfied that Bidder involved meets following requirements:

1. Has completed at least one (1) project of at least fifty percent (50%) of size or value of Division of work being bid and type of work completed is similar to that being bid. If greater magnitude of experience is deemed necessary, other than size or value of work, such requirements will be described in appropriate section of Specifications.

2. Maintains permanent place of business.

3. Can be bonded for terms of proposed Contract.

4. Contractor and subcontractors shall meet all applicable Best Value Contractor requirements.

5. Has record of satisfactorily completing past projects and supplies list of no more than three (3) most recent, similar projects, with architect or engineer's and owner's names, addresses and telephone numbers for each project. Submit to Public Works Project Manager within three (3) business days after Bid Due Date. Criteria which will be considered in determining satisfactory completion of projects by bidder will include:

    a. Completed contracts in accordance with drawings and specifications.
    b. Diligently pursued execution of work and completed contracts according to established time schedule unless Owner grants extensions.
    c. Fulfilled guarantee requirements of construction documents.
    d. Is not presently on ineligible list maintained by County's Department of Administration for noncompliance with equal employment opportunities and affirmative action requirements.

e. Authorized to conduct business in Wisconsin. By submitting Bid, bidder warrants that it has: complied with all necessary requirements to do business in State of Wisconsin; that persons executing contract on its behalf are authorized to do so; and, if corporation, that name and address of bidder's registered agent are as set forth in Contract. Bidder shall notify Owner immediately, in writing, of any change in its registered agent, their address, and bidder's legal status. For partnership, term "registered agent" shall mean general partner.

B. County's Public Works Project Manager will make such investigations as are deemed necessary to determine ability of bidder to perform the Work, and bidder shall furnish to County's Public Works Project Manager or designee all such information and data for this purpose as County's Public Works Project Manager may request. Owner reserves right to reject Bid if evidence submitted by, or investigation of, bidder fails to satisfy Owner that bidder is responsible and qualified to carry out obligations of Contract and to complete the Work contemplated therein.

5. BID GUARANTEE

A. Bank certified check, cashier's check or Bid Bond, payable to County in amount not less than five percent (5%) of maximum bid, shall accompany each Bid as guarantee that if Bid is accepted, Bidder will execute and return proposed Contract and Performance and Payment Bonds within ten (10) business days after being notified of acceptance of Bid. Company issuing bonds must be licensed to do business in Wisconsin.

B. Any bid, which is not accompanied by bid guarantee, will be considered "No Bid" and will not be read at Bid Due Date.

C. If successful Bidder so delivers Contract, Certificate of Insurance, and Performance and Payment Bonds, check will be returned to Bidder. In case Bidder fails to deliver such Contract, insurance, and bond, amount of bid guarantee will be forfeited to County as liquidated damages.

D. All checks tendered as bid guarantee, except those of three (3) lowest qualified, responsible bidders, will be returned to their makers within three (3) business days after Bid Due Date. All such retained checks will be returned immediately upon signing of Contract and Performance and Payment Bonds by successful Bidder.

6. WITHDRAWAL OF BIDS

A. Bids may be withdrawn by written request received from bidder or authorized representative thereof prior to time fixed for Bid Due Date, without prejudice to right of bidder to file new Bid. Withdrawn Bids will be returned unopened. Negligence on part of bidder in preparing their Bid confers no right for withdrawal of Bid after it has been opened.

B. No Bid may be withdrawn for period of sixty (60) calendar days after Bid Due Date.

C. If Bid contains error, omission or mistake, bidder may limit liability to amount of bidder's guarantee by giving written Notice of Intent not to execute Contract to Owner within seventy-two (72) hours of Bid Due Date.

7. CONTRACT FORM

A. Sample copy of contract that successful Bidder will be required to enter into is included in these Construction Documents and bidders are required to familiarize themselves with all conditions contained therein.

8. CONTRACT INTERESTS BY COUNTY PUBLIC OFFICIALS

A. In accordance with Wisconsin Statute 946.13, county official may not bid for or enter into any contract involving receipts or disbursements of more than $15,000.00 in a year, in which they have private pecuniary interest, direct or indirect if at same time they are authorized to take official action with respect to making of this Contract. Any contract entered into in violation of this Statute is void and County incurs no liability thereon. This subsection does not affect application and enforcement of Wisconsin Statute 946.13 by state prosecutors in criminal courts of this state.

9. EMERGING SMALL BUSINESS PROVISIONS

A. **Emerging Small Business Definition.** For purposes of this section, ESB is defined as:

1. Independent business concern that has been in business minimum of one year;

2. Business located in State of Wisconsin;

3. Business comprised of less than twenty-five (25) employees;

4. Business must not have gross sales in excess of three million dollars ($3,000,000.00) over past three years; and

5. Business does not have history of failing to complete projects.

B. **Emerging Small Business (ESB) Involvement.** Bidder shall make good faith effort to award minimum of ten percent (10%) of the Work to ESBs. Bidder shall submit report to Dane County Contract Compliance Specialist within ten (10) business days of Bid Due Date demonstrating such efforts. Good faith efforts means significant contact with ESBs for purposes of soliciting bids from them. Failure to make or demonstrate good faith efforts will be grounds for disqualification.

C. **Emerging Small Business Report.** Emerging Small Business Enterprise Report is to be submitted by Bidder in separate envelope marked “Emerging Small Business Report”. This report is due by 2:00 p.m. following specified ten (10) business days after Bid Due Date. Bidder who fails to submit Emerging Small Business Report shall be deemed not responsive.

D. **ESB Goal.** Goal of this project is ten percent (10%) ESB participation. ESB utilizations are shown as percentage of total Bid. If Bidder meets or exceeds specified goal, Bidder is only required to submit Form A - Certification, and Form B - Involvement. Goal shall be met if Bidder qualifies as ESB.

E. **Report Contents.** Following award of Contract, Bidder shall submit copies of executed contracts for all Emerging Small Businesses. Emerging Small Business Report shall consist of these:

1. Form A - Certification;

2. Form B - Involvement;

3. Form C - Contacts;

4. Form D - Certification Statement (if appropriate); and

5. Supportive documentation (i.e., copies of correspondence, telephone logs, copies of advertisements).

F. **ESB Listing.** Bidders may solicit bids from *Dane County Targeted Business Directory* by going to this website. Do not click as a link; copy & paste address into a web browser.
https://equity.countyofdane.com/documents/PDFs/Targeted-Business-Directory.xlsx

G. **DBE Listing.** Bidders may also solicit bids from *State of Wisconsin DOT Disadvantaged Business Enterprise Unified Certification Program (DBE / UCP) Directory* by going to this website. These are not only transportation-related designers & contractors. Do not click as a link; copy & paste address into a web browser.
https://wisconsindot.gov/Documents/doing-bus/civil-rights/dbe/dbe-ucp-directory.xlsx

H. **ESB Certification.** All contractors, subcontractors and suppliers seeking ESB certification must complete and submit Emerging Small Business Report to Dane County Contract Compliance Program.

I. **Certification Statement.** If ESB firm has not been certified by County as ESB prior to submittal of this Bid, ESB Report cannot be used to fulfill ESB goal for this project unless firm provides "Form D - Certification Statement". Certification statement must be completed and signed by ESB firm.

J. **Questions.** Questions concerning Emerging Small Business provisions shall be directed to:

OEI@countyofdane.com
or
Dane County Contract Compliance Specialist
City-County Building, Room 356
210 Martin Luther King, Jr. Blvd.
Madison, WI 53703
608/266-4192

K. **Substituting ESBs.** In event of any significant changes in subcontract arrangements or if need arises to substitute ESBs, Bidder shall report such proposed changes to Contract Compliance Specialist to making any official changes and request authorization to substitute ESB firm. Bidder further agrees to make every possible effort to replace ESB firm with another qualified ESB firm.

L. **Good Faith Efforts.** Good faith efforts can be demonstrated by meeting all of these obligations:

1. Selecting portions of the Work to be performed by ESBs in order to increase likelihood of meeting ESB goal including, where appropriate, breaking down Contract into smaller units to facilitate ESB participation.

2. Advertising in general circulation, trade associations and women / minority focus media concerning subcontracting opportunities.

3. Providing written notices to reasonable number of specific ESBs that their interest in Contract was being solicited in sufficient time to allow ESBs to participate effectively.

4. Following up on initial solicitations of interest by contacting ESBs within five (5) business days prior to Bid Due Date to determine with certainty whether ESB were interested, to allow ESBs to prepare bids.

5. Providing interested ESB with adequate information about Drawings, Specifications and requirements of Contract.

6. Using services of available minority, women and small business organizations and other organizations that provide assistance in recruitment of MBEs / WBEs / ESBs.

7. Negotiating in good faith with interested ESBs, not rejecting ESBs as unqualified without sound reason based on thorough investigation of their capabilities.

8. Submitting required project reports and accompanying documents to County's Contract Compliance Specialist within twenty-four (24) hours after Bid Due Date.

M. **Appeals Disqualification of Bid.** Bidder who is disqualified may appeal to Public Works & Transportation Committee and Equal Opportunity Commission.

10. METHOD OF AWARD - RESERVATIONS

A. Following will be basis of award of Contract, providing cost does not exceed amount of funds then estimated by County as available to finance Contract(s):

1. Lowest dollar amount submitted by qualified responsible bidder on Base Bid for all work comprising project, combined with such additive Owner accepted alternates.

2. Owner reserves right to reject all bids or any bid, to waive any informality in any bid, and to accept any bid that will best serve interests of County.

3. Unit Prices and Informational Bids will not be considered in establishing low bidder.

11. SECURITY FOR PERFORMANCE AND PAYMENTS

A. Simultaneous with delivery of signed Contract, Bidder shall be required to furnish Performance and Payment Bonds as specified in Article 29 of General Conditions of Contract, "Contract Security". Surety Company shall be licensed to do business in Wisconsin. Performance and Payment Bonds must be dated same date or subsequent to date of Contract. Performance and Payment Bonds must emulate information in Sample Performance and Payment Bonds in Construction Documents.

B. Provide certified copy of power of attorney from Surety Company showing that agent who signs Bond has power of attorney to sign for Surety Company. Secretary or Assistant Secretary of company must sign this certification, not attorney-in-fact. Certification must bear same or later date as Bond. Power of Attorney must emulate model power of attorney information detailed in Sample Performance and Payment Bonds.

C. If Bidder is partnership or joint venture, State certified list, providing names of individuals constituting partnership or joint venture must be furnished. Contract itself may be signed by one partner of partnership, or one partner of each firm comprising joint venture, but Performance and Payment Bonds must be signed by all partners.

D. If Bidder is corporation, it is necessary that current certified copy of resolution or other official act of directors of corporation be submitted showing that person who signs Contract

is authorized to sign contracts for corporation. It is also necessary that corporate seal be affixed to resolution, contract, and performance and payment bonds. If your corporation has no seal, it is required that above documents include statement or notation to effect that corporation has no seal.

12. TAXES

A. Wisconsin Statute 77.54 (9m) allows building materials that become part of local unit government facilities to be exempt from sales & use tax. Vendors & materials suppliers may not charge Bidders sales & use tax on these purchases. This does not include highways, streets or roads. Any other Sales, Consumer, Use & other similar taxes or fees required by law shall be included in Bid.

B. In accordance with Wisconsin Statute 71.80(16)(a),successful nonresident bidder, whether incorporated or not, and not otherwise regularly engaged in business in this state, shall file surety bond with State of Wisconsin Department of Revenue payable to Department of Revenue, to guarantee payment of income taxes, required unemployment compensation contributions, sales and use taxes and income taxes withheld from wages of employees, together with any penalties and interest thereon. Amount of bond shall be three percent (3%) of Contract or subcontract price on all contracts of $50,000 or more.

13. SUBMISSION OF BIDS

A. All Bids shall be submitted on standard Bid Form bound herein and only Bids that are made on this Bid Form will be considered. Entire Bid Form and other supporting documents, if any, shall be removed or copied from Construction Documents, filled out, and submitted in manner specified hereinafter. Submit completed Bid Bond with Bid as well.

B. No bids for any subdivision or any sub-classification of the Work, except as indicated, will be accepted. Any conditional Bid, amendment to Bid Form or appended item thereto, or inclusion of any correspondence, written or printed matter, or details of any nature other than that specifically called for, which would alter any essential provision of Construction Documents, or require consideration of unsolicited material or data in determining award of Contract, will disqualify Bid. Telecommunication alterations to Bid will not be accepted.

C. Bidders must submit single Bid for all the Work.

D. Bid amounts shall be inserted in words and in figures in spaces provided on Bid Form; in case of conflict, written word amounts will govern.

E. Addenda issued after Bid Letting shall become part of Construction Documents. Bidders shall acknowledge receipt of such addenda in appropriate space provided on Bid Form. Bid may be rejected if receipt of any particular addendum applicable to award of Contract has not been acknowledged on Bid Form.

F. Bids shall be signed, placed in envelope, sealed and delivered before due time to place designated in Invitation to Bid, and identified with project name, bid number, location, category of work being bid upon, Bid Due Date, name and address of bidder.

G. Bidder shall be responsible for sealed Bid being delivered to place designated for Bid Due Date on or before date and time specified. Bids received after time of closing will be rejected and returned to bidder unopened.

H. Current conditions prevent public bid openings.

I. Bids hand delivered & dropped off at Public Works' physical address should be placed in the "Public Works Bids & Proposals" drop box placed outside or just inside the building's front vestibule.

J. Bid will be opened on listed due date & time & results should be available within 24 hours at bids-pwht.countyofdane.com.

K. Bid will be considered invalid and will be rejected if bidder has not signed it.

L. Faxed or emailed Bids will not be accepted.

M. Bidder's organization shall submit completed with Bid, Fair Labor Practices Certification form, included in these Construction Documents.

14. SUBCONTRACTOR LISTING

A. Bidders are required to submit Section 00 43 36, Proposed Subcontractors Form listing all subcontractors for this project including committed prices for each subcontractor. Project Manager must receive Form no later than when successful Bidder submits their signed Contract. Failure to submit may delay progress payments.

15. ALTERNATE BIDS

A. Bidder shall carefully read requests for Alternate Bids, and thoroughly examine Drawings and Specifications to determine extent various changes and conditions will affect Bid.

B. Space is provided in Bid Form for requested Alternate Bids. Failure to submit bid for any requested Alternate Bids may result in rejection of entire Bid.

C. Bidder shall state amount to be added / subtracted to Base Bid for providing alternates, including all incidentals, omissions, additions, and adjustments as may be necessary or required by such changes. If there is no difference in price, Bidder shall state, "No Change".

D. Descriptions of requested Alternate Bids are as set forth in Construction Documents.

16. INFORMATIONAL BIDS

A. Not Applicable

17. UNIT PRICES

A. Provide unit prices where requested on Bid Form. Unit prices will include all costs for materials, labor, insurance, taxes, overhead and profit necessary to perform specified work. Estimated quantities are approximate only. Payment will be based upon actual quantities placed, provided or installed. Failure to provide requested unit prices may result in rejection of entire Bid.

B. Owner reserves right to accept or reject any unit prices as given in Bid.

C. Bidder shall refer to Bid Form and applicable specification section to determine basis of unit measure and detailed information related to each unit price item requested.

18. COMMENCEMENT AND COMPLETION

A. Successful Bidder shall commence work when schedule and weather permit, but no later than stated in Bid Form. Contractor shall pursue the Work regularly and continuously at reasonable rate to insure completion of the Work within time stated in Bid.

B. Should it be found impossible to complete the Work on or before time specified for completion, written request may be submitted for extension of time setting forth reasons believed to justify granting of such request. Refer to Article 20 of General Conditions of Contract, titled "Time for Completion".

19. WORK BY OWNER

A. Not Applicable.

20. SPECIAL HAZARDS COVERAGE

A. Not Applicable.

FORM A

DANE COUNTY
EMERGING SMALL BUSINESS REPORT - CERTIFICATION

In accordance with General Conditions of Contract, submit this Emerging Small Business Report within ten (10) days after Bid Due Date.

PROJECT NAME: _____

_____

BID NO.: _____ BID DUE DATE: _____

BIDDER INFORMATION

COMPANY NAME: _____

ADDRESS: _____

_____

TELEPHONE NO.: _____

CONTACT PERSON: _____

EMAIL ADDRESS: _____

FORM B

DANE COUNTY
(Copy this Form as necessary to provide complete information)
EMERGING SMALL BUSINESS REPORT - INVOLVEMENT

COMPANY NAME: _____

PROJECT NAME: _____

BID NO.: _____ BID DUE DATE: _____

ESB NAME: _____

CONTACT PERSON: _____

ADDRESS: _____

_____

PHONE NO & EMAIL.: _____

_____

Indicate percentage of financial commitment to this ESB: _____% Amount: $_____

ESB NAME: _____

CONTACT PERSON: _____

ADDRESS: _____

_____

PHONE NO & EMAIL.: _____

_____

Indicate percentage of financial commitment to this ESB: _____% Amount: $_____

FORM C

DANE COUNTY
(Copy this Form as necessary to provide complete information)
EMERGING SMALL BUSINESS REPORT - CONTACTS

COMPANY NAME: _____

PROJECT NAME: _____

BID NO.: _____ BID DUE DATE: _____

	ESB FIRM NAME CONTACTED	DATE	PERSON CONTACTED	DID ESB BID?	ACC-EPT BID?	REASON FOR REJECTION
1)						
2)						
3)						
4)						
5)						
6)						
7)						
8)						

FORM D

DANE COUNTY
EMERGING SMALL BUSINESS REPORT - CERTIFICATION STATEMENT

I, _____ , _____ of
Name Title

_____ certify to best of my knowledge and
Company

belief that this business meets Emerging Small Business definition as indicated in Article 9 and that information contained in this Emerging Small Business Report is true and correct.

_____ _____
Bidder's Signature Date

Name of Bidding Firm: _____

SECTION 00 41 13

BID FORM

BID NO. 322005
PROJECT: 2022 CONCRETE RESTORATION – PHASE I
DANE COUNTY CAPITOL SQUARE SOUTH PARKING RAMP

TO: DANE COUNTY PUBLIC WORKS ENGINEERING DIVISION
PROJECT MANAGER
1919 ALLIANT ENERGY CENTER WAY
MADISON, WISCONSIN 53713

NOTE: WISCONSIN STATUTE 77.54 (9M) ALLOWS FOR NO SALES & USE TAX ON THE PURCHASE OF MATERIALS FOR COUNTY PUBLIC WORKS PROJECTS. THIS DOES NOT APPLY TO HIGHWAYS, STREETS AND ROADS PROJECTS.

BASE BID - UNIT PRICING:
Contractor to provide construction restoration & repair services consisting of concrete removal and replacement at the overhead and vertical surfaces of concrete slabs, beams, and columns. Also, complete milled surface slab replacement at level 7. See specification section 01 22 00 for unit price descriptions and quantity summary per level. The undersigned, having examined the site where the Work is to be executed and having become familiar with local conditions affecting the cost of the Work and having carefully examined the Drawings and Specifications, all other Construction Documents and Addenda thereto prepared by Dane County Department of Public Works hereby agrees to provide all labor, materials, equipment and services necessary for the complete and satisfactory execution of the entire Work, as specified in the Construction Documents, for the Base Bid unit pricing as follows:

Bid Item Number	Bid Item Name / Supplemental Description	Quantity	Unit	Unit Price	Total
1	Topside concrete slab milling and replacement	9,800	SF		
2	Replace reinforcing steel in removal depth	15	TON		
3	Full depth slab replacement at milled surface	3,200	SF		
4	Embedded galvanic DAS anodes in slab replacement area	6,300	LF		
5	Concrete repair at overhead concrete surface, 1" to 3" depth	4,585	SF		
6	Concrete repair at overhead concrete surface, 3" to 6" depth	1,965	SF		
7	Full depth slab replacement	30	SF		
8	Vertical surface concrete repairs at parapets and walls	395	SF		
9	Concrete repair at columns	265	SF		

Bid Item Number	Bid Item Name / Supplemental Description	Quantity	Unit	Unit Price	Total
10	Embedded galvanic anodes at overhead and vertical surfaces	4,330	EACH		
11	Expansion joint replacement	60	LF		
12	Overhead conductive coating removal	24,000	SF		
13	Epoxy crack injection	105	LF		

Total: $ _____
Numeric Price

_____ and __ /100 Dollars
Written Price

ALTERNATE BID A - UNIT PRICING:
Concrete removal and replacement at the overhead and vertical surfaces of concrete slabs, beams, and columns at Level 2. Epoxy injection of basement walls and sealer application at Level 7.

Bid Item Number	Bid Item Name / Supplemental Description	Quantity	Unit	Unit Price	Total
5A	Concrete repair at overhead concrete surface, 1" to 3" depth	525	SF		
6A	Concrete repair at overhead concrete surface, 3" to 6" depth	225	SF		
8A	Vertical surface concrete repairs at parapets and walls	80	SF		
9A	Concrete repair at columns	100	SF		
10A	Embedded galvanic anodes at overhead and vertical surfaces	540	EACH		
12A	Overhead conductive coating removal	24,000	SF		
13A	Epoxy crack injection	55	LF		
14	Rout and seal cracks	800	LF		
15	Silane sealer application	45,000	SF		

Total: $ _____
Numeric Price

_____ and __ /100 Dollars
Written Price

ALTERNATE BID B - UNIT PRICING:
Concrete removal and replacement at the overhead and vertical surfaces of concrete slabs, beams, and columns at additional ramp locations.

Bid Item Number	Bid Item Name / Supplemental Description	Quantity	Unit	Unit Price	Total
5B	Concrete repair at overhead concrete surface, 1" to 3" depth	1,365	SF		
6B	Concrete repair at overhead concrete surface, 3" to 6" depth	585	SF		
8B	Vertical surface concrete repairs at parapets and walls	280	SF		
9B	Concrete repair at columns	200	SF		
10B	Embedded galvanic anodes at overhead and vertical surfaces	1,465	EACH		

Total: $_____
Numeric Price

_____and __ /100 Dollars
Written Price

Receipt of the following addenda and inclusion of their provisions in this Bid is hereby acknowledged:

Addendum No(s). _____ through _____

Dated _____

Dane County Department of Highway and Transportation must have this project completed by September 29, 2022. Assuming this Work can be started by May 16, 2022, what dates can you commence and complete this job?

Commencement Date: _____ Completion Date: _____
(final, not substantial)

I hereby certify that all statements herein are made on behalf of:

_____
(Name of Corporation, Partnership or Person submitting Bid)

Select one of the following:
1. A corporation organized and existing under the laws of the State of _____, or

2. A partnership consisting of _____, or

3. A person conducting business as _____;

Of the City, Village, or Town of _____ of the State of _____.

I have examined and carefully prepared this Bid from the associated Construction Documents and have checked the same in detail before submitting this Bid; that I have full authority to make such statements and submit this Bid in (its) (their) (my) behalf; and that the said statements are true and correct. In signing this Bid, we also certify that we have not, either directly or indirectly, entered into any agreement or participated in any collusion or otherwise taken any action in restraint of free competition; that no attempt has been made to induce any other person or firm to submit or not to submit a Bid; that this Bid has been independently arrived at without collusion with any other bidder, competitor, or potential competitor; that this Bid has not been knowingly disclosed prior to the Bids Due Date to another bidder or competitor; that the above statement is accurate under penalty of perjury.

The undersigned is qualified as a Best Value Contractor or has proven their exemption. Qualification or exemption shall be complete before Bid Due Date / Time.

The undersigned further agrees to honor the Base Bid and the Alternate Bid(s) for sixty (60) calendar days from date of Award of Contract.

SIGNATURE: _____
(Bid is invalid without signature)

Print Name: _____ Date: _____

Title: _____

Address: _____

Telephone No.: _____ Fax No.: _____

Email Address: _____

Contact Person: _____

END OF SECTION

THIS PAGE IS FOR BIDDERS' REFERENCE

DO NOT SUBMIT WITH BID FORM.

BID CHECK LIST:
These items **must** be included with Bid:

☐ Bid Form
☐ Bid Bond
☐ Fair Labor Practices Certification

DANE COUNTY BEST VALUE CONTRACTING QUALIFICATION

General Contractors & all Subcontractors must be qualified as a Best Value Contractor with the Dane County Public Works Engineering Division. Qualification & listing is not permanent & must be renewed every 36 months. Complete a *Best Value Contracting Application* online at:

publicworks.countyofdane.com/bvc

DANE COUNTY VENDOR REGISTRATION PROGRAM

All bidders are strongly encouraged to be a registered vendor with Dane County. Registering allows vendors an opportunity to receive notifications for RFBs & RFPs issued by the County and provides the County with up-to-date company contact information. Complete a new form or renewal online at:

danepurchasing.com/Account/Login?

SECTION 00 43 36

PROPOSED SUBCONTRACTORS FORM

General Contractor Name: _____ Bid No: _____

Instructions:
1. Complete all information in table below.
2. Include this Form with signed Construction Contract (Section 00 52 96).
3. General contractors & subcontractors must be qualified & registered as Best Value Contractor (Dane County Ordinances, Chapter 40.07). General contractors must be qualified & registered before bids are due. Subcontractors must be qualified & registered 10 working days before performing any work related to Construction Contract. No contractor can perform work without being qualified & registered.
4. Sample Best Value Contracting Application is included in this RFB package for informational purposes; fill out form online (publicworks.countyofdane.com/bvc).

SUBCONTRACTOR NAME	ADDRESS & PHONE NO.	DIVISION OF WORK	$$ AMOUNT OF CONTRACT

Check box if there is another form page attached to include additional subcontractors. ☐

The undersigned, for and on behalf of the General Contractor named herein, certifies the information on this Form is accurate.

_____ _____
Officer or Authorized Agent Signature Date

_____
Printed or Typed Name and Title

SUBCONTRACTOR NAME	ADDRESS & PHONE NO.	DIVISION OF WORK	$$ AMOUNT OF CONTRACT

END OF SECTION

COUNTY OF DANE

PUBLIC WORKS CONSTRUCTION CONTRACT

Contract No. _____ Bid No. 322005

Authority: 2021 RES -_____

THIS CONTRACT, made and entered into as of the date by which authorized representatives of both parties have affixed their signatures, by and between the County of Dane (hereafter referred to as "COUNTY") and _____ (hereafter, "CONTRACTOR"), and

W I T N E S S E T H :

WHEREAS, COUNTY, whose address is c/o Public Works Director, 1919 Alliant Energy Center Way, Madison, WI 53713, desires to have CONTRACTOR provide 2022 Concrete Restoration – Phase I ("the Project"); and

WHEREAS, CONTRACTOR, whose address is _____ _____ is able and willing to construct the Project, in accordance with the Construction Documents, site meeting, etc.;

NOW, THEREFORE, in consideration of the above premises and the mutual covenants of the parties hereinafter set forth, the receipt and sufficiency of which is acknowledged by each party for itself, COUNTY and CONTRACTOR do agree as follows:

1. CONTRACTOR agrees to construct, for the price of $_____ the Project and at the CONTRACTOR'S own proper cost and expense to furnish all materials, supplies, machinery, equipment, tools, superintendence labor, insurance, and other accessories and services necessary to complete the Project in accordance with the conditions and prices stated in the Bid Form, General Conditions of Contract, the drawings which include all maps, plats, plans, and other drawings and printed or written explanatory matter thereof, and the specifications therefore as prepared by _____ (hereinafter referred to as "the Architect / Engineer"), and as enumerated in the Project Manual Table of Contents, all of which are made a part hereof and collectively evidence and constitute the Contract.

2. The term of this Contract shall commence when fully executed by the parties. The CONTRACTOR shall commence the Work by _____. The Work's substantial completion date shall be _____. Failure to meet commence work or substantial completion dates on the Work as set forth herein is grounds for termination of the Contract and other remedies as set forth in the General Conditions of Contract incorporated herein.

3. COUNTY agrees to pay the CONTRACTOR in current funds for the performance of the Contract subject to additions and deductions, as provided in the General Conditions of Contract, and to make payments on account thereof as provided in Article entitled, "Payments to Contractor" of the General Conditions of Contract.

4. During the term of this Contract, CONTRACTOR agrees to take affirmative action to ensure equal employment opportunities. The CONTRACTOR agrees in accordance with Wisconsin Statute 111.321 and Chapter 19 of the Dane County Code of Ordinances not to discriminate on the basis of age, race, ethnicity, religion, color, gender, disability, marital status, sexual orientation, national origin, cultural differences, ancestry, physical appearance, arrest record or conviction record, military participation or membership in the national guard, state defense force or any other reserve component of the military forces of the United States, or political beliefs. Such equal opportunity shall include, but not be limited to, the following: employment, upgrading, demotion, transfer, recruitment, advertising, layoff, termination, training, rates of pay, and any other form of compensation. CONTRACTOR agrees to post in conspicuous places, available to all employees and applicants for employment, notices setting forth the provisions of this paragraph.

5. CONTRACTOR shall file an Affirmative Action Plan with the Dane County Contract Compliance Specialist in accord with Chapter 19 of the Dane County Code of Ordinances. CONTRACTOR must file such plan within fifteen (15) business days of the effective date of this Contract. During the term of this Contract CONTRACTOR shall also provide copies of all announcements of employment opportunities to COUNTY'S Office of Equity & Inclusion, and shall report annually the number of persons, by race, ethnicity, gender, and disability status, which apply for employment and, similarly classified, the number hired and number rejected.

6. During the term of this Contract, all solicitations for employment placed on CONTRACTOR'S behalf shall include a statement to the effect that CONTRACTOR is an "Equal Opportunity Employer".

7. CONTRACTOR agrees to furnish all information and reports required by COUNTY'S Contract Compliance Specialist as the same relate to affirmative action and nondiscrimination, which may include any books, records, or accounts deemed appropriate to determine compliance with Chapter 19, Dane County Code of Ordinances, and the provisions of this Contract.

8. The intent of this Contract is to be a Contract solely between the parties hereto and for their benefit only. Do not construe any part of this Contract to add to, supplement, amend, abridge or repeal existing rights, benefits or privileges of any third party or parties including, but not limited to, employees of the parties.

9. The entire agreement of the parties is contained herein and this Contract supersedes any and all oral agreements and negotiations between the parties relating to the subject matter hereof. The parties expressly agree that the express terms of this Contract shall not be amended in any fashion except in writing, executed by both parties.

10. CONTRACTOR must be qualified as a Best Value Contractor or have proven their exemption with Dane County Public Works Engineering Division before Bid Due Date / Time. All contractors and subcontractors must be qualified as a Best Value Contractor or have proven their exemption to perform any work under this Contract.

11. This Contract, and any amendment or addendum relating to it, may be executed and transmitted to any other party by legible facsimile reproduction or by scanned legible electronic PDF copy, and utilized in all respects as, an original, wet-inked manually executed document. Further, this Contract and any amendment or addendum thereto, may be stored and reproduced by each party electronically, photographically, by photocopy or other similar process, and each party may at its option destroy any original document so reproduced. All parties hereto stipulate that any such legible reproduction shall be admissible in evidence as the original itself in any judicial, arbitration or administrative proceeding whether or not the original is in existence and whether or

not each party made such reproduction in the regular course of business. This term does not apply to the service of notices under this Contract.

IN WITNESS WHEREOF, COUNTY and CONTRACTOR, by their respective authorized agents, have caused this Contract and its Schedules to be executed, effective as of the date by which all parties hereto have affixed their respective signatures, as indicated below.

* * * * * * *

FOR CONTRACTOR:

Signature | Date

Printed or Typed Name and Title

Signature | Date

Printed or Typed Name and Title

NOTE: If CONTRACTOR is a corporation, Secretary should attest. In accordance with IRS Regulations, unincorporated entities are required to provide either their Social Security or Employer Number in order to receive payment for services rendered.

* * * * * * *

This Contract is not valid or effectual for any purpose until approved by the appropriate authority designated below, and work is not authorized until the CONTRACTOR has been given notice to proceed by COUNTY'S Public Works Director.

FOR COUNTY:

Joseph T. Parisi, County Executive | Date

Scott McDonell, County Clerk | Date

AIA® Document A310™ – 2010

Bid Bond

CONTRACTOR:
(Name, legal status and address)

SURETY:
(Name, legal status and principal place of business)

OWNER:
(Name, legal status and address)

BOND AMOUNT:

PROJECT:
(Name, location or address, and Project number, if any)

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

The Contractor and Surety are bound to the Owner in the amount set forth above, for the payment of which the Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, as provided herein. The conditions of this Bond are such that if the Owner accepts the bid of the Contractor within the time specified in the bid documents, or within such time period as may be agreed to by the Owner and Contractor, and the Contractor either (1) enters into a contract with the Owner in accordance with the terms of such bid, and gives such bond or bonds as may be specified in the bidding or Contract Documents, with a surety admitted in the jurisdiction of the Project and otherwise acceptable to the Owner, for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof; or (2) pays to the Owner the difference, not to exceed the amount of this Bond, between the amount specified in said bid and such larger amount for which the Owner may in good faith contract with another party to perform the work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect. The Surety hereby waives any notice of an agreement between the Owner and Contractor to extend the time in which the Owner may accept the bid. Waiver of notice by the Surety shall not apply to any extension exceeding sixty (60) days in the aggregate beyond the time for acceptance of bids specified in the bid documents, and the Owner and Contractor shall obtain the Surety's consent for an extension beyond sixty (60) days.

If this Bond is issued in connection with a subcontractor's bid to a Contractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

When this Bond has been furnished to comply with a statutory or other legal requirement in the location of the Project, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

Signed and sealed this day of

(Witness)	*(Contractor as Principal)* *(Seal)*
	(Title)
(Witness)	*(Surety)* *(Seal)*
	(Title)

CAUTION: You should sign an original AIA Contract Document, on which this text appears in RED. An original assures that changes will not be obscured.

Init.
/

AIA® Document A312™ – 2010

Performance Bond

CONTRACTOR:
(Name, legal status and address)

SURETY:
(Name, legal status and principal place of business)

OWNER:
(Name, legal status and address)

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

AIA Document A312–2010 combines two separate bonds, a Performance Bond and a Payment Bond, into one form. This is not a single combined Performance and Payment Bond.

CONSTRUCTION CONTRACT
Date:

Amount:

Description:
(Name and location)

BOND
Date:
(Not earlier than Construction Contract Date)

Amount:

Modifications to this Bond: ☐ None ☐ See Section 16

CONTRACTOR AS PRINCIPAL		**SURETY**	
Company:	*(Corporate Seal)*	Company:	*(Corporate Seal)*
Signature:		Signature:	
Name and Title:	Name	Name and Title:	

(Any additional signatures appear on the last page of this Performance Bond.)

(FOR INFORMATION ONLY — Name, address and telephone)

AGENT or **BROKER:**

OWNER'S REPRESENTATIVE:
(Architect, Engineer or other party:)

§ 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.

§ 2 If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Section 3.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond shall arise after

.1 the Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice shall indicate whether the Owner is requesting a conference among the Owner, Contractor and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Section 3.1 shall be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement shall not waive the Owner's right, if any, subsequently to declare a Contractor Default;

.2 the Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and

.3 the Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.

§ 4 Failure on the part of the Owner to comply with the notice requirement in Section 3.1 shall not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.

§ 5 When the Owner has satisfied the conditions of Section 3, the Surety shall promptly and at the Surety's expense take one of the following actions:

§ 5.1 Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;

§ 5.2 Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;

§ 5.3 Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Section 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or

§ 5.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor and with reasonable promptness under the circumstances:

.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or

.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.

§ 6 If the Surety does not proceed as provided in Section 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Section 5.4, and the Owner refuses the payment or the Surety has denied liability, in whole or in part, without further notice the Owner shall be entitled to enforce any remedy available to the Owner.

§ 7 If the Surety elects to act under Section 5.1, 5.2 or 5.3, then the responsibilities of the Surety to the Owner shall not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety shall not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication, for

.1 the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;

.2 additional legal, design professional and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Section 5; and

.3 liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.

§ 8 If the Surety elects to act under Section 5.1, 5.3 or 5.4, the Surety's liability is limited to the amount of this Bond.

§ 9 The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors and assigns.

§ 10 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 11 Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and shall be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 12 Notice to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears.

§ 13 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

§ 14 Definitions

§ 14.1 Balance of the Contract Price. The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made, including allowance to the Contractor of any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.

§ 14.2 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.

§ 14.3 Contractor Default. Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.

§ 14.4 Owner Default. Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 14.5 Contract Documents. All the documents that comprise the agreement between the Owner and Contractor.

§ 15 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 16 Modifications to this bond are as follows:

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL		**SURETY**	
Company:	*(Corporate Seal)*	Company:	*(Corporate Seal)*
Signature:		Signature:	
Name and Title:		Name and Title:	
Address		Address	

CAUTION: You should sign an original AIA Contract Document, on which this text appears in RED. An original assures that changes will not be obscured.

AIA® Document A312™ – 2010

Payment Bond

CONTRACTOR:
(Name, legal status and address)

SURETY:
(Name, legal status and principal place of business)

OWNER:
(Name, legal status and address)

CONSTRUCTION CONTRACT
Date:

Amount:

Description:
(Name and location)

BOND
Date:
(Not earlier than Construction Contract Date)

Amount:

Modifications to this Bond: ☐ None ☐ See Section 18

CONTRACTOR AS PRINCIPAL		**SURETY**	
Company:	*(Corporate Seal)*	Company:	*(Corporate Seal)*
Signature:		Signature:	
Name and Title:	Name	Name and Title:	

(Any additional signatures appear on the last page of this Payment Bond.)

(FOR INFORMATION ONLY — Name, address and telephone)
AGENT or **BROKER:**

OWNER'S REPRESENTATIVE:
(Architect, Engineer or other party:)

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

Any singular reference to Contractor, Surety, Owner or other party shall be considered plural where applicable.

AIA Document A312–2010 combines two separate bonds, a Performance Bond and a Payment Bond, into one form. This is not a single combined Performance and Payment Bond.

§ 1 The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to the Owner to pay for labor, materials and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.

§ 2 If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies and holds harmless the Owner from claims, demands, liens or suits by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.

§ 3 If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond shall arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Section 13) of claims, demands, liens or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials or equipment furnished for use in the performance of the Construction Contract and tendered defense of such claims, demands, liens or suits to the Contractor and the Surety.

§ 4 When the Owner has satisfied the conditions in Section 3, the Surety shall promptly and at the Surety's expense defend, indemnify and hold harmless the Owner against a duly tendered claim, demand, lien or suit.

§ 5 The Surety's obligations to a Claimant under this Bond shall arise after the following:

§ 5.1 Claimants, who do not have a direct contract with the Contractor,

.1 have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and

.2 have sent a Claim to the Surety (at the address described in Section 13).

§ 5.2 Claimants, who are employed by or have a direct contract with the Contractor, have sent a Claim to the Surety (at the address described in Section 13).

§ 6 If a notice of non-payment required by Section 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Section 5.1.1.

§ 7 When a Claimant has satisfied the conditions of Sections 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:

§ 7.1 Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and

§ 7.2 Pay or arrange for payment of any undisputed amounts.

§ 7.3 The Surety's failure to discharge its obligations under Section 7.1 or Section 7.2 shall not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Section 7.1 or Section 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

§ 8 The Surety's total obligation shall not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Section 7.3, and the amount of this Bond shall be credited for any payments made in good faith by the Surety.

§ 9 Amounts owed by the Owner to the Contractor under the Construction Contract shall be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfy obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.

§ 10 The Surety shall not be liable to the Owner, Claimants or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to, or give notice on behalf of, Claimants or otherwise have any obligations to Claimants under this Bond.

§ 11 The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders and other obligations.

§ 12 No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Section 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this Paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

§ 13 Notice and Claims to the Surety, the Owner or the Contractor shall be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, shall be sufficient compliance as of the date received.

§ 14 When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted herefrom and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

§ 15 Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.

§ 16 Definitions

§ 16.1 Claim. A written statement by the Claimant including at a minimum:

- **.1** the name of the Claimant;
- **.2** the name of the person for whom the labor was done, or materials or equipment furnished;
- **.3** a copy of the agreement or purchase order pursuant to which labor, materials or equipment was furnished for use in the performance of the Construction Contract;
- **.4** a brief description of the labor, materials or equipment furnished;
- **.5** the date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
- **.6** the total amount earned by the Claimant for labor, materials or equipment furnished as of the date of the Claim;
- **.7** the total amount of previous payments received by the Claimant; and
- **.8** the total amount due and unpaid to the Claimant for labor, materials or equipment furnished as of the date of the Claim.

§ 16.2 Claimant. An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic's lien or similar statute against the real property upon which the Project is located. The intent of this Bond shall be to include without limitation in the terms "labor, materials or equipment" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor's subcontractors, and all other items for which a mechanic's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.

§ 16.3 Construction Contract. The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.

§ 16.4 Owner Default. Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.

§ 16.5 Contract Documents. All the documents that comprise the agreement between the Owner and Contractor.

§ 17 If this Bond is issued for an agreement between a Contractor and subcontractor, the term Contractor in this Bond shall be deemed to be Subcontractor and the term Owner shall be deemed to be Contractor.

§ 18 Modifications to this bond are as follows:

(Space is provided below for additional signatures of added parties, other than those appearing on the cover page.)

CONTRACTOR AS PRINCIPAL		**SURETY**	
Company:	*(Corporate Seal)*	Company:	*(Corporate Seal)*
Signature:		Signature:	
Name and Title:		Name and Title:	
Address		Address	

CAUTION: You should sign an original AIA Contract Document, on which this text appears in RED. An original assures that changes will not be obscured.

SECTION 00 72 12

GENERAL CONDITIONS OF CONTRACT

TABLE OF CONTENTS

1. CONSTRUCTION DOCUMENTS

A. Construction Documents, listed in Table of Contents of this Specification volume shall form part of this Contract and provisions of Construction Documents shall be as binding upon parties as if they were fully set forth in Contract itself.

B. These shall also be considered as part of Construction Documents: Addenda, including additions and modifications incorporated in such addenda before execution of Contract; requests for information; construction bulletins; change orders; and written interpretations by Architect / Engineer or Public Works Project Manager that are made after execution of Contract.

C. Construction Documents are complementary, and what is required by one shall be as binding as if required by all. Intent of Construction Documents is to include all labor, materials and equipment necessary for proper execution of the Work.

2. DEFINITIONS

A. These terms as used in this Contract are respectively defined as follows:
   1. All uses of term "County" in Construction Documents shall mean Dane County.
   2. All uses of term "Department" in Construction Documents shall mean Department of Administration Public Works Engineering Division, which is a unit of Dane County government. Department is County agency overseeing Contract with Contractor.
   3. Public Works Project Manager is appointed by and responsible to Department. Public Works Project Manager has authority to act on behalf of Department and will sign change orders, payment requests and other administrative matters related to projects.
   4. Public Works Project Manager is responsible for supervision, administration and management of field operations involved in construction phase of this Work.
   5. Term "Work" includes all labor, equipment and materials necessary to produce project required by Construction Documents.
   6. Term "Substantial Completion" is date when project or specified area of project is certified by Architect / Engineer that construction is sufficiently completed, in accordance with Construction Documents, and as modified by any subsequent changes agreed to by parties, so that County may occupy project or specified area of project for use for which it was intended subject to permit approval for occupancy.
   7. Contractor is person, firm, or corporation with whom County makes Contract. Though multiple contracts may be involved, Construction Documents treat them throughout as if each were of singular number.

3. ADDITIONAL INSTRUCTIONS AND DRAWINGS

A. Contractor may be furnished additional instructions and detail drawings as necessary to carry out the Work included in Contract. Additional drawings and instructions thus supplied to Contractor will coordinate with Construction Documents and will be so prepared that they can be reasonably interpreted as part thereof. Contractor shall carry out the Work in accordance with additional detail drawings and instructions.

4. SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

A. Unless otherwise specified, Contractor shall submit three (3) copies of all Shop Drawings for each submission, until receiving final approval. After final approval, provide five (5) additional copies for distribution and such other copies as may be required.

B. Contractor shall submit, on an on-going basis and as directed, Product Data such as brochures that shall contain catalog cuts and specifications of all furnished mechanical and electrical equipment. After Architect / Engineer's approval, one (1) copy shall remain in Architect / Engineer's file, one (1) kept at Department's office and one (1) kept at job site by Contractor for reference purposes.

C. Samples shall consist of physical examples furnished by Contractor in sufficient size and quantity to illustrate materials, equipment or workmanship, and to establish standards to compare the Work.
   1. Submit Samples in sufficient quantity (minimum of two (2)) to permit Architect / Engineer to make all necessary tests and of adequate size showing quality, type, color range, finish, and texture. Label each Sample stating material, type, color, thickness, size, project name, and Contractor's name.
   2. Submit transmittal letter requesting approval, and prepay transportation charges to Architect / Engineer's office on samples forwarded.
   3. Materials installed shall match approved Samples.

D. Contractor shall review Shop Drawings and place their dated stamp thereon to evidence their review and approval and shall submit with reasonable promptness and in orderly sequence to cause no delay in the Work or in work of any other contractor. At time of submission, Contractor shall inform Architect / Engineer in writing of any deviation in Shop Drawings or Samples from requirements of Construction Documents. Architect / Engineer will not consider partial lists.

E. Architect / Engineer will review and approve or reject Shop Drawings with reasonable promptness to cause no delay. Architect / Engineer's approval shall not relieve Contractor from responsibility for errors or omissions in Shop Drawings.

F. Contractor shall not commence any work requiring Shop Drawing, Product Data or Sample submission until Architect / Engineer has approved submission. All such work shall be in accordance with approved Shop Drawings, Product Data and Samples.

G. Contractor shall keep on site of the Work, approved or conformed copy of Shop Drawings and shall at all times give Department access thereto.

H. By stamping and submitting Shop Drawings, Product Data and Samples, Contractor thereby represents that he or she has or will determine and verify all field measurements, field construction criteria, materials, catalog numbers, and similar data and that he or she has checked and coordinated each Shop Drawing, Product Data and Sample with requirements of the Work and of Construction Documents. Architect / Engineer shall return without examination, Shop Drawings, Product Data and Samples not so noted.

I. All Shop Drawings from any one Contractor should be numbered consecutively and on cover sheet shall bear name and location of project, name of Contractor, date of submittal and date of each correction or revision and associated Specification section and page number.

5. CUTTING AND PATCHING

A. Contractor shall be responsible for all cutting, fitting or patching required to complete the Work or to make its parts fit together properly.

B. Contractor shall not damage or endanger portion of the Work or fully or partially completed construction of County or separate contractors by cutting, patching or otherwise altering such construction, or by excavation. Contractor shall not cut or otherwise alter such construction by County or separate contractor except with written consent of County and of such separate contractor; such consent shall not be unreasonably withheld. Contractor shall not withhold unreasonably from County or separate contractor, Contractor's consent to cutting or otherwise altering the Work.

6. CLEANING UP

A. Contractor shall keep premises and surrounding area free from accumulation of waste materials or rubbish caused by operations under Contract. Contractor shall remove from and about the Work waste materials, rubbish, Contractor's tools, construction equipment, machinery, and surplus materials at completion of the Work. Contractor shall maintain streets and sidewalks around the Work site in clean condition. Contractor shall remove all spillage and prevent tracking of spillage arising from performance of the Work, into, out of, and within the Work site. Contractor shall establish regular maintenance program of sweeping, vacuuming and / or hosing to minimize accumulation of dirt and dust upon such areas.

B. If Contractor fails to clean up as directed in Construction Documents, County may do so and shall charge Contractor cost thereof.

C. Contractor shall be responsible for broken windows and glass, and at completion of the Work shall replace such damaged or broken windows and glass. After replacing damaged or broken windows and glass, Contractor shall remove all labels, wash and polish both sides of all windows and glass.

D. In addition to general cleaning (sweeping, vacuuming and / or hosing, as is appropriate to work surface), Contractor shall perform following final cleaning for all trades at completion of the Work:
   1. Remove temporary protections;
   2. Remove marks, stains, fingerprints and other soil or dirt from painted, decorated and finished woodwork and wall surfaces;
   3. Remove spots, plaster, soil and paint from ceramic tile, marble and other finished materials, and wash or wipe clean;
   4. Clean fixtures, cabinet work and equipment, removing stains, paint, dirt and dust, and leave same in undamaged, new condition;
   5. Clean aluminum in accordance with recommendations of manufacturer; and
   6. Clean resilient floors thoroughly with well-rinsed mop containing only enough moisture to clean off any surface dirt or dust and buff dry by machine to bring surfaces to sheen.

7. USE OF SITE

A. Contractor shall provide County and Architect / Engineer access to the Work under all circumstances.

B. Contractor shall confine operations at site to areas permitted by County, law, ordinance, permits and Construction Documents and shall not unreasonably encumber site with materials or equipment. Contractor shall assure free, convenient, unencumbered, direct and safe access to all properties adjacent to the Work for County, its employees, invitees and guests.

C. Contractor & subcontractors shall follow all current *Public Health - Madison & Dane County* procedures & recommendations including the mandatory use of face masks while inside any County facility. County Project Manager shall clarify these procedures & recommendations at pre-construction meeting.

8. MATERIALS AND WORKMANSHIP

A. Contractor shall perform all work and furnish all supplies and materials, machinery, equipment, facilities and means, necessary to complete the Work required by this Contract, within time specified, in accordance with provisions of Construction Documents.

B. All equipment and materials incorporated in the Work covered by this Contract are to be new; use recycled and / or recovered materials to extent that such use is technically and economically feasible. Recovered materials are products recovered from solid waste in form identical to original form for use that is same as, or similar to original use. Recycled materials are products manufactured from solid waste.

C. If requested, Contractor shall furnish satisfactory evidence as to kind and quality of construction materials proposed or used. Contractor shall furnish to Architect / Engineer, for approval, manufacturer name and model, performance capacities and other pertinent information of machinery, mechanical, electrical or other types of equipment, which Contractor plans to install.

D. If not otherwise provided, materials and labor called for in this Contract shall be provided and performed in accordance with established practice and standards recognized by Architects, Engineers, Department, and construction industry.

E. Reference to "Standard" specifications of any association or manufacturer, or codes of County authorities, intends most recent printed edition or catalog in effect on date that corresponds with date of Construction Documents.

F. Whenever reference is made in Specifications that work shall be "performed", "applied", in accordance with "manufacturer's directions or instructions", Contractor to whom those instructions are directed shall furnish three (3) printed copies of such instructions to Architect / Engineer before execution of the Work.

9. CONTRACTOR'S TITLE TO MATERIALS

A. Contractor or any subcontractor shall not purchase materials or supplies for the Work subject to any chattel mortgage or under conditional sale contract or other agreement by which seller retains interest. Contractor warrants that all materials and supplies used in the Work are free from all liens, claims or encumbrances and Contractor has good title to them.

10. "OR EQUAL" CLAUSE

A. Whenever equipment or materials are identified on Drawings or in Specifications by reference to manufacturer's or vendor's name, trade name, catalog number, and other identifying information, it is intended to establish standards; and any equipment or material of other manufacturers and vendors which will perform adequately duties imposed by general design will be considered equally accepted provided equipment or material so proposed is, in opinion of Architect / Engineer, of equal substance and function. Architect / Engineer and Department shall provide written approval before Contractor may purchase or install it.

B. Equipment or materials of manufacturers, other than those named, may be used only upon following conditions:
   1. That, in opinion of Architect / Engineer and Department, proposed material or equipment item is fully equal or superior (in design, materials, construction, workmanship, performance, finish, etc.) to named item. No compromise in quality level, however small, is acceptable.
   2. That, in substituting materials or equipment, Contractor assumes responsibility for any changes in system or for modifications required in adjacent or related work to accommodate such substitution despite Architect / Engineer's and Department's approval, and all costs growing out of approval of "or equal" items shall be responsibility of Contractor. No extra costs resulting from such approval shall become responsibility of Department, Architect / Engineer or any other separate Contractor.
   3. It shall be understood that use of materials or equipment other than those specified, or approved equal by Architect / Engineer and Department, shall constitute violation of Contract, and that Architect / Engineer and Department shall have right to require removal of such materials or equipment and their replacement with specified materials or equipment at Contractor's expense.
   4. Product and manufacturer named first in Specifications or on information shown on Drawings is basis of selection of manufactured items and equipment, particularly mechanical equipment. In using other than first named products or manufacturers, including those specified as additionally approved or acceptable, Contractor assumes responsibility for any changes in system and for modifications in any work required to accommodate them. Architect / Engineer's approval of such additionally acceptable products or manufacturers, either in Specifications or in Addendum, does not relieve Contractor from obligation to coordinate such optional products with other Contractors, whose work may be affected by them, and to pay all additional costs resulting from their inclusion into the Work. Contractor's liability shall include payment of Architect / Engineer's fees for any additional services made necessary by or directly connected to such product changes. No extra costs resulting from such changes shall become responsibility of Department, Architect / Engineer or any other separate Contractor.

C. No request for approval of "or equal" materials will be entertained except from Contractor. Identify any request for substitution as substitution on Contractor's letter of transmittal and give reasons for substitution. Department may in its sole discretion allow substitutions of materials.

11. PATENTS AND ROYALTIES

A. If Contractor uses any design, device or material covered by letters, patent or copyright, it is mutually agreed and understood, that, without exception, contract prices shall include all royalties or costs arising from use of such design, device or materials, in any way involved in the Work.

B. Contractor shall indemnify and save harmless County from any and all claims for infringement by reason of use of such patent or copyright in connection with the Work agreed to be performed under this Contract, and shall indemnify County for any cost, expense or damage which it may be obliged to pay by reason of such infringement at any time during prosecution of the Work or after completion of the Work.

12. SURVEYS, PERMITS, REGULATIONS AND TAXES

A. Department will furnish to Contractor all site, topography and property surveys necessary for execution of the Work.

B. Contractor shall procure and pay fees associated with all permits,, licenses and approvals necessary for execution of this Contract. This includes but is not limited to meter fees, parking and site logistics.

C. Contractor shall give all notices and comply with all State of Wisconsin, Federal and local laws, codes, rules and regulations relating to performance of the Work, protection of adjacent property, and maintenance of passageways, guard fences or other protective facilities.

D. Contractor does not need to pay State and local sales & use taxes on building materials that become part of local unit government facilities. See Wisconsin Statute 77.54 (9m). This does not include materials for highways, streets or roads. Contractor shall pay any other Sales, Consumer, Use & other similar taxes or fees required by law.

E. Contractor shall promptly notify Architect / Engineer of any variances of Drawings or Specifications with that of any State of Wisconsin, federal or local law, code, rule or regulation. Upon such notification, Architect / Engineer will require correction of variance to comply with applicable law, code, rule or regulation at no additional cost to Contractor.

F. Work under this Contract shall comply with all applicable State of Wisconsin, Federal and local laws, codes and regulations.

G. Contractor shall pay charges for water, sewer and other utility connections made by municipalities where required by Specifications.

13. CONTRACTOR'S OBLIGATIONS AND SUPERINTENDENCE

A. Contractor shall provide and pay for all materials, labor, tools, equipment, transportation and superintendence necessary to execute, complete and deliver the Work within specified time. Contractor agrees to secure at their own expense all personnel necessary to carry out the Work. Such personnel shall not be deemed County employees nor shall they have or be deemed to have any direct contractual relationship with County.

B. Performance of any work necessary after regular working hours, on Sundays or Legal Holidays shall be without additional expense to County. Performance of any work at site at other than normal working hours must be coordinated with Public Works Project Manager.

C. Contractor shall furnish, erect, maintain and remove such temporary works as may be required.

D. Contractor shall observe, comply with, and be subject to all terms, conditions, requirements and limitations of Construction Documents.

E. At the Work site, Contractor shall give personal superintendence to the Work or shall employ construction superintendent or foreman, experienced in character of work covered by Contract, who shall have full authority to act for Contractor. Understand that such superintendent or foreman shall be acceptable to Architect / Engineer and Department.

F. Remove from project or take other corrective action upon notice from Architect / Engineer or Department for Contractor's employees whose work is considered by Architect / Engineer or Department to be unsatisfactory, careless, incompetent, unskilled or otherwise objectionable.

G. Contractor and subcontractors shall be required to conform to Labor Laws of State of Wisconsin and various acts amendatory and supplementary thereto and to other laws, ordinances and legal requirements applicable to the Work.

H. Presence and observation of the Work by Architect / Engineer or Public Works Project Manager shall not relieve Contractor of any obligations.

14. WEATHER CONDITIONS

A. In event of temporary suspension of work, or during inclement weather, or whenever Architect / Engineer shall direct, Contractor shall, and shall cause subcontractors to protect carefully all work and materials against damage or injury from weather. If, in opinion of Architect / Engineer or Department, any work or materials that have been damaged or injured due to failure on part of Contractor or any subcontractors so to protect the Work, such materials shall be removed and replaced at expense of Contractor.

15. PROTECTION OF WORK AND PROPERTY

A. Contractor shall at all times safely guard County's property from injury or loss in connection with this Contract. Contractor shall at all times safely guard and protect the Work, and adjacent property, from damage. Contractor shall replace or make good any such damage, loss or injury unless such is caused directly by errors contained in Contract, or by County, or County's duly authorized representative.

B. Contractor may act diligently, without previous instructions from Architect / Engineer and / or Department, in emergency that threatens loss or injury of property, or safety of life. Contractor shall notify Architect / Engineer and / or Department immediately thereafter. Promptly submit any claim for compensation by Contractor due to such extra work to Architect / Engineer and / or Department for approval as provided for in Article 18 herein.

16. INSPECTION AND TESTING OF MATERIALS

A. Authorized representatives and agents of County government shall have access at all times to the Work wherever it is in preparation or progress and Contractor shall provide facilities for such access and for inspection.

B. Should it be considered necessary or advisable at any time before final acceptance of the Work to make examination of work already completed, by removing or tearing out same, Contractor shall upon request, promptly furnish all necessary facilities, labor and materials. If such work is found to be defective in any aspect, due to fault of Contractor or subcontractors thereof, Contractor shall assume all expenses of such examination and of satisfactory reconstruction. Contractor will be reimbursed for such examination and replacement in accordance with Article 18 - A.3., of these General Conditions of Contract if such work is found to meet requirements of Contract.

C. If Specifications, Architect / Engineer's, or Public Works Project Manager's instructions require any work to be specially tested or approved, Contractor shall give Architect / Engineer and Public Works Project Manager timely notice of its readiness for testing or inspection. Test all materials and equipment requiring testing in accordance with accepted or specified standards, as applicable. Architect / Engineer shall recommend laboratory or inspection agency and Department will select and pay for all initial laboratory inspection

services. Should retesting be required, due to failure of initial testing, cost of such retesting shall be borne by Contractor.

D. Cost of any testing performed by manufacturers or Contractor for substantiating acceptability of proposed substitution of materials and equipment, or necessary conformance testing in conjunction with manufacturing processes or factory assemblage, shall be borne by Contractor or manufacturer responsible.

17. REPORTS, RECORDS AND DATA

A. Contractor shall submit to Architect / Engineer and Public Works Project Manager such schedule of quantities and costs, progress schedules, payrolls, reports, estimates, invoices, records and other data as either may request concerning work performed or to be performed under this Contract.

18. CHANGES IN THE WORK

A. Make no changes, except in cases of emergency, in the Work covered by approved Construction Documents without having prior written approval of Department. Charges or credits for the Work covered by approved change shall be determined by one of these methods:
   1. Unit bid prices previously approved.
   2. Agreed lump sum based on actual cost of:
      a) Labor, including foremen, and all fringe benefits that are associated with their wages.
      b) Materials entering permanently into the Work.
      c) Ownership or rental cost of construction tools and equipment during time of use on extra work.
      d) Power and consumable supplies for operation of power equipment.
      e) Workmen's Compensation Insurance, Contractor's Public Liability and Property Damage Insurance, and Comprehensive Automobile Liability Insurance.
      f) Social Security and old age and unemployment contributions.
      g) Add to cost under (2), fixed fee to be agreed upon, but not to exceed fifteen percent (15%) of actual cost of work performed with their own labor force. Fee shall be compensation to cover cost of supervision, overhead, bond, profit and any other general expense.
      h) On that portion of the Work under (2) done under subcontract, Contractor may include not over seven and one-half percent (7½%) for supervision, overhead, bond, profit and any other general expense.
      i) Department may require correct amount of costs with supporting vouchers; Contractor shall keep and present in such form as directed.
   3. Cost-plus work, with not-to-exceed dollar limit, based on actual cost of:
      a) Labor, including foremen, and all fringe benefits that are associated with their wages.
      b) Materials entering permanently into the Work.
      c) Ownership or rental cost of construction tools and equipment during time of use on extra work. Rental cost cannot exceed fifty percent (50%) replacement value of rented equipment.
      d) Power and consumable supplies for operation of power equipment.
      e) Workmen's Compensation Insurance, Contractor's Public Liability and Property Damage Insurance, and Comprehensive Automobile Liability Insurance.
      f) Social Security and old age and unemployment contributions.
      g) To cost under (3), there shall be added fixed fee to be agreed upon but not to exceed fifteen percent (15%) of actual cost of work performed with their own labor force.

Fee shall be compensation to cover cost of supervision, overhead, bond, profit, and any other general expense.

h) On that portion of the Work under (3) done under subcontract, Contractor may include not over seven and one-half percent (7½%) for supervision, overhead, bond, profit, and any other general expense.

i) Contractor shall keep and present, in such form as directed, correct amount of cost together with such supporting vouchers as may be required by Department.

B. If Contractor claims that by any instructions given by Architect / Engineer, Department, by drawings or otherwise, regarding performance of the Work or furnishing of material under Contract, involves extra cost, Contractor shall give Department written notice of cost thereof within two (2) weeks after receipt of such instructions and in any event before proceeding to execute work, unless delay in executing work would endanger life or property.

C. No claim for extra work or cost shall be allowed unless it was done in pursuance of written Change Order from Architect / Engineer and approved by Department, as previously mentioned, and claim presented with payment request submitted after changed or extra work is completed.

D. Negotiation of cost for change in the Work shall not be cause for Contractor to delay prosecution of the Work if Contractor has been authorized in writing by Public Works Project Manager to proceed.

19. EXTRAS

A. Without invalidating Contract, Department may order extra work or make changes by altering, adding to or deducting from the Work, contract sum being adjusted in accordance with Article 18 herein.

20. TIME FOR COMPLETION

A. Contractor agrees that the Work shall be prosecuted regularly and diligently and complete the Work as stated in Construction Documents.

21. CORRECTION OF WORK

A. All work, all materials whether incorporated in the Work or not, and all processes of manufacture shall at all times and places be subject to inspection of Architect / Engineer and Public Works Project Manager who shall be judge of quality and suitability of the Work, materials, and processes of manufacture for purposes for which they are used. Should they fail to meet Architect / Engineer's and Public Works Project Manager's approval they shall be reconstructed, made good, replaced or corrected, by Contractor at Contractor's expense. Immediately remove all rejected material from site.

B. If Contractor defaults or neglects to carry out the Work in accordance with Construction Documents or fails to perform any provision of Contract, Department may, after ten (10) business days' written notice to Contractor and without prejudice to any other remedy County may have, make good such deficiencies. In such case, appropriate Change Order shall be issued deducting from Contractor's payments then or thereafter, cost of correcting such deficiencies, including cost of Architect / Engineer's additional services made necessary by such default, neglect or failure.

22. SUBSURFACE CONDITIONS FOUND DIFFERENT

A. If Contractor encounters subsurface or latent conditions at site materially differing from those shown on Drawings or indicated in Specifications, Contractor shall immediately give notice to Architect / Engineer and Public Works Project Manager of such conditions before they are disturbed. Architect / Engineer will thereupon promptly investigate conditions, and if Architect / Engineer finds that they materially differ from those shown on Drawings or indicated in Specifications, Architect / Engineer will at once make such changes as necessary, any increase or decrease of cost resulting from such changes to be adjusted in manner provided in above Article 18 entitled "Changes in the Work".

23. RIGHT OF DEPARTMENT TO TERMINATE CONTRACT

A. In event that any provisions of this Contract are violated by Contractor or by any subcontractors, County may serve written notice upon Contractor and Surety of its intention to terminate Contract, such notice to contain reasons for such intention to terminate Contract, and unless within ten (10) business days after serving of such notice upon Contractor, such violation or delay shall cease and satisfactory arrangement or correction be made, Contract shall, upon expiration of said ten (10) business days, cease and terminate.

B. In event of any such termination, County shall immediately serve notice thereof upon Surety and Contractor, and Surety shall have right to take over and perform Contract subject to County's approval; provided, however, that if Surety does not commence performance thereof within ten (10) business days from date of mailing to such Surety of notice of termination, County may take over the Work and prosecute same to completion by contract, or by force account, at expense of Contractor; Contractor and Surety shall be liable to County for any excess cost occasioned County thereby, and in such event County may take possession of and utilize in completing the Work, such materials and equipment as may be on the Work site and therefore necessary.

24. CONSTRUCTION SCHEDULE AND PERIODIC ESTIMATES

A. Contractor shall be responsible for Construction Schedule and coordination. Immediately after execution and delivery of Contract and before making first payment, Contractor shall notify all subcontractors to furnish all required information to develop Construction Schedule. Contractor and all subcontractors associated with the Work shall furnish following information from each Division of Specifications:
   1. List of construction activities;
   2. Start, finish and time required for completion of each activity;
   3. Sequential relationships between activities;
   4. Identify all long lead-time items, key events, meetings or activities such as required submittals, fabrication and delivery, procurement of materials, installation and testing;
   5. Weekly definition of extent of work and areas of activity for each trade or Subcontract; and
   6. Other information as determined by Public Works Project Manager.

B. In addition to above requested items, Contractor shall request delivery dates for all County-furnished equipment, materials or labor. This shall include any work handled by Department under separate contracts such as asbestos abatement, air and water balancing, etc. Indicate on Construction Schedule these associated delivery and installation dates.

C. Progress Reporting:

1. Contractor shall update and publish Construction Schedule on monthly basis. Revisions to Schedule shall be by Contractor and made in same detail as original Schedule and accompanied by explanation of reasons for revision; and shall be subject to approval by Department.
2. Failure of Contractor to keep Schedule in updated format shall result in County hiring firm specializing in construction schedule development and deducting those costs associated with updating process from payments due Contractor.
3. Contractor shall submit show actual percentage of each activity completed, estimated future progress, and anticipated completion time.

D. Responsibility for timely completion requires:
   1. Contractor and subcontractors understand that performance of each is interdependent upon performance of others.
   2. Whenever it becomes apparent from current schedule, that phasing or progress completion dates will not be met, Contractor must take some or all following actions at no additional cost to County:
      a) Increase construction labor in such quantities and crafts as will eliminate backlog of work.
      b) Increase number of working hours per shift, shifts per working day, working days per week, amount of construction equipment, or any combination of foregoing to eliminate backlog of work.
      c) Reschedule work (yet remain in conformance with Drawings and Specifications).
   3. Prior to proceeding with any of above actions, Contractor shall notify Public Works Project Manager.

E. Maintain current Construction Schedule at all times. Revise Construction Schedule in same detail as original and accompany with explanation of reasons for revision. Schedule shall be subject to approval by Architect / Engineer and Public Works Project Manager.

25. PAYMENTS TO CONTRACTOR

A. Contractor shall provide:
   1. Detailed estimate giving complete breakdown of contract price by Specification Division; and
   2. Periodic itemized estimates of work done for purpose of making partial payments thereon.

B. Submit these estimates for approval first to Architect / Engineer, then to Public Works Project Manager. Costs employed in making up any of these schedules are for determining basis of partial payments and not considered as fixing basis for additions to or deductions from Contract price.

C. County will make partial payments to Contractor for value, proportionate to amount of Contract, of all labor and material incorporated in the Work during preceding calendar month upon receipt of Application and Certificate for Payment form from Architect / Engineer and approval of Department.

D. Contractor shall submit for approval first to Architect / Engineer, and then to Public Works Project Manager all Application and Certificate for Payment forms. If requested, Application and Certificate for Payment shall be supported by such additional evidence as may be required, showing Contractor's right to payment claimed.

E. Application and Certificate for Payment for preparatory work and materials delivered and suitably stored at site to be incorporated into the Work at some future period, will be given due consideration. Requesting payment for materials stored off site, may be rejected, however, if deemed essential for reasons of job progress, protection, or other sufficient cause, requests will be considered, conditional upon submission by Contractor of bills of sale, photographs and such other procedures as will adequately protect County's interest such as storage in bonded warehouse with adequate coverage. If there is any error in payment, Contractor is obligated to notify Department immediately, but no longer than ten (10) business days from receipt of payment.

F. Payments by County will be due within forty-five (45) business days after receipt by Department of Application and Certificate for Payment.

G. County will retain five percent (5%) of each Application and Certificate for Payment until final completion and acceptance of all the Work covered by Contract. However, anytime after fifty percent (50%) of the Work has been furnished and installed at site, County will make remaining payments in full if Architect / Engineer and Public Works Project Manager find that progress of the Work corresponds with Construction Schedule. If Architect / Engineer and Public Works Project Manager find that progress of the Work does not correspond with Construction Schedule, County may retain up to ten percent (10%) of each Application and Certificate for Payment for the Work completed.

H. All material and work covered by partial payments made shall become sole property of County, but this provision shall not be construed as relieving Contractor from sole responsibility for care and protection of materials and work upon which payments have been made, or restoration of any damaged work, or as waiver of right of County to require fulfillment of all of terms of Contract.

I. County will make final payment within sixty (60) calendar days after final completion of the Work, and will constitute acceptance thereof.

J. County may make payment in full, including retained percentages and less authorized deductions, upon completion and acceptance of each Division where price is stated separately in Contract.

K. Every contractor engaged in performance of any contract for Department of Public Works, Highway & Transportation shall submit to this Department, as requested and with final application for payment for work under said contract, affidavit(s) as required to prove that all debts and claims against this Work are paid in full or otherwise satisfied, and give final evidence of release of all liens against the Work and County.

26. WITHHOLDING OF PAYMENTS

A. County, after having served written notice on said Contractor, may either pay directly any unpaid bills of which Department has written notice, or withhold from Contractor's unpaid compensation sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged; whereupon, payment to Contractor shall be resumed in accordance with terms of this Contract, but in no event shall these provisions be construed to impose any obligations upon County to either Contractor or Contractor's Surety.

B. In paying any unpaid bills of Contractor, County shall be deemed agent of Contractor, and any payment so made by County, shall be considered as payment made under Contract by

County to Contractor and County shall not be liable to Contractor for any such payment made in good faith.

C. Contractor shall indemnify, hold harmless and defend Dane County, its boards, commissions, agencies, officers, employees and representatives from all claims growing out of lawful demands of subcontractors, laborers, workers, mechanics, material men, and furnishers of machinery and parts thereof, equipment, power tools, and all supplies, including commissary, incurred in performance of this Contract.

D. At Department's request, Contractor shall furnish satisfactory evidence that all obligations of nature designated above have been paid, discharged or waived.

27. ACCEPTANCE OF FINAL PAYMENT AS RELEASE

A. Making of final payment shall constitute waiver of all claims by County except those arising from:
   1. Unsettled lien;
   2. Faulty or defective work appearing after substantial completion;
   3. Failure of the Work to comply with requirements of Construction Documents; or
   4. Terms of any special guarantees required by Construction Documents.

B. Acceptance of final payment shall constitute waiver of all claims by Contractor.

28. PAYMENTS BY CONTRACTOR

A. Contractor shall pay following not later than fifth (5^{th}) business day following each payment received from County:
   1. All transportation and utility services rendered;
   2. All materials, tools, and other expendable equipment that have been delivered at site of the Work to extent of ninety percent (90%) of cost thereof, and balance of cost thereof when said balance is paid to Contractor; and
   3. Each subcontractor, respective amount allowed Contractor because of work performed by subcontractor to extent of subcontractor's interest therein.

29. CONTRACT SECURITY

A. Contractor shall furnish Performance and Payment Bonds in amount at least equal to one hundred percent (100%) of Contract price as security for faithful performance of this Contract and payment of all persons performing labor on project under this Contract and furnishing materials in connection with this Contract.

B. Sample Performance and Payment Bonds that Contractor will be required to execute is bound into these Construction Documents. Before construction Contract is consummated, completed Performance and Payment Bonds must be approved by Department.

30. ASSIGNMENTS

A. Contractor shall not assign whole or any part of this Contract or any moneys due or to become due hereunder without written consent of Department. In case Contractor assigns all or any part of any moneys due or to become due under this Contract, instrument of assignment shall contain clause substantially to effect that it is agreed that right of assignee in and to any moneys due or to become due to Contractor shall be subject to prior claims of all

persons, firms and corporations for services rendered or materials supplied for performance of the Work called for in this Contract.

31. MUTUAL RESPONSIBILITY OF CONTRACTORS

A. If, through acts of neglect on part of Contractor or any subcontractor shall suffer loss or damage on the Work, Contractor agrees to settle with such subcontractor by agreement or arbitration if such other subcontractor will so settle. If such subcontractor shall assert any claim against County on account of any damage alleged to have been sustained, Department shall notify Contractor, who shall indemnify, hold harmless and defend Dane County, its boards, commissions, agencies, officers, employees and representatives against any such claim.

32. SEPARATE CONTRACTS

A. Department may award other contracts for the Work and all Contractors shall fully cooperate with each other and carefully adjust their work to that provided under other contracts as may be directed by Department. No Contractor shall commit or permit any act that will interfere with performance of the Work by any other Contractor.

B. Contractor shall coordinate the Work with those of other Contractors. Cooperation will be required in arrangement for storage of materials and in detailed execution of the Work. Contractor, including subcontractors, shall keep informed of progress and detail work of others and shall notify Architect / Engineer or Department immediately of lack of progress or defective workmanship on part of others. Failure of Contractor to keep informed of the Work progressing on site and failure to give notice of lack of progress or defective workmanship by others shall be construed as acceptance by Contractor of status of the Work as being satisfactory for proper coordination with Contractor's own work.

33. SUBCONTRACTS

A. Contractor may use services of specialty subcontractors on those parts of the Work that, under normal contracting practices, are performed by specialty subcontractors.

B. Contractor shall not award any work to any subcontractor without prior approval of Department. Qualifications of subcontractors shall be same as qualifications of Contractor. Request for subcontractor approval shall be submitted to Department fifteen (15) business days before start of subcontractor's work. If subcontractors are changed or added, Contractor shall notify Department in writing.

C. Contractor shall be as fully responsible to County for acts and omissions of subcontractors, and of persons either directly or indirectly employed by them, as Contractor is for acts and omissions of persons directly employed by Contractor.

D. Contractor shall cause appropriate provisions to be inserted in all subcontracts relative to the Work to bind subcontractors to Contractor by terms of General Conditions of Contract and other Construction Documents insofar as applicable to work of subcontractors and to give Contractor same power as regards terminating any subcontract that Department may exercise over Contractor under any provision of Construction Documents.

E. Nothing contained in this Contract shall create any contractual relation between any subcontractor and County.

F. Contractor shall insert in all subcontracts, Articles 26, 33, 43 and 45, respectively entitled: "Withholding of Payments", "Subcontracts", "Affirmative Action Provision and Minority / Women / Disadvantaged Business Enterprises", and "Minimum Wages", and shall further require all subcontractors to incorporate physically these same Articles in all subcontracts.

34. PROJECT MANAGER'S AUTHORITY

A. Public Works Project Manager shall:
   1. Administer and ensure compliance with Construction Documents;
   2. Provide responsible on-site observations of construction and have authority to request work and to stop work whenever necessary to insure proper enforcement of Construction Documents;
   3. Convene and chair project meetings and foreman's coordination meetings when necessary to coordinate resolution of conflicts between Contractors, Architects, Engineers, Consultants, and Department; and
   4. Check and inspect material, equipment and installation procedures of all trades for proper workmanship and for compliance with Drawings, Specifications and Shop Drawings, permit no material on project site that is not satisfactory and reject work not in compliance with Construction Documents.

35. CONSULTANT'S AUTHORITY

A. Architect / Engineer is retained by, and is responsible to Department acting for County.

B. Architect / Engineer shall determine amount, quality, acceptability, and fitness of several kinds of work and materials that are provided under this Contract and shall decide all questions that may arise in relation to said work and construction thereof.

C. Architect / Engineer shall decide meaning and intent of any portion of Specifications and of any Drawings where they may be found obscure or be in dispute.

D. Architect / Engineer shall provide responsible observation of construction. Architect / Engineer has authority to stop the Work whenever such stoppage may be necessary to insure proper execution of Construction Documents.

E. Architect / Engineer shall be interpreter of conditions of Construction Documents and judge of its performance.

F. Within reasonable time, Architect / Engineer shall make decisions on all matters relating to progress of the Work or interpretation of Construction Documents.

G. Architect / Engineer's decisions are subject to review by Public Works Project Manager.

36. STATED ALLOWANCES

A. Stated allowances enumerated in Instructions to Bidders shall cover net cost of materials or equipment, and all applicable taxes. Contractor's cost of delivery and unloading at site, handling costs on site, labor, installation costs, overhead, profit and any other incidental costs shall be included in Contractor's bid, but not as part of cash allowance.

B. Department will solicit at least two (2) bids on materials or equipment for which allowance is stated and select on basis of lowest qualified responsible bid. Contractor will then be instructed to purchase "Allowed Materials". If actual price for purchasing "Allowed Materials", including taxes, is more or less than "Cash Allowance", Contract price shall be adjusted accordingly. Adjustment in Contract price shall not contain any cost items excluded from cash allowance.

37. ESTIMATES OF QUANTITIES

A. Whenever estimated quantities of work to be done and materials to be furnished under this Contract are shown in any of Construction Documents, they are given for use in comparing bids and right is especially reserved to increase or diminish them as they may be deemed reasonably necessary or desirable by Department to complete the Work included in this Contract, and cost for such increase or diminution shall be adjusted in manner provided for in General Conditions of Contract Article 18 entitled "Changes in the Work".

38. LANDS AND RIGHTS-OF-WAY

A. Prior to start of construction, County shall furnish all land and rights-of-way necessary for carrying out and completion of the Work to be performed under this Contract.

39. GENERAL GUARANTEE

A. Neither final certificate of payment nor any provision in Construction Documents nor partial or entire occupancy of premises by County shall constitute acceptance of work not done in accordance with Construction Documents or relieve Contractor of liability in respect to any expressed warranties or responsibility for faulty materials or workmanship.
   1. In no event shall making of any payment required by Contract constitute or be construed as waiver by County of any breach of covenants of Contract or waiver of any default of Contractor and making of any such payment by County while any such default or breach shall exist shall in no way impair or prejudice right of County with respect to recovery of damages or other remedy as result of such breach or default.

B. Contractor shall remedy and make good all defective workmanship and materials and pay for any damage to other work resulting there from, which appear within period of one (1) year from date of substantial completion, providing such defects are not clearly due to abuse or misuse by County. Department will give notice of observed defects with reasonable promptness.

C. Guarantee on work executed after certified date of substantial completion will begin on date when such work is inspected and approved by Architect / Engineer's and Public Works Project Manager.

D. Where guarantees or warrantees are required in sections of Specifications for periods in excess of one (1) year, such longer terms shall apply; however, Contractor's Performance and Payment Bonds shall not apply to any guarantee or warranty period in excess of one (1) year.

40. CONFLICTING CONDITIONS

A. Any provision in any of Construction Documents which may be in conflict or inconsistent with any Articles in these General Conditions of Contract or Supplementary Conditions shall be void to extent of such conflict or inconsistency.

B. In case of ambiguity or conflict between Drawings and Specifications, Specifications shall govern.

C. Printed dimensions shall be followed in preference to measurements by scale. Large-scale drawings take precedence over small-scale drawings. Dimensions on Drawings and details are subject to field measurements of adjacent work.

41. NOTICE AND SERVICE THEREOF

A. Any notice to Contractor from Department relative to any part of this Contract shall be in writing and considered delivered and service thereof completed, when said notice is posted, by certified or registered mail, to Contractor at Contractor's last given address, or delivered in person to said Contractor, or Contractor's authorized representative on the Work.

42. PROTECTION OF LIVES AND HEALTH

A. In order to protect lives and health of Contractor's employees under Contract, Contractor shall comply with all pertinent provisions of Wisconsin Administrative Code, Rules of Department of Commerce, relating to Safety and Health.

B. Contractor alone shall be responsible for safety, efficiency and adequacy of Contractor's tools, equipment and methods, and for any damage that may result from their failure or their improper construction, maintenance or operation.

43. AFFIRMATIVE ACTION PROVISION AND MINORITY / WOMEN / DISADVANTAGED BUSINESS ENTERPRISES

A. Affirmative Action Provisions.
   1. During term of their Contract, Contractor agrees not to discriminate on basis of race, religion, color, sex, handicap, age, sexual preference, marital status, physical appearance, or national origin against any person, whether recipient of services (actual or potential), employee, or applicant for employment. Such equal opportunity shall include but not be limited to following: employment, upgrading, demotion, transfer, recruitment, advertising, layoff, termination, training, rates of pay, and any other form of compensation or level of service(s). Contractor agrees to post in conspicuous places, these affirmative action standards so as to be visible to all employees, service recipients and applicants for this paragraph. Listing of prohibited bases for discrimination shall no be construed to amend in any fashion state or federal law setting forth additional bases and exceptions shall be permitted only to extent allowable in state or federal law.
   2. Contractor is subject to this Article only if Contractor has twenty (20) or more employees and receives $20,000.00 or more in annual aggregate contracts with County. Contractor shall file and Affirmative Action Plan with Dane County Contract Compliance Specialist in accord with Chapter 19 of Dane County Code of Ordinances. Such plan must be filed within fifteen (15) business days of effective date of this Contract and failure to do so by said date shall constitute ground for immediate termination of Contract by County. Contractor shall also, during term of this Contract, provide copies of all announcements of employment opportunities to County's Office of Equity & Inclusion, and shall report annually number of persons, by race, sex and handicap status, who apply for employment, and, similarly classified, number hired and number rejected.

3. Contact Dane County Contract Compliance Specialist at Dane County Office of Equity & Inclusion, 210 Martin Luther King, Jr. Blvd., Room 356, Madison, WI 53703, 608/266-4192.
4. In all solicitations for employment placed on Contractor's behalf during term of this Contract, Contractor shall include statement to affect Contractor is "Equal Opportunity Employer". Contractor agrees to furnish all information and reports required by County's Contract Compliance Specialist as same relate to affirmative action and nondiscrimination, which may include any books, records, or accounts deemed appropriate to determine compliance with Chapter 19, Dane County Code of Ordinances, and provision of this Contract.

B. Minority / Women / Disadvantaged / Emerging Small Business Enterprises.
1. Chapter 19.508 of Dane County Code of Ordinances is official policy of Dane County regarding utilization of, to fullest extent of, Minority Business Enterprises (MBEs), Women Business Enterprises (WBEs) Disadvantage Business Enterprises (DBEs) and Emerging Small Business Enterprises (ESBEs).
2. Contractor may utilize MBEs / WBEs / DBEs / ESBEs as subcontractors or suppliers. List of subcontractors will be required of low bidder as stated in this Contract. List shall indicate which are MBEs / WBEs / DBEs / ESBEs and percentage of subcontract awarded, shown as percentage of total dollar amount of bid.

44. COMPLIANCE WITH FAIR LABOR STANDARDS

A. During term of this Contract, Contractor shall report to County Contract Compliance Specialist, within ten (10) business days, any allegations to, or findings by National Labor Relations Board (NLRB) or Wisconsin Employment Relations Commission (WERC) that Contractor has violated statute or regulation regarding labor standards or relations. If investigation by Contract Compliance Specialist results in final determination that matter adversely affects Contractor's responsibilities under this Contract, and which recommends termination, suspension or cancellation of this Contract, County may take such action.

B. Contractor may appeal any adverse finding by Contract Compliance Specialist as set forth in Dane County Ordinance 25.015(11)(c) through (e).

C. Contractor shall post this statement in prominent place visible to employees: "As condition of receiving and maintaining contract with Dane County, this employer shall comply with federal, state and all other applicable laws prohibiting retaliation or union organizing."

45. USE AND OCCUPANCY PRIOR TO ACCEPTANCE

A. Contractor agrees to use and occupancy of portion or unit of the Work before formal acceptance by Department, provided Department:
1. Secures written consent of Contractor; except when in opinion of Public Works Project Manager, Contractor is chargeable with unwarranted delay in final cleanup of punch list items or other Contract requirements.
2. Secures endorsement from insurance carrier and consent of Surety permitting occupancy of building or use of the Work during remaining period of construction, or, secures consent of Surety.
3. Assumes all costs and maintenance of heat, electricity and water.
4. Accepts all work completed within that portion or unit of the Work to be occupied, at time of occupancy.

46. CLAIMS

A. No claim may be made until Department's Public Works Director has reviewed Architect / Engineer's decision as provided for in Article 35 of General Conditions of Contract. If any claim remains unresolved after such review by Department's Public Works Director, the claim may be filed under Wisconsin Statute 893.80. Work shall progress during period of any dispute or claim. Unless specifically agreed between parties, venue will be in Dane County, Wisconsin.

47. ANTITRUST AGREEMENT

A. Contractor and County recognize that in actual economic practice, overcharges resulting from antitrust violations are in fact usually borne by County. Therefore, Contractor hereby assigns to County any and all claims for such overcharges as to goods and materials purchased in connection with this Contract, except as to overcharges which result from antitrust violations commencing after price is established under this Contract and any change order thereto.

48. INSURANCE

A. Contractor Carried Insurance:
   1. Contractor shall not commence work under this Contract until Contractor has obtained all insurance required under this Article and has provided evidence of such insurance to Risk Manager, 425 City-County Building, 210 Martin Luther King Jr. Blvd., Madison, WI 53703. Contractor shall not allow any subcontractor to commence work until insurance required of subcontractor has been so obtained and approved. Company providing insurance must be licensed to do business in Wisconsin.
   2. Worker's Compensation Insurance:
      a) Contractor shall procure and shall maintain during life of this Contract, Worker's Compensation Insurance as required by statute for all of Contractor's employees engaged in work at site of project under this Contract and, in case of any such work sublet, Contractor shall require subcontractor similarly to provide Worker's Compensation Insurance for all of latter's employees to be engaged in such work unless such employees are covered by protection afforded by Contractor's Worker's Compensation Insurance.
      b) If any claim of employees engaged in hazardous work on project under this Contract is not protected under Worker's Compensation Statute, Contractor shall provide and shall cause each subcontractor to provide adequate Employer's Liability Insurance for protection of such of Contractor's employees as are not otherwise protected.
   3. Contractor's Public Liability and Property Damage Insurance:
      a) Contractor shall procure and maintain during life of this Contract, Contractor's Public Liability Insurance and Contractor's Property Damage Insurance in amount not less than $1,000,000 bodily injury, including accidental death, to any one person, and subject to same limit for each person, in amount not less than $1,000,000 on account of one accident, and Contractor's Property Damage Insurance in amount not less then $1,000,000 or combined single limit of at least $1,000,000 with excess coverage over and above general liability in amount not less than $5,000,000. Contractor shall add "Dane County" as additional insured for each project.
      b) Contractor's Public Liability and Property Damage Insurance shall include Products, Completed Operation, and Contractual Liability under Insurance Contract. "Contractor shall in all instances save, defend, indemnify and hold harmless County and Architect / Engineer against all claims, demands, liabilities, damages or any other costs which may accrue in prosecution of the Work and that Contractor will save, defend, indemnify and hold harmless County and Architect / Engineer from all

damages caused by or as result of Contractor's operations" and each shall be listed as additional insured on Contractor's and subcontractors' insurance policies.

c) Obligations of Contractor under Article 50.A.2.b) shall not extend to liability of Architect / Engineer, agents or employees thereof, arising out of:
   1) Preparation or approval of maps, drawings, opinions, reports, surveys, change orders, designs or specifications; or
   2) Giving of or failure to give directions or instructions by Architect / Engineer, agents or employees thereof provided such giving or failure to give is primary cause of injury or damage.

d) Contractor shall procure and shall maintain during life of this Contract, Comprehensive Automobile Liability Insurance covering owned, non-owned and hired automobiles for limits of not less than $1,000,000 each accident single limit, bodily injury and property damage combined with excess coverage over and above general liability in amount not less than $5,000,000.

e) Contractor shall either:
   1) Require each subcontractor to procure and to maintain during life of subcontract, subcontractor's Public Liability Property Damage Insurance, and Comprehensive Automobile Liability Insurance of type and in same amount specified in preceding paragraphs; or
   2) Insure activities of subcontractors in Contractor's own policy.

4. Scope of Insurance and Special Hazards: Insurance required under Article 50.A.2 & 50.A.3. hereof shall provide adequate protection for Contractor and subcontractors, respectively, against damage claims which may arise from operations under this Contract, whether such operation be by insured or by anyone directly or indirectly employed by insured and also against any of special hazards which may be encountered in performance of this Contract as enumerated in Supplementary Conditions.
5. Proof of Carriage of Insurance: Contractor shall furnish Risk Manager with certificates showing type, amount, class of operations covered, effective dates, dates of expiration of policies and "Dane County" listed as additional insured. Such certificates shall also contain (substantially) following statement: "Insurance covered by this certificate will not be canceled or materially altered, except after ten (10) business days written notice has been received by Risk Manager."

B. Builder's Risk:
   1. County shall provide Builder's Risk insurance coverage for its insurable interests in construction or renovation projects with completed value of $1,000,000 or less. Therefore, if project completed value is more than $1,000,000, Contractor shall obtain and maintain in force, at its own expense, Builder's Risk Insurance on all risks for amount equal to full completed value of covered structure or replacement value of alterations or additions. Any deductible shall not exceed $25,000 for each loss. Policy shall include occupancy clause and list Dane County as loss payee.

C. Indemnification / Hold Harmless:
   1. Contractor shall indemnify, hold harmless and defend Dane County, its boards, commissions, agencies, officers, employees and representatives from and against all claims, damages, losses and expenses including attorneys' fees arising out of or resulting from performance of the Work, provided that any such claim, damage, loss or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself) including loss of use resulting therefrom, and is caused in whole or in part by any act or omission of Contractor, any subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by part indemnified hereunder.

2. In any and all claims against Dane County, its boards, commissions, agencies, officers, employees and representatives or by any employee of Contractor, any subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, indemnification obligation under this Contract shall not be limited in any way by any limitation on amount or type of damages, compensation or benefits payable by or for Contractor or any subcontractor under worker's compensation acts, disability benefits or other employee benefit acts.
3. Obligations of Contractor under this Contract shall not extend to liability of Architect / Engineer, its agents or employees arising out of:
    a) Preparation or approval of maps, drawings, opinion, reports, surveys, change orders, designs or specifications; or
    b) Giving of or failure to give directions or instruction by Architect / Engineer, its agents or employees provided such giving or failure to give is primary cause of injury or damage.
4. Dane County shall not be liable to Contractor for damages or delays resulting from work by third parties or by injunctions or other restraining orders obtained by third parties.

49. WISCONSIN LAW CONTROLLING

A. It is expressly understood and agreed to by parties hereto that in event of any disagreement or controversy between parties, Wisconsin law shall be controlling.

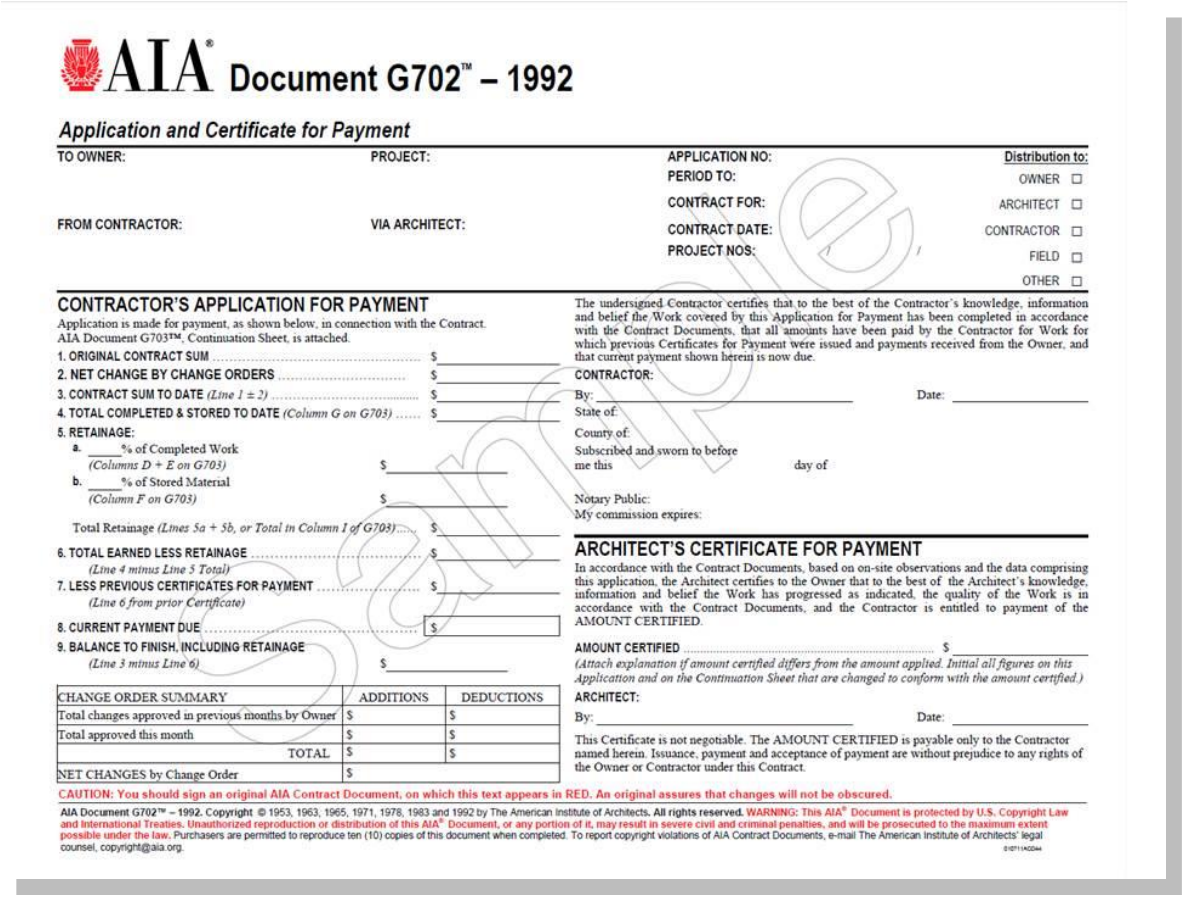
END OF SECTION

SECTION 00 73 00

SUPPLEMENTARY CONDITIONS

1. APPLICATION & CERTIFICATE FOR PAYMENT

A. Every contractor engaged in performance of any contract for Department of Administration Public Works Engineering Division shall submit partial and final Application & Certificate for Payment for work under said contract. Form shall provide similar information as shown on AIA G702™ and G703™ forms (samples shown below). Forms shall be submitted to Public Works Project Manager for approval.



AIA® Document G702™ – 1992

Application and Certificate for Payment

TO OWNER: PROJECT: APPLICATION NO: Distribution to:
PERIOD TO: OWNER ☐
CONTRACT FOR: ARCHITECT ☐
FROM CONTRACTOR: VIA ARCHITECT: CONTRACT DATE: CONTRACTOR ☐
PROJECT NOS: / / FIELD ☐
OTHER ☐

CONTRACTOR'S APPLICATION FOR PAYMENT

Application is made for payment, as shown below, in connection with the Contract.
AIA Document G703™, Continuation Sheet, is attached.

1. ORIGINAL CONTRACT SUM ..... $
2. NET CHANGE BY CHANGE ORDERS ..... $
3. CONTRACT SUM TO DATE *(Line 1 ± 2)* ..... $
4. TOTAL COMPLETED & STORED TO DATE *(Column G on G703)* ..... $
5. RETAINAGE:
   a. ____% of Completed Work *(Columns D + E on G703)* $
   b. ____% of Stored Material *(Column F on G703)* $
   Total Retainage *(Lines 5a + 5b, or Total in Column I of G703)* ..... $
6. TOTAL EARNED LESS RETAINAGE ..... $ *(Line 4 minus Line 5 Total)*
7. LESS PREVIOUS CERTIFICATES FOR PAYMENT ..... $ *(Line 6 from prior Certificate)*
8. CURRENT PAYMENT DUE ..... $
9. BALANCE TO FINISH, INCLUDING RETAINAGE *(Line 3 minus Line 6)* $

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTIONS
Total changes approved in previous months by Owner	$	$
Total approved this month	$	$
TOTAL	$	$
NET CHANGES by Change Order	$	

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief the Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for Work for which previous Certificates for Payment were issued and payments received from the Owner, and that current payment shown herein is now due.

CONTRACTOR:
By: Date:
State of:
County of:
Subscribed and sworn to before me this day of
Notary Public:
My commission expires:

ARCHITECT'S CERTIFICATE FOR PAYMENT

In accordance with the Contract Documents, based on on-site observations and the data comprising this application, the Architect certifies to the Owner that to the best of the Architect's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the AMOUNT CERTIFIED.

AMOUNT CERTIFIED ..... $
(Attach explanation if amount certified differs from the amount applied. Initial all figures on this Application and on the Continuation Sheet that are changed to conform with the amount certified.)
ARCHITECT:
By: Date:

This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.

CAUTION: You should sign an original AIA Contract Document, on which this text appears in RED. An original assures that changes will not be obscured.

AIA® Document G703™ – 1992

Continuation Sheet

AIA Document G702™–1992, Application and Certificate for Payment, or G732™–2009, Application and Certificate for Payment, Construction Manager as Adviser Edition, containing Contractor's signed certification is attached.
In tabulations below, amounts are in US dollars.
Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NO:
APPLICATION DATE:
PERIOD TO:
ARCHITECT'S PROJECT NO:

A	B	C	D	E	F	G		H	I
ITEM NO.	DESCRIPTION OF WORK	SCHEDULED VALUE	WORK COMPLETED: FROM PREVIOUS APPLICATION (D + E)	WORK COMPLETED: THIS PERIOD	MATERIALS PRESENTLY STORED (Not in D or E)	TOTAL COMPLETED AND STORED TO DATE (D+E+F)	% (G ÷ C)	BALANCE TO FINISH (C – G)	RETAINAGE (If variable rate)
	GRAND TOTAL								

2. INSURANCE

A. Not Applicable.

3. ASBESTOS DISPOSAL PROCEDURES

A. Not Applicable.

END OF SECTION

SECTION 00 73 00

BEST VALUE CONTRACTING

1. CONTRACTORS / LICENSURE APPLICANTS

The Dane County Department of Public Works requires contractors & subcontractors to be a Best Value Contractor (BVC) before being hired. Contractor & subcontractor application documents should be turned in immediately. Contractor approval or exemption must be complete prior to Bid Due Date / Time. All subcontractors must also be approved or prove their exemption ten (10) business or more days before performing any work under a County contract. This document shall be completed, properly executed, along with the necessary attachments and additional information that the County requires for the protection and welfare of the public in the performance of a County contract.

Contractors or subcontractors of any tier who attain qualification status will retain that status for a period of three (3) years from the date of qualification. Contractors shall notify the Dane County Department of Public Works, Highway & Transportation within fifteen (15) days of any changes to its business or operations that are relevant to the application or status. Failure to do so could result in suspension, revocation of the contractor's qualification, debarment from County contracts for up to three (3) years and / or other sanctions available under the law.

No contracts will be awarded for construction work performed on Dane County projects unless the contractor is currently approved as a Wisconsin Trade Trainer or has applied for approval as an Apprenticeship Trade Trainer to the Wisconsin Department of Workforce Development and agrees to an acceptable apprenticeship program. If you are not currently approved as a Wisconsin Trade Trainer, or have not applied for approval as an Apprenticeship Trade Trainer, please contact the Department of Workforce Development - Bureau of Apprenticeship Standards at 608/266-3133 or visit their web site at: https://dwd.wisconsin.gov/apprenticeship/.

Fill out the BVC Application at the Public Works Engineering Division web site (publicworks.countyofdane.com/bvc). This document is only provided in the RFB for reference. The following page shows what the questions are on the application.

2. EXEMPTIONS TO QUALIFICATION

Contractors performing work that does not apply to an apprenticeable trade, as outlined in Item 4. Apprenticeable Trades, is the only reason for claiming an exemption if not an active Wisconsin Trades Trainer. See Question 18A.

3. APPLICATION QUESTIONS

NO.	PROOF OF RESPONSIBILITY	CHECK IF APPLICABLE
1	Does your firm acknowledge that in doing work under any County Public Works Contract, it will be required to use as subcontractors only those contractors that are also qualified with the County or become so ten (10) or more days before beginning any work?	Yes: ☐ No: ☐
2	Does your firm possesses all technical qualifications and resources, including equipment, personnel and financial resources, necessary to perform the work required for any project or obtain the same through the use of responsible, qualified subcontractors?	Yes: ☐ No: ☐
3	Will your firm possess all valid, effective licenses, registrations or certificates required by federal, state, county, or local law, which are necessary for the type of work to be performed including, but not limited to, those for any type of trade work or specialty work?	Yes: ☐ No: ☐

4	Will your firm meet all bonding requirements as required by applicable law or contract specifications?	Yes: ☐ No: ☐
5	Will your firm meet all insurance requirements as required by applicable law or specifications, including general liability insurance, workers compensation insurance and unemployment insurance requirements?	Yes: ☐ No: ☐
6	Will your firm maintain a substance abuse policy for employees hired for public works contracts that comply with Wis. Stats. Sec. 103.503?	Yes: ☐ No: ☐
7	Will your employees who will perform work on a Public Works project all be covered under a current workers compensation policy and be properly classified under such policy?	Yes: ☐ No: ☐
8	Will your employees who will perform work on a Public Works project have the opportunity to enroll in minimum essential coverage and not be subject to an enrollment period of more than 60 days per the federal Affordable Care Act, Sec. 1513?	Yes: ☐ No: ☐
9	Will your firm fully abide by the equal opportunity and affirmative action requirements of all applicable laws, including County ordinances?	Yes: ☐ No: ☐
10	Has your firm been the subject of any order or judgement from any State or Federal Agency or court concerning employment practice, including but not limited to: classification of employees under state unemployment or workers compensation laws; minimum wage, overtime pay, recordkeeping, and child labor standards imposed by federal or state law; and employment discrimination or unfair labor practices prohibited by federal or state law. (Attach copies of any order or judgement)	Yes: ☐ No: ☐ If Yes, attach details.
11	Is your firm authorized or registered to transact business in the state by the Department of Financial Institutions in compliance with Wis. Stat. Chaps. 178, 179, 180, 181, or 183?	Yes: ☐ No: ☐ If Yes, attach details.
12	In the past three (3) years, has your firm had control or has another corporation, partnership or other business entity operating in the construction industry controlled it? If so, please attach a statement explaining the nature of the firm relationship?	Yes: ☐ No: ☐ If Yes, attach details.
13	In the past three (3) years, has your firm had any type of business, contracting or trade license, certification or registration revoked or suspended?	Yes: ☐ No: ☐ If Yes, attach details.
14	In the past three (3) years, has your firm been debarred by any federal, state or local government agency?	Yes: ☐ No: ☐ If Yes, attach details.
15	In the past three (3) years, has your firm defaulted or failed to complete any contract?	Yes: ☐ No: ☐ If Yes, attach details.
16	In the past three (3) years, has your firm committed a willful violation of federal, state or local government safety laws as determined by a final decision of a court or government agency authority.	Yes: ☐ No: ☐ If Yes, attach details.
17	In the past three (3) years, has your firm been in violation of any law relating to your contracting business where the penalty for such violation resulted in the imposition of a penalty greater than $10,000?	Yes: ☐ No: ☐ If Yes, attach details.
18	Is your firm an active Wisconsin Trade Trainer as determined by the Wisconsin Bureau of Apprenticeship Standards?	Yes: ☐ No: ☐ If Yes, attach details.

18A	Is your firm claiming an exemption to qualification?	Yes: ☐ No: ☐ If Yes, attach details.
19	Contractor has been in business less than one year?	Yes: ☐ No: ☐

4. APPRENTICEABLE TRADES:

- Bricklayer
- Boilermaker
- Carpenter
- Cement Mason (Concrete Finisher)
- Cement Mason (Heavy Highway)
- Construction Craft Laborer
- Data Communications Installer
- Electrician
- Elevator Mechanic / Technician
- Environmental Systems Technician / HVAC Service Technician / HVAC Install & Service
- Glazier
- Heavy Equipment Operator / Operating Engineer
- Insulation Worker (Heat & Frost)
- Iron Worker (Assembler, Metal Buildings)
- Painter / Decorator
- Plasterer
- Plumber
- Roofer / Waterproofer
- Sheet Metal Worker
- Sprinkler Fitter
- Steamfitter (Service & Refrigeration)
- Taper & Finisher
- Telecommunications (Voice, Data & Video) Installer / Technician
- Tile Setter

END OF SECTION

SECTION 00 73 11

FAIR LABOR PRACTICES CERTIFICATION

The undersigned, for and on behalf of the BIDDER, APPLICANT or PROPOSER named herein, certifies as follows:

A. That he or she is an officer or duly authorized agent of the above-referenced BIDDER, APPLICANT or PROPOSER, which has a submitted a bid, application or proposal for a contract or agreement with the county of Dane.

B. That BIDDER, APPLICANT or PROPOSER has (check one):

_____ not been found by the National Labor Relations Board ("NLRB") or the Wisconsin Employment Relations Commission ("WERC") to have violated any statute or regulation regarding labor standards or relations in the seven years prior to the signature date of this Certification.

_____ been found by the National Labor Relations Board ("NLRB") or the Wisconsin Employment Relations Commission ("WERC") to have violated any statute or regulation regarding labor standards or relations in the seven years prior to the signature date of this Certification.

_____ _____

Officer or Authorized Agent Signature Date

_____

Printed or Typed Name and Title

_____

Printed or Typed Business Name

NOTE: You can find information regarding the violations described above at: www.nlrb.gov and werc.wi.gov.

For reference, Dane County Ordinance 25.09 is as follows:

(1) BIDDER RESPONSIBILITY. (a) Any bid, application or proposal for any contract with the county, including public works contracts regulated under chapter 40, shall include a certification indicating whether the bidder has been found by the National Labor Relations Board (NLRB) or the Wisconsin Employment Relations Committee (WERC) to have violated any statute or regulation regarding labor standards or relations within the last seven years. The Controller shall investigate any such finding and make a recommendation to the committee, which shall determine whether the conduct resulting in the finding affects the bidder's responsibility to perform the contract.

If you indicated that the NLRB or WERC have found you to have such a violation, you must include copies of any relevant information regarding such violation with your proposal, bid or application.

Include this completed Certification with your bid, application or proposal.

END OF SECTION

SECTION 01 00 00

GENERAL REQUIREMENTS

PART 1 GENERAL

1.1 SECTION SUMMARY

A. Section Includes:
1. Section Summary
2. Summary of the Work
3. Contractor Use of Premises
4. Applications for Payment
5. Change Procedures
6. Alternates
7. Coordination
8. Cutting and Patching
9. Conferences
10. Progress Meetings
11. Job Site Administration
12. Submittal Procedures
13. Proposed Products List
14. Shop Drawings
15. Product Data
16. Samples
17. Manufacturers' Instructions
18. Manufacturers' Certificates
19. Quality Assurance / Quality Control of Installation
20. References
21. Interior Enclosures
22. Protection of Installed Work
23. Parking
24. Staging Areas
25. Occupancy During Construction and Conduct of Work
26. Protection
27. Progress Cleaning
28. Products
29. Transportation, Handling, Storage and Protection
30. Product Options
31. Substitutions
32. Starting Systems
33. Demonstration and Instructions
34. Contract Closeout Procedures
35. Final Cleaning
36. Adjusting
37. Spare Parts and Maintenance Materials
38. As-Built and Record Drawings and Specifications

1.2 SUMMARY OF THE WORK

A. Project Description: Perform the Work as specified and detailed in Construction Documents package. Contractor to provide construction restoration & repair services consisting of concrete removal and replacement at the overhead and vertical surfaces of concrete slabs, beams, and columns. Also, complete milled surface slab replacement at level 7. Additional construction services (Alternate Bids) include: additional locations of concrete repairs and level 7 silane sealer application. Only firms with capabilities, experience & expertise with similar projects should obtain this Request for Bids document & submit Bids.

B. Work by Owner: Third-party testing for concrete used in restoration.

C. Permits: Prior to commencement of the Work, Contractor to secure any and all necessary permits for completion of the Work and facility occupancy.

D. The Capitol Square South Parking Ramp (CSS), formally known as the Dane County Parking Ramp, is owned and operated by Dane County. The structure was originally constructed with a basement and four elevated levels in 1957. Two additional levels were added in 1963. In plan, the CSS is a three-bay wide structure approximately 263 feet by 188 feet. The supported floor system consists of conventionally reinforced concrete two-way flat slabs supported by wide, flat-shaped conventionally reinforced concrete beams supported by interior and exterior conventionally reinforced concrete columns. There are a total of seven parking levels including the slab-on-grade level. Total parking capacity is approximately 1000 cars.

1.3 CONTRACTOR USE OF PREMISES

A. Limit use of premises to allow work by others and work by Owner.

B. Confine operation at site to areas permitted by law, ordinance, permit, and Construction Documents.

C. Do not unreasonably encumber site with materials and equipment.

D. Do not load structure with weight that will endanger structure.

E. Assume full responsibility for protection and safekeeping of products stored on premises. Construction equipment, shoring, tools, etc. shall not be stored in areas of Owner's continued use.

F. Move any stored products which interfere with operations of Owner or other Contractor.

G. There is no storage for materials outside of Contractor's work area.

H. Contractor to provide phasing of work to maintain traffic flow through structure, all drive lane work to be divided in half so cars may pass at all times.

1.4 APPLICATIONS FOR PAYMENT

A. Submit two (2) original copies with “wet” signatures of each pay application on AIA G702™ and G703™ forms or approved contractors invoice form.

B. Content and Format: Utilize Schedule of Values for listing items in Application for Payment.

C. Payment Period: Monthly.

D. Submit Applications for Payment to Engineer for initial approval. Engineer will forward approved copies to Owner who will also approve & process for payment.

1.5 CHANGE PROCEDURES

A. Contractor's costs for Products, delivery, installation, labor, insurance, payroll, taxes, bonding, equipment rental, overhead and profit will be included in Change Orders authorizing expenditure of funds from contingency allowance.

1.6 ALTERNATES

A. Alternates quoted on Bid Form shall be reviewed and accepted or rejected at Owner's option.

B. Coordinate related work and modify surrounding work as required.

C. Schedule of Alternates: See Bid Form.

1.7 COORDINATION

A. Coordinate scheduling, submittals, and work of various sections of Specifications to assure efficient and orderly sequence of installation of interdependent construction elements.

B. Commence work on date to be specified in written Notice to Proceed and to fully complete all work within 120 consecutive calendar days thereafter. Completion time will be converted to specific date when Notice to Proceed is issued. Completion shall include all construction as outlined in drawings and specifications as well as removal of all materials, debris, barricades, and other construction related items from site.

C. Final project closeout shall be completed within 30 days of construction completion date for all work addressed above. Final project closeout shall include, but not be limited to, submittal of warranties, lien waivers, wage rate compliance affidavits, documents of completed work, and proper pay applications.

D. Restoration will be completed in phases to allow for continued operation of CSS during the Work. Phasing shall consist of concrete removal from centerline of drive lane to parapet along slab edge allowing traffic flow on other half of bay. Phasing may also consist of concrete removal along drive lane while allowing traffic flow on either side

along parking lanes. Contractor shall produce phasing plans which will be submitted at pre-construction meeting.

E. Contractor, at Contractor's expense, is responsible for removing and reinstalling or protecting in place electrical conduits, light fixtures, water pipes, and anything else that may obstruct the Work. If Contractor damages any of these items, Contractor shall be responsible to report these to Owner and replace them to Owner's satisfaction.

F. Contractor shall be allowed approximately 150 parking stalls to be out of service for their work area from Monday through Friday. This shall consist of top of slab area directly below area being restored for bottom of slab restoration, adjacent area closed for traffic flow and parking and drive lane areas directly above restoration. Similarly, for top of slab removal, area being restored and slab area adjacent to restoration for drive lane shall be included in Contractor's area as well as floor area directly below restoration.

G. Contractor will be asked to reduce number and type of parking spaces out of service for Special Events dates. Owner will provide Contractor with schedule of dates.

H. Dust protection, required along full length of work area, shall be in place prior to concrete removal.

I. Steel plates shall be used to cover top of slab removal areas in locations of public access during evening and weekend hours when flag persons are not present.

J. Contractor shall maintain access to undisturbed parking areas throughout restoration. Owner shall accommodate traffic rerouting and shifting of construction occupancy as required. Contractor will provide traffic barriers.

K. Provide appropriate signage warning public of construction area and directing them to exits.

L. Owner will occupy all but work areas during construction. Coordinate with Engineer in scheduling work.

M. Public Works Project Manager may choose to photograph or videotape site or workers as the Work progresses.

1.8 CUTTING AND PATCHING

A. Employ skilled and experienced installer to perform cutting and patching new work; restore work with new Products.

B. Submit written request in advance of cutting or altering structural or building enclosure elements.

C. Fit work tight to adjacent elements. Maintain integrity of wall, ceiling, or floor construction; completely seal voids.

D. Refinish surfaces to match adjacent finishes.

1.9 CONFERENCES

A. There will be pre-bid conference for this project; see Instructions to Bidders.

B. Owner will schedule preconstruction conference after Award of Contract for all affected parties.

C. Contractor shall submit Construction Schedule at pre-construction meeting.

D. When required in individual Specification section, convene pre-installation conference at project site prior to commencing work of Section.

1.10 PROGRESS MEETINGS

A. Schedule and administer meetings throughout progress of the Work at minimum of one (1) per week, at project site, with Engineer & Public Works Project Manager, for coordinating and expediting progress.

B. Preside at meetings, record minutes, and distribute copies within two (2) business days to those affected by decisions made.

C. Attendance at progress meetings by General Contractor, subcontractors, or their authorized representative, is mandatory.

D. Contractors shall give verbal reports of progress on the Work, discuss schedule for upcoming period and present all conflicts, discrepancies or other difficulties for resolution.

E. Day & time of progress meetings to be determined at pre-construction meeting.

1.11 JOB SITE ADMINISTRATION

A. Contractor shall have project superintendent on site minimum of four (4) hours per day during progress of the Work.

B. Engineer will have representative on site fifteen (15) hours per week on average during progress of the Work.

1.12 SUBMITTAL PROCEDURES

A. Submittal form to identify Project, Contractor, Subcontractor or supplier; and pertinent Construction Documents references.

B. Apply Contractor's stamp, signed or initialed, certifying that review, verification of Products required, field dimensions, adjacent construction work, and coordination of information is in accordance with requirements of the Work and Construction Documents.

C. Identify variations from Construction Documents and Product or system limitations that may be detrimental to successful performance of completing the Work.

D. Revise and resubmit submittals as required; identify all changes made since previous submittal.

1.13 PROPOSED PRODUCTS LIST

A. Within fifteen (15) business days after date of Award of Contract, submit complete list of major Products proposed for use, with name of manufacturer, trade name, and model number of each Product.

1.14 SHOP DRAWINGS

A. Submit number of copies that Contractor requires, plus three (3) copies that shall be retained by Public Works Project Manager.

1.15 PRODUCT DATA

A. Submit number of copies that Contractor requires, plus two (2) copies that shall be retained by Public Works Project Manager.

B. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturer's standard data to provide information unique to this Project.

1.16 SAMPLES

A. Submit samples to illustrate functional and aesthetic characteristics of Product.

B. Submit samples of finishes from full range of manufacturers' standard colors, textures, and patterns for Public Works Project Manager's selection.

1.17 MANUFACTURERS' INSTRUCTIONS

A. When specified in individual Specification sections, submit manufacturers' printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, in quantities specified for Product Data.

1.18 MANUFACTURERS' CERTIFICATES

A. When specified in individual Specification sections, submit manufacturers' certificate to Public Works Project Manager for review, in quantities specified for Product Data.

B. Indicate material or Product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

1.19 QUALITY ASSURANCE / QUALITY CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, Products, services, site conditions, and workmanship, to produce work of specified quality.

B. Comply fully with manufacturers' instructions.

C. Comply with specified standards as minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

1.20 REFERENCES

A. Conform to reference standard by date of issue current as of date for receiving bids.

B. Should specified reference standard conflict with Construction Documents, request clarification from Public Works Project Manager before proceeding.

1.21 INTERIOR ENCLOSURES

A. Provide temporary partitions as required to separate work areas from Owner occupied areas, to prevent distribution of dust and moisture into Owner occupied areas, and to prevent damage to existing materials and equipment.

1.22 PROTECTION OF INSTALLED WORK

A. Protect installed work and provide special protection where specified in individual Specification sections.

1.23 PARKING

A. Parking of vehicles and equipment required for construction purposes shall be in contractor’s designated work areas. Any vehicle in Parking Ramp other than contractor’s designated for this project will be charged for parking.

B. All contractors and their employees shall cooperate with General Contractor and others in parking of vehicles to avoid interference with normal operations and construction activities.

C. Do not obstruct existing service drives and parking lots with equipment, materials and / or vehicles. Keep accessible for Owner’s use at all times.

1.24 STAGING AREAS

A. Coordinate staging areas with Public Works Project Manager prior to starting the Work.

B. On-site space for use as staging areas and storage of materials is limited and will be apportioned among various Contractors as their needs dictate with due regard for storage

requirements of each Contractor. Each Contractor shall be responsible for safety of equipment and materials that are stored on site.

1.25 OCCUPANCY DURING CONSTRUCTION AND CONDUCT OF WORK

A. Areas of existing facility will be occupied during period when the Work is in progress. Work may be done during normal business hours, Monday through Friday (7:00 a.m. to 7:00 p.m., as City of Madison Noise Ordinance will allow), but confer with Owner, schedule work and store materials so as to interfere as little as possible with normal use of premises. Work performed on Saturday and/or Sunday shall be by permission of Owner. Notify Owner when coring or similar noise making work is to be done and obtain Owner's written approval of schedule. If schedule is not convenient for Owner, reschedule and resubmit new times for Owner approval.

B. Work shall be done and temporary facilities furnished so as not to interfere with access to any occupied area and so as to cause least possible interference with normal operation of facility or any essential service thereof.

C. Contractor shall, at all times, provide approved, safe walkways and facility entrances for use by Owner, employees and public.

D. Contractor shall provide adequate protection for all parts of facility, its contents and occupants wherever the Work under this Contract is to be performed.

E. Each Contractor shall arrange with Owner to make necessary alterations, do new work, make connections to all utilities, etc., at such times as will not cause interruption of utility services to facility. Contractor doing this work shall protect, cap, cut off and / or replace and relocate existing pipes, electrical work and other active utilities encountered which may interfere with new construction work.

F. New work in extension of existing work shall correspond in all respects with that to which it connects or similar existing work unless otherwise indicated or specified.
   1. Existing work shall be cut, altered, removed or replaced as necessary for performance of Contract obligations.
   2. Work remaining in place, damaged or defaced by reason of work done under this Contract shall be restored equal to its condition at time of Award of Contract.
   3. If removal of work exposes discolored or unfinished surfaces or work out of alignment, such surfaces shall be refinished or materials replaced as necessary to make continuous work uniform and harmonious.

G. Contractor is responsible for providing & maintaining temporary toilet facilities.

1.26 PROTECTION

A. Contractor shall protect from injury all trees, shrubs, hedges, walks and driveways and pay for any damage to same resulting from insufficient or improper protection.

B. Contractor shall provide and maintain barricades & signage to prohibit public access to construction site.

C. Contractor shall provide and maintain guard lights at all barricades, railings, obstructions in streets, roads or sidewalks and at all trenches adjacent to public walks or roads.

1.27 PROGRESS CLEANING

A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in clean and orderly condition.

1.28 PRODUCTS

A. Products: Means new material, machinery, components, equipment, fixtures, and systems forming the Work, but does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work. Products may also include existing materials or components specifically identified for reuse.

B. Do not use materials and equipment removed from existing premises, except as specifically identified or allowed by Construction Documents.

1.29 TRANSPORTATION, HANDLING, STORAGE AND PROTECTION

A. Transport, handle, store and protect Products in accordance with manufacturer's instructions.

1.30 PRODUCT OPTIONS

A. Where definite material is specified, it is not intentional to discriminate against "equal" product made by another manufacturer. Intention is to set definite standard of material quality. Should bidder choose to bid materials other than those specified, bidder shall submit said materials specifications to Public Works Project Manager for approval at least seven (7) business days prior to Bid Due Date.

B. Products and materials that are not specified, but have been approved for use by Public Works Project Manager shall be identified in addenda to all bidding contractors.

C. Requests for material or product substitutions submitted after Bid Due Date shall be considered. Owner reserves right to approve or reject substitutions based on Specification requirements and intended use.

1.31 SUBSTITUTIONS

A. Public Works Project Manager shall consider requests for Substitutions only within fifteen (15) calendar days after date of Public Works Construction Contract.

B. Document each request with complete data substantiating compliance of proposed Substitution with Construction Documents.

C. Submit three (3) copies of requests for Substitution for consideration. Limit each request to one (1) proposed Substitution.

D. Substitutions shall not change contract price established at Bid Due Date.

1.32 STARTING SYSTEMS

A. Provide written notification prior to start-up of each equipment item or system.

B. Ensure that each piece of equipment or system is ready for operation.

C. Execute start-up under supervision of responsible persons in accordance with manufacturers' instructions.

D. Submit written report that equipment or system has been properly installed and is functioning correctly.

1.33 DEMONSTRATION AND INSTRUCTIONS

A. Demonstrate operation and maintenance of Products to Owner's personnel prior to date of final inspection.

B. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at agreed-upon times, at designated location.

C. Owner may choose to photograph or videotape demonstration session; demonstration and demonstrator shall be to level of satisfaction of Owner.

1.34 CONTRACT CLOSEOUT PROCEDURES

A. Submit written certification that Construction Documents have been reviewed, the Work has been inspected, and the Work is complete in accordance with Construction Documents and ready for Public Works Project Manager's inspection.

B. Submit final Application for Payment identifying total adjusted Contract Sum / Price, previous payments, and amount remaining due.

1.35 FINAL CLEANING

A. Execute final cleaning prior to final inspection.

B. Clean interior and exterior surfaces exposed to view.

C. Remove waste and surplus materials, rubbish, and construction facilities from site.

1.36 ADJUSTING

A. Adjust operating Products and equipment to ensure smooth and unhindered operation.

1.37 SPARE PARTS AND MAINTENANCE MATERIALS

A. Provide Products, spare parts, maintenance and extra materials in quantities specified in individual Specification Sections.

B. Deliver to the Work site and place in location as directed.

1.38 AS-BUILT AND RECORD DRAWINGS AND SPECIFICATIONS

A. Contractor-produced Drawings and Specifications shall remain property of Contractor whether Project for which they are made is executed or not. Contractor shall furnish Engineer with original marked up redlines of Construction Documents' drawings and specifications that shall include all Addendums, Change Orders, Construction Bulletins, on-site changes, field corrections, etc. These are project As-Built Drawings & Specifications.

B. Engineer shall update original Construction Documents to include all Addendums & any other changes including those provided by Contractor in As-Built Drawings & Specifications. These updates are project Record Drawings & Specifications.

C. Engineer shall furnish Public Works Project Manager with Record Drawings as detailed in Professional Services Agreement.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01 22 00

UNIT PRICES

PART 1 GENERAL

1.1 PAYMENT

A. Work is to be paid for on Unit Price basis and bid on estimated quantities. These work items are to be installed and completed per specifications and as shown on drawings.

1.2 MEASUREMENT OF QUANTITIES

A. Work to be performed on unit price basis shall be measured according to quantities described above. Payment will be made for work actually performed, based on quantities recorded by Contractor and approved by Engineer. Unless stated otherwise, records described below shall consist of both plan view drawings and tables cross-referenced to drawings with required measured quantities. Unless otherwise stated, Engineer will verify accuracy of record by visual examination of work performed and measuring quantities with measuring wheel and tape measure.

B. Contractor shall notify Owner and Engineer at once in writing of any unit price work that deviates materially from prescribed basis for bidding and for which adjustment in Unit Price is desired. Contractor shall measure and quantify all such deviations, subject to Engineer's verification, prior to any repair work which might make verification impossible. No adjustments in Unit Prices will be considered unless supporting field measurements are provided, and subject to Owner's prior approval. Adjustments will only be considered if all repairs of given type have been measured and all deviations, both plus and minus have been included in determination of average deviation from Unit Price basis.

Item	Type of Work	Unit Price
1	Topside concrete slab milling and replacement including removal of concrete surface to a depth of 2.5” and placing “ready-mix” concrete fill. Also includes additional chipping required for removal of reinforcing steel. Refer to detail sheet S8.1 and specification sections 02 41 17 and 03 31 00. Payment based on area of concrete placed at top surface of slab. Place additional 1” of concrete cover above existing slab elevation.	$/Sq. Ft.
2	Replace reinforcing steel in removal depth including fabrication, supply, detailing, storing, and placing replacement and top reinforcing steel. Refer to detail sheet S8.2 and specification section 03 21 00. Payment based on nominal rebar weights per installed length.	$/Tons
3	Full depth slab replacement at milled surface including removal of concrete, sandblasting of the newly exposed concrete slab at the opening perimeter and reinforcing steel, and placing “ready-mix” concrete fill. Also includes all forming required. Refer to detail sheet S8.1 and specification sections 02 41 17, 03 11 00, 03 11 13, and 03 31 00. Payment based on area of concrete placed at top surface of slab. Place additional 1” of concrete cover above existing slab elevation.	$/Sq. Ft.

4	Embedded galvanic DAS anodes in slab replacement area including the Galvashield DAS anode and wire connections to new reinforcing steel. Refer to detail sheets S9.1, S9.2, S9.3, S9.4, S9.11 and specification section 03 37 01. Payment based on the length of DAS anodes installed.	$/Lin. Ft.
5	Concrete repair at overhead concrete surface, 1"-3" depth of slabs and beams including removal of concrete with ¾" gap all around reinforcing bar, sandblasting of newly exposed concrete surface and reinforcing steel, and placing pre-packaged or shotcrete concrete fill. Refer to detail sheet S8.1 and specification sections 02 41 17, 03 01 30, and 03 37 13. Payment based on exposed area of concrete placed.	$/Sq. Ft.
6	Concrete repair at overhead concrete surface, 3"-6" depth of slabs and beams including removal of concrete with ¾" gap all around reinforcing bar, sandblasting of newly exposed concrete surface and reinforcing steel, and placing pre-packaged or shotcrete concrete fill. Refer to detail sheet S8.1 and specification sections 02 41 17, 03 01 30, and 03 37 13. Payment based on exposed area of concrete placed.	$/Sq. Ft.
7	Full depth slab replacement including removal of concrete, sandblasting of the newly exposed concrete slab at the opening perimeter and reinforcing steel, and placing "ready-mix" concrete fill (pre-packaged concrete at Contractor's option). Also includes all forming required. Refer to detail sheet S8.1 and specification sections 02 41 17, 03 01 30, 03 11 00, 03 11 13, and 03 31 00. Payment based on area of concrete placed at top surface of slab.	$/Sq. Ft.
8	Concrete repair at vertical surfaces of parapets and walls including removal of concrete with ¾" gap all around reinforcing bar, sandblasting of newly exposed concrete surface and reinforcing steel, and placing pre-packaged or shotcrete concrete fill. Refer to detail sheet S8.1 and specification sections 02 41 17, 03 01 30, 03 11 00, and 03 37 13. Payment based on exposed area of concrete placed.	$/Sq. Ft.
9	Concrete repair at columns including removal of concrete with ¾" gap all around reinforcing bar, sandblasting of newly exposed concrete surface and reinforcing steel, and placing pre-packaged concrete fill. Refer to detail sheet S8.1 and specification sections 02 41 17, 03 01 30, 03 11 00, and 03 11 13. Payment based on exposed area of concrete placed.	$/Sq. Ft.
10	Embedded galvanic anodes at overhead and vertical surfaces including Galvashield XP4 anode and wire connection to clean reinforcing steel. Refer to detail sheets S9.5, S9.6, S9.7, S9.8, S9.9, S9.10, S9.11 and specification section 03 37 00. Payment based on number of galvanic anodes installed.	$/Each
11	Expansion joint replacement including removal of existing expansion joint seal, widening joint as required, replacing/rebuilding epoxy block outs, replacing epoxy nosing and removing traffic plates and installing new expansion joint. Refer to detail sheet S8.1 and specification section 07 95 13. Payment is based on length of expansion joint installed.	$/Lin. Ft.

12	Overhead conductive coating removal including removal of paint and unconnected distribution wires. Refer to specification section 02 41 17. Payment based on area of paint removal.	$/Sq. Ft.
13	Epoxy crack injection including epoxy injection of concrete cracks at basement walls and removal/grinding flush of epoxy injection ports. Refer to specification section 03 64 07. Payment is based on linear footage of crack injected with epoxy.	$/Lin. Ft.
14	Rout and seal cracks including grinding crack and joint edges, installing backer rod or bond breaker tape, and installing sealant. Refer to detail sheet S8.1 and specification Section 07 92 00. Payment based on length of sealant installed.	$/Lin. Ft.
15	Silane sealer application including surface preparation and applying silane sealer. Refer to Specification Section 07 19 16. Payment based on area of sealer applied.	$/Sq. Ft.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

RFB 322005 - BASE BID

Item No.	Type of Work	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Total Est Qty	Unit
1	Topside concrete slab milling and replacement	-	-	-	-	-	-	9,800	9,800	SF
2	Replace reinforcing steel in removal depth	-	-	-	-	-	-	15	15	TONS
3	Full depth slab replacement at milled surface	-	-	-	-	-	-	3,200	3,200	SF
4	Embedded galvanic DAS anodes in slab replacement area	-	-	-	-	-	-	6,300	6,300	LF
5	Concrete repair at overhead concrete surface, 1" to 3" depth	2,800	-	910	-	-	875	-	4,585	SF
6	Concrete repair at overhead concrete surface, 3" to 6" depth	1,200	-	390	-	-	375	-	1,965	SF
7	Full depth slab replacement	-	-	-	-	-	30	-	30	SF
8	Vertical surface concrete repairs at parapets and walls	100	-	160	-	-	95	40	395	SF
9	Concrete repair at columns	115	-	100	-	-	50	-	265	SF
10	Embedded galvanic anodes at overhead and vertical surfaces	2,350	-	1,075	-	-	800	105	4,330	EA
11	Expansion joint replacement	-	-	-	-	-	-	60	60	LF
12	Overhead conductive coating removal	-	-	24,000	-	-	-	-	24,000	SF
13	Epoxy crack injection	105	-	-	-	-	-	-	105	LF

RFB 322005 - ALTERNATE BID A

Item No.	Type of Work	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Total Est Qty	Unit
5A	Concrete repair at overhead concrete surface, 1" to 3" depth	-	525	-	-	-	-	-	525	SF
6A	Concrete repair at overhead concrete surface, 3" to 6" depth	-	225	-	-	-	-	-	225	SF
8A	Vertical surface concrete repairs at parapets	-	80	-	-	-	-	-	80	SF
9A	Concrete repair at columns	-	100	-	-	-	-	-	100	SF
10A	Embedded galvanic anodes at overhead and vertical surfaces	-	540	-	-	-	-	-	540	EA
12A	Overhead conductive coating removal	-	24,000	-	-	-	-	-	24,000	SF
13A	Epoxy crack injection	-	55	-	-	-	-	-	55	LF
14	Rout and seal cracks	-	-	-	-	-	-	800	800	LF
15	Silane sealer application	-	-	-	-	-	-	45,000	45,000	SF

RFB 322005 - ALTERNATE BID B (*Same Location as planned Phase 2)*

Item No.	Type of Work	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7	Total Est Qty	Unit
5B	Concrete repair at overhead concrete surface, 1" to 3" depth	-	-	-	210	595	560	-	1,365	SF
6B	Concrete repair at overhead concrete surface, 3" to 6" depth	-	-	-	90	255	240	-	585	SF
8B	Vertical surface concrete repairs at parapets	-	-	-	160	120	-	-	280	SF
9B	Concrete repair at columns	-	-	-	140	60	-	-	200	SF
10B	Embedded galvanic anodes at overhead and vertical surfaces	-	-	-	315	600	550	-	1,465	EA

SECTION 01 74 19

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Summary
2. Waste Management Goals
3. Construction and / or Demolition Waste Management
4. Waste Management Plan
5. Reuse
6. Recycling
7. Materials Sorting and Storage on-Site
8. Lists of Recycling Facilities Processors and Haulers
9. Waste Management Plan Form

B. Related Sections:
1. Section 01 00 00 – General Requirements

1.2 WASTE MANAGEMENT GOALS

A. Dane County requires that as many waste materials as possible produced as result of this project be salvaged, reused or recycled in order to minimize impact of construction waste on landfills and to minimize expenditure of energy and cost in fabricating new materials. Additional information may be found in Dane County Green Building Policy, Resolution 299, 1999-2000.

1.3 CONSTRUCTION AND / OR DEMOLITION WASTE MANAGEMENT

A. All construction and demolition waste suitable for recycling must go to Dane County Construction & Demolition Recycling Facility located at 7102 US Hwy 12, Madison, located across from Yahara Hills Golf Course. This facility can receive mixed loads of construction and demolition waste. For complete list of acceptable materials, see https://landfill.countyofdane.com/services/construction.

B. Dane County Landfill, also at 7102 US Hwy 12, Madison, must receive all other waste from this project. https://landfill.countyofdane.com/services/construction.

1.4 WASTE MANAGEMENT PLAN

A. Contractor shall develop Waste Management Plan (WMP) for this project. Public Works Project Manager and / or Engineer may be contacted with questions. Outlined in RECYCLING section of this specification are examples of materials that can be recycled or reused as well as recommendations for waste sorting methods.

B. Contractor shall complete WMP and include cost of recycling / reuse in Bid. WMP will be submitted to Public Works Project Manager within fifteen (15) business days of Bid Due date. Copy of blank WMP form is in this Section. Submittal shall include cover letter and WMP form with:
   1. Information on:
      a. Types of waste materials produced as result of work performed on site;
      b. Estimated quantities of waste produced;
      c. Identification of materials with potential to be recycled or reused;
      d. How materials will be recycled or reused;
      e. On-site storage and separation requirements (on site containers);
      f. Transportation methods; and
      g. Destinations.

1.5 REUSE

A. Contractors and subcontractors are encouraged to reuse as many waste materials as possible. Salvage should be investigated for materials not reusable on site.

1.6 RECYCLING

A. These materials must be recycled at Dane County Construction & Demolition Recycling Facility:
   1. Wood.
   2. Wood Pallets.
   3. PVC Plastic (pipe, siding, etc.).
   4. Asphalt & Concrete.
   5. Bricks & Masonry.
   6. Vinyl Siding
   7. Cardboard.
   8. Metal.
   9. Unpainted Gypsum Drywall.
   10. Shingles.

B. These materials can be recycled elsewhere in Dane County area:
   1. Fluorescent Lamps.
   2. Foam Insulation & Packaging (extruded and expanded).
   3. Carpet Padding.
   4. Barrels & Drums.

C. All materials must be recycled at WDNR permitted waste processing facilities that adhere to all State Statutes.

1.7 MATERIALS SORTING AND STORAGE ON SITE

A. Contractor shall provide separate containers for recyclable materials. Number of containers will be dependent upon project and site conditions.

B. Contractor shall provide on-site locations for subcontractors supplied recycling containers to help facilitate recycling.

C. Mixed loads of recycled materials are allowed only per instructions at https://landfill.countyofdane.com/services/construction.

1.8 LISTS OF RECYCLING FACILITIES PROCESSORS AND HAULERS

A. Refer to https://landfill.countyofdane.com/services/construction for information on Dane County Construction & Demolition Recycling Facility.

B. Web site https://landfill.countyofdane.com/ lists current information for Dane County Recycling Markets. Contractors can also contact Allison Hackner at 608/266-4990, or local city, village, town recycling staff listed at site https://landfill.countyofdane.com/resources/local-contacts. Statewide listings of recycling / reuse markets are available from UW Extension at www.uwgb.edu/solid-hazardous-waste-education-center.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

WASTE MANAGEMENT PLAN FORM

Contractor Name: _____

Address: _____

_____

Phone No.: _____ Recycling Coordinator: _____

MATERIAL	ESTIMATED QUANTITY	DISPOSAL METHOD (CHECK ONE)	RECYCLING / REUSE COMPANY OR DISPOSAL SITE
Salvaged & reused building materials	_____ cu. yds. _____ tons	_____ Recycled _____ Reused _____ Landfilled _____ Other	Name:_____
Wood	_____ cu. yds. _____ tons	_____ Recycled _____ Reused _____ Landfilled _____ Other	Name:_____
Wood Pallets	_____ units	_____ Recycled _____ Reused _____ Landfilled _____ Other	Name:_____
PVC Plastic	_____ cu. ft. _____ lbs.	_____ Recycled _____ Reused _____ Landfilled _____ Other	Name:_____
Asphalt & Concrete	_____ cu. ft. _____ lbs.	_____ Recycled _____ Reused _____ Landfilled _____ Other	Name:_____
Bricks & Masonry	_____ cu. ft. _____ lbs.	_____ Recycled _____ Reused _____ Landfilled _____ Other	Name:_____
Cardboard	_____ cu. ft. _____ lbs.	_____ Recycled _____ Reused _____ Landfilled _____ Other	Name:_____
Metals	_____ cu. yds. _____ tons	_____ Recycled _____ Reused _____ Landfilled _____ Other	Name:_____
Barrels & Drums	_____ units	_____ Recycled _____ Reused _____ Landfilled _____ Other	Name:_____
Other	_____	_____ Recycled _____ Reused _____ Landfilled _____ Other	Name:_____
Other	_____	_____ Recycled _____ Reused _____ Landfilled _____ Other	Name:_____

SECTION 02 41 17

REMOVAL OF EXISITNG CONCRETE AND SURFACE PREPARATION

PART 1 GENERAL

1.1 RELATED WORK

A. Applicable provisions of Division 01 shall govern work of this section.

B. Related work specified elsewhere:
1. Section 03 01 30 – Maintenance of Cast-in-Place Concrete
2. Section 03 11 00 – Concrete Forming
3. Section 03 11 13 – Concrete Shoring
4. Section 03 37 00 – Embedded Galvanic Anodes
5. Section 03 37 01 – Distributed Galvanic Anodes
6. Section 03 37 13 – Shotcrete

1.2 SUMMARY

A. Include materials, labor, services and incidentals necessary for completion of this Section of Work.

B. Include the removal of unsound concrete, examination of exposed reinforcing, sandblasting of acceptable reinforcing, replacement of unacceptable reinforcing with new, and cleaning of the newly exposed underlying sound concrete prior to casting new fill concrete.

C. The removal work shall be carried out in a manner so as to create a minimum disturbance with the continued use of the parking structure.

PART 2 PRODUCTS

2.1 EQUIPMENT

A. CHIPPING HAMMERS: Use chipping hammers with a total weight not to exceed:
1. 60 pounds and equipped with flat chisel-type points with a cutting edge not less than ¾" or greater than 2½" in width may be used for initial removal to the level of the top layer of reinforcing steel
2. 30 pounds to remove concrete to the elevation of the second, lower elevation of reinforcing provided the removal is one layer of reinforcing.
3. Chipping hammers with a total weight not to exceed 15 pounds must be used once the reinforcing is exposed.
4. If, in the opinion of the Engineer, it appears that the 30 pound hammer is having detrimental effects on the existing concrete slab and encased reinforcing steel, its use shall be discontinued and nothing heavier than a 15 pound hammer will be allowed.

5. Use chipping hammers of nominal 15 pound class or less for removal of concrete from beneath reinforcing.
    a. 15 pounds and equipped with flat chisel-type points with a cutting edge not less than ¾" or greater than 2½" in width.

B. SANDBLASTING EQUIPMENT: Sandblasting equipment shall be capable of removing rust from the exposed reinforcement and laitance from newly exposed concrete surfaces.

C. COMPRESSED AIR EQUIPMENT: Compressed air equipment shall be capable of removal of dust and dirt from concrete repair areas.

PART 3 EXECUTION

3.1 CONCRETE REMOVAL

A. Prior to removal, the Contractor shall submit the Contractor's plan for confining dust and water run-off, collecting and disposal of broken concrete, steel reinforcement and other waste material as a result of the Contractor's removal operations. This plan shall be submitted to the Engineer and the Owner prior to start of construction. Dumpster location shall be coordinated with the Engineer and the Owner. Stockpiling of removal debris within parking garage is not allowed unless authorized and coordinated with the Engineer.

B. Shore the structure as required. Shoring design, supply, and installation is the responsibility of the Contractor.

C. Contractor responsible for removing and reinstalling or protection in place of mechanical, electrical, and plumbing utilities including electrical lighting and conduits as required for repair work.

D. Delaminated areas which require removal of unsound concrete will be identified on the plans by the Engineer. The unsound concrete shall be removed by chipping to sound concrete. The marking by the Engineer does not guarantee that unsound concrete is not present in areas beyond those identified. Additional concrete removal may be required after the Contractor's initial removal. The Engineer will review the removal areas prior to concrete replacement.

E. Concrete patches shall be square or rectangular in shape with squared corners per ICRI Guideline 310.1R. Do not feather edges, but chip edges square or slightly undercut. See plans for more information and details.

F. During the chipping process in deteriorated concrete areas, care shall be exercised to avoid cracking of the underlying sound concrete.

G. During removal of unsound concrete, if more than half of the reinforcing bar diameter is exposed or if the bar is not firmly bonded to the surrounding concrete, or if the bar is corroded, then the remaining concrete around the bar shall be removed. Support bars for the main reinforcing steel shall not be exposed provided there is no corrosion on these bars.

H. Undercut all exposed reinforcing steel by removing concrete from the full circumference of the steel as per ICRI R310.1R. The minimum clearance between the concrete substrate and reinforcing steel shall be ¾ inch or ¼ inch larger than the top size aggregate in the repair material, whichever is greater.

I. Concrete removal shall continue along the reinforcing steel until no further delamination, cracking, or significant rebar corrosion exists and the reinforcing steel is well bonded to the surrounding concrete as per ICRI R310.1R.

J. The newly exposed sound concrete shall be cleaned by blowing away loose material with a deep sandblast, with chipping hammer removal option, followed by cleaning with a compressed air jet.

K. The Engineer shall be allowed 24 hours for the inspection of properly prepared concrete surfaces and reinforcement, before the scheduled concrete placement.

3.2 CLEANING AND REPAIR OF REINFORCING STEEL

A. Clean exposed reinforcing steel of rust, mortar, etc. to provide sufficient electrical connection and mechanical bond.

B. Bars that are damaged or that have lost more than 10 percent of their original area at any point along the length shall be considered unacceptable and shall be removed and replaced with an equivalent new bar of equal length at the Engineer’s direction. No. 8 bars and smaller that have lost between 5 percent and 10 percent of their original area at any point can be blast-cleaned and reused as long as a new full-length #4 bar is used as supplemental steel next to the old cleaned bar at the Engineer’s direction.

C. Secure loose reinforcing steel by tying tightly to other bars with steel tie wire.

D. Exposed or supplemental reinforcing bars shall be no closer than ¾" measured radially from existing concrete. The elevation of exposed or supplemental reinforcing shall be maintained at the original height.

E. Where portions of reinforcing bars are exposed, the Engineer will determine if the embedded portion of the bar is soundly bonded to the remaining concrete. If, in the Engineer's judgment, the bar is not soundly bonded, the Contractor shall remove concrete around and under the bar for a length as determined by the Engineer.

F. Install additional reinforcing bars as detailed or directed by the Engineer.

G. Do not coat the reinforcing steel or steel tie wires with a barrier or primer coating.

H. Verify electrical continuity of all reinforcing steel, including supplemental steel, per specifications sections 03 37 00 and 03 37 01.

3.3 CLEAN UP

A. Contractor shall remove loose concrete from the site and leave the area broom clean.

B. Debris shall not be flushed down the existing floor drains.

END OF SECTION

SECTION 03 01 30

MAINTENANCE OF CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.1 RELATED WORK

A. Applicable provisions of Division 01 shall govern work of this section.

B. Related work specified elsewhere:
1. Section 02 41 17 – Removal of Existing Concrete and Surface Preparation
2. Section 03 11 00 – Concrete Forming
3. Section 03 37 13 – Shotcrete

1.2 SUMMARY

A. Include materials, labor, services and incidentals necessary for completion of this Section of Work.

B. Work includes supplying, placing, finishing, and curing concrete over properly prepared existing concrete surfaces as indicated on Drawings and as specified.

1.3 QUALITY ASSURANCE

A. Pre-Construction Meeting
1. A pre-construction meeting is required with Contractor in order to coordinate work schedule and inspection required by Engineer.

B. Guarantee
1. Contractor shall assume Total Responsibility Guarantee for Material and Labor.

C. Installer Qualifications
1. Concrete patching repair work shall be performed under the immediate control of a person experienced in this type of work. The system installer's superintendent assigned to this project shall have a minimum of 5 years experience on projects of similar magnitude and scope and shall be present during system installation.

D. Inspection
1. Installer must examine substrate and conditions under which work is to be performed and must notify Contractor in writing of unsatisfactory conditions. Do not proceed with work until unsatisfactory conditions have been corrected.

1.4 SUBMITTALS

A. Manufacturers Data
1. Submit manufacturer's product data for concrete repair materials, indicating physical and chemical characteristics, technical specifications, limitations, installation instructions and general recommendations regarding each material.

PART 2 PRODUCTS

2.1 ACCEPTABLE PRODUCTS

A. Overhead and Vertical Repair Mortar
   1. Master Builders Solutions: MasterEmaco N 400
   2. Master Builders Solutions: MasterEmaco N 400RS
   3. Sika Group: SikaQuick VOH
   4. Substitutions: As approved by Engineer.

B. Horizontal Repair Mortar
   1. Master Builders Solutions: MasterEmaco S 467RS
   2. Master Builders Solutions: MasterEmaco T 1061
   3. Sika Group: SikaQuick - 2500
   4. Substitutions: As approved by Engineer.

C. Consult with manufacturers for product limitations.

PART 3 EXECUTION

3.1 PREPARATION OF SURFACES TO RECEIVE PATCHING CONCRETE

A. For requirements, refer to Specification Section 02 41 17 – Removal of Existing Concrete and Surface Preparation.

B. Remove unsound material, dirt, oil, grease and other bond inhibiting materials.

C. Remove rust and loose concrete on exposed reinforcing steel by sandblasting.

D. Concrete substrate shall be saturated surface dry with no standing water prior to application and shall be saturated for a minimum of two hours prior to application.

E. Conform to additional specific preparation requirements specified by manufacturer or ACI Standard for each patching product as applicable.

F. Cavities will be examined prior to commencement of patching operations. Sounding the surface shall be part of the examination. Delamination noted during the sounding shall be removed as specified.

G. Airblasting is required as a final step to remove sand and debris. Debris shall be removed from the site prior to the start of patching.

H. DO NOT coat exposed reinforcing steel with rebar primer in areas with anode installation.

3.2 MIXING, APPLICATION, AND FINISHING

A. Conform to manufacturer's specifications or ACI Standard for each patching product, as applicable.

B. Install repair mortar over the patch area and work into the substrate with proper finishing tools.

C. Finished surface shall be struck off flush with existing surfaces. Finish shall match existing or be lightly brushed.

3.3 CURING

A. Concrete shall be maintained above 50°F and in a moist condition for at least the first 7 days after placing.

B. Curing shall be accomplished by burlap covers kept continuously wet, continuous waterproof paper or 4 mil polyethylene sheeting conforming to ASTM C-171 with edges lapped and tightly sealed by sand, wood planks, pressure-sensitive tape, mastic or glue.

C. For concrete surfaces receiving no overlay a spray applied curing compound may be used in accordance with ASTM C-309. Two applications shall be made; the second shall be within an hour of the first application.

D. The concrete shall be sounded by the Contractor in the presence of the Engineer with a chain drag after the curing time. Hollowness shall be corrected by the Contractor by removing the concrete at these locations and recasting at no extra cost to the Owner.

E. Adequate protection shall be provided for concrete during freezing or near freezing weather. Concrete materials, reinforcement, forms, filler and ground with which concrete is to come in contact shall be free of frost, ice and show. Whenever air temperature is below 40°F, the minimum temperature of concrete when discharged shall be 65°F and concrete during the required curing period shall be maintained at a temperature not less than 50°F. Throughout heating period concrete shall be kept moist as specified. Placement and curing of concrete during cold weather shall conform to requirements of ACI 306R.

F. Placement and curing of concrete during hot weather shall be in conformance with the requirements of ACI 305R.

END OF SECTION

SECTION 03 11 00

CONCRETE FORMING

PART 1 GENERAL

1.1 RELATED WORK

A. Applicable provisions of Division 01 shall govern work of this section.

B. Related work specified elsewhere:
   1. Section 03 01 30 – Maintenance of Cast-in-Place Concrete
   2. Section 03 11 13 – Concrete Shoring
   3. Section 03 21 00 – Reinforcing Steel
   4. Section 03 31 00 – Structural Cast-in-Place Concrete

1.2 WORK INCLUDED

A. Include materials, labor, services and incidentals necessary for completion of this Section of Work.

B. Include formwork for cast in place concrete as required by Concrete Contractor.

C. Notify trades in ample time for each to install own work required in conjunction with formwork.

D. Inserts, sleeves and other miscellaneous embedded items required by mechanical, electrical or plumbing trades shall be supplied and installed by those respective trades.

E. Provide and install inserts, sleeves and other miscellaneous embedded items other than those required by mechanical, electrical or plumbing trades.

F. Supply, install and maintain shoring and re-shoring related to concrete formwork.

1.3 QUALITY ASSURANCE

A. Industry Standards, Specifications and Codes:
   1. General:
      a. Comply with provisions of the following codes and standards except as modified herein.
      b. Referenced codes and standards including revisions and commentaries shall be the most currently adopted as of the date of these Contract Documents.
   2. American Concrete Institute (ACI)
      a. ACI 301 Specifications for Structural Concrete for Buildings
      b. ACI 318 Building Code Requirements for Structural Concrete
      c. ACI 347 Guide to Formwork for Concrete
   3. National Forest Products Association (NFPA)

a. NDS National Design Specification for Wood Construction including Design Values for Wood Construction

4. The Engineered Wood Association (APA)
   a. Plywood Design Specification

1.4 DESIGN CRITERIA

A. Contractor to design forms, shores and bracing. Include factors pertaining to safety of formwork structure such as live load, dead load, weight of equipment on formwork, concrete mix, height of concrete drop, vibration reactions and similar factors.

B. Design formwork to be readily removable without impact, shock or damage to cast in place concrete surfaces and adjacent materials.

1.5 ALLOWABLE TOLERANCES

A. Flatwork true to plane: 1/4 inch in 10 feet

B. Vertical surfaces true to plane: 1/4 inch floor to floor

C. Formwork displacement: Maximum 1/4 inch

D. Deviation of building dimensions indicated on drawings and position of columns, walls and partitions: 1/4 inch

E. Deviation in cross sectional dimensions of columns, piers or beams or in thickness of slabs and walls: plus/minus 1/4 inch

PART 2 PRODUCTS

2.1 FORM MATERIALS

A. General: Plywood, metal framed plywood faced or other acceptable panel type materials to provide continuous, straight, smooth, exposed surfaces. Furnish in largest practical sizes to minimize number of joints. Provide form material with sufficient thickness to withstand pressure of newly placed concrete without bow or deflection.

B. Surfaces Exposed To View: New plywood complying with U.S. Standard PS 1 Plyform Class I, B B Concrete Form Plywood, B-Matte MDO Plywood by Simpson, 5/8 inch or 3/4 inch thick without defects, mill oiled and edge sealed or wood forms lined with 3/16 inch tempered pressed wood or 1/4 inch thick plywood B B conforming to EXT DFPA as large a size as possible to minimize joints.

C. Formed Surfaces Concealed From View: Clean straight lumber dressed on face and edges, nominal 1 inch thickness or plywood 5/8 inch or 3/4 inch thick conforming to EXT DFPA or metal forms smooth and as large a size as possible.

D. Reveals and Chamfers: Wood or purpose-made plastic or high density plastic foam to achieve sharp, true lines.

2.2 FORMWORK ACCESSORIES

A. Nails, Spikes, Lag Bolts, Through Bolts, Anchorages: Sizes as required of sufficient strength and character to maintain formwork in place while placing concrete.

B. Form Ties:
   1. For Unexposed Concrete: Adjustable length removable or snap off type which will leave holes no larger than 1 inch in diameter in face of concrete and when forms are removed no metal will be within 1 inch of finished concrete surface.
   2. For Exposed Concrete: Ties shall be snap-off type (break point 1 inch or more from surface) with plastic cones added to form a 1-1/4 inch diameter, 1-1/2 inch deep recess around tie, which shall be grouted flush to match adjacent concrete surface.
   3. No wire ties or site fabricated ties permitted.

2.3 FORM COATINGS

A. Form coatings for exposed concrete shall consist of an approved non-staining form oil, lacquer or plastic. Plywood approved for reuse shall be recoated as directed by Engineer. When oil is used, excess shall be wiped off with rags. When lacquer is used, a light coating of form oil over lacquer will be permitted provided excess is wiped off. When factory applied plastic coatings are used, follow manufacturer's instructions. Contact surface of forms shall be free of foreign matter, including dust. Form oil shall be applied to forms before reinforcing is erected. Form oil shall be of type which will not affect bonding of specified exterior finish.

2.4 CONSTRUCTION JOINT MATERIALS

A. Solid Wood Lumber: Spruce-Pine-Fur (SPF) #2 or equivalent.

PART 3 EXECUTION

3.1 PREPARATION

A. Verify lines, levels and centers before proceeding with formwork. Ensure dimensions agree with Drawings.

3.2 COORDINATION

A. Coordinate work of other sections and cooperate with trades involved in forming and setting openings, slots, recesses, chases, sleeves, bolts, anchors and other inserts. Do not perform work unless specifically indicated on Drawings or reviewed prior to installation.

3.3 FORMWORK ERECTION

A. Erect, support, brace and maintain formwork to support vertical and lateral loads that might be applied until such loads can be supported by concrete structure. Construct formwork so concrete members and structures are of correct size, shape, alignment, elevation and position.

B. Construct forms to sizes, shapes, lines and dimensions shown on Drawings and to obtain accurate alignment, location and grades. Level and plumb work. Provide for openings, offsets, sinkages, keyways, recesses, moldings, rustications, reglets, chamfers, blocking, screeds, bulkheads, anchorages and inserts, and other features required in work. Use selected materials to obtain required finishes. Solidly butt joints and provide back up at joints to prevent leakage of cement paste.

C. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush plates or wrecking plates where stripping may damage concrete surfaces. Provide top forms for inclined surfaces where slope is too steep to place concrete with bottom forms only. Kerf wood inserts for forming keyways, reglets, recesses and like to prevent swelling and for easy removal.

D. Provide temporary openings where interior area of formwork is inaccessible for cleanout, for inspection before concrete placement and for placement of concrete. Securely brace temporary openings and set tightly to forms to prevent loss of concrete mortar. Locate temporary openings on forms at inconspicuous locations.

E. At all exposed corners of concrete walls, beams, columns, slab edges and miscellaneous items not specified or indicated, provide 3/4-inch, 45 degree chamfer.

F. Install ties so portion remaining within concrete after removal is at least 1 inch inside concrete. Remove so surrounding concrete is not disfigured and cleanout hole remains to be patched.

G. Coat contact surfaces of forms with form coating compound before reinforcement is placed.

H. Thin form coating compounds only with thinning agent of type and in amount and under conditions of form coating compound manufacturer's directions. Do not allow excess form coating material to accumulate in forms or to come into contact with concrete surfaces against which fresh concrete will be placed. Apply in compliance with manufacturer's instructions.

3.4 INSERTS, EMBEDDED PARTS AND OPENINGS

A. Plumbing, Heating and Electrical Items:
   1. Premanufactured items including inserts, sleeves and other embedded items required by mechanical, electrical and plumbing trades shall be supplied, accurately located, and installed by respective trades.
   2. Site fabricated box outs for chases, sleeves and other miscellaneous openings for mechanical, electrical and plumbing trades shall be supplied and installed by Formwork Contractor.
   3. Location of mechanical, electrical and plumbing inserts, embedded parts, openings and recesses shall be coordinated with respective trades by General Contractor.

B. Other Items:
   1. Other inserts, embedded parts, box outs for openings, chases, reveals and recesses except those specifically mentioned above by mechanical, electrical or

plumbing trades, shall be installed by Formwork Contractor. Special inserts, embedded parts or other special requirements needed by specific trades shall be supplied by that respective trade to Formwork Contractor for installation. General Contractor shall have overall responsibility for coordinating location of inserts, embedded parts, openings and recesses.

2. Install concrete accessories in accordance with manufacturer's recommendations; straight, level and plumb. Ensure items are not disturbed during concrete placement.

3. Set and build into Work, anchorage devices and other embedded items required for other work attached to or supported by cast in place concrete. Use setting drawings, diagrams, instructions and directions provided by suppliers of items to be attached.

3.5 JOINTS AND EDGE FORMS

A. Locate construction joints as shown on Drawings or as approved by Engineer. Form with keyway. Place perpendicular to main reinforcement. Continue reinforcement through joint, except slabs-on-grade, and locate joint so as not to affect structural integrity or appearance of structure. Includes joint between wall and footing.

B. Set edge forms or bulkheads and intermediate screed strips for slabs to obtain required elevations and contours in finished slab surface. Provide and secure units of sufficient strength to support types of screeds required. Align concrete surface to elevation of screed strips by use of strike off templates or accepted compacting type screeds.

3.6 CLEANING

A. Clean forms as erection proceeds to remove foreign matter. Remove cuttings, shavings and debris from within forms. Flush with water or use compressed air to remove remaining foreign matter. Ensure water and debris drain to exterior through clean out ports. Retighten forms after concrete placement if required to eliminate mortar leaks.

3.7 FIELD QUALITY CONTROL

A. Inspect and check completed formwork, shoring and bracing to ensure work is in accordance with formwork design and supports, fastenings, wedges, ties and parts are secured.

B. Clean and repair surfaces of forms to be reused in Work. Split, frayed, delaminated or otherwise damaged form facing material will not be acceptable. Apply new form coating compound material to concrete contact form surfaces as specified for new formwork.

C. When forms are extended for successive concrete placement, thoroughly clean surfaces, remove fins and laitance, and tighten forms to close joints. Align and secure joints to avoid offsets. Do not use "patched" forms for exposed concrete surfaces. Do not use metal cover plates for repairing defects in forms for exposed concrete work.

D. Inform Engineer when formwork is complete and has been cleaned to allow for inspection. Obtain review prior to placing concrete.

E. For exposed to view concrete surfaces do not reuse plywood formwork.

F. Allow Engineer to inspect each section of plywood type formwork prior to reuse.

3.8 FORMWORK REMOVAL

A. Notify Engineer and Owner's field representative prior to removing formwork, centering, shoring and reshoring.

B. Remove forms in a manner to ensure safety of structure at all times. Where entire structure is supported on shores; beam and girder sides, columns and similar vertical forms may be removed after 48 hours, providing concrete is sufficiently hard not to be injured thereby. In no case shall supporting forms or shoring be removed until members have acquired sufficient strength to support their weight and load safely. Coordinate removal with work of other trades.

C. Remove forms according to ACI 347. However, the following schedule shall govern the minimum waiting period after placing concrete before bottom forms and shores of similar falsework supporting flexural members such as girders, beams, joists, slabs, etc. may be disturbed or stripped:

Structural Members	Waiting Period
1. Columns, walls and beam sides	2 days
2. Spans less than 12 foot - slabs and beam bottoms	7 days
3. Spans between 12 foot and 30-foot slabs and beam bottoms	14 days
4. Spans greater than 30 foot - slabs and beam bottoms	28 days

D. The above schedule applies to daily curing temperatures above 50°F. For lower daily curing temperatures, increase waiting period. In addition to above requirements, do not remove forms until concrete has attained 80 percent of minimum design strength.

E. Re shore removed area before removing additional adjacent formwork.

F. Retain re shores in place for a minimum of 14 days and concrete has attained 100 percent of minimum design strength. Retain re shores in place until concrete construction above has attained sufficient strength to not require shoring below.

END OF SECTION

SECTION 03 11 13

CONCRETE SHORING

PART 1 GENERAL

1.1 RELATED WORK

A. Applicable provisions of Division 01 shall govern work of this section.

B. Related work specified elsewhere:
1. Section 03 01 30 – Maintenance of Cast-in-Place Concrete
2. Section 03 11 00 – Concrete Forming
3. Section 03 31 00 – Structural Cast-in-Place Concrete

C. ASTM B418 – Standard Specification for Cast and Wrought Galvanic Zinc Anodes

1.2 SUMMARY

A. Include materials, labor, services and incidentals necessary for completion of this Section of Work.

B. Include materials related to shoring as described below.

C. Shoring shall be designed by Contractor to temporarily support members whose support is to be removed by partial demolition and concrete removal. Locations to require shoring will be determined by the engineer during the pre-construction meetings.

1.3 SUBMITTALS

A. The Contractor shall submit to Engineer, a record of reference elevations of shored members at various stages as described below.

1.4 QUALITY ASSURANCE

A. Contractor shall obtain reference elevations of members supported by shoring prior to concrete removal, during concrete removal, after concrete removal, during and after concrete replacement, and after shoring removal.

B. When reference elevations indicate unanticipated movements, shoring shall be adjusted to minimize adverse effects of that movement

PART 2 PRODUCTS

2.1 VERTICAL LOAD SHORES

A. Shores supporting vertical loads shall be adjustable through positive means, such as by adjustable screw jacks, in order to compensate for elastic shortening of shores during loading and other effects. Ellis Shore clamps shall not be used.

B. Shores shall be effectively cross braced to prevent buckling failure of individual members and overall shoring stability failure.

C. Shores shall be provided to carry full weight of floor system for entire bay in which work is being performed. Shores shall be in place prior to removal of unsound slab concrete and shall be supported on 1 structural level or to grade, as directed by engineer at pre-construction meeting. See structural plans for loads required to be supported at repair locations.

PART 3 EXECUTION

3.1 INSTALLATION

A. Shores shall be installed snug, plumb and square.

B. Shores shall be adjusted as required during progress of work as indicated by movements measured during relative elevation surveys of shored members.

3.2 REMOVAL

A. Shores shall only be removed when compressive strength results of replacement concrete reaches 75 percent of its specified 28-day strength. If Contractor chooses to have supplemental strength tests, it shall be the responsibility of the Contractor to make and pay for costs of these tests. Supplemental cylinders shall be stored on the structure in vicinity of the area they represent and shall be cured in the same manner as that portion of the structure.

B. Shores that have been removed shall not be stored in such a manner that they interfere with Owner's continued use of the structure. If shoring is not to be used within the structure it shall be removed from the structure or stored in the area in which Contractor is working.

END OF SECTION

SECTION 03 21 00

REINFORCING STEEL

PART 1 GENERAL

1.1 RELATED WORK

A. Applicable provisions of Division 01 shall govern work of this section.

1.2 WORK INCLUDED

A. Include materials, labor, services and incidentals necessary for completion of this Section of Work.

B. Work includes fabrication and placement of reinforcement for cast in place concrete including bars, welded wire fabric, ties, dowels, stirrups, supports and accessories required.

C. Work also includes the addition of supplemental reinforcing to replace bar cross section loss due to corrosion.

1.3 QUALITY ASSURANCE

A. Industry Standards, Specifications and Codes:
   1. General:
      a. Comply with provisions of the following codes and standards except as modified herein.
      b. Referenced codes and standards including revisions and commentaries shall be the most currently adopted as of the date of these contract documents.
   2. American Concrete Institute (ACI):
      a. ACI 301 Specifications for Structural Concrete for Buildings
      b. ACI 318 Building Code Requirements for Structural Concrete
      c. ACI 315 Details and Detailing of Concrete Reinforcement
   3. Concrete Reinforcing Steel Institute (CRSI):
      a. Manual of Standard Practice
      b. Recommended Practice for Placing Reinforcing Bars
   4. American Society for Testing and Materials (ASTM):
      a. Specific ASTM numbers are noted in later text.

1.4 QUALIFICATIONS

A. Acceptable Manufacturers:
   1. Shall be regularly engaged in the manufacture of steel bar, welded wire fabric reinforcing and mechanical splicing devices.

B. Installer Qualifications:

1. Shall have 3 years' experience in installation of steel bar and welded wire fabric reinforcing.

C. Source Quality Control:
1. Mill test certificates identifying chemical and physical analysis of each load of reinforcing steel delivered if requested.

1.5 SUBMITTALS

A. Submit in accordance with Division 01 requirements.

B. Steel Properties:
1. Submit certification of grade, chemical analysis and tensile properties of steel furnished if requested.

PART 2 PRODUCTS

2.1 REINFORCING STEEL

A. Reinforcing Bars:
1. Conform to ASTM A615 "Standard Specification for Deformed and Plain Billet Steel Bars for Concrete Reinforcement".
2. Reinforcing bars shall be deformed, except that plain bars may be used for spirals.
3. Main reinforcing bars and other bars not listed above shall be Grade 60, unless noted otherwise on Contract Documents.
4. All reinforcing shall be black, uncoated rebar.

B. Welded Wire Fabric:
1. Conform to ASTM A185 "Standard Specification for Welded Steel Wire Fabric, Plain for Concrete Reinforcement".
2. Welded wire fabric shall be electrically welded and 65,000 psi yield strength.

2.2 ACCESSORIES

A. Supports For Reinforcement:
1. Provide supports for reinforcement including bolsters, chairs, spacers and other devices for spacing, supporting and fastening reinforcement in place.
2. Use wire bar type supports complying with CRSI recommendations unless otherwise indicated. Do not use wood, brick and other unacceptable materials, e.g., mortar blocks, coarse aggregates.
3. For exposed to view concrete surfaces, where legs of supports are in contact with forms, provide supports with legs which are plastic protected. For sandblasted or bush hammered concrete provide stainless steel protected or special stainless bar supports.
4. In areas of concrete removal, short lengths of reinforcing bar shall be used to provide support for bars on chipped or rough concrete surfaces using similar spacing of supports.

2.3 FABRICATION

A. Shop fabricate reinforcing bars to conform to required shapes and dimensions. In case of fabricating errors, do not re bend or straighten reinforcement in a manner that will injure or weaken materials.

B. Reinforcement shall be bent cold unless otherwise permitted by Engineer.

C. Unacceptable Materials:
   1. Reinforcement with any of the following defects will not be permitted in Work:
      a. Bar lengths, depths and bends exceeding specified fabrication tolerances.
      b. Bends or kinks not indicated on Drawings or final Shop Drawings.
      c. Bars with reduced cross section due to excessive rusting or other cause.

2.4 PRODUCT DELIVERY, STORAGE AND HANDLING

A. General:
   1. Deliver reinforcement to project site in bundles marked with metal tags indicating bar size, lengths and other information corresponding to markings shown on placement drawings.
   2. Handle and store materials to prevent dirt or excessive rust.

PART 3 EXECUTION

3.1 INSPECTION

A. Examine formwork and other conditions under which concrete reinforcement is to be placed and notify Formwork Contractor of unsatisfactory conditions. Do not proceed with work until unsatisfactory conditions have been corrected in a manner to your satisfaction.

3.2 PLACEMENT

A. Comply with specified codes and standards and CRSI "Recommended Practice for Placing Reinforcing Bars" for details and methods of reinforcement placement and supports and as specified.

B. Clean reinforcement to remove loose rust and mill scale, earth, ice and other materials which reduce or impair bond with concrete.

C. Position, support and secure reinforcement against displacement by formwork, construction or concrete placement operations. Locate and support reinforcing by metal chairs, runners, bolsters, spacers and hangers as required.

D. Place reinforcement to obtain coverage for concrete protection as indicated on Contract Documents. Arrange, space and securely tie bars and bar supports together with 16 gage wire to hold reinforcement accurately in position during concrete placement operations. Set wire ties so ends are directly away from exposed concrete surfaces.

E. Exposed or additional reinforcing shall be no closer than 3/4 inch measured radially from existing concrete. Elevation of exposed or additional reinforcing shall be maintained at original height.

F. At openings in structural slabs, provide two #4 bars top and bottom of slab at 45 degrees on all 4 corners, each bar 48-inch minimum length.

G. At openings in concrete slabs additionally provide a minimum of two #5 bars around opening.

H. Provide two #4 bars 3 inches apart on 4 sides of floor drains in slabs.

I. Unless permitted by Engineer, reinforcing shall not be bent after being embedded in hardened concrete.

J. Welded wire fabric shall lap one full mesh at side and end laps and must be wired together.

K. Provide sufficient number of supports and sizes as required to carry reinforcement. Maximum spacing of chairs is 48 inches on center. Do not place reinforcing bars more than 2 inches beyond the last leg of any continuous bar support. Do not use supports as bases for runways for concrete conveying equipment and similar construction loads.

3.3 WELDING OF REINFORCEMENT

A. Welding of reinforcement covered by this Section is prohibited.

3.4 FIELD QUALITY CONTROL

A. Notify Engineer when reinforcing is in place so he or she may review reinforcing placement. Engineer shall have a minimum of 48-hour notice prior to placement of concrete

B. Tend to reinforcing at all times during concrete placement and make necessary adjustments to reinforcing which has been dislodged by concrete placement or workmen.

C. Bar Placement Tolerances:
   1. 1/4 inch (plus/minus) between bars
   2. 1/4 inch (plus/minus) vertically for members 8 inches deep or less
   3. 1/2 inch (plus/minus) vertically for members over 8 inches deep and less than 2 foot deep
   4. 1 inch (plus/minus) vertically for members 2 foot or deeper

END OF SECTION

SECTION 03 31 00

STRUCTURAL CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.1 RELATED WORK

A. Applicable provisions of Division 01 shall govern work of this section.

B. Related work specified elsewhere:
1. Section 02 74 19 – Removal of Existing Concrete and Surface Preparation
2. Section 03 11 00 – Concrete Forming
3. Section 03 11 13 – Concrete Shoring
4. Section 03 21 00 – Reinforcing Steel

1.2 WORK INCLUDED

A. Include materials, labor, services and incidentals necessary for completion of this Section of Work.

B. Extent of cast in place concrete work is shown on Drawings.

C. Notify other trades of the date for concrete placement in ample time for each to install their own work.

D. Install anchor bolts, embedded plates, inserts and similar items furnished by other trades.

E. Place additional 1" of concrete cover above existing slab elevation on 7th floor restoration area to match previously replaced slab areas.

1.3 NOTIFICATION

A. Contractor shall notify the inspection/testing agency and Engineer at least 24 hours prior to major concrete pour.

1.4 PROTECTION OF ADJACENT WORK

A. Contractor shall be responsible to see that due care is exercised to avoid staining adjacent finished material during concrete work. Contractor, without expense, shall make such damage good to Owner.

1.5 QUALITY ASSURANCES

A. Industry Standards, Specifications and Codes
1. General:
a. Comply with provisions of the following codes and standards except as modified herein.

b. Referenced codes and standards including revisions and commentaries shall be the most currently adopted as of the date of these Contract Documents.

2. American Concrete Institute (ACI):
   a. ACI 117 Standard Specifications for Tolerances for Concrete Construction and Materials
   b. ACI 301 Specifications for Structural Concrete
   c. Additional ACI sections are noted in later text.
3. American Society For Testing And Materials (ASTM):
   a. Specific ASTM standards are noted in later text.

1.6 ALLOWABLE TOLERANCES

A. Flatwork tolerance for random-traffic floors should be measured in accordance with ASTM E 1155.

B. Floor tolerance measurements shall be made within 16 hours after completion of final troweling operation, and where applicable, before removal of supporting shores.

C. Floor slabs shall conform to the following ACI F-number requirements:
1. Slab-On-Grade and Level Suspended Slabs Shored Until After Testing:
   a. Specified Overall Values - FF30/FL20
   b. Minimum Local Values - FF15/FL10
2. Unlevel Shored Suspended Slabs and Unshored Suspended Slabs:
   a. Specified Overall Value - FF25
   b. Minimum Local Value - FF15

D. See ACI 117 for other tolerances not stated herein.

1.7 SUBMITTALS

A. Submit in accordance with Division 01 requirements.

B. Mix Designs:
1. Prepare design mixtures for each class of concrete on the basis of laboratory trial mixtures or field test data, or both in accordance with ACI 301. Design mixtures shall meet the requirements listed in Section 2.4. Submit material content per cubic yard of each class of concrete furnished including:
2. Weight of cementitious materials.
3. Saturated surface dried weights of fine and coarse aggregates.
4. Quantities, type and name of admixtures.
5. Weight of mixing water or water/cementious material ratio.

C. Submit to Engineer mix designs, certification that materials used in concrete mixtures meet ASTM and other applicable specifications, and documentation indicating proposed concrete proportions will produce an average compressive strength equal to or greater than the required compressive strength as specified in ACI 301. Obtain approval prior to placing concrete.

D. Test Reports:

1. Submit reports of concrete testing including, compressive strength, density (unit weight), air content, temperature and slump. Furnish copies to General Contractor, Consulting Engineer, Concrete Supplier and Owner Representative. Test results shall be reported in writing within 2 days that tests are made.

PART 2 PRODUCTS

2.1 MATERIALS

A. Hydraulic Cement:
   1. For normal concrete, hydraulic cement shall meet requirements of ASTM C 150, ASTM C 595, or ASTM C 1157.
   2. For air entrained concrete, cement shall meet requirements of ASTM C 150 cement specified for normal concrete used with an air entraining admixture conforming to ASTM C 260.

B. Slag Cement:
   1. Slag cement shall meet requirements of ASTM C 989.

C. Silica Fume Cement:
   1. Silica fume shall meet the requirements of ASTM C 1240.

D. Fly ash:
   1. Fly ash shall meet the requirements of ASTM C 618.

E. Aggregates:
   1. Normal weight aggregate shall comply with requirements of ASTM C 33. Lightweight aggregates shall comply with requirements of ASTM C 330.

F. Water:
   1. Water used for batching concrete shall meet the requirements of ASTM C 1602.

2.2 ADMIXTURES

A. No other admixtures will be allowed except those listed without Engineer's approval.

B. All admixture products should be from one the following manufacturers:
   1. Master Builders Solutions
   2. The Euclid Chemical Company
   3. Sika Group
   4. GCP Applied Technologies
   5. Substitutions: As approved by Engineer.

C. Air Entraining:
   1. Shall Conform to ASTM C 260, certified by the manufacturer to be compatible with other required admixtures. The Entrained air content shall be controlled at 6½ percent for ¾" aggregate concrete and 5½ percent for 1½" aggregate concrete within limits of plus or minus 1½ percent each.

D. Water Reducing:
   1. Shall conform to ASTM C 494, Type A

E. Mid-Range Water Reducing:
   1. Shall conform to ASTM C 494, Type A or Type F

F. High-Range Water Reducing (Super Plasticizer):
   1. Shall conform to ASTM C 494, Type F or Type G.

G. Water Reducing, Non-Chloride Accelerator:
   1. Shall conform to ASTM C 494, Type C or Type E.

H. Water Reducing, Retarding:
   1. Shall conform to ASTM C 494, Type D.

I. Admixtures shall not contain calcium chloride as an intentionally added ingredient. Calcium chloride as an admixture is not permitted. Admixtures containing more than ½ of 1 percent (0.5 percent) chloride ions by weight of admixture are not permitted.

2.3 RELATED MATERIALS

A. Evaporation Retardant and Finishing Aid:
   1. Shall be one of the following approved products:
      a. Sika Film – Sika Group
      b. MasterKure – Master Builders Solutions
      c. Substitutions: As approved by Engineer.

B. Absorptive Cover: Burlap cloth made from jute or Kenaf, weighing approximately 9 ounces per square yard, complying with AASHTO M182, Class 2.

C. Moisture-Retaining Cover: One of the following, complying with ASTM C 171, Type 1 or 2:
   1. Polyethylene Film
   2. Polyethylene Coated Burlap

2.4 READY MIXED CONCRETE

A. Ready mixed concrete shall be measured, mixed and delivered according to ASTM C94, except as modified herein.

B. Prepare design mixtures for each class of concrete on the basis of laboratory trial mixtures or field test data, or both in accordance with ACI 301. Design mixtures shall meet the following requirements:
   1. Compressive Strength at 28 days: 4,000 psi
   2. Max aggregate size: 3/4 inch
   3. Air Entrainment (±1%): 6.0%

C. Addition of water is permitted for batches of material with insufficient slump at the job site but is limited to the lesser of; 1 gallon per cubic yard or the quantity of water

indicated on the delivery ticket such that the mixing water content on approved mix design is not exceeded.

D. Ready Mixed Concrete Delivery Tickets:
   1. Furnish 2 delivery tickets with each batch of concrete before unloading at site; 1 for Contractor and 1 for Engineer on which is printed, stamped or written the following information:
      a. Name of ready-mix batch plant
      b. Serial number of ticket
      c. Date and truck number
      d. Name of Contractor
      e. Job name and location
      f. Specific class or designation of concrete
      g. Amount of concrete (cubic yards)
      h. Time loaded or of first mixing of cement and aggregates
      i. Type, name and amount of admixture
      j. Type, brand and amount of cement
      k. Total water content by producer (or W/C ratio)
      l. Maximum size of aggregate
      m. Weights of fine and coarse aggregates

E. Mix Proportioning:
   1. Maximum water-cementitious ratio by weight shall be 0.45.
   2. A maximum of 30 percent total replacement of Portland cement with GGBFS (Ground Granulated Blast-Furnace Slag) and fly ash at a 1:1 ratio; up to 350 pounds, with a maximum 25 percent fly ash. If fly ash is used alone, limit maximum replacement to 25 percent.
   3. Slump shall be such that the finished surface follows that of the existing inclined ramps with no sagging or bulging due to gravity on the plastic mix.
   4. Grout for bonding replacement concrete to existing concrete. Grout shall consist of equal parts by weight of cement and sand. It shall be mixed with sufficient water to form a stiff slurry. The consistency of this slurry shall be such that it can be applied with a stiff brush or broom to the old concrete in a thin, even coating that will not run or puddle in low spots. For use on vertical joints, this grout shall be thinned to paint consistency.

PART 3 EXECUTION

3.1 GENERAL

A. Clean all mixing and transportation equipment. Wet forms and exposed concrete surfaces thoroughly. Remove all ice, excess water, mud and other debris from within forms and from restoration surfaces and reinforcement. Notify Engineer prior to placing in ample time for inspection of forms, exposed concrete surfaces and reinforcing.

B. A pre-construction meeting shall take place prior to placing concrete. Topic of discussion shall include: concrete handling, placing, finishing and curing.

3.2 PLACEMENT OF CONCRETE

A. Pre-Placement Inspection:
   1. Before placing concrete, inspect and complete formwork installation, reinforcing steel and items to be embedded or cast in-place. Notify other Contractors to permit installation of their work; cooperate with other trades in setting such work as required. Thoroughly wet wood forms immediately before placing concrete as required where form coatings are not used. Notify inspection agency and Engineer 24 hours in advance of pouring.

B. Placing Concrete in Forms:
   1. Deposit concrete in forms in horizontal layers not deeper than 18 inches and in a manner to avoid inclined construction joints. Where placement consists of several layers, place each layer while preceding layer is still plastic to avoid cold joints.
   2. Deposit concrete continuously or in layers of such thickness that no concrete will be placed on concrete which has hardened sufficiently to cause formation of seams or planes of weakness within the section. If a section cannot be placed continuously, provide construction joints as specified. Deposit concrete as nearly as practicable to its final location to avoid segregation due to re-handling or flowing.
   3. Consolidate placed concrete by mechanical vibrating equipment supplemented by hand spading, rodding or tamping. Use vibrators designed to operate with vibratory element submerged in concrete, maintaining a speed of not less than 6000 impulses per minute. Alternate methods of consolidating concrete including the use of self-consolidating concrete may be submitted to the Engineer for approval.
   4. Do not use vibrators to move concrete inside of forms. Insert and withdraw vibrators vertically at uniformly spaced locations not farther than visible effectiveness of machine. Do not insert vibrators into lower layers of concrete that have begun to set. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing segregation of mix.

C. Placing Concrete Slabs:
   1. Deposit and consolidate concrete slabs in a continuous operation until placing of a panel or section is completed.
   2. Place suspended slabs in sections as large as practicable to complete finishing, within limits acceptable to Engineer.
   3. Consult with Engineer with regard to limits of single placements prior to commencing work.
   4. Consolidate concrete during placing operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
   5. Bring slab surfaces to correct level with a straightedge and strikeoff. Use bull floats or darbies to smooth surface, leaving it free of humps or hollows. Do not sprinkle water on plastic concrete surface. Do not disturb slab surfaces prior to beginning finishing operations. “Wet Screed” placement of slabs is not allowed.
   6. Maintain reinforcing in the proper position during concrete placement operations.

D. Cold Weather Placing:
1. Protect concrete work from physical damage or reduced strength which could be caused by frost, freezing actions or low temperatures in compliance with ACI 301.
2. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
3. Do not use calcium chloride, salt or other materials containing anti-freeze agents or chemical accelerators other than approved, non-chloride accelerating admixtures.
4. Do not allow carbon dioxide from heating units to contact freshly placed concrete surfaces for 48 hours. Vent heaters outside of enclosure.

E. Hot Weather Placing:
1. When hot weather conditions exist that would seriously impair quality and strength of concrete, place concrete in compliance with ACI 301.
2. Wet forms thoroughly before placing concrete.
3. Do not use retarding admixtures without the written permission of the Engineer.

3.3 CONCRETE JOINTS

A. Construction Joints:
1. Locate as directed by Engineer or as shown on Drawings. Form keyway. Place perpendicular to main reinforcement. Continue reinforcement through joint. Locate joint so as not to affect structural integrity or appearance of the structure. Includes joint between wall and footing.

3.4 FINISHING

A. General:
1. Strike and level concrete. Allow to set before floating. Power float on disappearance of water sheen. Hand float areas inaccessible to power float. Applicable to flat work to obtain smooth, uniform, granular texture. Floors shall be flat and level within tolerances given in Part 1, except where drains occur or sloped floors are indicated, in which case tolerance applies to planes indicated.

B. Broom Finish:
1. Draw broom across surface after floating to form a regular, parallel pattern. Applicable to parking ramps, drives, ramps and stairs. Direction of brooming shall be perpendicular to traffic pattern.

C. Formed Concrete:
1. Top of concrete: Strike concrete smooth then float and trowel surface to texture comparable to formed surface.
2. Formed Surface: As cast finish, patch holes and defects after form removal. Remove fins.
3. Rubbed Surface: Rub with rubbing stone to remove all projections and round corners. Wet surface and brush evenly with cement grout mixture. Provide rubbed concrete surfaces in finished areas to be left to view in stairwells, where concrete is exposed to view in a finished area and wherever else a rubbed surface is called for on the plans.

3.5 CURING

A. Comply with ACI 301.

B. Class B Concrete Curing:
1. Concrete items listed below shall be sheet cured per ACI 308 2.3.1 Plastic Film or 2.3.2 Reinforced Paper only, for 7 days after placement. Curing system joints shall be sealed and moisture added daily to maintain concrete surface in a damp condition. Insulating blankets used during cold weather do not need sealed joints as long as concrete surface is damp.

C. Formed Surfaces:
1. Cure formed concrete surfaces including walls, columns, underside of beams, supported slabs and other similar surfaces by moist curing with forms in place for full curing period or until forms are removed. If forms are removed, continue curing by membrane curing.

D. Protection:
1. Protect concrete from damaging mechanical disturbances including load stresses, heavy shock, excessive vibration, and from damage caused by rain or flowing water. Protect finished concrete surfaces from damage by subsequent construction operations.

3.6 CONCRETE REPAIR PROCEDURES

A. Concrete Surface Repairs:
1. Comply with ACI 301 “Specifications for Structural Concrete”.
2. Remove and replace, at no additional cost, concrete not formed as shown on Drawings, concrete out of alignment, surfaces beyond required tolerances or defective surfaces which cannot be properly repaired or patched, including concrete failing to meet strength requirements as determined by testing laboratory.
3. Patching Defective Areas: Repair and patch defective areas with cement mortar immediately after removal of forms, when acceptable to Engineer. Cut out honeycomb, rock pockets, voids over 1/4 inch in any dimension, and holes left by tie rods and bolts, down to solid concrete but, in no case to a depth of less than 1 inch. Make edges of cuts perpendicular to concrete surface. Thoroughly clean, dampen with water and brush coat area to be patched with specified bonding agent. Place patching mortar after bonding compound has dried.
4. For exposed to view surfaces, blend white Portland cement and standard Portland cement so that, when dry, patching mortar will match color surrounding. Provide test areas at inconspicuous location to verify mixture and color match before proceeding with patching. Compact mortar in place and strike-off slightly higher than surrounding surface.
5. Repair of Formed Surfaces: Remove and replace concrete having defective surfaces if defects cannot be repaired to satisfaction of the Engineer. Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycomb, rock pockets, fins and other projections on surface and stains and other discolorations that cannot be removed by cleaning. Flush out form tie

holes, fill with dry pack mortar or precast cement cone plugs secured in place with bonding agent.

6. Repair concealed formed surfaces, where possible, that contain defects that affect durability of concrete. If defects cannot be repaired, remove and replace concrete.
7. Repair of Unformed Surfaces: Test unformed surfaces, such as monolithic slabs, for smoothness and verify surface plane to tolerances specified for each surface and finish. Correct low and high areas as specified. Test unformed surfaces sloped to drain for trueness of slope, in addition to smoothness, using a template having required slope.
8. Repair finished unformed surfaces that contain defects that affect durability of concrete. Surface defects, include crazing, cracks in excess of 0.01 inch wide or which penetrate to reinforcement or completely through non-reinforced sections regardless of width, spalling, popouts, honeycomb, rock pockets and other objectionable conditions.
9. Correct high areas in unformed surfaces by grinding, after concrete has cured at least 14 days.
10. Correct low areas in unformed surfaces during or immediately after completion of surface finishing operations by cutting out low areas and replacing with fresh concrete. Finish repaired areas to blend into adjacent concrete. Proprietary leveling compounds may be used when acceptable to Engineer.
11. Repair defective areas, except random cracks and single holes not exceeding 1 inch diameter, by cutting out and replacing with fresh concrete. Remove defective areas to sound concrete with clean, square cuts and expose reinforcing steel with at least 3/4 inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding compound. Mix patching concrete of same materials to provide concrete of same type or class as original concrete. Place, compact and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
12. Repair isolated random cracks and single holes not over 1 inch in diameter by dry-pack method. Groove top of cracks and cut out holes to sound concrete and clean of dust, dirt and loose particles. Dampen cleaned concrete surfaces and apply bonding compound. Mix dry-pack, consisting of 1 part Portland cement to 2-1/2 parts fine aggregate passing a No. 16 mesh sieve, using only enough water as required for handling and placing. Place dry-pack after bonding compound has dried. Compact dry-pack mixture in place and finish to match adjacent concrete. Keep patched area continuously moist for not less than 72 hours.
13. Do not use repair methods not specified above and do not perform structural repairs, except with prior written approval of Engineer for method and procedure, using approved epoxy adhesive mortar.

3.7 QUALITY CONTROL TESTING DURING CONSTRUCTION

A. General:
   1. Sample fresh concrete to conform to ASTM C 172.

B. Aggregate Tests:
   1. Chloride content in aggregate shall be tested in accordance with ASTM D 1411. Tests shall be made and results must be approved by Engineer before the aggregate is used in concrete.

C. Slump:
   1. In accordance with ASTM C 143. One slump test at point of discharge from ready mix truck for each set of test cylinders taken, unless noted otherwise, with additional tests when concrete consistency seems to have changed. Slump tests, when taken, shall be conducted after site addition of superplasticizer, however a visual estimate of slump shall be recorded prior to site addition of superplasticizer to a mix. Visual slump should only be used after correlation has been established with actual slump tests.

D. Air Content:
   1. Only for air entrained concrete, in accordance with ASTM C 231 pressure method for normal weight concrete and ASTM C 173 for lightweight concrete. One air content test for each set of strength test cylinders made unless noted otherwise. If measured air content falls outside limits specified, a check test shall be made immediately on another portion of the same sample. In the event of a second failure, concrete will be considered to have failed to comply with Specifications. In compliance with ASTM C 94, site addition of additional air entrainment admixture is permissible until plant adjustments have been made. For site added superplasticizer, air should only be checked after the addition of superplasticizer.

E. Concrete Temperature:
   1. In accordance with ASTM C 1064 each time a set of compression test specimen is made.

F. Electrical Conductivity:
   1. Concrete shall have an electrical resistivity of less than 50,000 ohm-cm. Tests shall be made and results must be approved by Engineer before placing concrete.

G. Strength Tests:
   1. Strength test for any class of concrete shall consist of 4 standard cylinders made from a composite sample secured from a single load of concrete in accordance with ASTM C 172, except when in the opinion of the Engineer, they may require additional specimens.
   2. All Concrete:
      a. Make test cylinders in accordance with ASTM C 31. Each test shall consist of a minimum of 4 cylinders.
      b. After 24 hours, 3 cylinders to be carefully transported to testing laboratory for moist curing.
      c. 1 laboratory cured cylinder to be tested at 7 days and 2 laboratory cured cylinders to be tested at 28 days, the fourth cylinder shall be held.
   3. Test results at 28 days shall be the average strength of specimens determined in accordance with ASTM C 39.
   4. Strength test shall be made for each truck.
   5. Strength of each concrete class shall be deemed satisfactory when both of the following criteria are met:
      a. The average of three consecutive compressive-strength tests equals or exceeds specified compressive strength.
      b. Any individual compressive-strength test result does not fall below specified compressive strength by more than 500 psi.

6. Testing shall be performed in compliance with Division 01 provisions by an approved testing laboratory at the Owner's expense, which shall submit complete reports of tests to General Contractor, Concrete Supplier, Engineer and Owner's representative. Reports of compressive strength tests shall contain project identification name and number, date of concrete placement, name of concrete testing service, concrete type and class, location of concrete batch in structure, design compressive strength at 28 days, concrete mix proportions and materials, weather at time of placement and compressive breaking strength and type of break. An individual having ACI Level 1 Technician certification shall complete testing, including test cylinder production. Site protection of test cylinders shall be made in compliance with ASTM C 31.
7. If Engineer has reason to believe cylinder strength tests are not representative of strength of concrete in place, he shall require drilled cores to be cut and tested at Contractor's expense. Coring and testing shall be in accordance with ASTM C 42 “Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete”. Acceptance or rejection of concrete shall be based on cylinders made from concrete sampled at point of discharge. Impact hammer, sonoscope or other nondestructive device may be permitted, but shall not be used as the sole basis for acceptance or rejection.
8. Extent of Testing:
    a. Class A: Trucks shall be tested for air content and slump at truck during discharge. After a consistent slump has been established, alternate slump tests may be a visual estimate. Test reports shall be sent to Engineer immediately upon completion.

END OF SECTION

SECTION 03 37 00

EMBEDDED GALVANIC ANODES

PART 1 GENERAL

1.1 RELATED WORK

A. Applicable provisions of Division 01 shall govern work of this section.

B. Related work specified elsewhere:
1. Section 02 41 17 – Removal of Existing Concrete and Surface Preparation
2. Section 03 01 30 – Maintenance of Cast-in-Place Concrete
3. Section 03 21 00 – Reinforcing Steel
4. Section 03 31 00 – Structural Cast-in-Place Concrete
5. Section 03 37 13 – Shotcrete

1.2 SUMMARY

A. This Section includes furnishing all labor, tools, materials, equipment and services necessary to properly install embedded galvanic anodes.

B. Embedded galvanic anodes are designed to provide localized corrosion protection. When placed at the appropriate spacing along the perimeter of concrete patches or along the interface between new/existing concrete, the anodes mitigate active corrosion and the formation of new corrosion sites in the adjacent existing concrete.

1.3 REFERENCES

A. ACI Repair Application Procedure (RAP) Bulletin 8 – Installation of Embedded Galvanic Anodes

B. ACI Guideline No. 222 – Corrosion of Metals in Concrete

C. ACI 562 - Code Requirements for Evaluation, Repair and Rehabilitation of Concrete Buildings

D. ASTM B418– Standard Specification for Cast and Wrought Galvanic Zinc Anodes

E. ICRI Guideline 310.1R - Guide for Surface Preparation for the Repair of Deteriorated Concrete resulting from Reinforcing Steel Corrosion

F. ISO 12696 – Cathodic Protection of Steel in Concrete

1.4 MANUFACTURER EXTENDED LIMITED WARRENTY

A. Contractor shall provide a Limited Warranty with a notarized signature from a corporate officer of the anode manufacturer.

B. The Limited Warranty shall state the following:

1. The published anode spacing guidelines for anode size and spacing are based on an estimated 10 to 30-year anode service life.
2. The galvanic anodes will remain electrochemically active and produce galvanic current in relation to the environment in which it is installed for a minimum of 5 years from the date of anode installation.
3. The anode unit, including its constitutes, does not include intentionally added substances that may cause corrosion to reinforcing steel over the life of the structure.
4. The galvanic anodes meet all building and repair code requirements.

1.5 ANODE MANUFACTURER CORROSION TECHNICIAN

A. The contractor will enlist and pay for a technical representative employed by the galvanic anode manufacturer to provide training and on-site technical assistance during the initial installation of the galvanic anodes. The technical representative shall be a NACE-qualified corrosion technician (NACE CP2 Cathodic Protection Technician or higher).

B. The qualified corrosion technician shall have verifiable experience in the installation and testing of embedded galvanic protection systems for reinforced concrete structures.

C. The contractor shall coordinate its work with the designated corrosion technician to allow for site support during project startup and initial anode installation. The corrosion technician shall provide contractor training and support for development of application procedures, verification of electrical continuity, and project documentation.

PART 2 PRODUCTS

2.1 EMBEDDED GALVANIC ANODES

A. Embedded galvanic anodes shall be Anode Type 1A Class C with the following nominal dimensions: 1.38 in. x 1.56 in. x 5.11 in. The anodes shall be pre-manufactured with a nominal 160 grams of zinc in compliance with ASTM B418 Type II cast around an integral, unspliced, uncoated, non-galvanized double loop steel tie wire and encased in a highly alkaline cementitious shell with a pH of 14 or greater.

B. The galvanic anodes shall be alkali-activated and shall contain no intentionally added chloride, bromide or other constituents that are corrosive to reinforcing steel as per ACI 562. Embedded galvanic anodes shall be Galvashield® XP4 available from Vector Corrosion Technologies (www.vector-corrosion.com) USA (813) 830-7566 or approved equal.

C. Application for approved equals shall be requested in writing two weeks before submission of project bids. Application for galvanic anode approved equals shall include verification of the following information:
1. The zinc anode is alkali-activated with an alkaline cementitious shell with a pH of 14 or greater.
2. The galvanic anode shall contain no intentionally added constituents corrosive to reinforcing steel, e.g. chloride, bromide, etc.

3. The anode manufacturer shall provide documented test results from field installations showing that the anodes have achieved a minimum of 20 years in service.
4. The galvanic anode shall have been used in a minimum of ten projects of similar size and application.
5. The galvanic anode units shall be supplied with solid zinc core (ASTM B418) cast around an uncoated, non-galvanized, non-spliced steel tie wire for wrapping around the reinforcing steel and twisting to provide a durable steel-to-steel connection between the tie wire and the reinforcing steel.
6. The anode manufacturer shall provide third party product evaluation, such as from Concrete Innovations Appraisal Service, BBA, etc.

2.2 REPAIR MATERIALS

A. Use an ionically conductive, cement-based repair mortar or concrete. Non-conductive repair materials such as epoxy, urethane, or magnesium phosphate shall not be permitted. Insulating materials such as epoxy bonding agents shall not be used unless otherwise called for in the design.

B. If repair materials have a saturated bulk resistivity of 50,000 ohm-cm or greater, pack Galvashield® Embedding Mortar or another repair mortar with a resistivity of 15,000 ohm-cm or less between the anode and the substrate to provide an ionically conductive path to the substrate

2.3 STORAGE

A. Deliver, store, and handle all materials in accordance with manufacturer's instructions. Anode units shall be stored in dry conditions in the original unopened containers in a manner to avoid exposure to extremes of temperature and humidity.

PART 3 EXECUTION

3.1 GALVANIC ANODE INSTALLATION

A. Install anode units and repair material immediately following preparation and cleaning of the steel reinforcement.

B. Galvanic anodes shall be installed along the perimeter of the repair at maximum spacings for each specific structure element as indicated on design drawings.

C. Place the galvanic anodes as close as possible to the interface with the parent concrete - maximum 4 in. - while still providing sufficient clearance between anodes and substrate to allow the repair material to fully encase the anode.
1. Place the anode such that the preformed BarFit™ groove fits along a single bar or at the intersection between two bars and secure to each clean bar
2. If less than 1 in. of concrete cover is expected, place anode beneath the bar and secure to clean reinforcing steel or increase the size of the repair cavity to accommodate the anodes

D. Wrap the tie wires around the clean reinforcing steel at least one full turn in opposite directions and bring the two free ends together and twist tight to create a secure electrical connection and allow no anode movement during concrete placement

E. Electrical Continuity
   1. Confirm electrical connection between anode tie wire and reinforcing steel by measuring DC resistance (ohm Ω) or DC potential (mV) with a multi-meter. Electrical connection is acceptable if the DC resistance measured with the multi-meter is 1 Ω or less or the DC potential is 1 mV or less
   2. Confirm electrical continuity of the exposed reinforcing steel within the repair area. If necessary, electrical continuity shall be established by tying discontinuous steel to continuous steel using steel tie wire. Electrical continuity between test areas is acceptable if the DC resistance measured with multi-meter is 1 Ω or less or the potential is 1 mV or less

3.2 CONCRETE OR MORTAR REPLACEMENT

A. If the repair procedures require the concrete surface to be saturated with water, do not damage the anode nor allow the anode units to be soaked for greater than 20 minutes.

B. Complete the repair with the repair material, taking care not to damage, loosen or leave voids around the anode.

3.3 FIELD QUALITY CONTROL

A. Notify Engineer when all the galvanic anodes are in place so they may review proper placement and connections. Engineer shall have a minimum of 24-hour notice prior to placement of concrete.

B. Tend to anodes at all times during concrete placement and make necessary adjustments to assure proper locations and connections.

END OF SECTION

SECTION 03 37 01

DISTRIBUTED GALVANIC ANODES

PART 1 GENERAL

1.1 RELATED WORK

A. Applicable provisions of Division 01 shall govern work of this section.

B. Related work specified elsewhere:
1. Section 02 41 17 – Removal of Existing Concrete and Surface Preparation
2. Section 03 21 00 – Reinforcing Steel
3. Section 03 31 00 – Structural Cast-in-Place Concrete

1.2 SUMMARY

A. The work under this section consists of supplying, installing, and energizing a zinc-based galvanic corrosion protection system, including required electrical connections, materials, testing, and ensuring continuity of the reinforcing steel to all elements as outlined in the construction drawings.

B. Distributed embedded galvanic anodes are designed to provide galvanic corrosion protection. The anodes are connected to reinforcing steel and embedded in concrete to mitigate corrosion.

1.3 REFERENCES

A. ACI Guideline No. 222 – Corrosion of Metals in Concrete

B. ICRI Guideline 310.1R-2008 Guide for Surface Preparation for the Repair of Deteriorated Concrete resulting from Reinforcing Steel Corrosion

C. ASTM B418 – Standard Specification for Cast and Wrought Galvanic Zinc Anodes

1.4 BID QUANTITY

A. Base bids on the quantity, dimensions, length, weight and information in this specification and shown on the drawings.

PART 2 PRODUCTS

2.1 DISTRIBUTED ANODE SYSTEM

A. The distributed galvanic anode units shall be alkali-activated Type F with a pH greater than 14 and shall not contain intentionally added constituents that are corrosive to reinforcing steel as per ACI 222R such as chlorides, bromides, or other halides. The anode zinc shall be in compliance with ASTM B418 Type II (Z13000) with iron content less than 15 ppm and shall be evenly distributed around a steel core which is continuous

along the length of the unit. Unless otherwise specified, the anode unit shall be supplied with a pair of uncoated stainless steel tie wires with optional loop ties to make connections to the reinforcing steel. The anode unit shall have a thin foil exterior and include FRP reinforcing to resist expansion.

B. Individual anode units shall be approximately 1 3/8 inches in diameter with 0.6 lb./ft of anode zinc mass. The length of individual anode units shall be as shown on design drawings. Anode units shall be supplied with uncoated, stainless steel tie wires for direct connection to the steel and connection to an inter-anode connecting header wire as per the design. Distributed galvanic anodes shall be Galvashield® DAS available from Vector Corrosion Technologies (www.vector-corrosion.com or vector-corrosion.eu) USA (813) 830-7566, Canada (204) 489-9611, UK (44) 1384 671 400 or approved equal.

C. Application for approved equals shall be requested in writing two weeks before submission of project bids. Application for galvanic anode approved equals shall include verification of the following information:
   1. The zinc anode is alkali-activated with a pH of 14 or greater and internally reinforced with alkaline-resistant mesh.
   2. The distributed anode contains no intentionally added constituents corrosive to reinforcing steel or detrimental to concrete, e.g. chloride, bromide, sulfate, etc.
   3. Proven track record of the anode technology showing satisfactory field performance with a minimum of five projects of similar size and application.
   4. Anode units contain multiple layers of zinc around uncoated, stainless (non-galvanized) steel tie wires.
   5. Third party product evaluation, such as from Concrete Innovations Appraisal Service, BBA, etc.

2.2 CONCRETE

A. Concrete mixture shall be of sufficient consistency to encapsulate the anodes without voids or segregation. Concrete shall have an electrical resistivity of less than 50,000 ohm-cm. Concrete mixtures that contain elevated levels of pozzolanic materials such as silica fume, ground-granulated blast-furnace slag, or fly ash will reduce the electrical conductivity of the concrete and may not be suitable for use. If higher resistance concrete is used, or the resistivity is unknown, use Galvashield Embedding Mortar to create a conductive bridge to the substrate prior to concrete installation and submit concrete mix design to Corrosion Engineer for review.

PART 3 EXECUTION

3.1 GENERAL DESCRIPTION

A. The galvanic corrosion protection system shall consist of alkali-activated distributed galvanic anodes placed evenly across the concrete surface as shown on design drawings. The anode units are connected to the reinforcing steel to be protected and encased in concrete with a minimum of 1 ½ in. (38mm) of clear concrete cover over the anode units. After the anode units are installed and encased in concrete, the system provides galvanic protection to the embedded reinforcing steel.

3.2 MANUFACTURER TECHNICAL ASSISTANCE

A. The contractor will enlist and pay for the services of a NACE-qualified cathodic protection technician (CP2 or greater) supplied by the galvanic anode manufacturer. The qualified corrosion technician shall have verifiable experience in the installation and testing of embedded galvanic protection systems for reinforced concrete structures.

B. The technician shall provide contractor training and support for development of application procedures, shop drawings for submittals, anode and concrete installation, reinforcing steel connection procedures, and verification of electrical continuity of embedded steel. The contractor shall coordinate its work with the designated technician to allow for site support during project startup and initial anode installation.

3.3 CONCRETE PREPARATION

A. Concrete repairs shall be square or rectangular in shape with squared corners per ICRI Guideline 310.1R-2008. Saw cut the repair boundary ½ inch deep or less if required to avoid cutting reinforcing steel. Create a clean, sound substrate to receive the repair material by removing bond-inhibiting materials from the concrete substrate by high pressure water blasting or abrasive blasting.

3.4 ELECTRICAL CONTINUITY OF STEEL AND ANODES

A. Reinforcing steel shall be tested for electrical continuity by procedures as directed by the cathodic protection technician. Electrical connection is acceptable if the DC resistance measured with the multi-meter is 1 Ω or less or the DC potential is 1 mV or less. Reinforcing steel found to be discontinuous shall be bonded to continuous reinforcement by steel tie wire.

B. Any new steel added to the structure, such as supplemental reinforcing, wire mesh or rebar shall be electrically continuous. The new steel shall be connected to the anode grid or bonded to existing reinforcing steel. After the distributed galvanic anodes are installed, the continuity of the connection between anode tie wire and reinforcing steel is verified using the same procedures prior to concrete placement.

3.5 DISTRIBUTED ANODE PLACEMENT

A. Distributed anodes shall be placed in locations as per the design and indicated on the drawings. Secure anodes to prevent movement during concrete placements. Protect the anodes from direct exposure to water until concrete placement.

3.6 REINFORCING STEEL CONNECTIONS

A. Distributed anode system must be connected to reinforcing steel to be protected. The anodes are directly connected to cleaned exposed steel or can be interconnected to header wires to create a distributed anode grid. For anode to reinforcing connections and spacing, refer to the drawings

B. If no exposed steel exists after preparation of the substrate, a small area of concrete shall be removed to expose reinforcing steel for anode connection. Electrical connections to

the reinforcing steel shall be established by tying the header wire to the exposed steel or by alternate methods.

3.7 CONCRETE PLACEMENT

A. After the distributed galvanic anodes have been installed. Place approved concrete taking care to avoid damage to the anodes, connections, and wiring. Consolidate concrete around anodes assuring no voids exist. Minimum concrete cover depth over the anodes shall be 1.5 in.

3.8 FIELD QUALITY CONTROL

A. Notify Engineer when all the distributed embedded galvanic anodes are in place so they may review proper placement and connections. Engineer shall have a minimum of 24-hour notice prior to placement of concrete.

B. Tend to distributed anode system at all times during concrete placement and make necessary adjustments to assure proper locations and connections.

END OF SECTION

SECTION 03 37 13

SHOTCRETE

PART 1 GENERAL

1.1 RELATED WORK

A. Applicable provisions of Division 01 shall govern work of this section.

B. The word "Shotcrete" used in this specification shall mean the wet mix process as described in ACI 506R.

C. Related work specified elsewhere:
1. Section 02 41 17 – Removal of Existing Concrete and Surface Preparation
2. Section 03 01 30 – Maintenance of Cast-in-Place Concrete
3. Section 03 37 00 – Embedded Galvanic Anodes

1.2 SUMMARY

A. Include all materials, labor, services and incidentals necessary for the completion of this section of the work.

B. Furnish the necessary equipment and materials to apply shotcrete patches on the underside of the parking structure slab, columns or beams.

1.3 REFERENCES

A. INDUSTRY STANDARDS, SPECIFICATIONS AND CODES

B. GENERAL
1. Comply with all provisions of the following codes and standards except as modified herein.
2. All referenced codes and standards including all revisions and commentaries shall be the most currently adopted as of the date of these contract documents.

C. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)
1. ASTM C-33 Specification for Concrete Aggregate
2. ASTM C-39 Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
3. ASTM C-42 Standard Method of Obtaining and Testing Drilled Cored and Sawed Beams of Concrete
4. ASTM C-150 Specification for Portland Cement
5. ASTM C-260 Standard Specification for Air Entrained Admixtures for Concrete
6. ASTM C-309 Standard Specification for Liquid Membrane - Forming Compounds for Curing Concrete
7. ASTM E-329 Specification for Inspection and Testing Agencies for Concrete, Steel and Bituminous Materials as used in Construction
8. Additional ASTM numbers are noted in later text.

D. AMERICAN CONCRETE INSTITUTE (ACI)
1. ACI 301 Specification for Structural Concrete in Buildings
2. ACI 305 Recommended Practice for Hot Weather Concreting
3. ACI 306 Recommended Practice for Cold Weather Concreting
4. ACI 318 Building Code Requirements for Reinforced Concrete
5. ACI 506 Guide to Shotcrete
6. ACI 506.2 Specification for Materials, Proportioning and Application of Shotcrete
7. Field Guide to Concrete Repair Application Procedures:
8. RAP Bulletin # 12 Concrete Repair by Shotcrete Application

1.4 SUBMITTALS

A. The Contractor shall submit trial mix proportions with compressive strength results as described later in this section. This does not apply when contractor is using a pre-portioned bag material.

B. The Contractor shall submit test results of shotcrete core tests after each day's gunning as described later in this section.

1.5 APPLICATOR QUALIFICATIONS

A. The Contractor shall have three (3) years of experience in performing work similar to that shown in the drawings and specifications. The foreman of the shotcrete crew shall have a minimum of two years experience as a shotcrete nozzleman, finisher and gunman. The nozzleman shall have certification or a minimum 3000 hours experience as a nozzleman and completed at least one similar application as a nozzleman.

B. The Contractor shall submit a list of (3) three projects in which similar work to that specified was successfully completed. This list shall contain the following for each of the (3) three projects:
1. Project Name
2. Owner of project
3. Owner's representative, address and phone number
4. One-sentence description of work
5. Cost of this shotcrete work
6. Total restoration cost of project
7. Date of completion

C. The sum of the costs for shotcrete work of the (3) three projects provided above shall be a minimum of $100,000.

1.6 DELIVERY, STORAGE AND HANDLING

A. Cement shall be stored in weathertight enclosures which shall provide protection from dampness and contamination. Aggregate stockpiles shall be arranged and used in a manner to avoid segregation or contamination with foreign matter or other aggregates. Reinforcement shall be stored so as to avoid contact with the ground, or other corrosive environments.

PART 2 PRODUCTS

2.1 MATERIALS SELECTION

A. Contractor’s option to use batched material or use of pre-portioned bag mix.

2.2 PRE-PORTIONED BAG MIX

A. MS-W1 Synthetic Fiber Shotcrete by King Packaged Materials Company, Ontario CA

B. Quikrete Shotcrete MS with Polypropylene Fibers #1229-86

C. Substitutions: As approved by Engineer.

2.3 CONCRETE TYPE, STRENGTHS AND USES

A. The minimum compressive strength indicated, based on 3" diameter, 3" long core specimens shall be as follows:

Concrete Type	Strength	Use
Shotcrete	7 days - 3300 PSI 28 days - 4000 PSI	Beams and underside of slab repair

B. Ends of the test specimens shall be properly prepared for testing as described in ASTM C-42 "Obtaining and Testing Drilled Cores and Sawed Beams of Concrete".

2.4 MATERIALS

A. CEMENT
1. Shall be Portland Cement conforming to ASTM C-150, Type 1.

B. ADMIXTURES
1. Admixtures shall be submitted to the Engineer for approval.
2. The total chloride ion content of the mix shall not exceed 0.10% by weight of cement.

C. AIR ENTRAINING
1. Shall conform to ASTM C-260. The entrained air content shall be controlled in a range of 6% to 8% of total air at the pump.
2. Air entraining shall be required for all shotcrete used in exterior applications.

D. WATER
1. Mixing water shall be fresh, clean and potable.

E. REINFORCING
1. Corroded reinforcing shall be prepared per Section 02 41 17 “Removal of Existing Concrete and Surface Preparation”.

F. AGGREGATES

1. Aggregates shall be clean, free of salt and organic impurities and conform to the requirements of ASTM C-33. The combined gradation shall conform to one of the gradations shown below:

GRADATION LIMITS FOR COMBINED AGGREGATE - GRADATION NO.1

Sieve Size U.S. Standard Square Mesh	Percent by Weight Passing
1/2"	-
3/8"	100
No. 4	95-100
No. 8	80-100
No. 16	50-85
No. 30	25-60
No. 50	10-30
No. 100	2-10

2.5 MIX PROPORTIONS AND PRECONSTRUCTION TESTING

A. The required shotcrete mix shall be developed prior to the actual application of shotcrete to any surface forming a permanent part of the repair work. A trial mix shall be made with the same ingredients and tested in the same mixing and placing equipment that is proposed for use in the work. The mix design proposed for use, when tested as described below shall have a minimum compressive strength of 3300 PSI at 7 days and 4000 PSI at 28 days.

B. A sand to cement ratio of 3½ to 4.0 is recommended, the actual mix proportions used will be at the discretion of the Contractor so long as the requirements for strength and proper steel encasement are met. The lowest water-cement ratio compatible with the above parameters is recommended.

C. Mix designs of each separate mix shall be prepared and the following data shall be submitted to the Engineer for each mix design. The Contractor shall be responsible for costs relating to testing.

1. Sieve analysis for fine and coarse aggregate
2. Test for aggregate organic impurities
3. Proportions of all materials
4. Mixing method
5. Mill certificates for cement
6. Slump at the pump
7. Air content at the pump

D. Two test panels shall be made using the trial mix by one of the nozzlemen expected to work on the job. The panel shall be at least 18" x 18" x 3"; they shall be gunned in an upside-down horizontal position simulating actual field conditions. At least 6 cubes or cores shall be cut from each of the test panels. These specimens shall be cut from the shotcreted test panels not earlier than 5 days after shotcreting. The specimens shall be examined by the Engineer for sand pockets or lamination. Three specimens shall be tested for compressive strength at 7 and 28 days. For cube specimens and core cylinders with a length/diameter ratio less than 2, the minimum compressive strength shall be at

least equal to the specified strength divided by 0.85. During storage, the specimens shall be kept continuously moist. Costs for cutting and testing shall be paid by the Owner.

E. The proportions of materials determined on the basis of developed mix proportions and trial mix testing along with compressive strength data shall be submitted to the Engineer for approval. After approval by the Engineer, these proportions shall be used in the actual application of shotcrete and shall not be varied without further approval.

PART 3 EXECUTION

3.1 PREPARATION OF CHIPPED-OUT SURFACES TO RECEIVE SHOTCRETE

A. The Engineer will locate and mark the areas to be repaired. See plan for repair areas discovered during study phase.

B. Refer to section 02 41 17 “Removal of Existing Concrete and Surface Preparation”.

3.2 BATCHING AND MIXING

A. Weight batching shall be used to control mix proportions. With the Engineer's permission, volume batching may be used during shotcreting operations provided that a minimum of one weight batching check is made every 8 hours for control purposes. Cement may be batched by integral bags.

B. Aggregate and cement shall be thoroughly mixed in the surface dry state before being deposited in the placing equipment. The moisture content of the combined aggregate at the time of mixing shall meet the approval of the inspector and should be in the range of 3% to 6% of weight of the oven-dry (110˚C) aggregate.

C. The water content of the mix should be such as to produce the minimum slump that can be handled by the pump. A slump in the range of 1½" to 3" at the pump is normally suitable. The applied mix shall be dry enough to prevent sagging or sloughing from the repair surface.

3.3 PLACEMENT OF SHOTCRETE

A. The provisions of "Guide to Shotcrete" (ACI 506) and "Specification for Materials, Proportioning and Application of Shotcrete" (ACI 506.2) should be followed insofar as they apply to the work.

B. The thickness of any given layer of shotcrete shall be such as to preclude sagging or falling away. If wind or air currents cause separation of the nozzle stream during placement, shotcreting shall be discontinued or suitable means shall be provided to screen the nozzle stream.

C. The surface of freshly placed shotcrete shall be broomed or scraped to remove any loose material if additional layers of shotcrete are to be applied thereto after hardening. Such surfaces shall also be dampened before applying succeeding layers.

D. No shotcrete shall be placed if drying or stiffening of mix takes place at any time prior to delivery to the nozzle. Under no circumstances shall any rebound or previously expended material be included in the work or used in the shotcrete mix.

E. If during the placement of shotcrete there is any overspray on adjacent surfaces including replacement subsequently to be shotcreted, all such overspray or rebound shall be removed prior to final set and before placement of shotcrete on such surfaces.

F. Shotcrete which lacks uniformity, exhibits segregation, honeycombing or lamination, or which contains any dry patches, voids or sand pockets shall be removed and replaced.

G. The nozzle shall be held at such a distance and angle so that material shall be fully placed behind reinforcement before any material is allowed to accumulate on its face.

H. Provide alignment wires to establish thickness and plane surfaces. Install alignment wires at corners and offsets not established by form work. Ensure alignment wires are tight, true to line and placed to allow further tightening.

3.4 FINISHING

A. Scraping with a featheredge or screed to remove high spots shall not be done until the shotcrete has become stiff enough to withstand the pull of the screeding device.

B. The final surface finish shall be troweled for architectural appearance. The finished surface shall retain the original architectural form. Partial forming of edges and corners with multiple passes of shotcrete shall be provided as directed by the Engineer.

3.5 CURING

A. Freshly applied shotcrete shall be protected from premature drying and temperatures below 40˚F and shall be maintained with minimal moisture loss at a relatively constant temperature.

B. Shotcrete shall be kept continuously moist for at least 7 days. The following method shall be used:

1. Applying a curing compound in accordance with ASTM C-309 "Specifications for Liquid Membrane – Forming Compounds for Curing Concrete". Two applications shall be made; the second shall be within an hour of the first application. Curing compounds shall not be used on any surface which additional shotcrete or other cementitious materials are to be bonded. Curing compounds shall be compatible with the surface sealer to be used.

3.6 LIMITATIONS OF OPERATIONS

A. No traffic shall be permitted in the bay above during the shotcreting work, and for 48 hours thereafter.

B. Traffic and pedestrian movement through the work area shall be limited to prevent damage or injury resulting from the work. Adjacent surfaces shall be protected as much as possible and shall be cleaned after the shotcrete work is completed.

3.7 FIELD QUALITY CONTROL

A. Specimens for determining compressive strength shall be made by the Contractor for each 8-hour period that shotcrete is placed. This shall not be required when using a pre-portioned bag material.

B. A test panel with minimum dimensions of 18" x 18" x 3" shall be gunned in the same position as the work represented and field cured in the same manner as the work. The panels shall be gunned by the nozzleman doing most of the work.

C. At least three 3" diameter cores or 3" cubes shall be cut from each panel for testing. Panels shall not be removed prior to 12 hours after shotcreting. Specimens shall not be cut until immediately prior to testing. All cutting and testing shall be performed by a qualified approved testing laboratory which meets the requirements of ASTM E-329 and their reports will be sent to the Engineer and the Contractor. Cost for fabrication of the test panel shall be paid for by the Contractor. Cost for cutting and testing shall be paid for by the Owner.

D. Testing of cores and cubes shall be in accordance with ASTM C-42. Each test report shall contain the following information for each set:
   1. Individual test specimen strength, type of failure
   2. Specimen number
   3. Portion of structure represented by the concrete tested
   4. Date cast
   5. Date tested
   6. Concrete properties specified
   7. Notice if tests indicate concrete is not in conformance with specifications.

E. The specimens shall be tested at an age of 7 days. Strength of concrete shall be considered satisfactory if average of two 7-day tests in each set of cores or cubes equals or exceeds 3300 PSI and neither of the 7-day tests is 500 PSI or more below the specified 7-day strength.

F. Should results of test not meet preceding requirements, associated shotcrete work will either be rejected by the Engineer or additional testing will be performed at 28 days. If strength acceptance criteria are not met by core tests at 28 days, the Contractor shall remove and replace all questionable areas of concrete at the Contractor's expense. The costs of additional tests shall be paid for by the Contractor.

G. Contractor may choose to have cores removed and tested from the work in place rather than the test panels at his expense.

H. The Engineer may perform additional destructive and non-destructive testing to detect voids in the shotcrete repairs. If any voids are found, the costs of these initial tests as well as all subsequent tests shall be paid by the Contractor. The Contractor shall also remove and replace at no cost to the Owner, all shotcrete repairs found to contain voids. If no voids are found, the costs of all tests will be paid by the Owner.

END OF SECTION

SECTION 03 64 07

EPOXY INJECTION GROUTING

PART 1 GENERAL

1.1 RELATED WORK

A. Applicable provisions of Division 01 shall govern work of this section.

B. Related work specified elsewhere:
1. Section 03 01 30 – Maintenance of Cast-in-Place Concrete
2. Section 07 92 00 – Joint Sealants
3. Section 07 95 13 – Vehicular Expansion Joints

1.2 SUMMARY

A. Section Includes:
1. Crack repair, crack waterproofing, and void filling in concrete members by pressure injection of flexible epoxies.
2. Section also includes conducting tests to confirm the success of the repair performed.
3. Cleaning concrete surfaces at cracks to be injected.
4. Sealing the exterior surface of the crack and installing injection ports.
5. Injection of the specified materials into cracks in concrete beams and slabs on all areas of the structure.
6. See Bid Form for quantities. Payment shall be by linear foot of crack injected.

1.3 REFERENCES

A. ASTM International (ASTM):
1. ASTM C42 - Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.
2. ASTM D412 – Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers - Tension.
3. ASTM C321 – Standard Test Method for Bond Strength of Chemical Resistant Mortars.
4. ASTM C881 – Standard Specification for Epoxy Resin Base Bonding Systems for Concrete.
5. ASTM C882 – Standard Test Method for Bond Strength of Epoxy Resin Systems used with Concrete by Slant Shear.
6. ASTM D570 – Standard Test Method for Water Absorption of Plastics.
7. ASTM D638 – Standard Test Method for Tensile Properties of Plastics.
8. ASTM D648 – Standard Test Method for Deflection Temperature of Plastics Under Flexural Load in the Edgewise Position.
9. ASTM D695 – Standard Test Method for Compressive Properties of Rigid Plastics.
10. ASTM D732 – Standard Test Method for Shear Strength of Plastics by Punch Tool.

11. ASTM D790 – Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
12. ASTM D2240 – Standard Test Method for Rubber Property - Durometer Hardness.

1.4 SUBMITTALS

A. Division 01 – General Requirements: Submittal procedures.

B. Product Data: Submit product data including characteristics, limitations, and identify dissolving solvents, fuels and potential destructive compounds.

C. Manufacturer's Installation Instructions: Submit special environmental requirements to install the Product. Submit statement of procedures, and description of equipment and injection method to be used prior to commencing work.

D. Material Safety Data Sheets: Submit Material Safety Data Sheets for all materials to be used. Contractor shall include his proposed safety procedures for handling and storage of these materials.

1.5 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum five (5) years documented experience.

B. Applicator: Company specializing in performing Work of this Section with minimum five (5) years documented experience approved by manufacturer.

1.6 PRE-INSTALLATION MEETING

A. Division 01 - General Requirements: Pre-installation meeting.

B. Convene minimum one week prior to commencing Work of this Section.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Division 01 - General Requirements: Product storage and handling requirements.

B. Maintain ambient storage temperature of between 45 and 65 degrees F in accordance with manufacturer's written instructions.

C. Keep away from heat, fire, and open flame.

1.8 ENVIRONMENTAL REQUIREMENTS

A. Do not install materials when temperature is below 50 degrees F or above 90 degrees F.

B. Maintain this temperature range, 24 hours before, during, and 24 hours after installation.

C. Restrict traffic from area where materials are being installed or are curing.

1.9 WARRANTY

A. Contractor shall furnish a three (3) year written warranty agreeing to re-inject all cracks which fail to adhere to the surfaces of crack.

PART 2 PRODUCTS

2.1 INJECTION MATERIALS

A. Epoxy:
1. The injection resin shall be a two-component, low viscosity, structural epoxy adhesive designed for pressure injection grouting. The injection resin shall meet or exceed the provisions of ASTM C881, Type IV, Grade 1.
2. Epoxy shall be resistant to water and moisture when cured, shall be able to gel and cure to strength in the presence of moisture, and shall have sufficient working life to permit progressive injection procedures without premature blocking of the crack or the injection ports.
3. Master Builders Solutions: MasterInject 1380
4. Sika Group: Sikadur-35 Hi-Mod LV
5. Substitutions: As approved by Engineer.

2.2 SURFACE SEAL MATERIALS

A. Surface Seal:
1. The surface seal shall be a mixed epoxy resin adhesive.
2. The surface seal shall have adequate strength to hold the injection ports in place and shall be capable of withstanding the pressure during adhesive injection and cure.
3. The surface seal shall be capable of being removed without undue alteration of the concrete substrate surface.
4. Sika Group: Sikadur-35 Hi-Mod LV Surface Sealer
5. Substitutions: As approved by Engineer.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify substrate is ready to receive work, surface is clean, dry and free of substances which could affect bond of surface seal.

B. Do not begin work until concrete substrate has cured 28 days, minimum.

C. Prior to the performance of any work, this Contractor shall mark all cracks that require repair.

D. The Engineer shall inspect the marked surfaces to verify adequacy and completeness prior to the performance of any work.

3.2 PREPARATION

A. Clean concrete surfaces adjacent to cracks of dust, dirt, oil, efflorescence, paint, or other contamination which may prevent bonding of surface seal material.

B. Wire brush surfaces and clean using water, acid, or sandblasting as appropriate. Rinse the surface and allow to dry.

C. Provide temporary entry ports located on the crack surface.

D. Space the entry ports to accomplish movement of injection fluids between adjacent portions, but not greater than the depth of the crack to be filled or the thickness of the concrete member.

E. Provide temporary surface seal material at the concrete crack face between and around the entry ports. Surface seal shall act to arrest the extrusion of injection materials.

F. Surface seal may need to be applied to both surfaces on cracks that pass through the concrete member. Allow the surface seal to completely cure before beginning the epoxy injection.

3.3 EPOXY INJECTION

A. Inject epoxy into prepared entry ports using sufficient pressure and equipment appropriate for this application to insure 95 percent (minimum) penetration of cracks.

B. Injection shall begin at the lowest entry port and continue until the adhesive emerges from the two adjacent entry ports.

C. Seal the injection port and transfer injection to the adjacent entry port.

D. Continue the process of injection from port to port until the entire crack is filled.

E. After the crack has been completely filled, permit the adhesive to cure.

F. After the adhesive has cured, remove the surface seal and temporary ports as well as any adhesive runs or spills from the concrete surface.

G. Clean the surfaces adjacent to the repair and blend the finish to match adjacent concrete surfaces.

3.4 PROTECTION OF INSTALLED CONSTRUCTION

A. Do not permit traffic over repaired areas until the injection adhesive has cured.

END OF SECTION

SECTION 07 19 16

SILANE WATER REPELLENTS

PART 1 GENERAL

1.1 RELATED WORK

A. Applicable provisions of Division 01 shall govern work of this section.

B. Related work specified elsewhere:
1. Section 03 01 30 – Maintenance of Cast-in-Place Concrete
2. Section 03 31 00 – Structural Cast-in-Place Concrete
3. Section 07 92 00 – Joint Sealants

1.2 SUMMARY

A. Section Includes:
1. Water-based alkylalkoxysilane water-repellent sealer for exterior vertical and horizontal above-grade surfaces as scheduled.

1.3 REFERENCES

A. ASTM International (ASTM):
1. ASTM D1653 - Standard Test Method for Water Vapor Transmission of Organic Coating Films.
2. ASTM G154 - Standard Practice for Operating Fluorescent Light Apparatus for UV Exposure of Nonmetallic Materials.

1.4 SYSTEM DESCRIPTION

A. Applied Penetrant: Material to restrict moisture absorption in material being treated as recommended by manufacturer for specific substrate.

1.5 SUBMITTALS

A. Division 01 – General Requirements: Submittal procedures.

B. Product Data: Submit details of product description, tests performed, limitations to coating, and chemical properties including percentage of solids.

C. Manufacturer's Installation Instructions: Submit special procedures and conditions requiring special attention, and cautionary procedures required during application.

D. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.6 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum five (5) years documented experience.

B. Applicator: Company specializing in performing Work of this section with minimum five (5) years documented experience.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Comply with manufacturer’s ordering instructions and lead-time requirements to avoid construction delays.

B. Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

C. Store in unopened containers in a clean, dry area between 35° F and 110° F.

1.8 ENVIRONMENTAL REQUIREMENTS

A. Apply sealer with surface, air, and material temperatures between 40° and 110° F during application.

B. Do not apply in rain or when rain is expected within 12 hours. Do not apply below 40° F or when temperatures are expected to fall below 40° F within 12 hours.

1.9 WARRANTY

A. Division 01 – General Requirements: Product warranties and product bonds.

B. Furnish five (5) year manufacturer warranty for water repellents.

PART 2 PRODUCTS

2.1 WATER REPELLENTS

A. Manufacturers:
1. Master Builders Solutions: MasterProtect H 400.
2. Sika Group: Sikagard SN-40
3. Substitutions: As approved by Engineer.

PART 3 EXECUTION

3.1 EXAMINATION

A. Division 01 – General Requirements: Coordination and project conditions.

B. Verify joint sealants are installed and cured.

3.2 PREPARATION

A. Delay work until concrete substrate is cured minimum of 30 days.

B. Remove loose particles and foreign matter.

C. Remove oil or foreign substance with chemical solvent which will not affect coating.

D. Pressure wash and rinse surfaces with water and let dry per manufacturers requirements.

3.3 APPLICATION

A. Apply sealer in accordance with manufacturer's instructions.

B. Stir material thoroughly before and periodically during use. Do not dilute.

C. Apply to saturation.

D. Apply even distribution of sealer.

E. Allow to soak in and broom out puddles.

3.4 PROTECTION OF INSTALLED CONSTRUCTION

A. Protect adjacent surfaces not scheduled to receive coating.

B. Protect landscaping, property, and vehicles.

C. When applied to unscheduled surfaces, remove immediately by methods as instructed by coating manufacturer.

D. Protect sealer from damage during construction.

END OF SECTION

SECTION 07 92 00

JOINT SEALANTS

PART 1 GENERAL

1.1 RELATED WORK

A. Applicable provisions of Division 01 shall govern work of this section.

B. Related work specified elsewhere:
1. Section 03 01 30 – Maintenance of Cast-in-Place Concrete
2. Section 07 19 16 – Silane Water Repellents

1.2 SUMMARY

A. Include materials, labor, services and incidentals necessary for completion of this Section of Work.

B. Sealants are required at, but are not necessarily limited to the following general locations:
1. Routed random cracks, concrete control joints and construction joints.
2. Masonry and concrete control joints exterior and interior.
3. Isolation joints between structure and other elements.
4. Joints at penetrations of walls, decks and floor by piping and other services and equipment.
5. Joints between items of equipment and other construction.
6. Around hollow metal windows.
7. Joints associated with flashing and sheet metal.
8. Specific drawing details requiring caulking. Wherever caulking is called for on Drawings it shall mean "sealant".

1.3 QUALITY ASSURANCE

A. Applicator Qualifications
1. Contractor shall have a minimum of three (3) years of experience in performing work similar to that shown in Drawings and Specifications.

B. Guarantee
1. The completed installation shall be guaranteed jointly and severally on a single document, by sealant manufacturer and installer agreeing to repair or replace sealants which fail to perform as airtight and watertight joints or fail in joint adhesion, cohesion, abrasion resistance, weather resistance, extrusion resistance, migration resistance, stain resistance or general durability or appear to deteriorate in other manner not clearly specified by submitted manufacturer's data as an inherent quality of material for exposure indicated.
2. Guarantee period shall be 5 years.

1.4 SUBMITTALS

A. Manufacturer's Data
   1. Submit manufacturer's specifications, recommendations and installation instructions for each type of sealant, caulking compound and associated miscellaneous material required. Include manufacturer's published data, letter of certification or certified test laboratory report indicating each material complies with requirements and is intended generally for applications shown. Show by transmittal that 1 copy of each recommendation and instruction has been distributed to installer.

B. Guarantee
   1. Submit sample copy prior to start of work.

C. Samples
   1. Submit samples of each color required for each type of sealant or caulking compound exposed to view. Compliance with other requirements is exclusive responsibility of Contractor.

PART 2 PRODUCTS

2.1 SEALANT

A. Traffic-bearing, 2 component, Type 1 self-leveling, as applicable, unmodified polyurethane sealant containing no asphalt, fillers or plasticizers. Follow manufacturer's previously submitted recommendations for type required at joints. Sealants shall conform to Federal Specification TT-S-00227E.
   1. Acceptable Productions and Manufacturers:
      a. Master Builders Solutions: MasterSeal NP 2 / SL 2
      b. Sika Group: Sikaflex-2C NS/SL
      c. Substitutions: As approved by Engineer.
   2. Sealant color will be chosen at time of construction from manufacturer's standard color pallet.

2.2 JOINT CLEANER

A. Provide type of joint cleaning compound recommended by sealant or caulking compound manufacturer for joint surfaces to be cleaned.

2.3 JOINT PRIMER/SEALER

A. Provide type of joint primer/sealer recommended by the sealant manufacturer for joint surfaces to be primed or sealed.

2.4 BOND BREAKER TAPE

A. Polyethylene tape or other plastic tape as recommended by sealant manufacture shall be applied to sealant-contact surfaces where bond to substrate or joint filler must be avoided for proper performance of sealant. Provide self-adhesive tape wherever applicable.

2.5 SEALANT BACKER ROD

A. Compressible rod stock polyethylene foam, polyethylene jacketed polyurethane foam or other flexible, permanent, durable non-absorptive material as recommended for compatibility with sealant by sealant manufacturer which control joint depth for sealant placement, break bond of sealant at bottom of joint, form optimum shape of sealant bead on back side and provide a highly compressible backer to minimize possibility of sealant extrusion when joint is compressed. Backer rod shall be at least 1/4 inch larger than width of joint.

PART 3 EXECUTION

3.1 PRE-INSTALLATION MEETING

A. The installer, Engineer, sealant manufacturer's technical representative and other trades involved in coordination with sealant work shall meet with Contractor at Project Site to review procedures and time schedule proposed for installation of sealants and coordination with other work. Review each major sealant application required on the Project.

3.2 WEATHER CONDITIONS

A. Do not proceed with installation of sealants under adverse weather conditions or when temperatures are below or above manufacturer's recommended limitations for installation. Proceed with work only when forecasted weather conditions are favorable for proper cure and development of high early bond strength. Coordinate time schedule with Contractor to avoid delay of project.

3.3 JOINT SURFACE PREPARATION

A. Removal of sealants by means of waterblasting is not permitted.

B. Complete removal of existing sealant is required prior to installation of new sealants.

C. At location of weld plate or flange connectors, sandblast exposed steel to near white metal condition and coat with zinc rich coating. Install bond breaker tape over horizontal steel surface prior to sealant installation.

D. Clean joint surfaces immediately before installation of sealant or caulking compound. Grind or sandblast joint blackouts to remove dirt, coatings, existing sealant, moisture and other substances which interfere with bond of sealant or caulking compound.

E. Installer must examine joint surfaces, backing and anchorage of units forming sealant rabbet and conditions under which sealant work is to be performed and notify Contractor in writing of conditions detrimental to proper and timely completion of work and performance of sealants. Do not proceed with sealant work until unsatisfactory conditions have been corrected in a manner acceptable to installer.

3.4 INSTALLATION

A. Comply with sealant manufacturer's printed instructions except where more stringent requirements are shown or specified and except where manufacturer's specific recommendations directs otherwise.

B. Contractor shall saw and grind surface of cracks and joints. Edges of cracks or joints to be sealed shall be of sound substrate. Prior to installing sealant, surfaces shall be cleaned of foreign debris and edges ground. Joint edges shall be slightly rounded. Rout out random cracks to a nominal depth of 3/8” and a width of ¼”

C. Prime or seal joint surfaces wherever shown or recommended by the sealant manufacturer. Do not allow primer or sealant to spill or migrate onto adjoining surfaces.

D. Install backer rod for sealants except where specifically noted to be omitted or recommended to be omitted by sealant manufacturer for application shown.

E. Install bond breaker tape wherever required by manufacturer's recommendations

F. Employ only proven installation techniques so sealants will be deposited in uniform, continuous ribbons without gaps or air pockets, with complete "wetting" of joint bond surfaces equally on opposite sides. Except as otherwise indicated, fill sealant rabbet to a slightly concave surface slightly below adjoining surfaces. Where horizontal joints are between a horizontal surface and a vertical surface, fill joint to form a slight cove so joint will not trap moisture and dirt.

G. Install sealant to depths as recommended by sealant manufacturer.

3.5 CURE AND PROTECTION

A. Cure sealants and caulking compounds in compliance with manufacturer's instructions and recommendations to obtain high early bond strength, internal cohesive strength and surface durability.

B. Installer shall advise Contractor of procedures required for the curing and protection of sealants and caulking compounds during construction period to avoid deterioration or damage (other than normal wear and weathering) prior to time of Owner's acceptance.

C. After completion of sealant work, Contractor shall water test structure and demonstrate to the satisfaction of Engineer that the structure is waterproofed.

END OF SECTION

SECTION 07 95 13

VEHICULAR EXPANSION JOINTS

PART 1 GENERAL

1.1 RELATED WORK

A. Applicable provisions of Division 01 shall govern work of this section.

B. Related work specified elsewhere:
1. Section 03 01 30 – Maintenance of Cast-in-Place Concrete
2. Section 07 92 00 – Joint Sealant

1.2 SUMMARY

A. Section Includes:
1. Expansion joint assemblies for parking garage floor surfaces.
2. Removal of the existing expansion joint system, surface preparation, patching and cleaning of the existing concrete slab to receive the new expansion joint; and the installation of the new expansion joint system.

1.3 REFERENCES

A. ASTM International (ASTM):
1. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
2. ASTM B455 - Standard Specification for Copper-Zinc-Lead Alloy (Leaded-Brass) Extruded Shapes.

1.4 SUBMITTALS

A. Division 01 – General Requirements: Submittal requirements.

B. Shop Drawings: Indicate joint and splice locations, miters, layout of work, affected adjacent construction, anchorage locations, and details for all special conditions.

C. Product Data: Submit joint assembly profiles, profile dimensions, and anchorage devices.

D. Samples: Submit two samples 2-inch long, illustrating profile, dimension, color, and finish selected.

E. Submit two copies of the Material Safety Data Sheets for all materials to be used. Contractor shall also submit two copies of his proposed safety procedures for handling and storage of this material.

F. Submit a written statement from the manufacturer describing shelf life for materials and products to be furnished and used on this project.

1.5 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this Section with not less than five (5) years experience.

B. Applicator: Company specializing in applying work of this Section with not less than five (5) years experience and acceptable to manufacturer.

1.6 PRE-INSTALLATION MEETINGS

A. Division 01 – General Requirements: Pre-installation meeting.

B. Convene minimum one (1) week prior to commencing work of this section.

1.7 FIELD MEASUREMENTS

A. Verify field measurements are as instructed by manufacturer.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Division 01 – Product Requirements: Product storage and handling requirements.

B. Delivery material to project in sealed, original packages or containers bearing name and brand of manufacturer and date manufactured.

C. Every precaution shall be taken to avoid danger of fire. Store hazardous materials in accordance with local ordinances. Provide dry chemical or CO2 fire extinguishers in areas. Allow no smoking or open containers of solvents. Store solvents in safety cans.

D. Store materials at temperatures not exceeding those recommended by membrane manufacturer.

E. Manufacturer shall submit to Engineer a written statement of materials' shelf life and proper storage conditions. Materials that have been improperly stored or that have an expired shelf life shall not be installed.

1.9 WARRANTY

A. The system manufacturer shall furnish the Owner with a written single source performance warranty that the expansion join sealant system be free of defects related to design workmanship or material deficiency for a five year period from the date of substantial completion of the work required under this section. The following problems shall be specifically covered under the warranty:
   1. Adhesive or cohesive failure of the seal.
   2. Discoloration, crazing or other weathering deficiency of the seal.
   3. Abrasion or tear failure of the seal resulting from normal traffic use.
   4. Defective joint installation.

B. Perform repair under this warranty at no cost to the Owner.

C. The system manufacturer shall submit a detailed warranty consistent with the terms of this specification prior to construction for approval. The approved warranty shall be made part of the contractual agreement and shall represent the sole warranty statement for the project.

D. Snowplows, abrasive maintenance equipment, and vandalism and are not normal traffic use and are exempt from the warranty.

E. Furnish the Owner with five copies of the snow removal guidelines for the areas covered by this warranty.

1.10 MAINTENANCE

A. Manufacturer shall provide Owner a preventive maintenance guideline for parking structure expansion control systems

PART 2 PRODUCTS

2.1 EXPANSION JOINT SYSTEMS

A. Expansion joint system shall consist of a thermoplastic rubber elastomeric membrane embedded in an elastomeric concrete material capable of bonding to substrate. Joint shall have a fire barrier system capable of providing a two (2) hour fire rating.

B. Manufacturers:
1. Watson Bowman ACME: Wabo H Seal – Model EH
2. Emseal: DSM System
3. Substitutions: As approved by Engineer.

2.2 2.3 FABRICATION

A. Ship membrane seal to jobsite in the longest practical continuous length.

B. Provide membrane seals with factory heat welded splices at all horizontal and vertical changes in direction such as 90 degree corners, tees, and crosses and at curbs, walls, and columns. Spliced ends of the membrane seals shall be rimmed using factory made 45 degree miter cuts. Seal shall extend a minimum of 3’-0” in each direction from factory splice.

C. Only straight, butt splice connections shall be heat welded on jobsite following manufacturer’s written instructions and utilizing specialty heat fusing equipment approved by manufacturer.

D. All factory and field heat fused connections shall incorporate welding of complete gland profile including all internal and external web configurations.

E. Membrane seal be grey in color. Changes in color shall be approved by Engineer.

PART 3 EXECUTION

3.1 EXAMINATION

A. Division 01 – General Requirements: Coordination and project conditions.

B. Verify joint preparation, condition, and affected dimensions are acceptable.

3.2 PREPARATION

A. Coordinate forming and placement of new blockouts with concrete contractor. Blockouts shall be formed to manufacturer's recommended dimensions.

B. Contractor shall clean surfaces of all contaminants and prepare concrete surfaces according to manufacturer's recommendations.

C. Manufacturer's representative shall be on site prior to commencement of installation for inspection of substrate preparation, inspection of blockout and joint configuration, and to discuss job specific installation instructions.

D. Joints shall run up and across adjacent curbs and run at least six (6) inches up adjacent walls and columns.

3.3 INSTALLATION

A. Protect adjacent areas by laying ground cloths and taping joint edges as required to prevent staining, marring, etc.

B. Align work plumb and level, flush with adjacent surfaces.

C. Install expansion joint in strict accordance with manufacturer's instructions.

D. Do not permit traffic over unprotected floor joint surfaces.

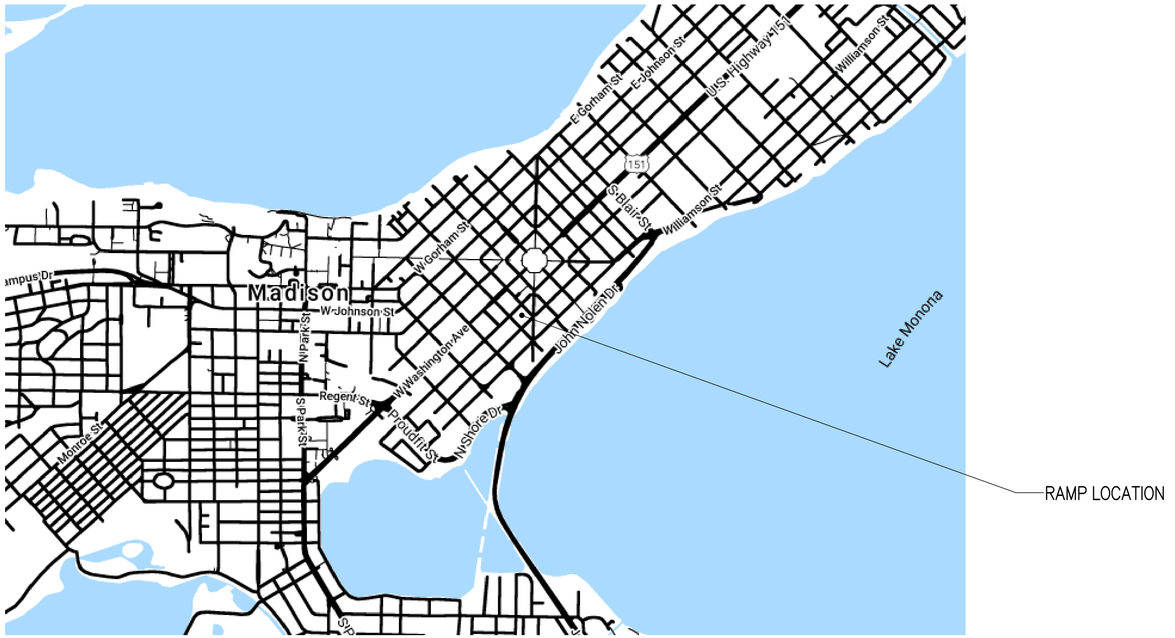
END OF SECTION

CAPITOL SQUARE SOUTH
2022 CONCRETE RESTORATION - PHASE I

DANE COUNTY, MADISON, WI
DANE COUNTY PUBLIC WORKS RFB NO.: 322005

DRAWING INDEX

SITE MAP



TRUE NORTH

PLAN NORTH

CONTACT INFORMATION:

OWNER:

DANE COUNTY DEPT. OF PUBLIC WORKS
1919 ALLIANT ENERGY CENTER WAY
MADISON, WI 53713

CONTACT:
J. ERIC URTES, AIA, LEED-AP
608-266-4798

STRUCTURAL ENGINEER:

MP-SQUARED STRUCTURAL ENGINEERS, LLC
583 D'ONOFRIO DRIVE, SUITE 201
MADISON, WI 53719

CONTACT:
PRESTON BAKER, P.E.
608-821-4770

2022 RESTORATION
CAPITOL SQUARE SOUTH PARKING RAMP
113 S. HENRY STREET
MADISON, WI 53703

DANE COUNTY PUBLIC WORKS
1919 Alliant Engergy Center Way
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ISSUE / REVISIONS		
NO.	DATE	DESCRIPTION
	03.01.2022	BID DOCS

MP2 JOB #: 20-17200
DC PW RFB#: 322005
DRAWN BY: PGB
CHECKED BY: MSL

SHEET CONTENTS
TITLE SHEET

SHEET NUMBER
S0.1

PLAN NOTES

⟨X⟩ RFB REPAIR ITEM NUMBER, SEE REPAIR NOTES

REPAIR AT CONCRETE COLUMN (LOAD BEARING), RFB REPAIR ITEM NO. 9.

ALL SHORING TO BE DESIGNED FOR THE FOLLOWING LOADS, PER FLOOR (SEE S9.5 FOR LAYOUT):

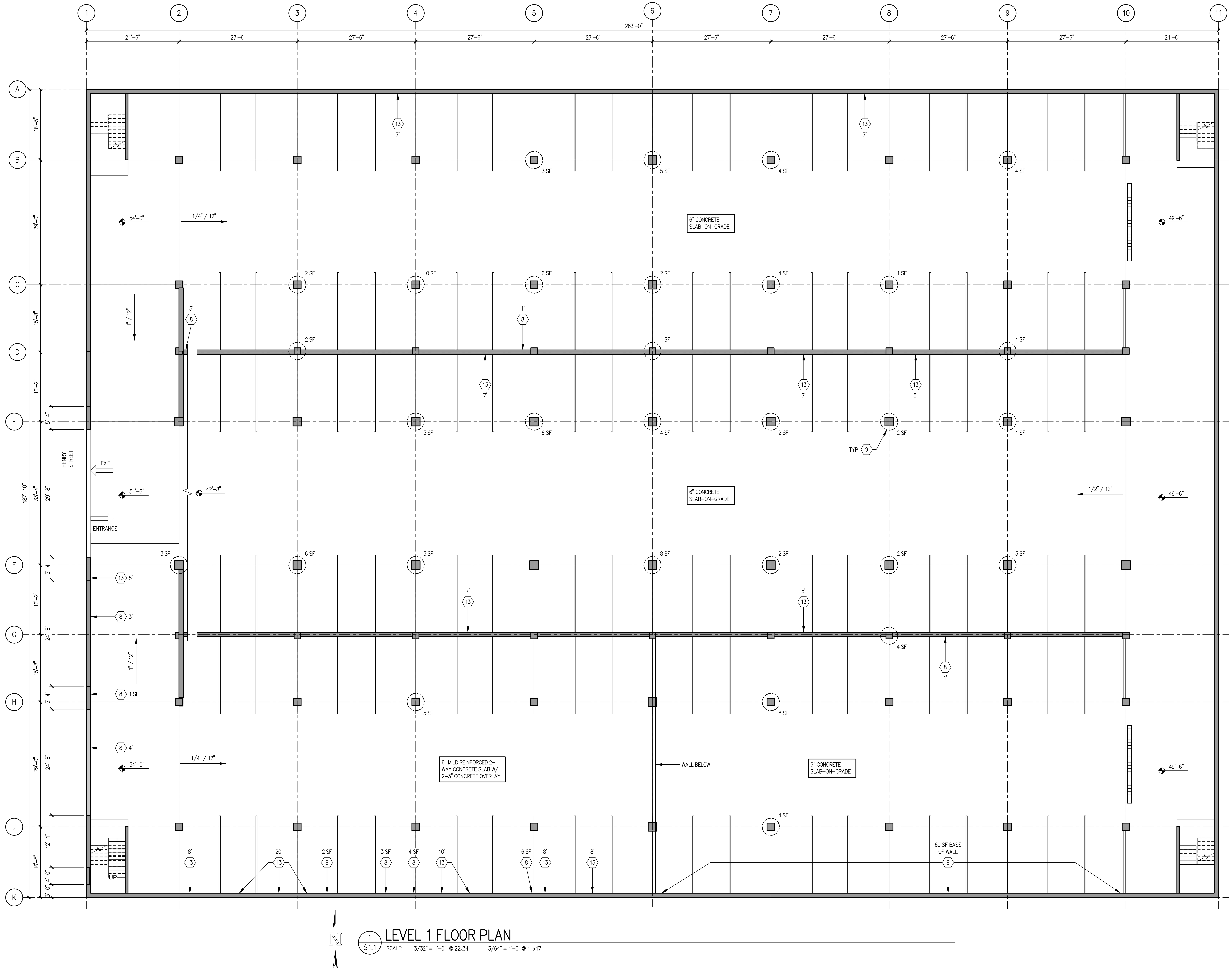
DEAD LOAD:
- FLOOR SLABS = 110 PSF
- LONGITUDINAL BEAMS = 1300 PLF
- TRANSVERSE BEAMS = 2100 PLF

LIVE LOAD = 40 PSF

REPAIR NOTES

ITEM NO.	DESCRIPTION	REFERENCE DETAIL(S)
1	TOPSIDE SLAB MILLING AND REPLACEMENT	1/S8.1
2	REPLACE REINFORCING STEEL IN REMOVAL DEPTH	1/S8.2
3	FULL DEPTH SLAB REPLACEMENT AT MILLED SURFACE	2/S8.1
4	EMBEDDED GALVANIC DAS ANODES IN SLAB REPLACEMENT AREA	S9 SHEETS
5	CONCRETE REPAIR AT OVERHEAD SURFACE, 1" TO 3" DEPTH	3/S8.1
6	CONCRETE REPAIR AT OVERHEAD SURFACE, 3" TO 6" DEPTH	4/S8.1
7	FULL DEPTH SLAB REPLACEMENT	5/S8.1
8	VERTICAL SURFACE CONCRETE REPAIRS AT PARAPETS AND WALLS	6/S8.1
9	CONCRETE REPAIRS AT COLUMNS	7/S8.1
10	EMBEDDED GALVANIC ANODES AT OVERHEAD AND VERTICAL SURFACE REPAIRS	S9 SHEETS
11	EXPANSION JOINT REPLACEMENT	8/S8.1
12	OVERHEAD CONDUCTIVE COATING REMOVAL	NA
13	EPOXY CRACK INJECTION	NA
14	ROUT AND SEAL CRACKS	9/S8.1
15	SILANE SEALER APPLICATION	NA

NOTE: ITEMS FOR ALTERNATE BIDS HAVE THE CORRESPONDING BID LETTER WITH ITEM NO.



1 / S1.1 LEVEL 1 FLOOR PLAN
SCALE: 3/32" = 1'-0" @ 22x34 3/64" = 1'-0" @ 11x17

2022 RESTORATION
CAPITOL SQUARE SOUTH PARKING RAMP
113 S. HENRY STREET
MADISON, WI 53703

DANE COUNTY PUBLIC WORKS
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ISSUE / REVISIONS		
NO.	DATE	DESCRIPTION
	03.01.2022	BID DOCS

MP2 JOB #: 20-17200
DC PW RFB#: 322005
DRAWN BY: PGB
CHECKED BY: MSL

SHEET CONTENTS
LEVEL 1 FLOOR PLAN

SHEET NUMBER
S1.1

PLAN NOTES OVERHEAD

(X) RFB REPAIR ITEM NUMBER

CONCRETE SPALL AT OVERHEAD SURFACE

CRACK IN CONCRETE (OBSERVATION ONLY)

REPAIR NOTES

ITEM NO.	DESCRIPTION	REFERENCE DETAIL(S)
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14	ROUT AND SEAL CRACKS	9/S8.1
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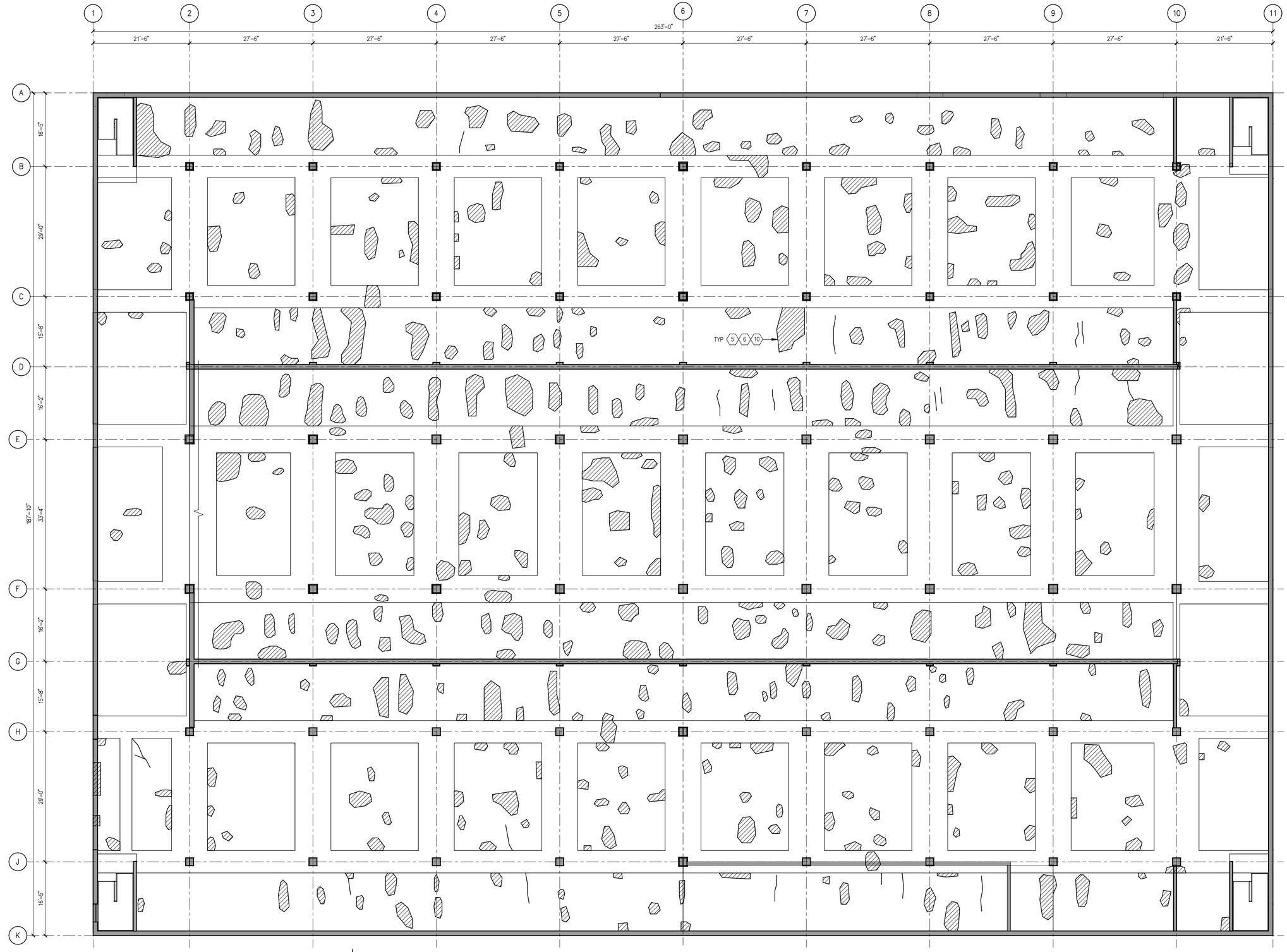

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1/S1.2 LEVEL 1 OVERHEAD PLAN (LEVEL 2 UNDERSIDE)

SCALE: 3/32" = 1'-0" @ 22x34 3/64" = 1'-0" @ 11x17

2022 RESTORATION

CAPITOL SQUARE SOUTH PARKING RAMP
113 S. HENRY STREET
MADISON, WI 53703

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ISSUE / REVISIONS		
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MP2 JOB #: 20-17200
DC PW RFB#: 322005
DRAWN BY: PGB
CHECKED BY: MSL

SHEET CONTENTS

LEVEL 1
OVERHEAD PLAN

SHEET NUMBER

S1.2

PLAN NOTES

(X) RFB REPAIR ITEM NUMBER, SEE REPAIR NOTES

REPAIR AT CONCRETE COLUMN (LOAD BEARING), RFB REPAIR ITEM NO. 9.

ALL SHORING TO BE DESIGNED FOR THE FOLLOWING LOADS, PER FLOOR (SEE S9.5 FOR LAYOUT):

DEAD LOAD:
FLOOR SLABS = 110 PSF
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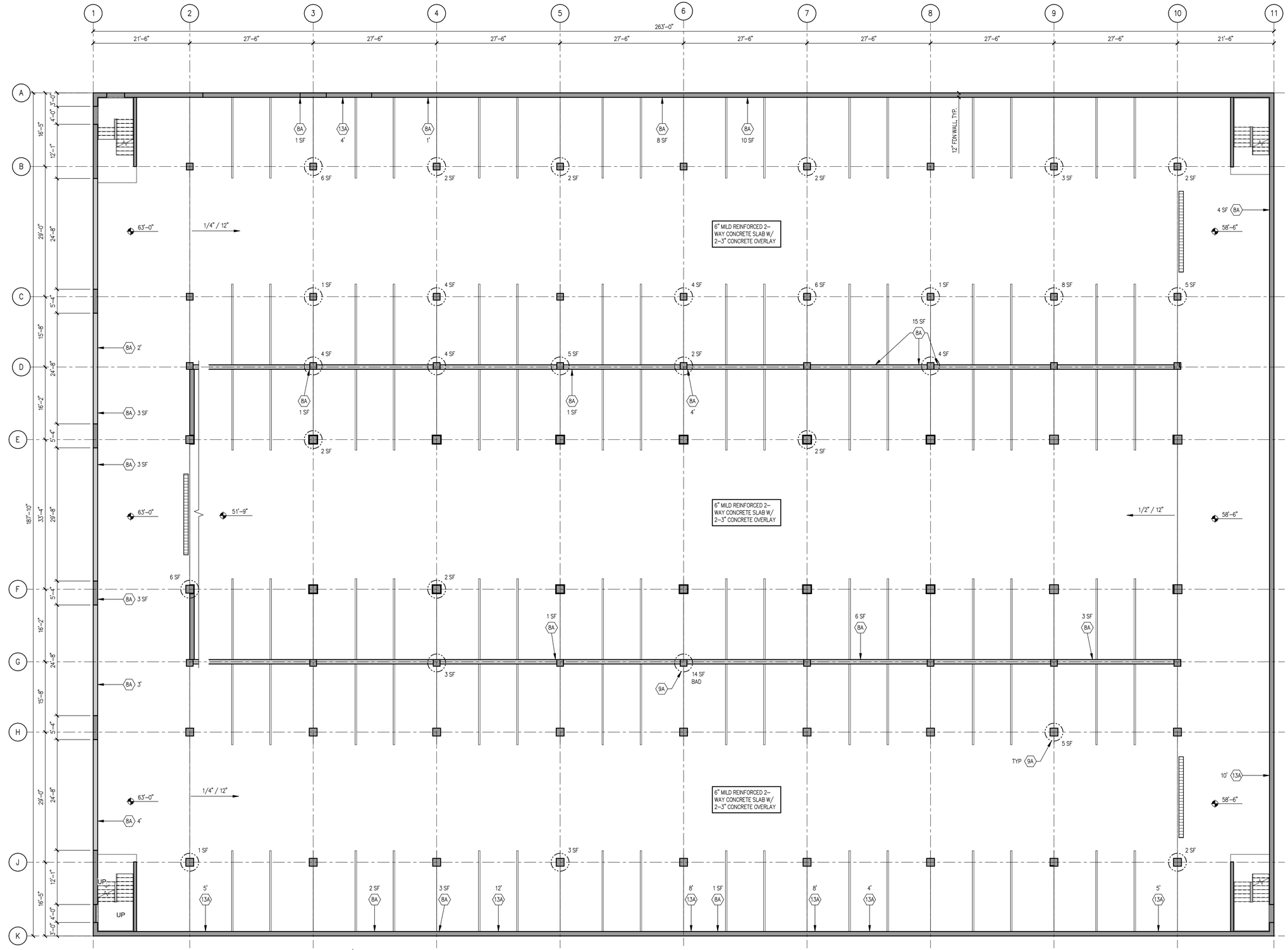
TRANSVERSE BEAMS = 2100 PLF

LIVE LOAD = 40 PSF

REPAIR NOTES

ITEM NO.	DESCRIPTION	REFERENCE DETAIL(S)
1	TOPSIDE SLAB MILLING AND REPLACEMENT	1/S8.1
2	REPLACE REINFORCING STEEL IN REMOVAL DEPTH	1/S8.2
3	FULL DEPTH SLAB REPLACEMENT AT MILLED SURFACE	2/S8.1
4	EMBEDDED GALVANIC DAS ANODES IN SLAB REPLACEMENT AREA	S9 SHEETS
5	CONCRETE REPAIR AT OVERHEAD SURFACE, 1" TO 3" DEPTH	3/S8.1
6	CONCRETE REPAIR AT OVERHEAD SURFACE, 3" TO 6" DEPTH	4/S8.1
7	FULL DEPTH SLAB REPLACEMENT	5/S8.1
8	VERTICAL SURFACE CONCRETE REPAIRS AT PARAPETS AND WALLS	6/S8.1
9	CONCRETE REPAIRS AT COLUMNS	7/S8.1
10	EMBEDDED GALVANIC ANODES AT OVERHEAD AND VERTICAL SURFACE REPAIRS	S9 SHEETS
11	EXPANSION JOINT REPLACEMENT	8/S8.1
12	OVERHEAD CONDUCTIVE COATING REMOVAL	NA
13	EPOXY CRACK INJECTION	NA
14	ROUT AND SEAL CRACKS	9/S8.1
15	SILANE SEALER APPLICATION	NA

NOTE: ITEMS FOR ALTERNATE BIDS HAVE THE CORRESPONDING BID LETTER WITH ITEM NO.



N

1 / S2.1 LEVEL 2 FLOOR PLAN

SCALE: 3/32" = 1'-0" @ 22x34 3/64" = 1'-0" @ 11x17

2022 RESTORATION
CAPITOL SQUARE SOUTH PARKING RAMP
113 S. HENRY STREET
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COUNTY of DANE WISCONSIN 1839

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SHEET CONTENTS

LEVEL 2 FLOOR PLAN

SHEET NUMBER

S2.1

PLAN NOTES OVERHEAD

(X) RFB REPAIR ITEM NUMBER

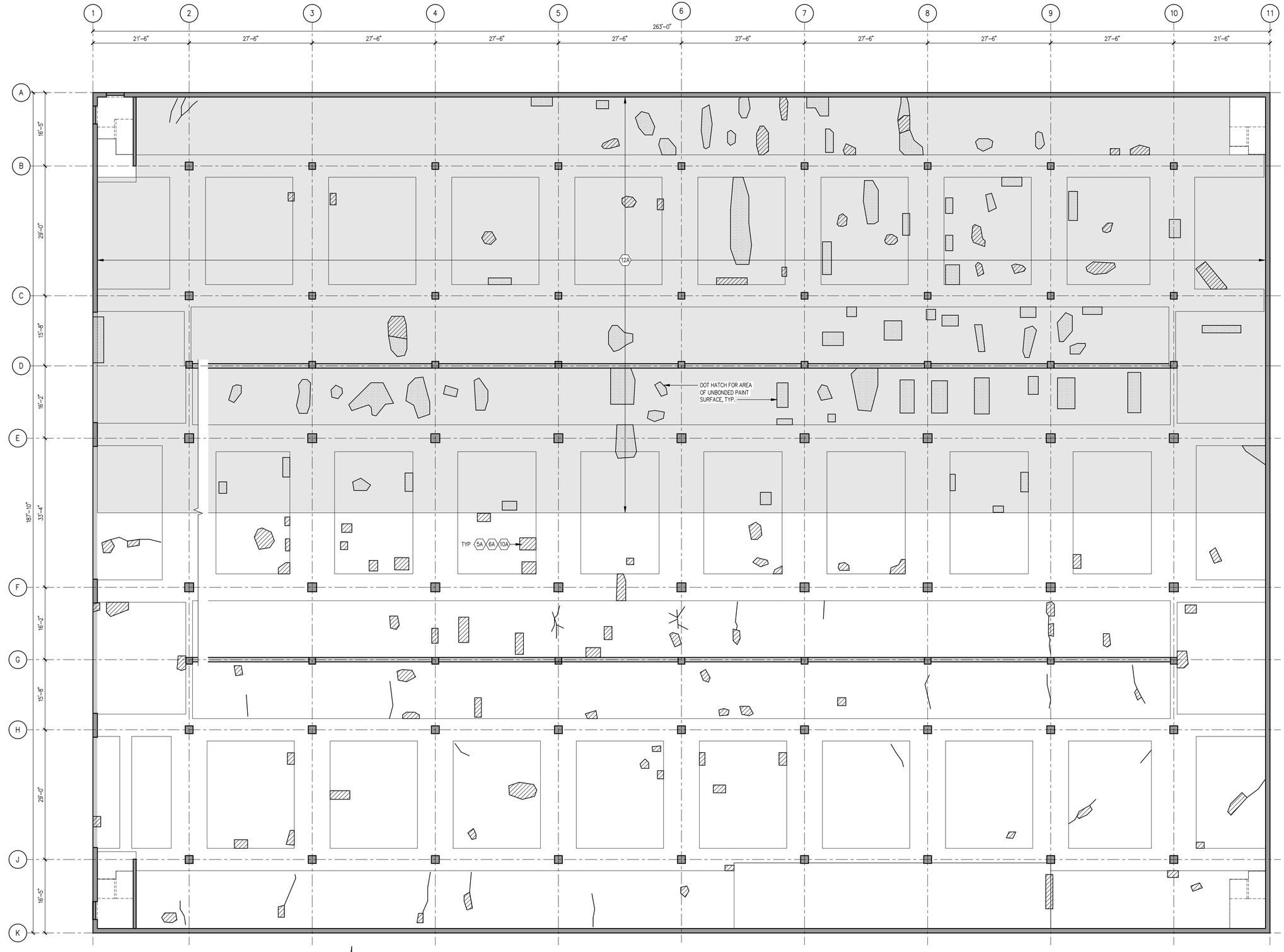
CONCRETE SPALL AT OVERHEAD SURFACE

CRACK IN CONCRETE (OBSERVATION ONLY)

REPAIR NOTES

ITEM NO.	DESCRIPTION	REFERENCE DETAIL(S)
1	TOPSIDE SLAB MILLING AND REPLACEMENT	1/S8.1
2	REPLACE REINFORCING STEEL IN REMOVAL DEPTH	1/S8.2
3	FULL DEPTH SLAB REPLACEMENT AT MILLED SURFACE	2/S8.1
4	EMBEDDED GALVANIC DAS ANODES IN SLAB REPLACEMENT AREA	S9 SHEETS
5	CONCRETE REPAIR AT OVERHEAD SURFACE, 1" TO 3" DEPTH	3/S8.1
6	CONCRETE REPAIR AT OVERHEAD SURFACE, 3" TO 6" DEPTH	4/S8.1
7	FULL DEPTH SLAB REPLACEMENT	5/S8.1
8	VERTICAL SURFACE CONCRETE REPAIRS AT PARAPETS AND WALLS	6/S8.1
9	CONCRETE REPAIRS AT COLUMNS	7/S8.1
10	EMBEDDED GALVANIC ANODES AT OVERHEAD AND VERTICAL SURFACE REPAIRS	S9 SHEETS
11	EXPANSION JOINT REPLACEMENT	8/S8.1
12	OVERHEAD CONDUCTIVE COATING REMOVAL	NA
13	EPOXY CRACK INJECTION	NA
14	ROUT AND SEAL CRACKS	9/S8.1
15	SILANE SEALER APPLICATION	NA

NOTE: ITEMS FOR ALTERNATE BIDS HAVE THE CORRESPONDING BID LETTER WITH ITEM NO.



N

1 / S2.2 LEVEL 2 OVERHEAD PLAN (LEVEL 3 UNDERSIDE)

SCALE: 3/32" = 1'-0" @ 22x34 3/64" = 1'-0" @ 11x17

2022 RESTORATION

CAPITOL SQUARE SOUTH PARKING RAMP
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SHEET CONTENTS

LEVEL 2
OVERHEAD PLAN

SHEET NUMBER

S2.2

PLAN NOTES

(X) RFB REPAIR ITEM NUMBER, SEE REPAIR NOTES

(8) REPAIR AT CONCRETE COLUMN (LOAD BEARING), RFB REPAIR ITEM NO. 9.

ALL SHORING TO BE DESIGNED FOR THE FOLLOWING LOADS, PER FLOOR (SEE S9.5 FOR LAYOUT):

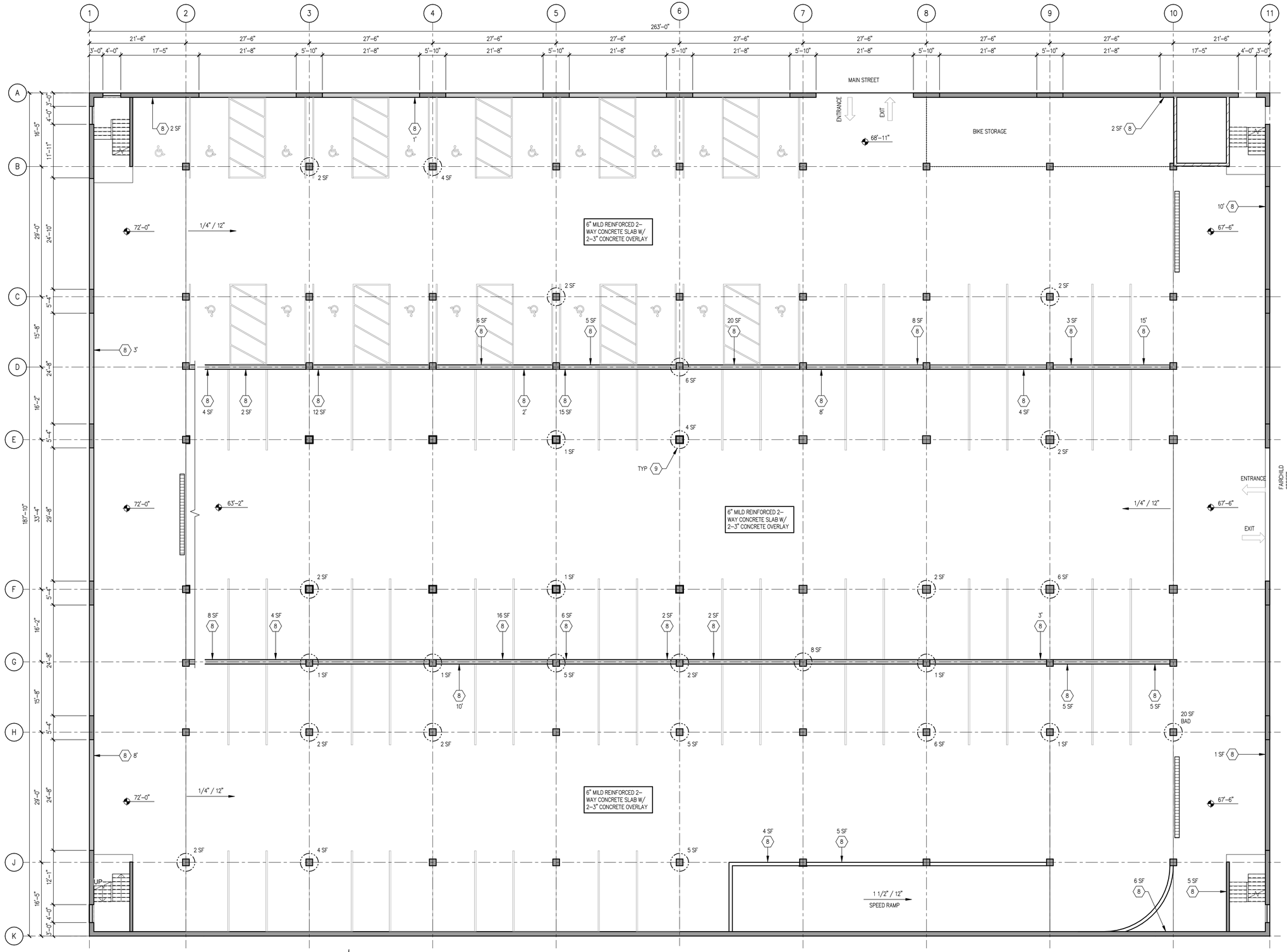
DEAD LOAD:
FLOOR SLABS = 110 PSF
LONGITUDINAL BEAMS = 1300 PLF
TRANSVERSE BEAMS = 2100 PLF

LIVE LOAD = 40 PSF

REPAIR NOTES

ITEM NO.	DESCRIPTION	REFERENCE DETAIL(S)
1	TOPSIDE SLAB MILLING AND REPLACEMENT	1/S8.1
2	REPLACE REINFORCING STEEL IN REMOVAL DEPTH	1/S8.2
3	FULL DEPTH SLAB REPLACEMENT AT MILLED SURFACE	2/S8.1
4	EMBEDDED GALVANIC DAS ANODES IN SLAB REPLACEMENT AREA	S9 SHEETS
5	CONCRETE REPAIR AT OVERHEAD SURFACE, 1" TO 3" DEPTH	3/S8.1
6	CONCRETE REPAIR AT OVERHEAD SURFACE, 3" TO 6" DEPTH	4/S8.1
7	FULL DEPTH SLAB REPLACEMENT	5/S8.1
8	VERTICAL SURFACE CONCRETE REPAIRS AT PARAPETS AND WALLS	6/S8.1
9	CONCRETE REPAIRS AT COLUMNS	7/S8.1
10	EMBEDDED GALVANIC ANODES AT OVERHEAD AND VERTICAL SURFACE REPAIRS	S9 SHEETS
11	EXPANSION JOINT REPLACEMENT	8/S8.1
12	OVERHEAD CONDUCTIVE COATING REMOVAL	NA
13	EPOXY CRACK INJECTION	NA
14	ROUT AND SEAL CRACKS	9/S8.1
15	SILANE SEALER APPLICATION	NA

NOTE: ITEMS FOR ALTERNATE BIDS HAVE THE CORRESPONDING BID LETTER WITH ITEM NO.



N

1 / S3.1 LEVEL 3 FLOOR PLAN

SCALE: 3/32" = 1'-0" @ 22x34 3/64" = 1'-0" @ 11x17

2022 RESTORATION
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SHEET CONTENTS

LEVEL 3 FLOOR PLAN

SHEET NUMBER

S3.1

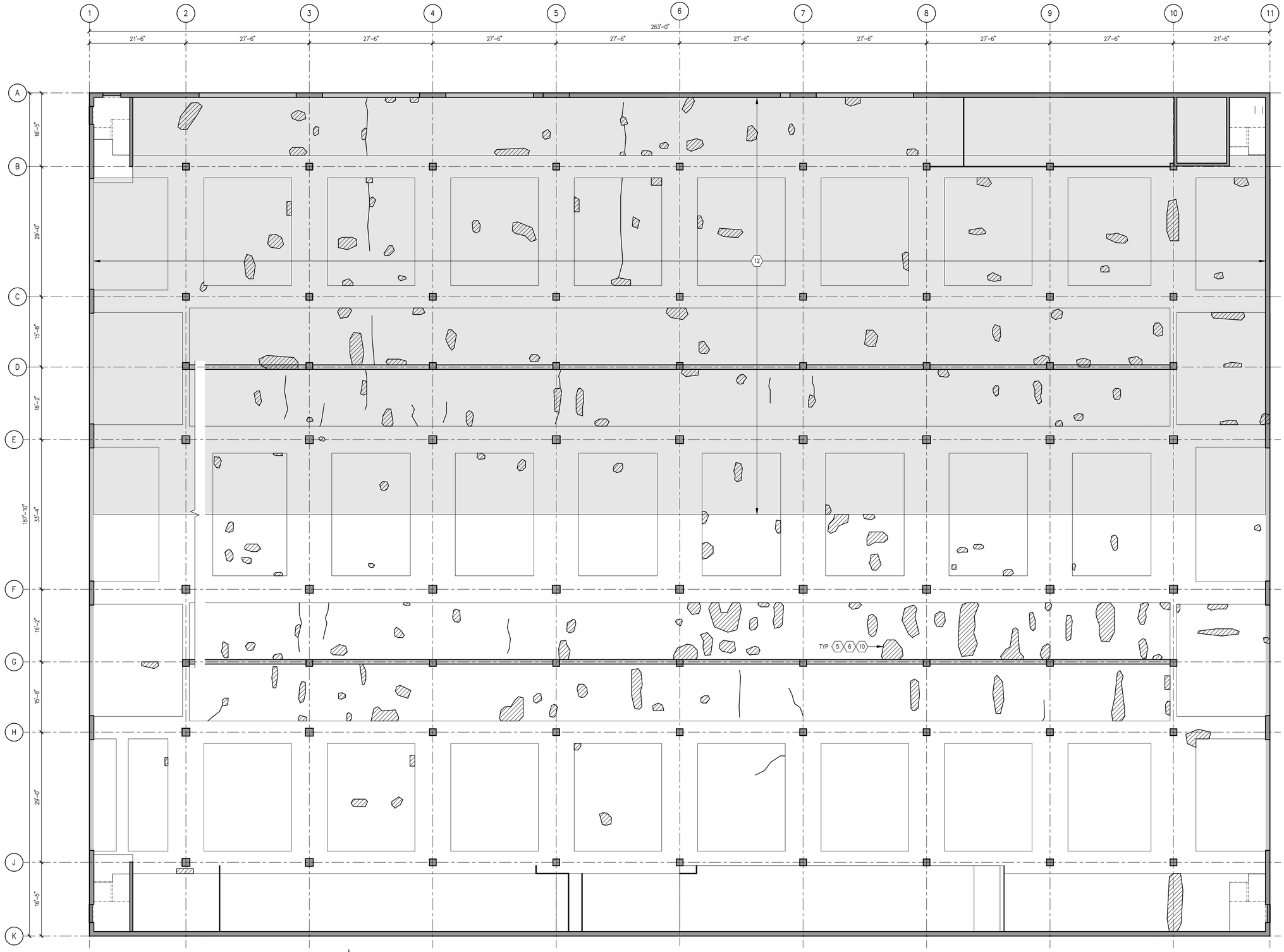
PLAN NOTES OVERHEAD

- (X) RFB REPAIR ITEM NUMBER
- CONCRETE SPALL AT OVERHEAD SURFACE
- CRACK IN CONCRETE (OBSERVATION ONLY)

REPAIR NOTES

ITEM NO.	DESCRIPTION	REFERENCE DETAIL(S)
1	TOPSIDE SLAB MILLING AND REPLACEMENT	1/S8.1
2	REPLACE REINFORCING STEEL IN REMOVAL DEPTH	1/S8.2
3	FULL DEPTH SLAB REPLACEMENT AT MILLED SURFACE	2/S8.1
4	EMBEDDED GALVANIC DAS ANODES IN SLAB REPLACEMENT AREA	S9 SHEETS
5	CONCRETE REPAIR AT OVERHEAD SURFACE, 1" TO 3" DEPTH	3/S8.1
6	CONCRETE REPAIR AT OVERHEAD SURFACE, 3" TO 6" DEPTH	4/S8.1
7	FULL DEPTH SLAB REPLACEMENT	5/S8.1
8	VERTICAL SURFACE CONCRETE REPAIRS AT PARAPETS AND WALLS	6/S8.1
9	CONCRETE REPAIRS AT COLUMNS	7/S8.1
10	EMBEDDED GALVANIC ANODES AT OVERHEAD AND VERTICAL SURFACE REPAIRS	S9 SHEETS
11	EXPANSION JOINT REPLACEMENT	8/S8.1
12	OVERHEAD CONDUCTIVE COATING REMOVAL	NA
13	EPOXY CRACK INJECTION	NA
14	ROUT AND SEAL CRACKS	9/S8.1
15	SILANE SEALER APPLICATION	NA

NOTE: ITEMS FOR ALTERNATE BIDS HAVE THE CORRESPONDING BID LETTER WITH ITEM NO.



N

1 S3.2 LEVEL 3 OVERHEAD PLAN (LEVEL 4 UNDERSIDE)

SCALE: 3/32" = 1'-0" @ 22x34 3/64" = 1'-0" @ 11x17

2022 RESTORATION

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SHEET CONTENTS

LEVEL 3
OVERHEAD PLAN

SHEET NUMBER

S3.2

PLAN NOTES

(X) RFB REPAIR ITEM NUMBER, SEE REPAIR NOTES

REPAIR AT CONCRETE COLUMN (LOAD BEARING), RFB REPAIR ITEM NO. 9.

ALL SHORING TO BE DESIGNED FOR THE FOLLOWING LOADS, PER FLOOR (SEE S9.5 FOR LAYOUT):

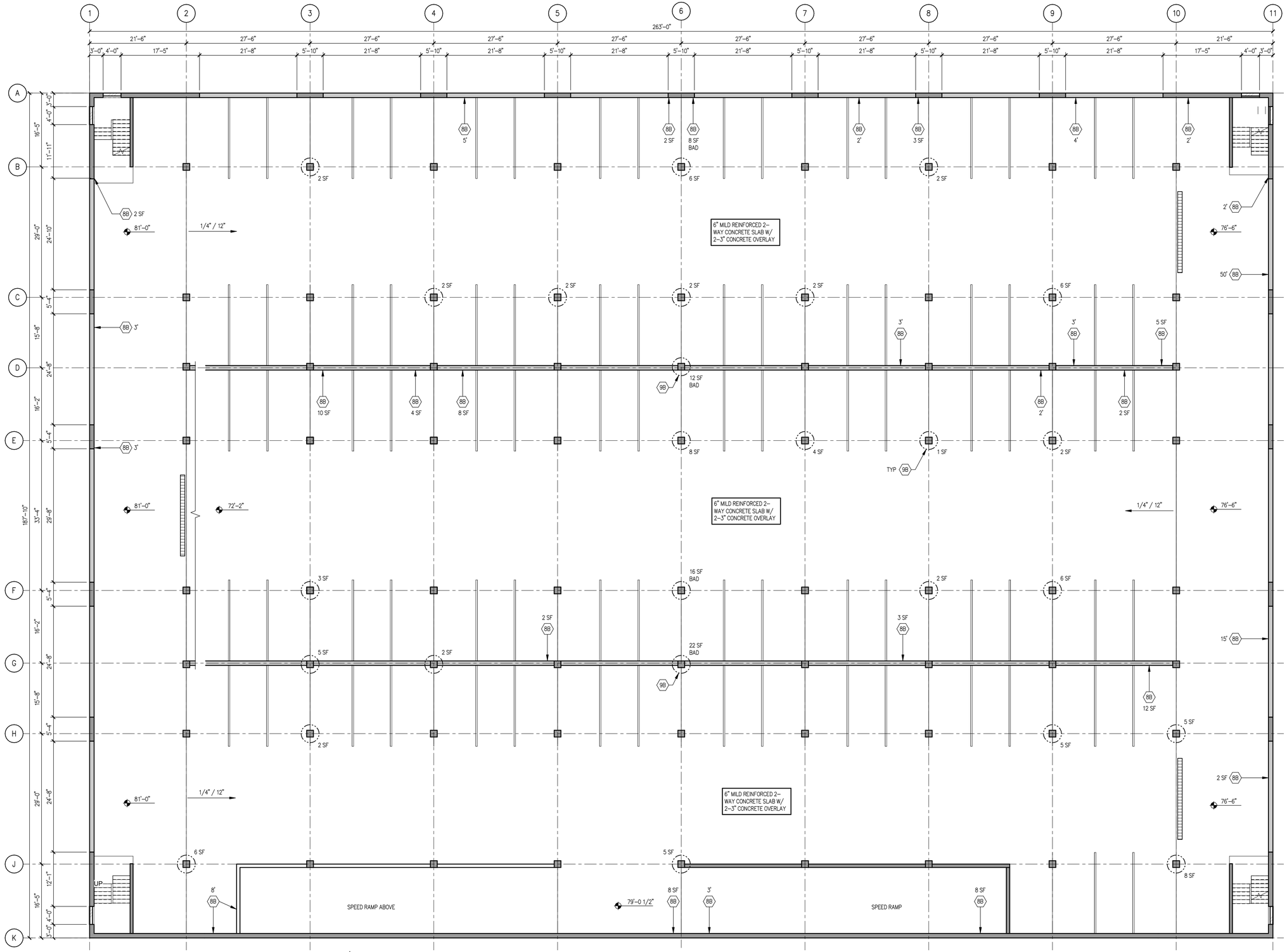
DEAD LOAD:
FLOOR SLABS = 110 PSF
LONGITUDINAL BEAMS = 1300 PLF
TRANSVERSE BEAMS = 2100 PLF

LIVE LOAD = 40 PSF

REPAIR NOTES

ITEM NO.	DESCRIPTION	REFERENCE DETAIL(S)
1	TOPSIDE SLAB MILLING AND REPLACEMENT	1/S8.1
2	REPLACE REINFORCING STEEL IN REMOVAL DEPTH	1/S8.2
3	FULL DEPTH SLAB REPLACEMENT AT MILLED SURFACE	2/S8.1
4	EMBEDDED GALVANIC DAS ANODES IN SLAB REPLACEMENT AREA	S9 SHEETS
5	CONCRETE REPAIR AT OVERHEAD SURFACE, 1" TO 3" DEPTH	3/S8.1
6	CONCRETE REPAIR AT OVERHEAD SURFACE, 3" TO 6" DEPTH	4/S8.1
7	FULL DEPTH SLAB REPLACEMENT	5/S8.1
8	VERTICAL SURFACE CONCRETE REPAIRS AT PARAPETS AND WALLS	6/S8.1
9	CONCRETE REPAIRS AT COLUMNS	7/S8.1
10	EMBEDDED GALVANIC ANODES AT OVERHEAD AND VERTICAL SURFACE REPAIRS	S9 SHEETS
11	EXPANSION JOINT REPLACEMENT	8/S8.1
12	OVERHEAD CONDUCTIVE COATING REMOVAL	NA
13	EPOXY CRACK INJECTION	NA
14	ROUT AND SEAL CRACKS	9/S8.1
15	SILANE SEALER APPLICATION	NA

NOTE: ITEMS FOR ALTERNATE BIDS HAVE THE CORRESPONDING BID LETTER WITH ITEM NO.



N

1 S4.1 LEVEL 4 FLOOR PLAN

SCALE: 3/32" = 1'-0" @ 22x34 3/64" = 1'-0" @ 11x17

2022 RESTORATION
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SHEET CONTENTS

LEVEL 4 FLOOR PLAN

SHEET NUMBER

S4.1

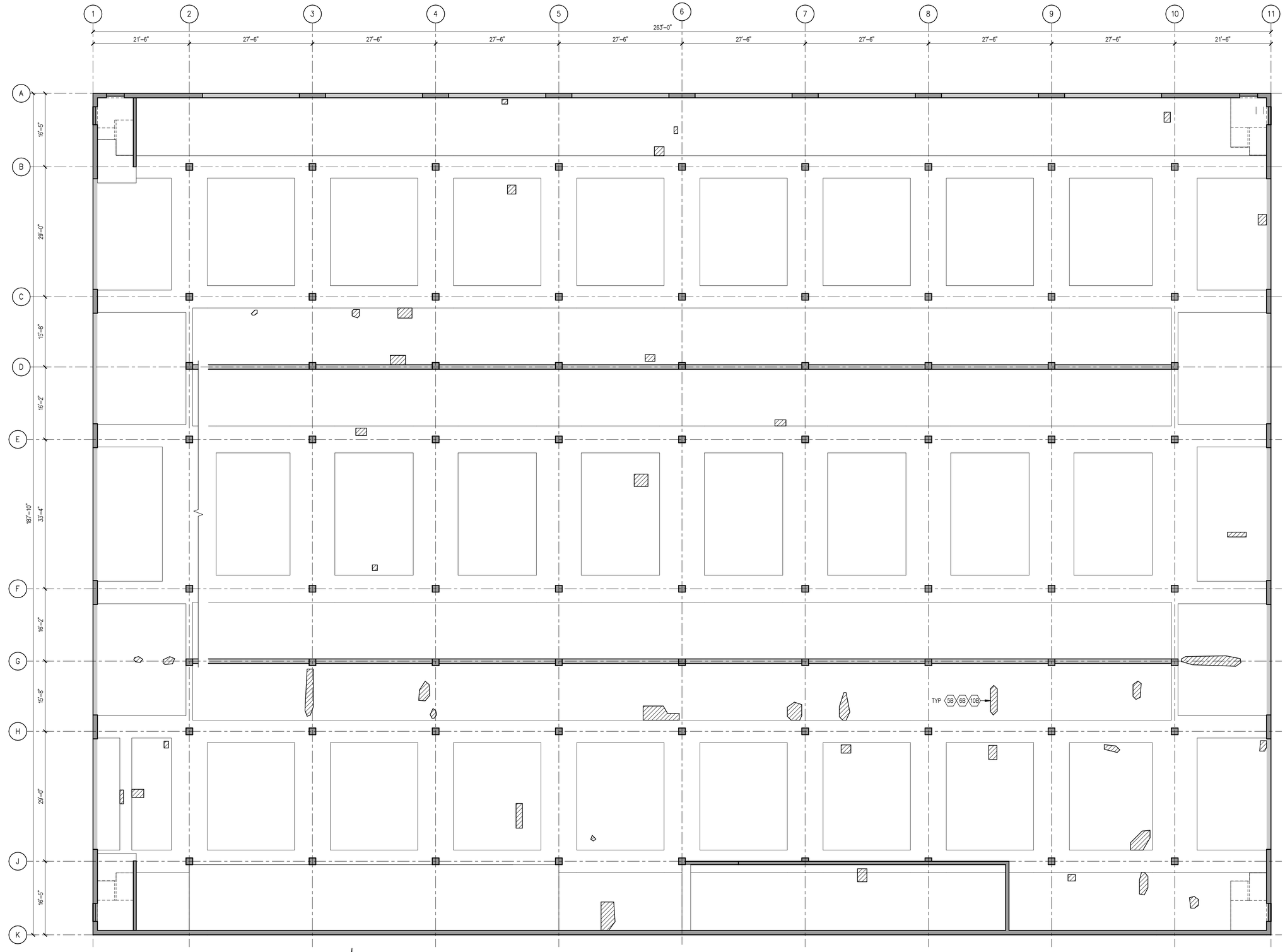
PLAN NOTES OVERHEAD

- (X) RFB REPAIR ITEM NUMBER
- CONCRETE SPALL AT OVERHEAD SURFACE
- CRACK IN CONCRETE (OBSERVATION ONLY)

REPAIR NOTES

ITEM NO.	DESCRIPTION	REFERENCE DETAIL(S)
1	TOPSIDE SLAB MILLING AND REPLACEMENT	1/S8.1
2	REPLACE REINFORCING STEEL IN REMOVAL DEPTH	1/S8.2
3	FULL DEPTH SLAB REPLACEMENT AT MILLED SURFACE	2/S8.1
4	EMBEDDED GALVANIC DAS ANODES IN SLAB REPLACEMENT AREA	S9 SHEETS
5	CONCRETE REPAIR AT OVERHEAD SURFACE, 1" TO 3" DEPTH	3/S8.1
6	CONCRETE REPAIR AT OVERHEAD SURFACE, 3" TO 6" DEPTH	4/S8.1
7	FULL DEPTH SLAB REPLACEMENT	5/S8.1
8	VERTICAL SURFACE CONCRETE REPAIRS AT PARAPETS AND WALLS	6/S8.1
9	CONCRETE REPAIRS AT COLUMNS	7/S8.1
10	EMBEDDED GALVANIC ANODES AT OVERHEAD AND VERTICAL SURFACE REPAIRS	S9 SHEETS
11	EXPANSION JOINT REPLACEMENT	8/S8.1
12	OVERHEAD CONDUCTIVE COATING REMOVAL	NA
13	EPOXY CRACK INJECTION	NA
14	ROUT AND SEAL CRACKS	9/S8.1
15	SILANE SEALER APPLICATION	NA

NOTE: ITEMS FOR ALTERNATE BIDS HAVE THE CORRESPONDING BID LETTER WITH ITEM NO.



N

1 S4.2 LEVEL 4 OVERHEAD PLAN (LEVEL 5 UNDERSIDE)

SCALE: 3/32" = 1'-0" @ 22x34 3/64" = 1'-0" @ 11x17

2022 RESTORATION

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SHEET CONTENTS

LEVEL 4
OVERHEAD PLAN

SHEET NUMBER

S4.2

PLAN NOTES

(X) RFB REPAIR ITEM NUMBER, SEE REPAIR NOTES

REPAIR AT CONCRETE COLUMN (LOAD BEARING), RFB REPAIR ITEM NO. 9.

ALL SHORING TO BE DESIGNED FOR THE FOLLOWING LOADS, PER FLOOR (SEE S9.5 FOR LAYOUT):

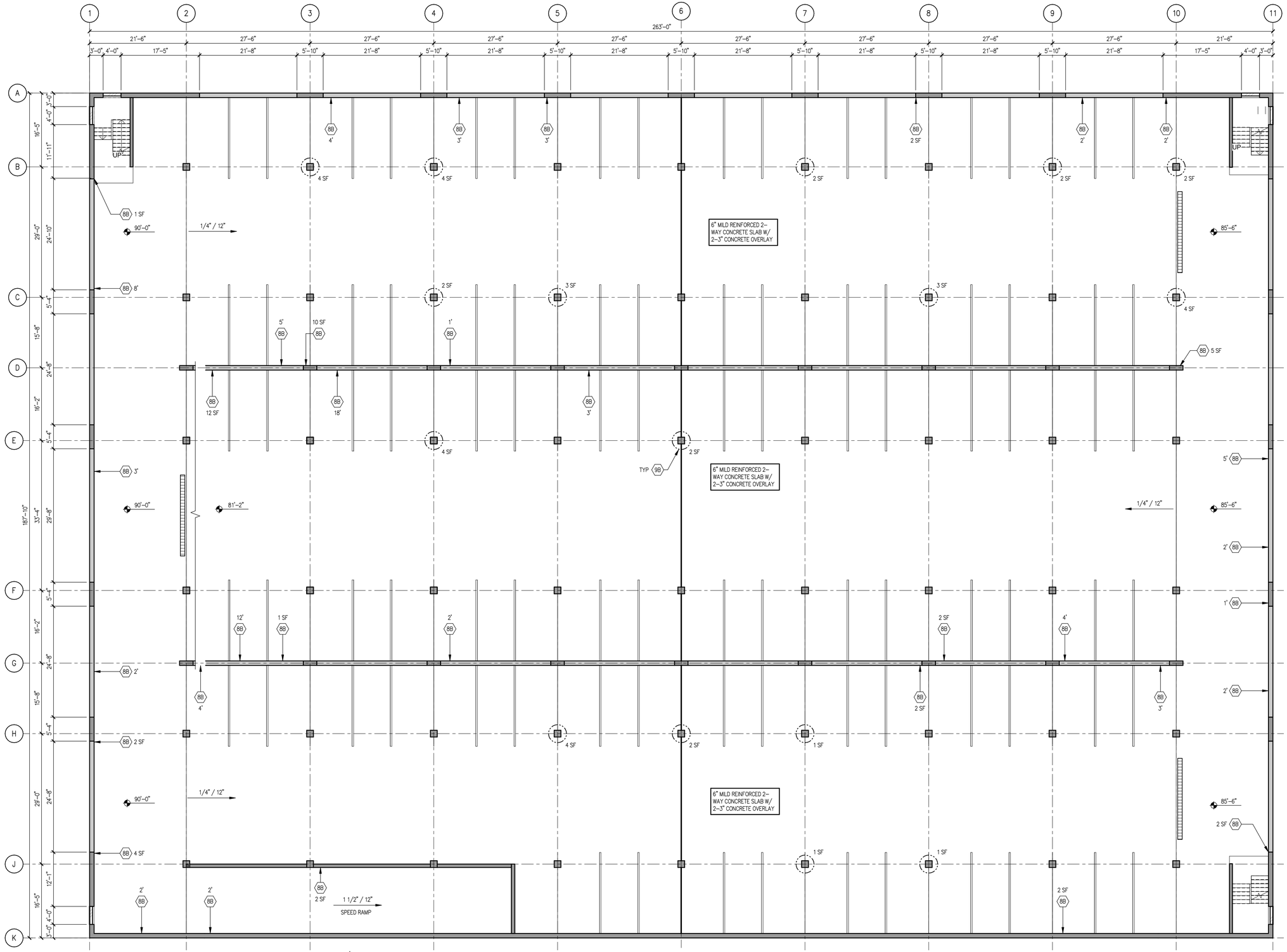
DEAD LOAD:
FLOOR SLABS = 110 PSF
LONGITUDINAL BEAMS = 1300 PLF
TRANSVERSE BEAMS = 2100 PLF

LIVE LOAD = 40 PSF

REPAIR NOTES

ITEM NO.	DESCRIPTION	REFERENCE DETAIL(S)
1	TOPSIDE SLAB MILLING AND REPLACEMENT	1/S8.1
2	REPLACE REINFORCING STEEL IN REMOVAL DEPTH	1/S8.2
3	FULL DEPTH SLAB REPLACEMENT AT MILLED SURFACE	2/S8.1
4	EMBEDDED GALVANIC DAS ANODES IN SLAB REPLACEMENT AREA	S9 SHEETS
5	CONCRETE REPAIR AT OVERHEAD SURFACE, 1" TO 3" DEPTH	3/S8.1
6	CONCRETE REPAIR AT OVERHEAD SURFACE, 3" TO 6" DEPTH	4/S8.1
7	FULL DEPTH SLAB REPLACEMENT	5/S8.1
8	VERTICAL SURFACE CONCRETE REPAIRS AT PARAPETS AND WALLS	6/S8.1
9	CONCRETE REPAIRS AT COLUMNS	7/S8.1
10	EMBEDDED GALVANIC ANODES AT OVERHEAD AND VERTICAL SURFACE REPAIRS	S9 SHEETS
11	EXPANSION JOINT REPLACEMENT	8/S8.1
12	OVERHEAD CONDUCTIVE COATING REMOVAL	NA
13	EPOXY CRACK INJECTION	NA
14	ROUT AND SEAL CRACKS	9/S8.1
15	SILANE SEALER APPLICATION	NA

NOTE: ITEMS FOR ALTERNATE BIDS HAVE THE CORRESPONDING BID LETTER WITH ITEM NO.



N

1 S5.1 LEVEL 5 FLOOR PLAN

SCALE: 3/32" = 1'-0" @ 22x34 3/64" = 1'-0" @ 11x17

2022 RESTORATION
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SHEET CONTENTS

LEVEL 5 FLOOR PLAN

SHEET NUMBER

S5.1

PLAN NOTES OVERHEAD

- (X) RFB REPAIR ITEM NUMBER
- CONCRETE SPALL AT OVERHEAD SURFACE
- CRACK IN CONCRETE (OBSERVATION ONLY)

REPAIR NOTES

ITEM NO.	DESCRIPTION	REFERENCE DETAIL(S)
1	TOPSIDE SLAB MILLING AND REPLACEMENT	1/S8.1
2	REPLACE REINFORCING STEEL IN REMOVAL DEPTH	1/S8.2
3	FULL DEPTH SLAB REPLACEMENT AT MILLED SURFACE	2/S8.1
4	EMBEDDED GALVANIC DAS ANODES IN SLAB REPLACEMENT AREA	S9 SHEETS
5	CONCRETE REPAIR AT OVERHEAD SURFACE, 1" TO 3" DEPTH	3/S8.1
6	CONCRETE REPAIR AT OVERHEAD SURFACE, 3" TO 6" DEPTH	4/S8.1
7	FULL DEPTH SLAB REPLACEMENT	5/S8.1
8	VERTICAL SURFACE CONCRETE REPAIRS AT PARAPETS AND WALLS	6/S8.1
9	CONCRETE REPAIRS AT COLUMNS	7/S8.1
10	EMBEDDED GALVANIC ANODES AT OVERHEAD AND VERTICAL SURFACE REPAIRS	S9 SHEETS
11	EXPANSION JOINT REPLACEMENT	8/S8.1
12	OVERHEAD CONDUCTIVE COATING REMOVAL	NA
13	EPOXY CRACK INJECTION	NA
14	ROUT AND SEAL CRACKS	9/S8.1
15	SILANE SEALER APPLICATION	NA

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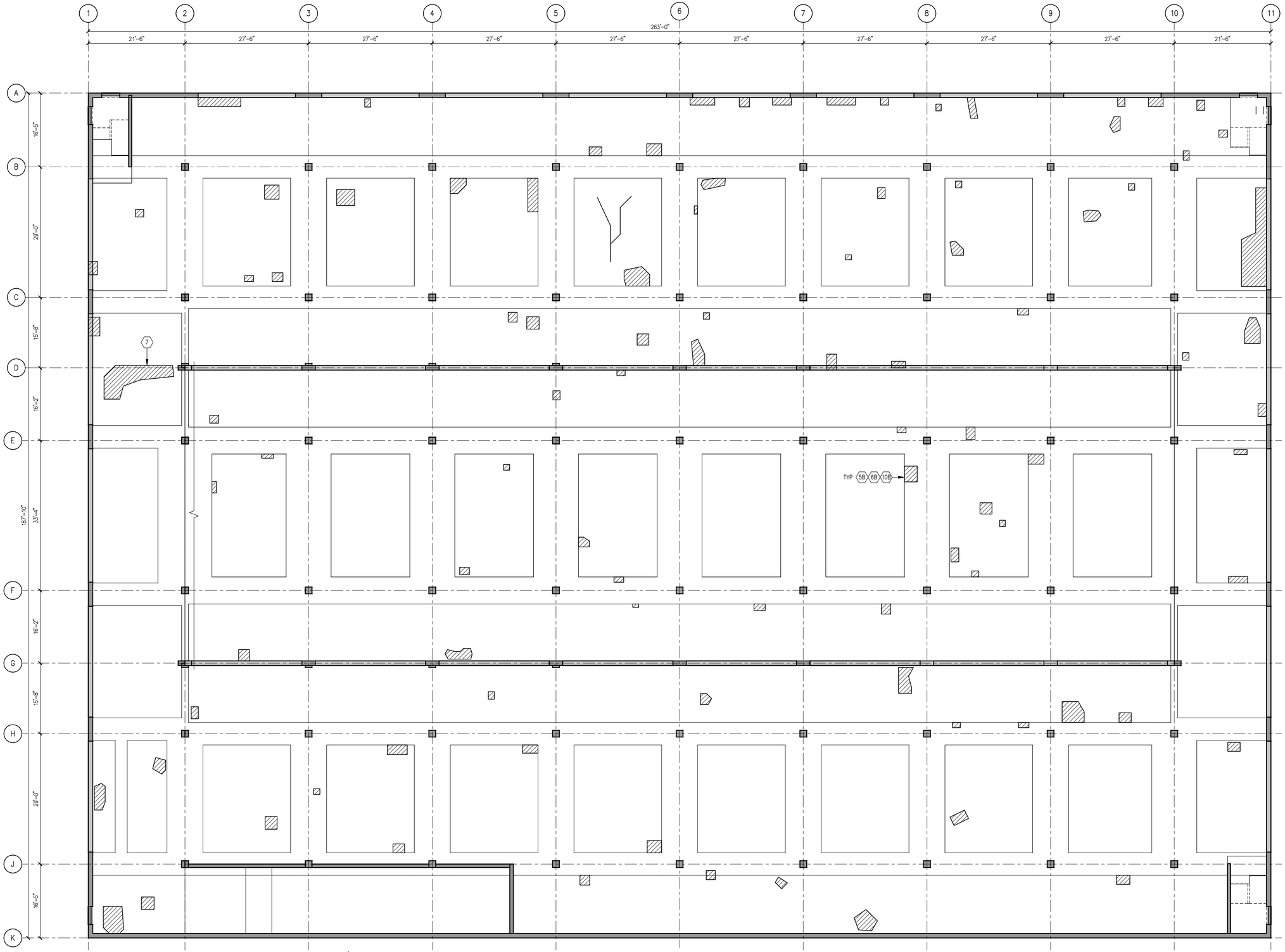

N

1 / S5.2 LEVEL 5 OVERHEAD PLAN (LEVEL 6 UNDERISDE)

SCALE: 3/32" = 1'-0" @ 22x34 3/64" = 1'-0" @ 11x17

2022 RESTORATION

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SHEET CONTENTS

LEVEL 5
OVERHEAD PLAN

SHEET NUMBER

S5.2

PLAN NOTES

⟨X⟩ RFB REPAIR ITEM NUMBER, SEE REPAIR NOTES

▣ REPAIR AT CONCRETE COLUMN (LOAD BEARING), RFB REPAIR ITEM NO. 9.

ALL SHORING TO BE DESIGNED FOR THE FOLLOWING LOADS, PER FLOOR (SEE S9.5 FOR LAYOUT):

DEAD LOAD:
- FLOOR SLABS = 110 PSF
- LONGITUDINAL BEAMS = 1300 PLF
- TRANSVERSE BEAMS = 2100 PLF

LIVE LOAD = 40 PSF

REPAIR NOTES

ITEM NO.	DESCRIPTION	REFERENCE DETAIL(S)
1	TOPSIDE SLAB MILLING AND REPLACEMENT	1/S8.1
2	REPLACE REINFORCING STEEL IN REMOVAL DEPTH	1/S8.2
3	FULL DEPTH SLAB REPLACEMENT AT MILLED SURFACE	2/S8.1
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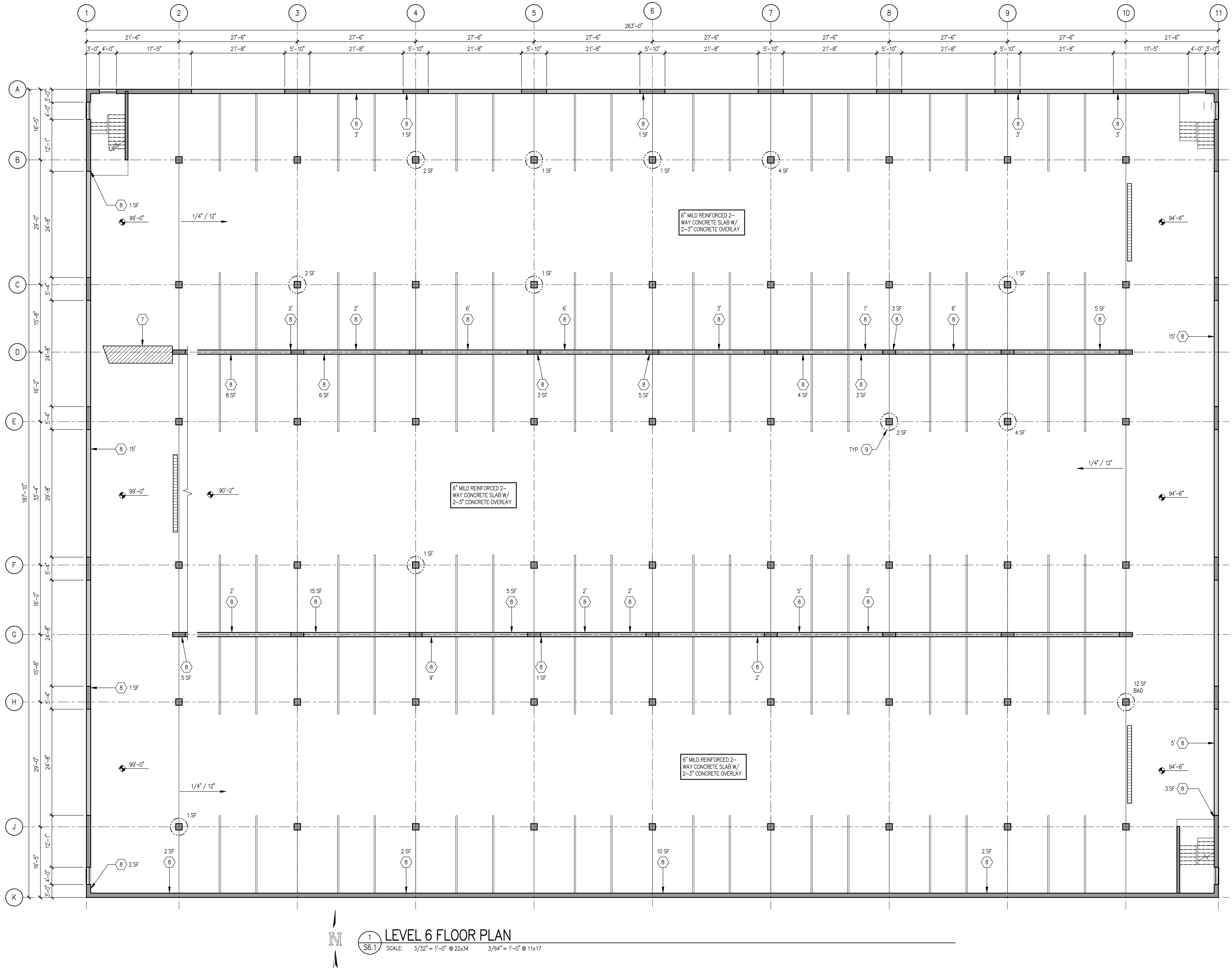
7	FULL DEPTH SLAB REPLACEMENT	5/S8.1
8	VERTICAL SURFACE CONCRETE REPAIRS AT PARAPETS AND WALLS	6/S8.1
9	CONCRETE REPAIRS AT COLUMNS	7/S8.1
10	EMBEDDED GALVANIC ANODES AT OVERHEAD AND VERTICAL SURFACE REPAIRS	S9 SHEETS
11	EXPANSION JOINT REPLACEMENT	8/S8.1
12	OVERHEAD CONDUCTIVE COATING REMOVAL	NA
13	EPOXY CRACK INJECTION	NA
14	ROUT AND SEAL CRACKS	9/S8.1
15	SILANE SEALER APPLICATION	NA

NOTE: ITEMS FOR ALTERNATE BIDS HAVE THE CORRESPONDING BID LETTER WITH ITEM NO.



1 S6.1 LEVEL 6 FLOOR PLAN

SCALE: 3/32" = 1'-0" @ 22x34 3/64" = 1'-0" @ 11x17

2022 RESTORATION
CAPITOL SQUARE SOUTH PARKING RAMP
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SHEET CONTENTS
LEVEL 6 FLOOR PLAN

SHEET NUMBER
S6.1

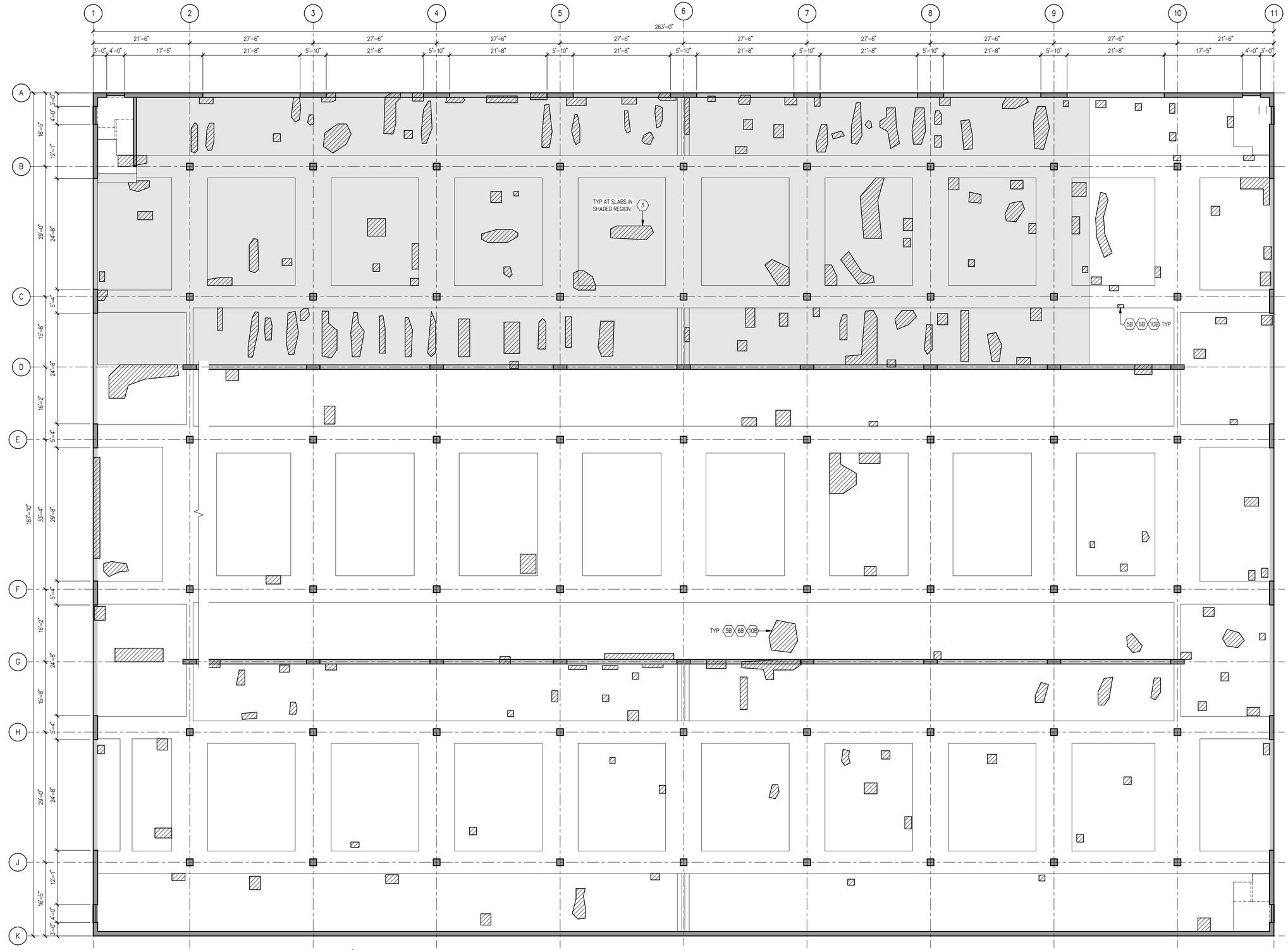
PLAN NOTES OVERHEAD

- (X) RFB REPAIR ITEM NUMBER
- CONCRETE SPALL AT OVERHEAD SURFACE
- CRACK IN CONCRETE (OBSERVATION ONLY)

REPAIR NOTES

ITEM NO.	DESCRIPTION	REFERENCE DETAIL(S)
1	TOPSIDE SLAB MILLING AND REPLACEMENT	1/S8.1
2	REPLACE REINFORCING STEEL IN REMOVAL DEPTH	1/S8.2
3	FULL DEPTH SLAB REPLACEMENT AT MILLED SURFACE	2/S8.1
4	EMBEDDED GALVANIC DAS ANODES IN SLAB REPLACEMENT AREA	S9 SHEETS
5	CONCRETE REPAIR AT OVERHEAD SURFACE, 1" TO 3" DEPTH	3/S8.1
6	CONCRETE REPAIR AT OVERHEAD SURFACE, 3" TO 6" DEPTH	4/S8.1
7	FULL DEPTH SLAB REPLACEMENT	5/S8.1
8	VERTICAL SURFACE CONCRETE REPAIRS AT PARAPETS AND WALLS	6/S8.1
9	CONCRETE REPAIRS AT COLUMNS	7/S8.1
10	EMBEDDED GALVANIC ANODES AT OVERHEAD AND VERTICAL SURFACE REPAIRS	S9 SHEETS
11	EXPANSION JOINT REPLACEMENT	8/S8.1
12	OVERHEAD CONDUCTIVE COATING REMOVAL	NA
13	EPOXY CRACK INJECTION	NA
14	ROUT AND SEAL CRACKS	9/S8.1
15	SILANE SEALER APPLICATION	NA

NOTE: ITEMS FOR ALTERNATE BIDS HAVE THE CORRESPONDING BID LETTER WITH ITEM NO.



N

1 / S6.2 LEVEL 6 OVERHEAD PLAN (LEVEL 7 UNDERSIDE)

SCALE: 3/32" = 1'-0" @ 22x34 3/64" = 1'-0" @ 11x17

2022 RESTORATION

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SHEET CONTENTS

LEVEL 6
OVERHEAD PLAN

SHEET NUMBER

S6.2

PLAN NOTES

(X) RFB REPAIR ITEM NUMBER, SEE REPAIR NOTES

REPAIR AT CONCRETE COLUMN (LOAD BEARING), RFB REPAIR ITEM NO. 9.

ALL SHORING TO BE DESIGNED FOR THE FOLLOWING LOADS, PER FLOOR (SEE S9.5 FOR LAYOUT):

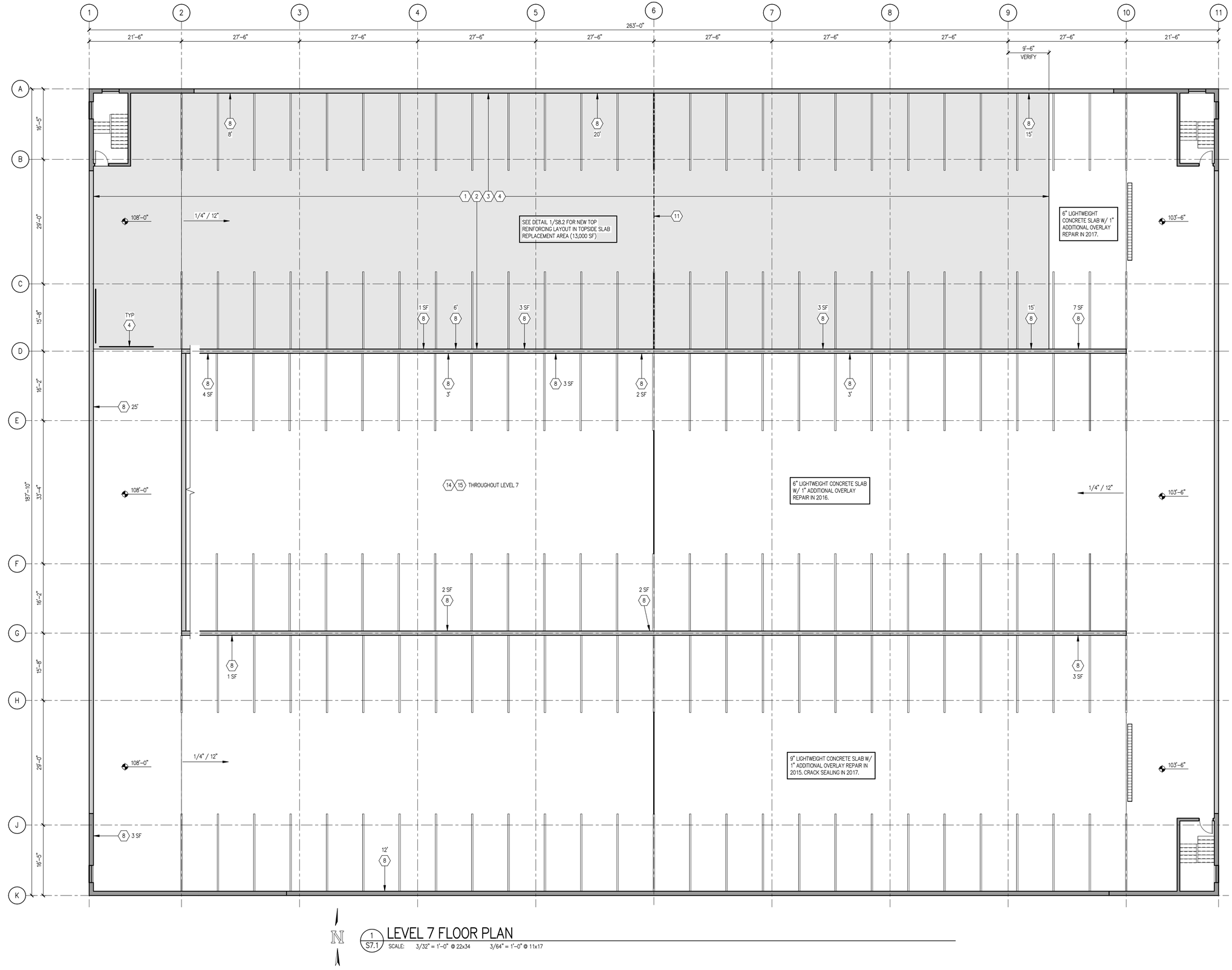
DEAD LOAD:
FLOOR SLABS = 110 PSF
LONGITUDINAL BEAMS = 1300 PLF
TRANSVERSE BEAMS = 2100 PLF

LIVE LOAD = 40 PSF

REPAIR NOTES

ITEM NO.	DESCRIPTION	REFERENCE DETAIL(S)
1	TOPSIDE SLAB MILLING AND REPLACEMENT	1/S8.1
2	REPLACE REINFORCING STEEL IN REMOVAL DEPTH	1/S8.2
3	FULL DEPTH SLAB REPLACEMENT AT MILLED SURFACE	2/S8.1
4	EMBEDDED GALVANIC DAS ANODES IN SLAB REPLACEMENT AREA	S9 SHEETS
5	CONCRETE REPAIR AT OVERHEAD SURFACE, 1" TO 3" DEPTH	3/S8.1
6	CONCRETE REPAIR AT OVERHEAD SURFACE, 3" TO 6" DEPTH	4/S8.1
7	FULL DEPTH SLAB REPLACEMENT	5/S8.1
8	VERTICAL SURFACE CONCRETE REPAIRS AT PARAPETS AND WALLS	6/S8.1
9	CONCRETE REPAIRS AT COLUMNS	7/S8.1
10	EMBEDDED GALVANIC ANODES AT OVERHEAD AND VERTICAL SURFACE REPAIRS	S9 SHEETS
11	EXPANSION JOINT REPLACEMENT	8/S8.1
12	OVERHEAD CONDUCTIVE COATING REMOVAL	NA
13	EPOXY CRACK INJECTION	NA
14	ROUT AND SEAL CRACKS	9/S8.1
15	SILANE SEALER APPLICATION	NA

NOTE: ITEMS FOR ALTERNATE BIDS HAVE THE CORRESPONDING BID LETTER WITH ITEM NO.



N

1 S7.1 LEVEL 7 FLOOR PLAN

SCALE: 3/32" = 1'-0" @ 22x34 3/64" = 1'-0" @ 11x17

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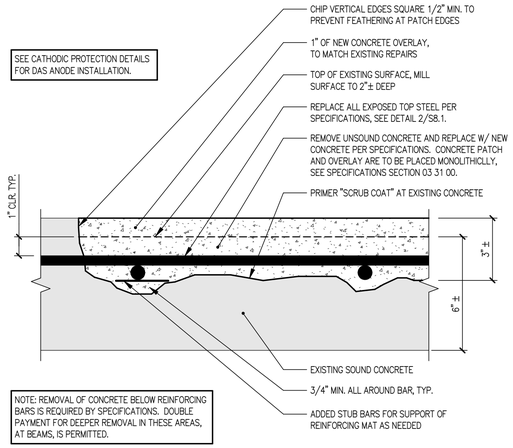
SHEET CONTENTS

LEVEL 7 FLOOR PLAN

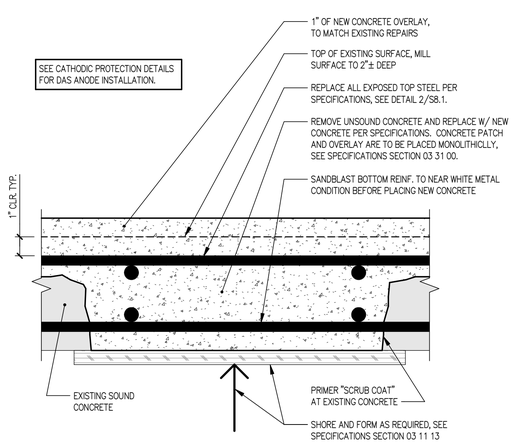
SHEET NUMBER

S7.1



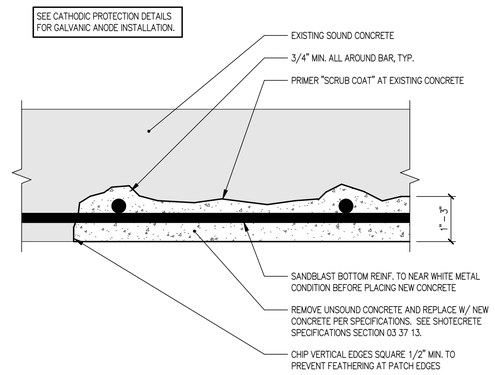
1 S8.1 TOPSIDE SLAB RESTORATION – LEVEL 7

SCALE: 3" = 1'–0"



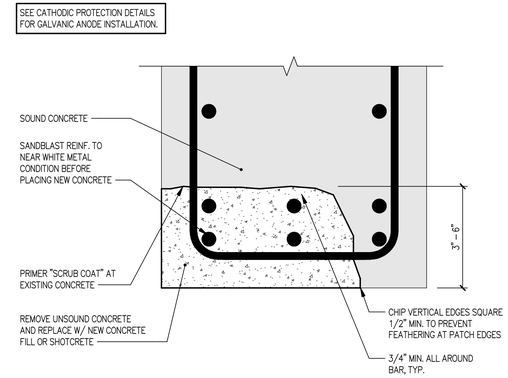
2 S8.1 FULL DEPTH SLAB RESTORATION – LEVEL 7

SCALE: 3" = 1'–0"



3 S8.1 OVERHEAD CONCRETE RESTORATION, 1"–3"

SCALE: 3" = 1'–0"



4 S8.1 OVERHEAD CONCRETE RESTORATION, 3"–6"

SCALE: 3" = 1'–0"

5 S8.1 FULL DEPTH SLAB RESTORATION

SCALE: 3" = 1'–0"

6 S8.1 VERTICAL SURFACE CONCRETE REPAIR

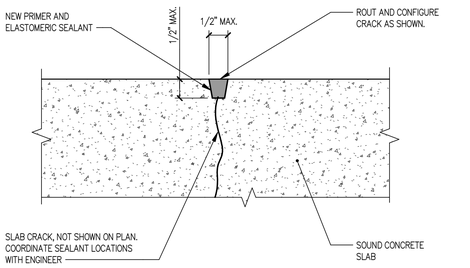
SCALE: 1 1/2" = 1'–0"

7 S8.1 CONCRETE REPAIR AT COLUMNS

SCALE: 1 1/2" = 1'–0"

8 S8.1 EXPANSION JOINT REPLACEMENT – LEVEL 7

SCALE: 1 1/2" = 1'–0"



9 S8.1 SLAB CRACK REPAIR

SCALE: 6" = 1'–0"

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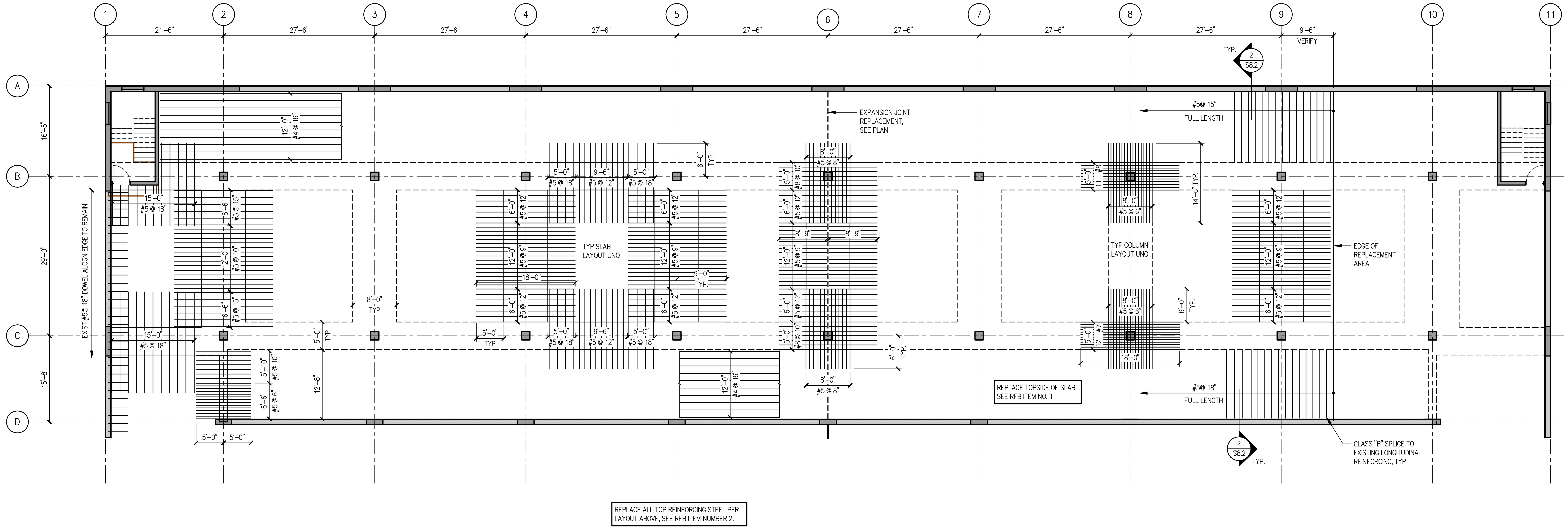
SHEET CONTENTS

CONCRETE REPAIR DETAILS

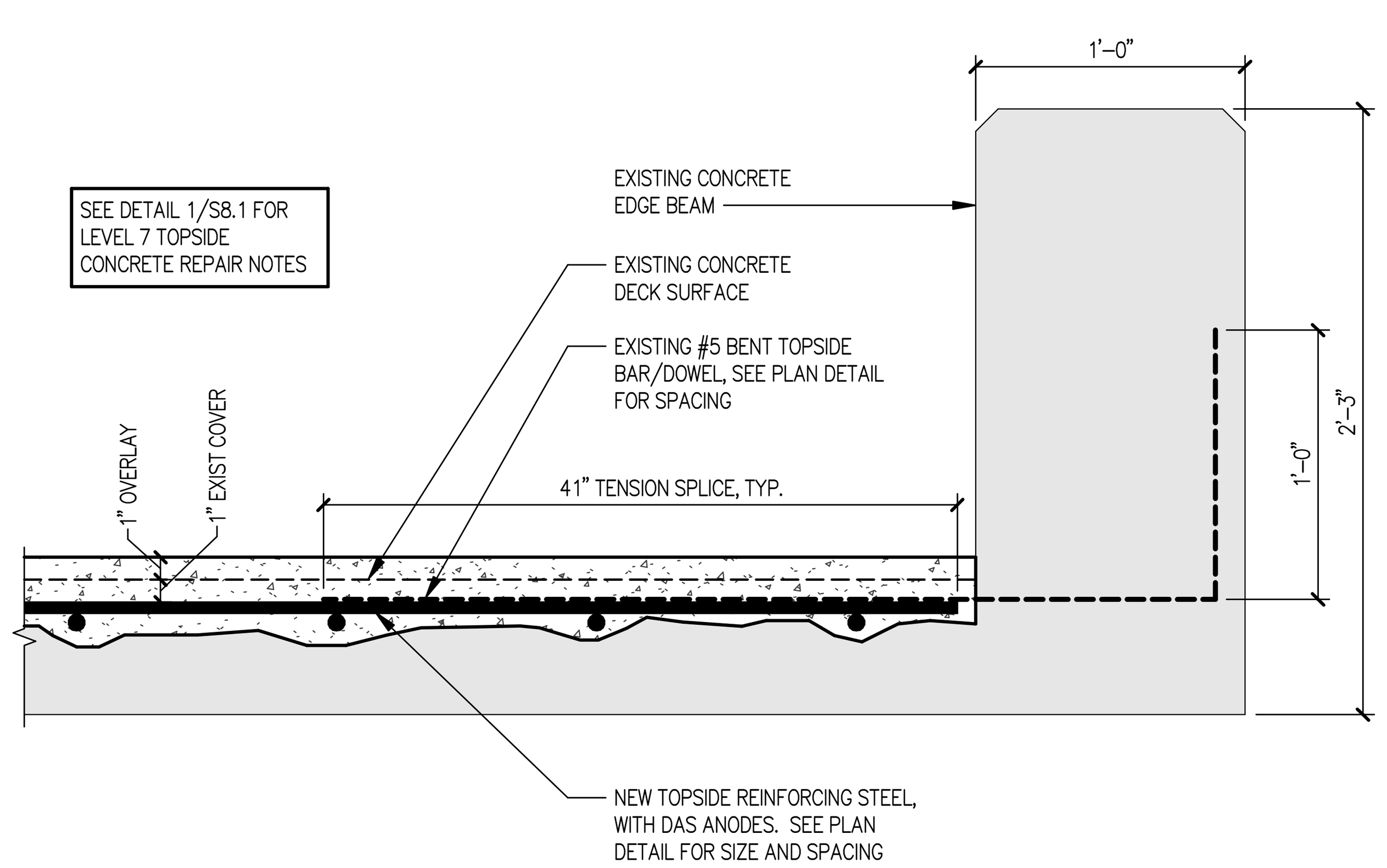
SHEET NUMBER

S8.1



1/S8.2 LEVEL 7 – TOPSIDE REINFORCING LAYOUT

SCALE: 3/32" = 1'-0"



2/S8.2 EDGE DETAIL – LEVEL 7

SCALE: 1 1/2" = 1'-0"

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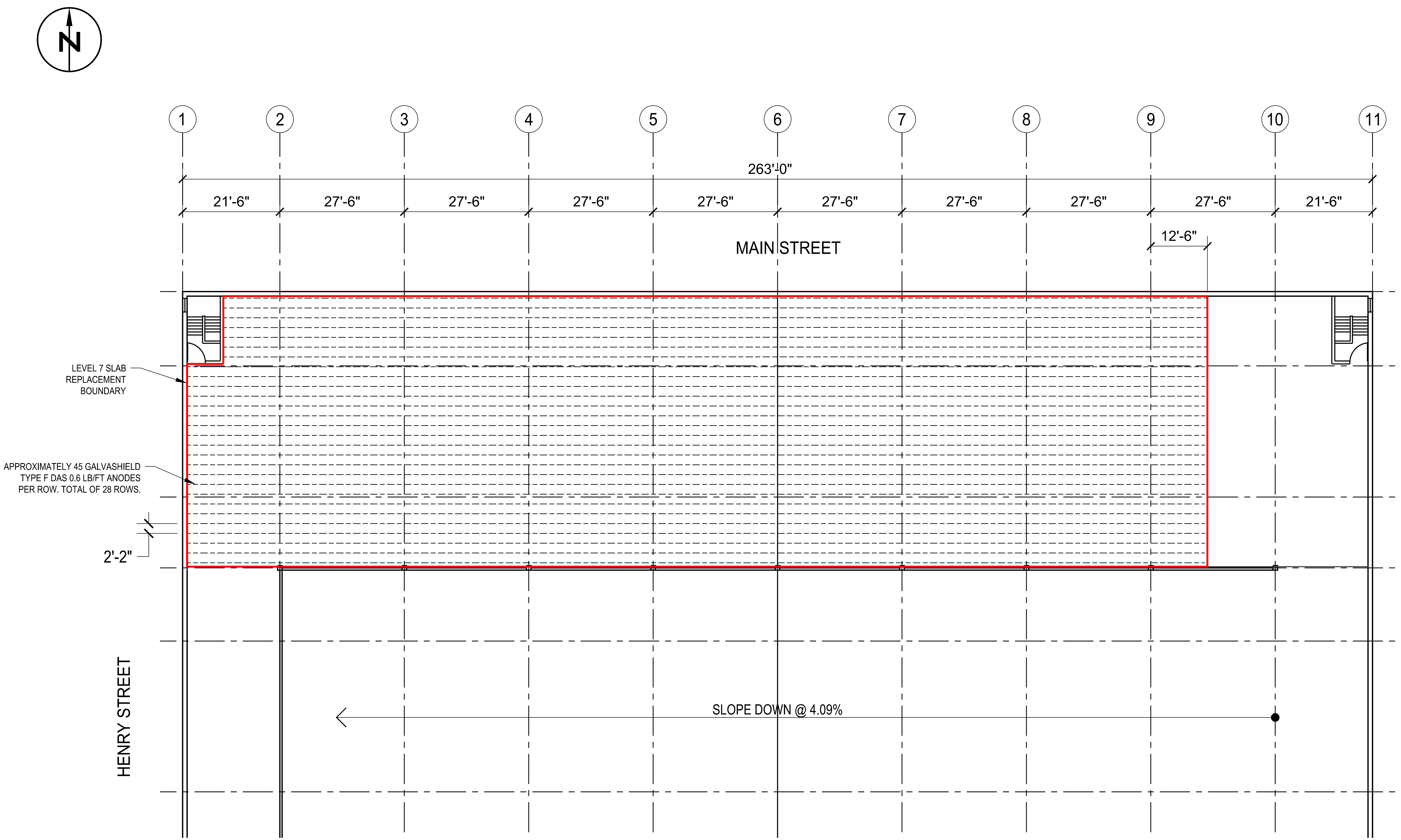
CONCRETE REPAIR DETAILS

SHEET NUMBER

S8.2



NOTE:

REFER TO SHEET S9.11 FOR ANODE SCHEDULE.

1 LEVEL 7 - PLAN VIEW
DAS ANODE INSTALLATION BOUNDARY
SCALE: 1/32" = 1'-0"

2022 RESTORATION

CAPITOL SQUARE SOUTH PARKING RAMP
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COUNTY of DANE · WISCONSIN · 1839

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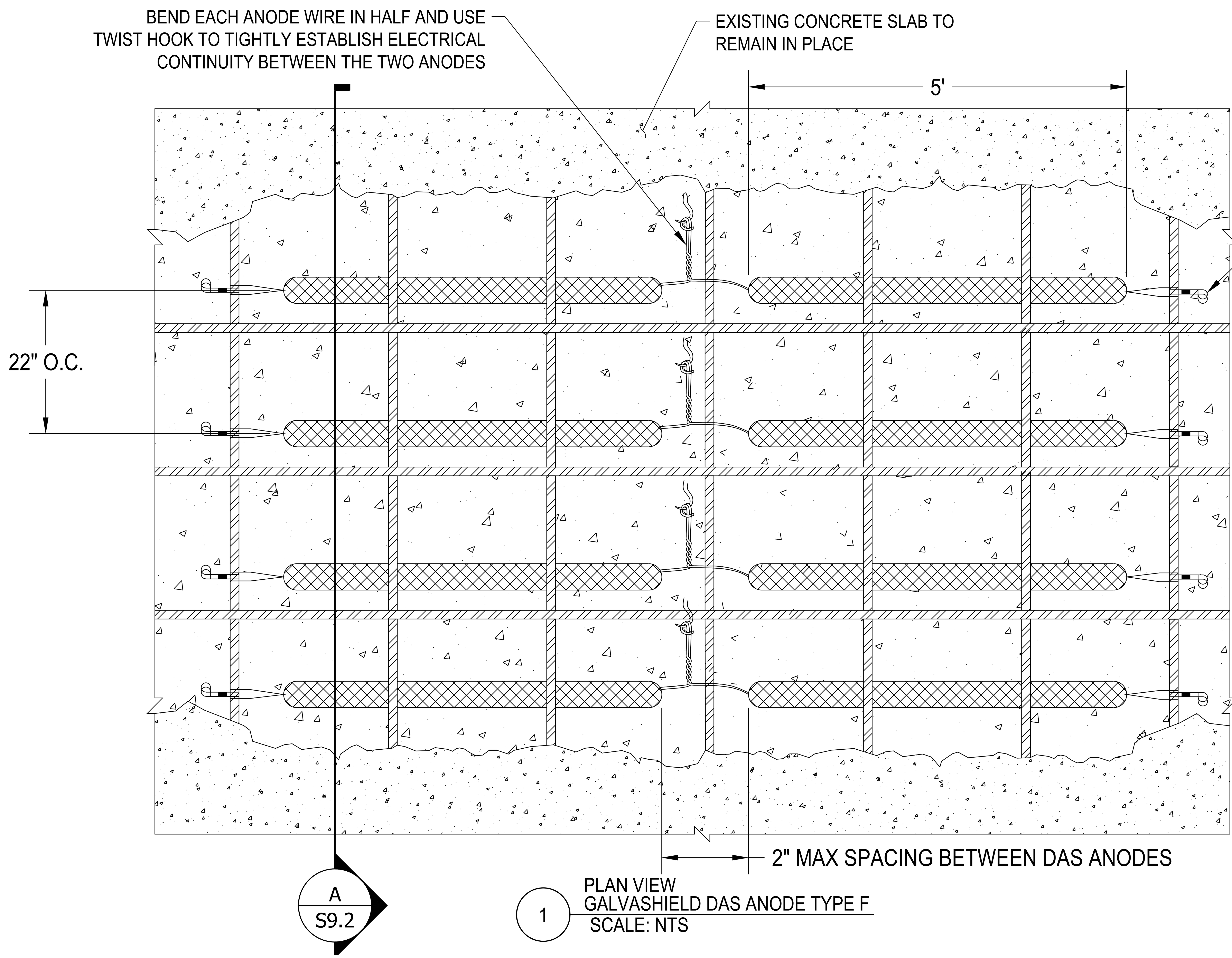
SHEET CONTENTS

DAS TYPE F ANODE LAYOUT PLAN VIEW

SHEET NUMBER

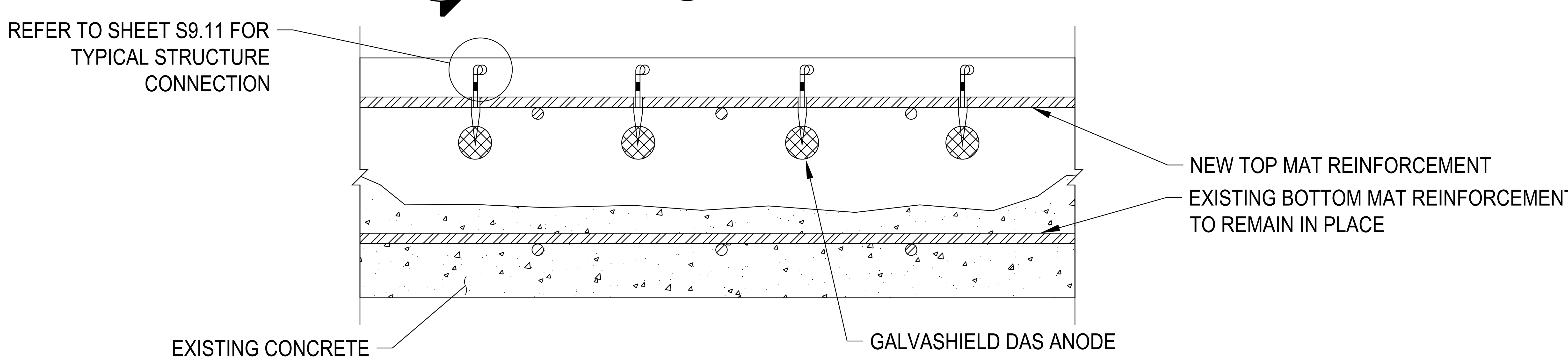
S9.1



1 PLAN VIEW
GALVASHIELD DAS ANODE TYPE F
SCALE: NTS

NOTE:

REFER TO SHEET S9.1 FOR DAS TYPE F INSTALLATION BOUNDARY.



A SECTION
GALVASHIELD DAS ANODE TYPE F
SCALE: NTS

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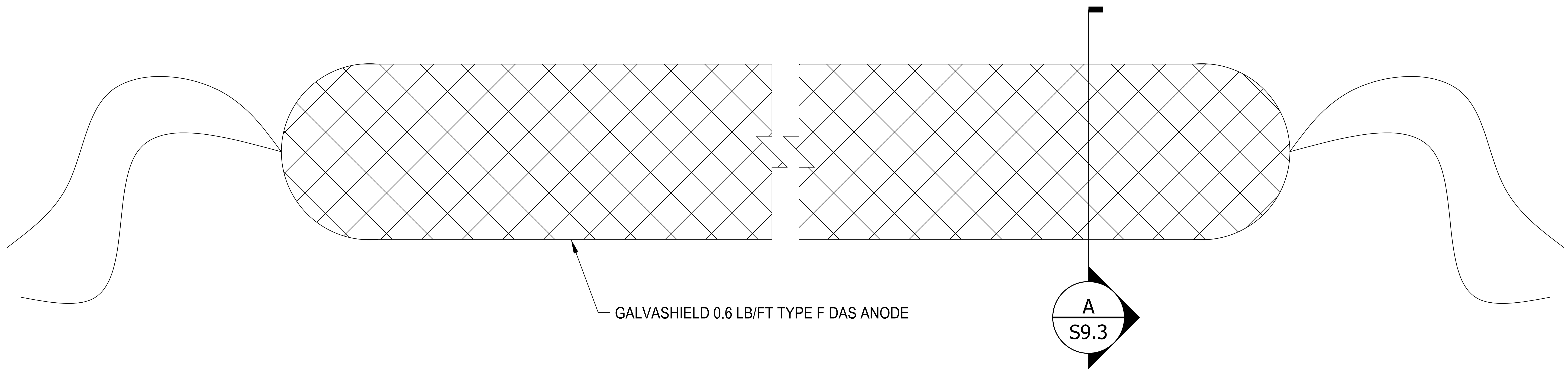
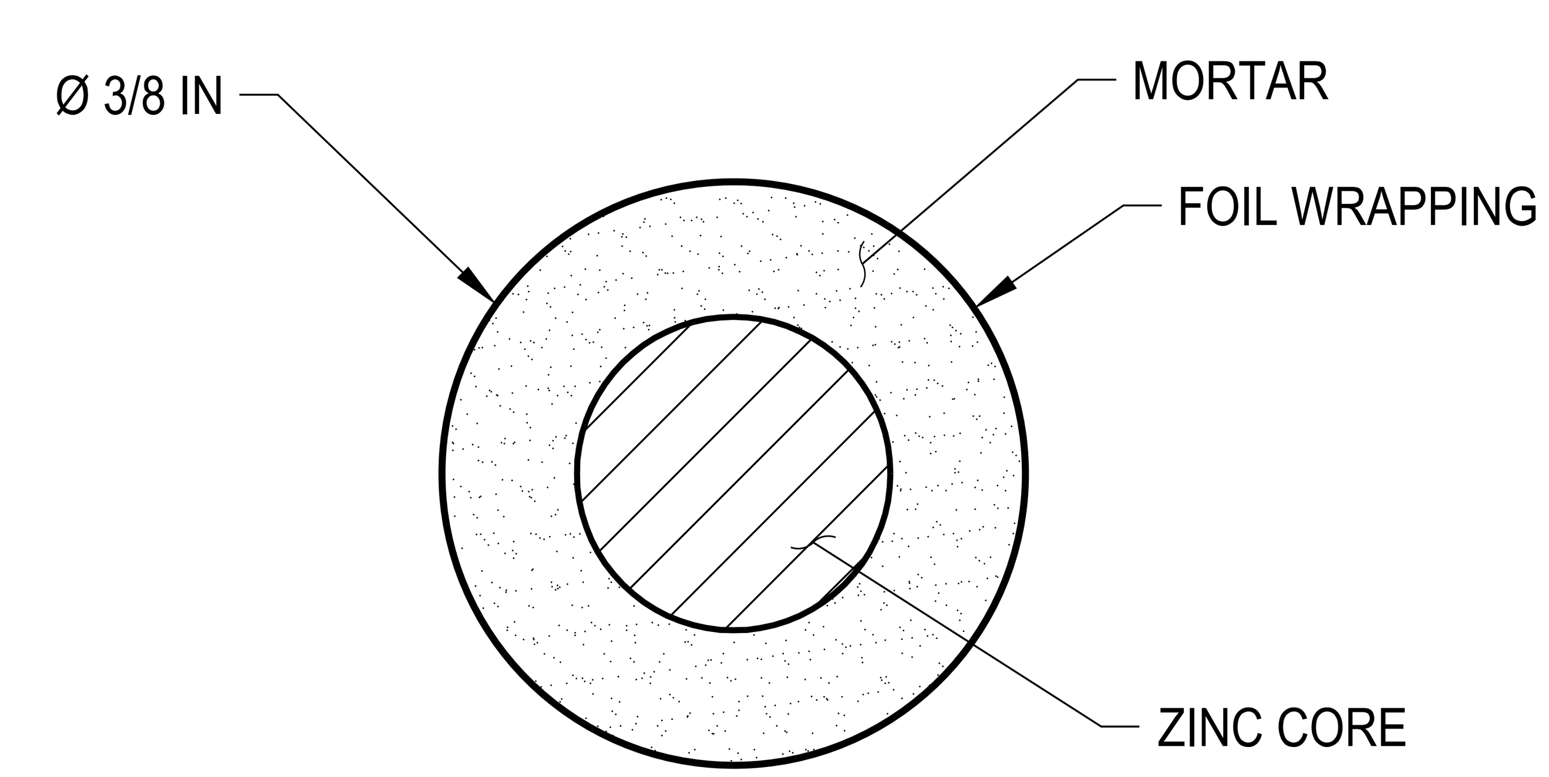
SHEET CONTENTS
TYPICAL GALVASHIELD DAS ANODE NEW-OLD CONCRETE BOUNDARY PLACEMENT

SHEET NUMBER
S9.2

FILE PATH: G:\Shared drives\Vector Corrosion Services\VCS 2022\Jobs 2022\F22004WI - MP Squared - Dane County CP\Drawings\Design Phase - Updated Border - rev 2\CAD\Dane County Drawings - Design Phase.dwg



1 PLAN
0.6 LB/FT TYPE F DAS ANODE
SCALE: N.T.S



A SECTION
0.6 LB/FT TYPE F DAS ANODE
SCALE: NTS

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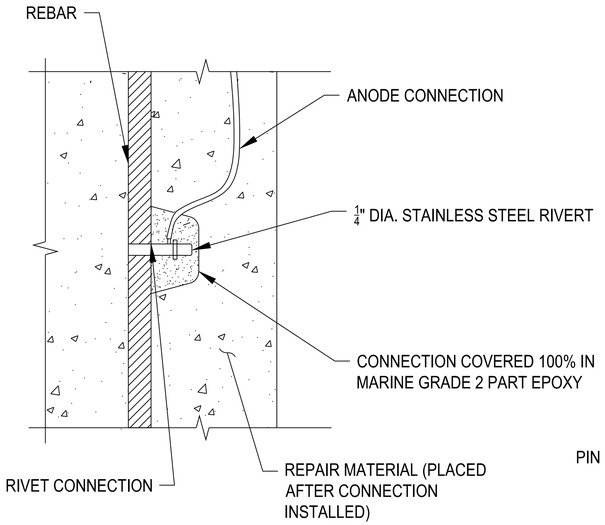
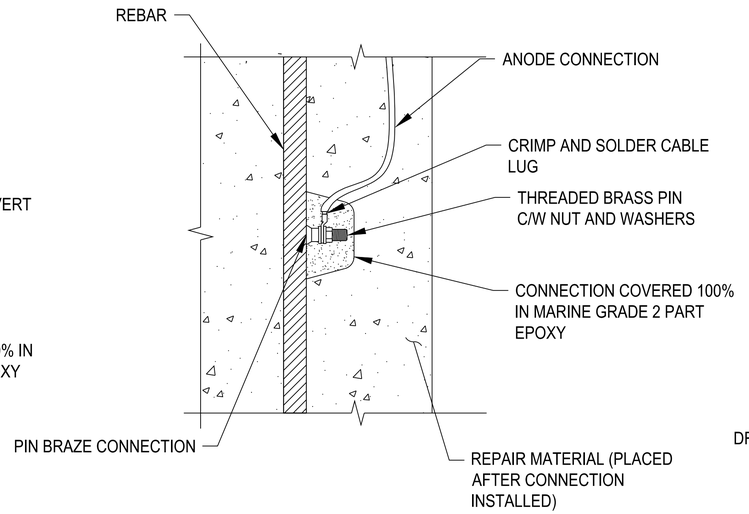
SHEET CONTENTS
GALVASHIELD
DAS ANODE
TYPE F

SHEET NUMBER
S9.3

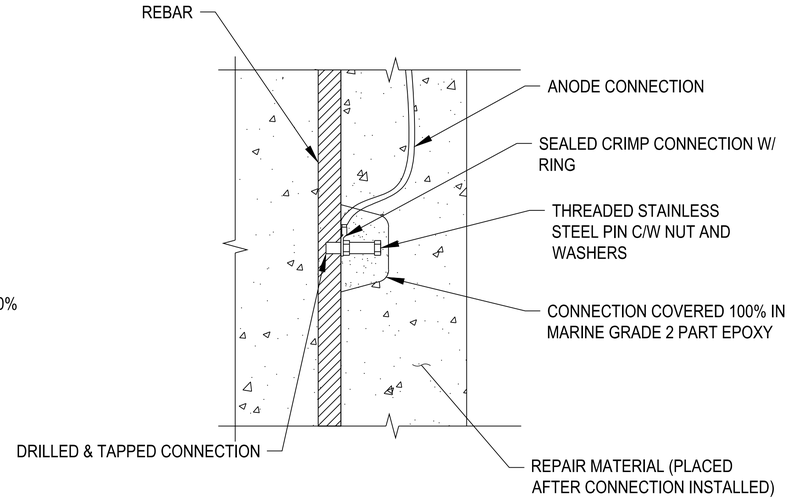
FILE PATH: G:\Shared drives\Vector Corrosion Services\VCS 2022\Jobs 2022\F22004WI - MP Squared - Dane County CP\Drawings\Design Phase - Updated Border - rev 2\CAD\Dane County Drawings - Design Phase.dwg



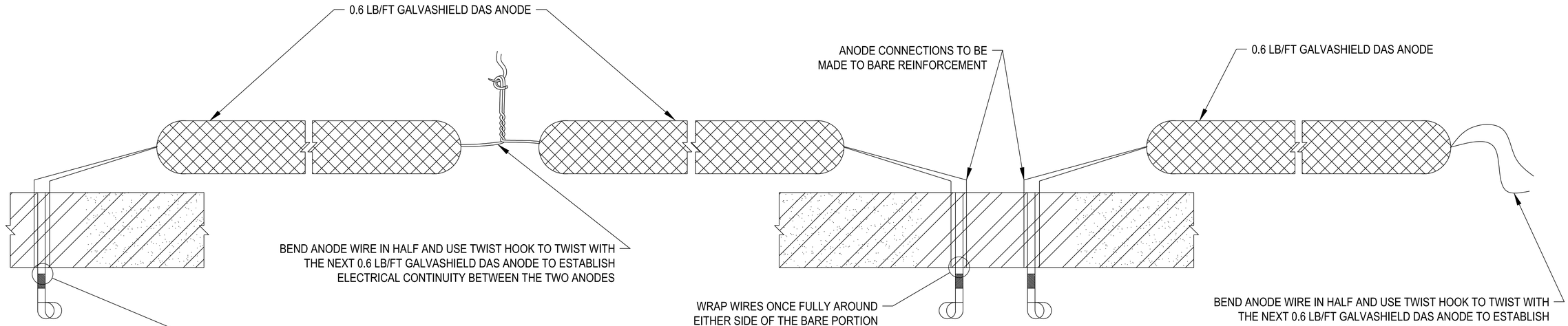
1 OPTION 1 - RIVET ANODE CONNECTION DETAIL
N.T.S



2 OPTION 2 - PIN BRAZE ANODE CONNECTION DETAIL
N.T.S



3 OPTION 3 - DRILL AND TAP ANODE CONNECTION DETAIL
N.T.S



4 DIRECT CONNECTION
SCALE: NTS

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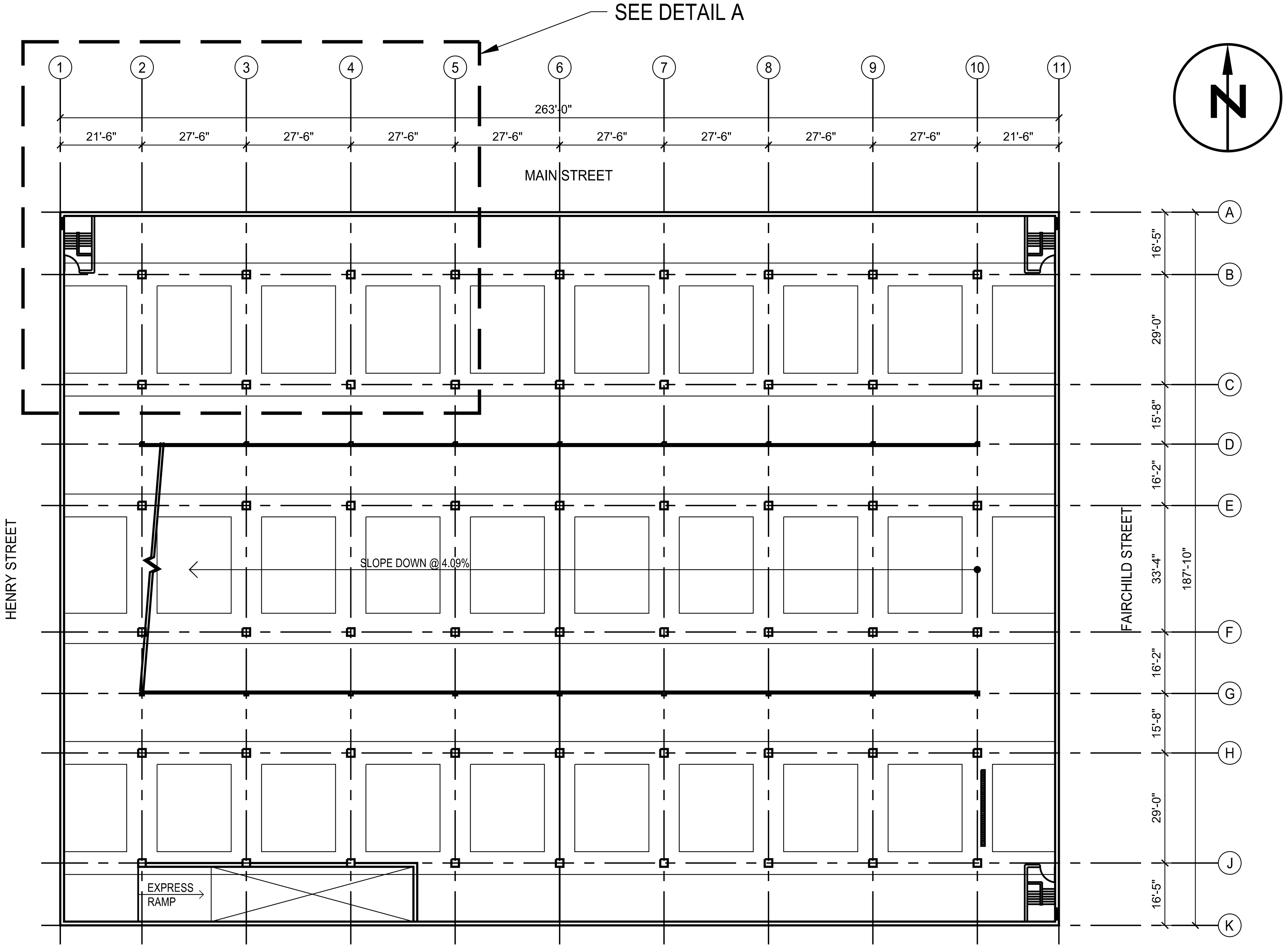
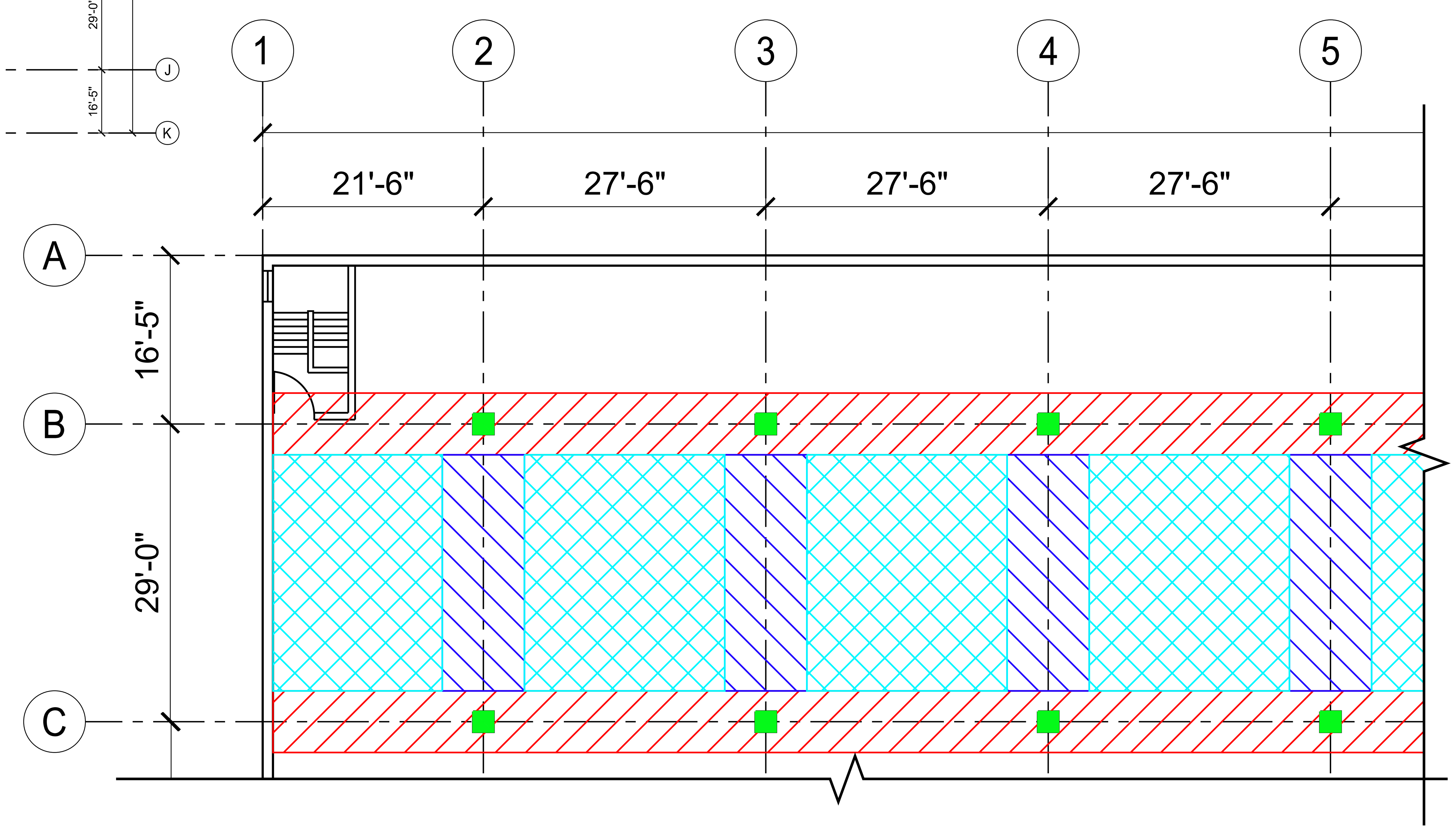
SHEET CONTENTS
TYPICAL STRUCTURE CONNECTIONS

SHEET NUMBER
S9.4



1 TYPICAL PLAN VIEW
SCALE: 3/128" = 1'-0"

LEGEND	
	SLAB
	LONGITUDINAL BEAMS
	TRANSVERSE BEAMS
	COLUMNS



A TYPICAL STRUCTURE ELEMENT CONFIGURATION
SCALE: 1/16" = 1'-0"

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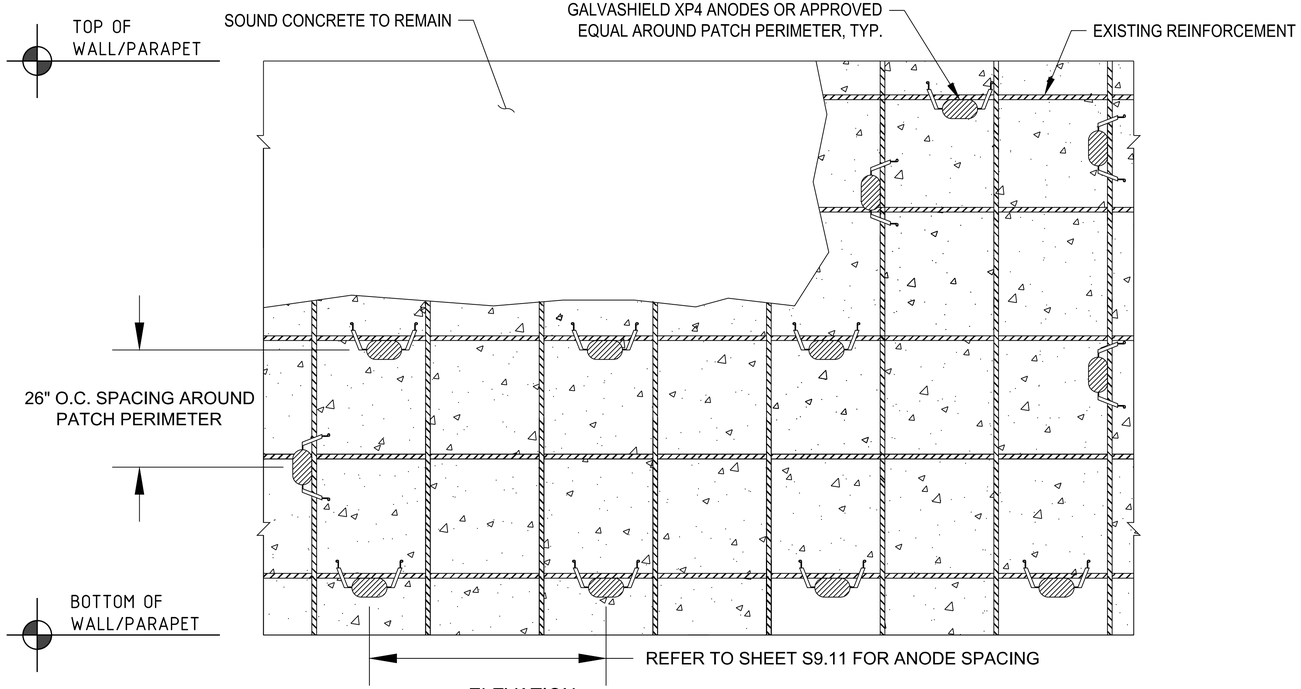
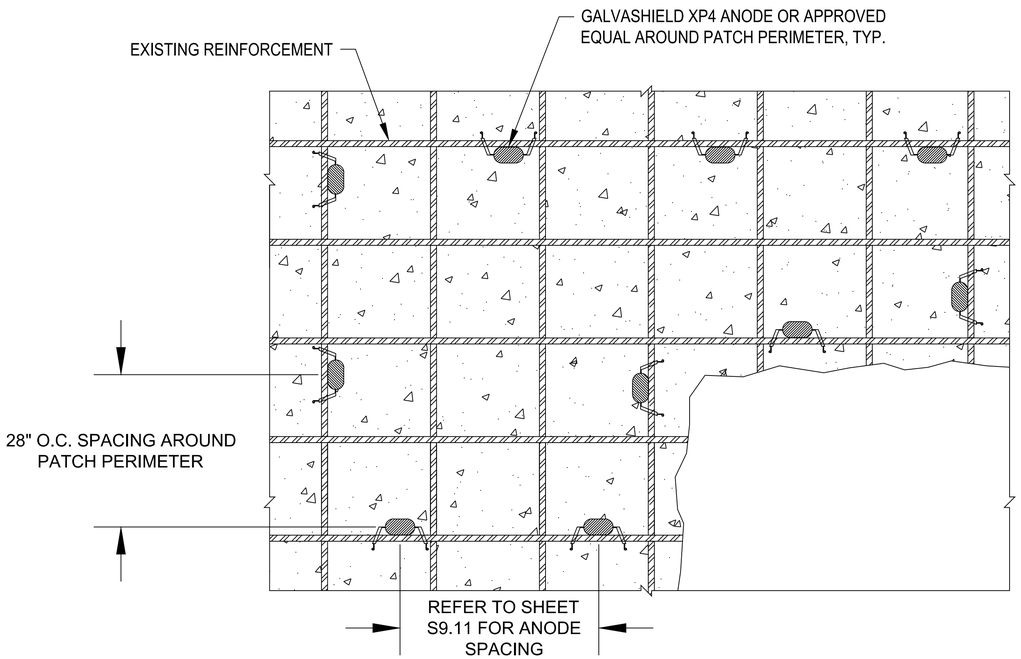
SHEET CONTENTS
STRUCTURE LAYOUT PLAN

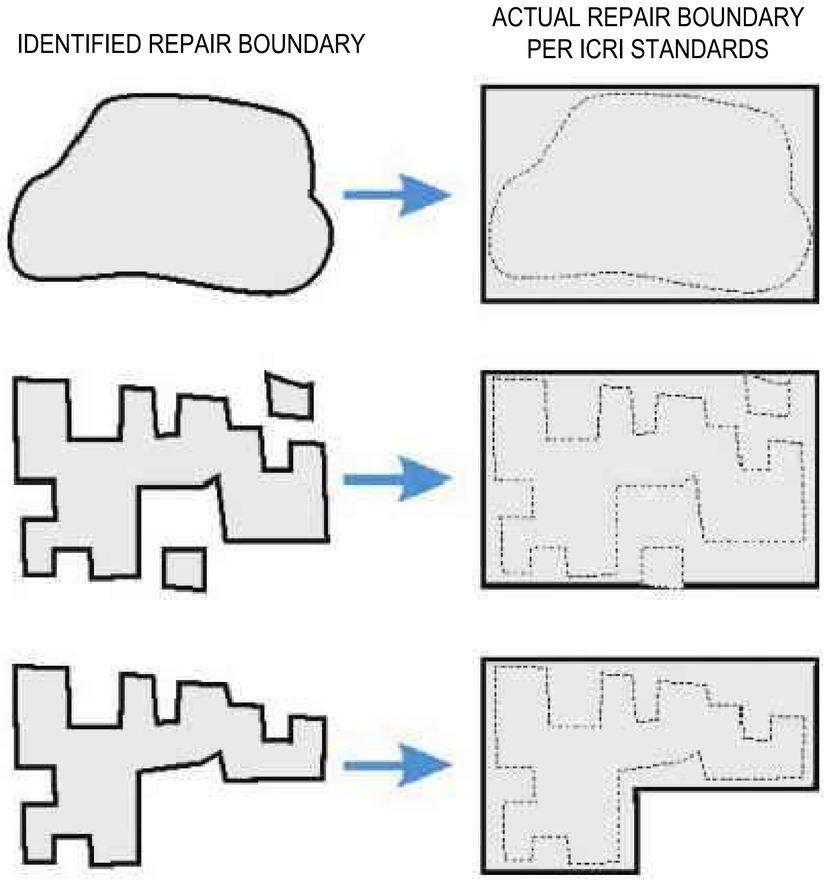
SHEET NUMBER
S9.5



1 ELEVATION
TYP. GALVANIC ANODE PLACEMENT - VERTICAL WALLS/PARAPETS
SCALE: N.T.S



2 OVERHEAD PLAN VIEW
TYP. GALVANIC ANODE PLACEMENT - SLAB
SCALE: N.T.S



3 ICRI GUIDELINES FOR CONCRETE REPAIR
SCALE: N.T.S

2022 RESTORATION
CAPITOL SQUARE SOUTH PARKING RAMP
113 S. HENRY STREET
MADISON, WI 53703

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DC PW RFB#: 322005
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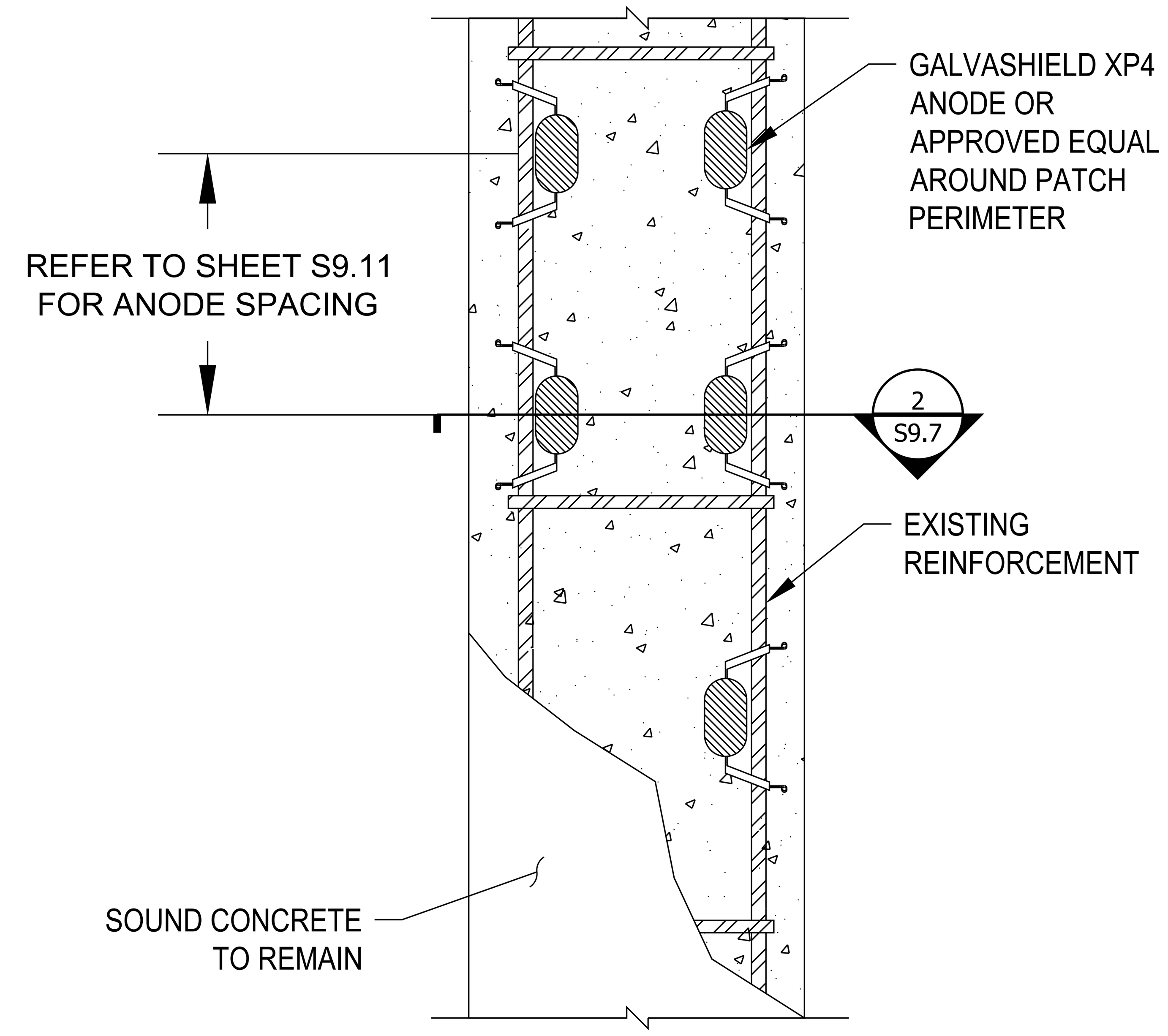
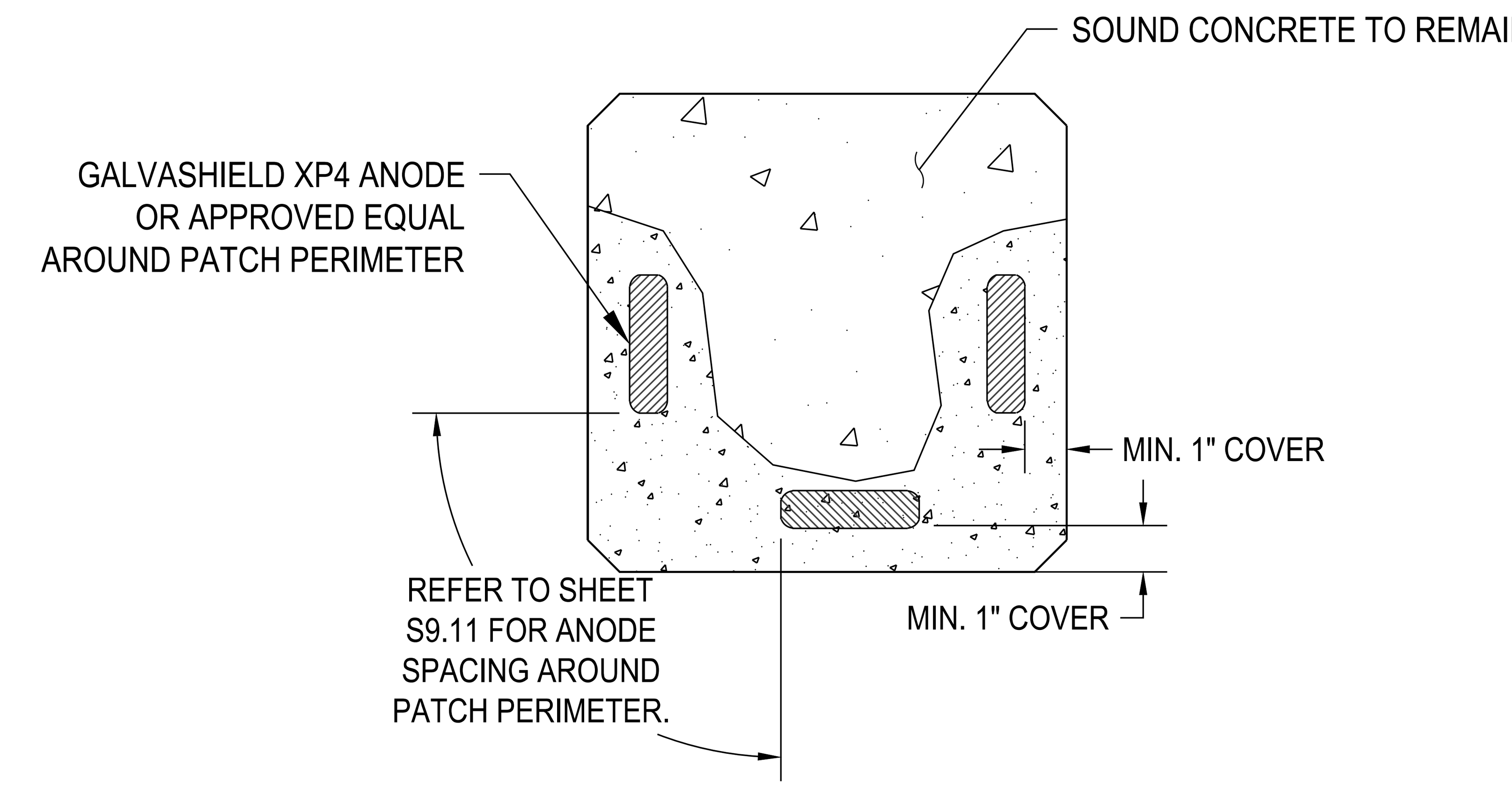
CHECKED BY: S. YAZDANI

SHEET CONTENTS
TYPICAL GALVASHIELD XP4 ANODE PLACEMENT FOR SLAB, WALLS, AND PARAPETS

SHEET NUMBER
S9.6



1 ELEVATION
TYP. GALVANIC ANODE PLACEMENT - COLUMNS
SCALE: NTS



2 SECTION
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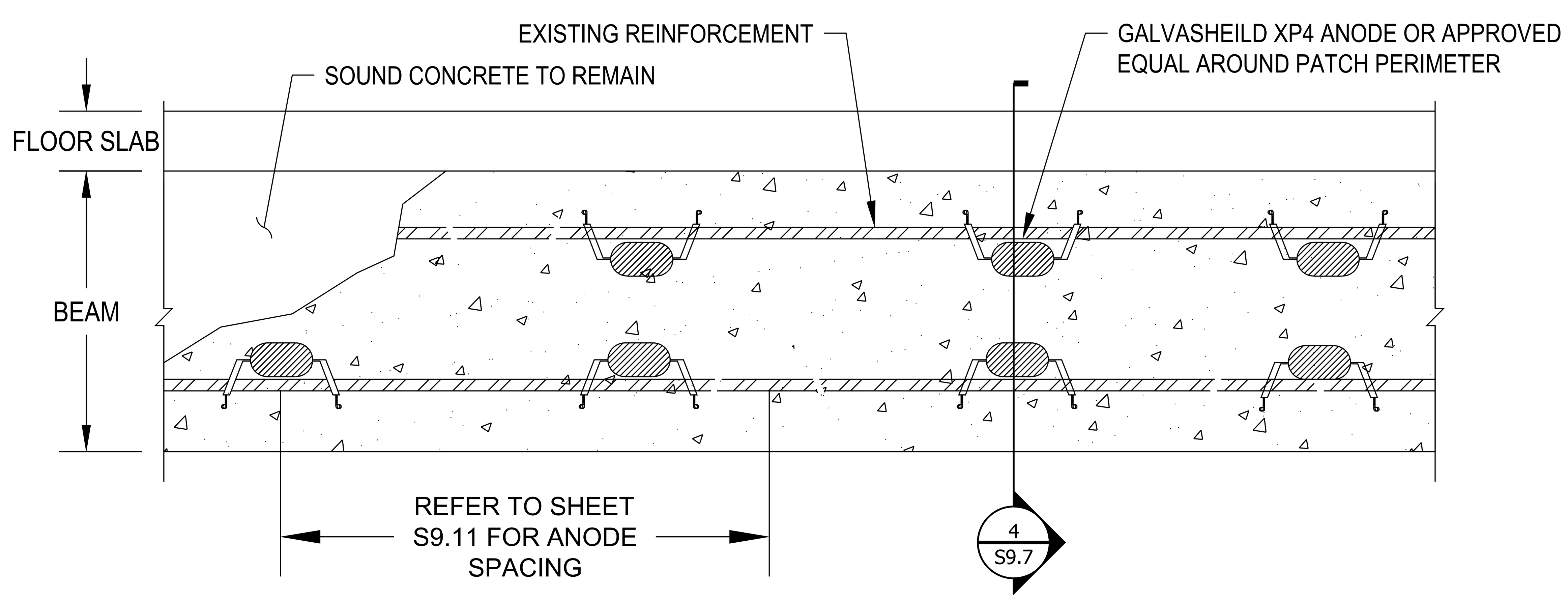
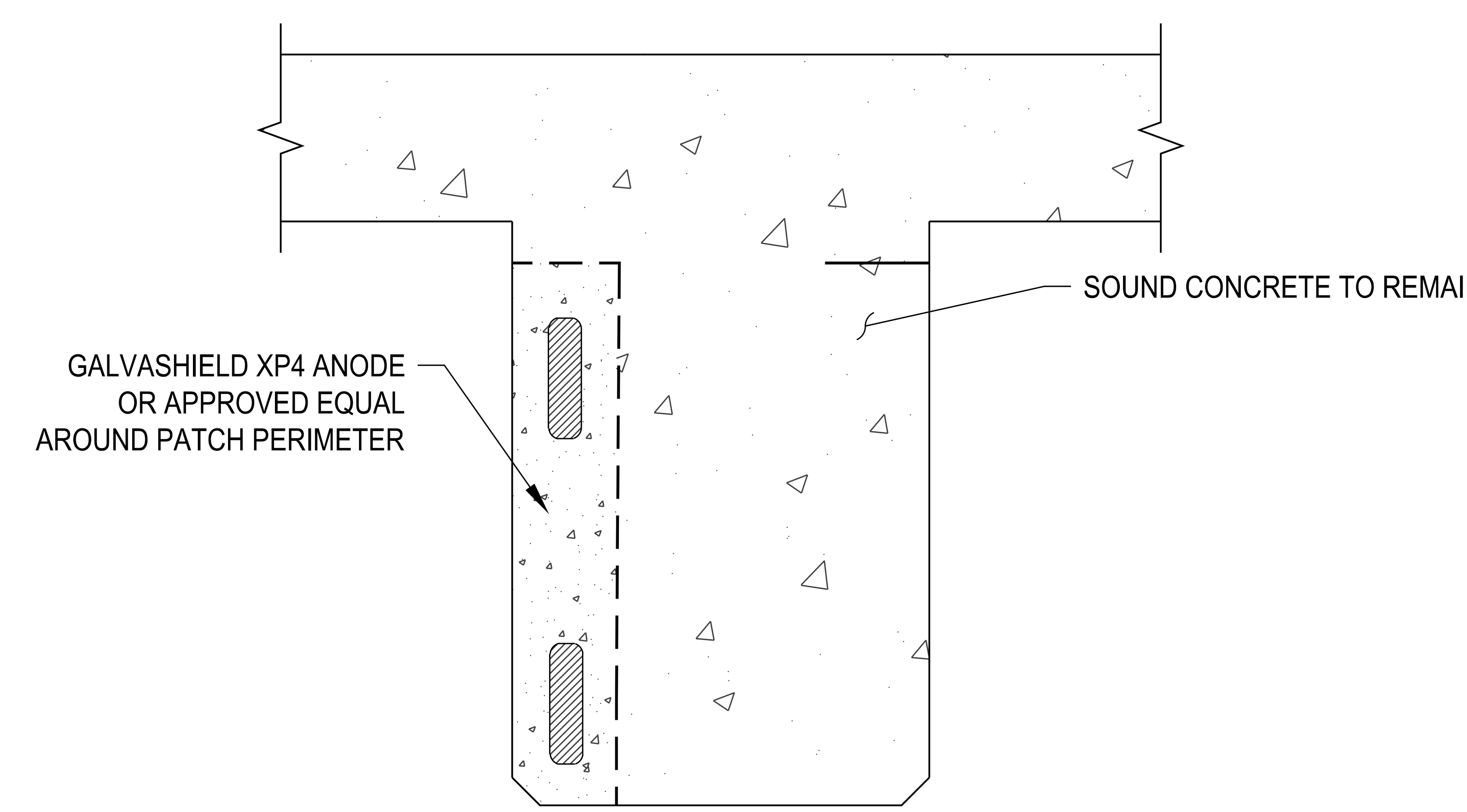
SCALE: NTS



3 ELEVATION
TYP. GALVANIC ANODE PLACEMENT - BEAMS
SCALE: NTS



4 SECTION
TYP. GALVANIC ANODE PLACEMENT - BEAMS
SCALE: NTS

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SHEET CONTENTS
TYPICAL GALVANIC ANODE PLACEMENT FOR BEAMS AND COLUMNS

SHEET NUMBER
S9.7

FILE PATH: G:\Shared drives\Vector Corrosion Services\VCS 2022\Jobs 2022\F22004WI - MP Squared - Dane County CP\Drawings\Design Phase - Updated Border - rev 2\CAD\Dane County Drawings - Design Phase.dwg

GALVASHIELD® XP4 ANODES
GENERAL NOTES

1. REMOVE DAMAGED CONCRETE AND CLEAN STEEL AS PER STANDARD ICRI REPAIR METHODS.

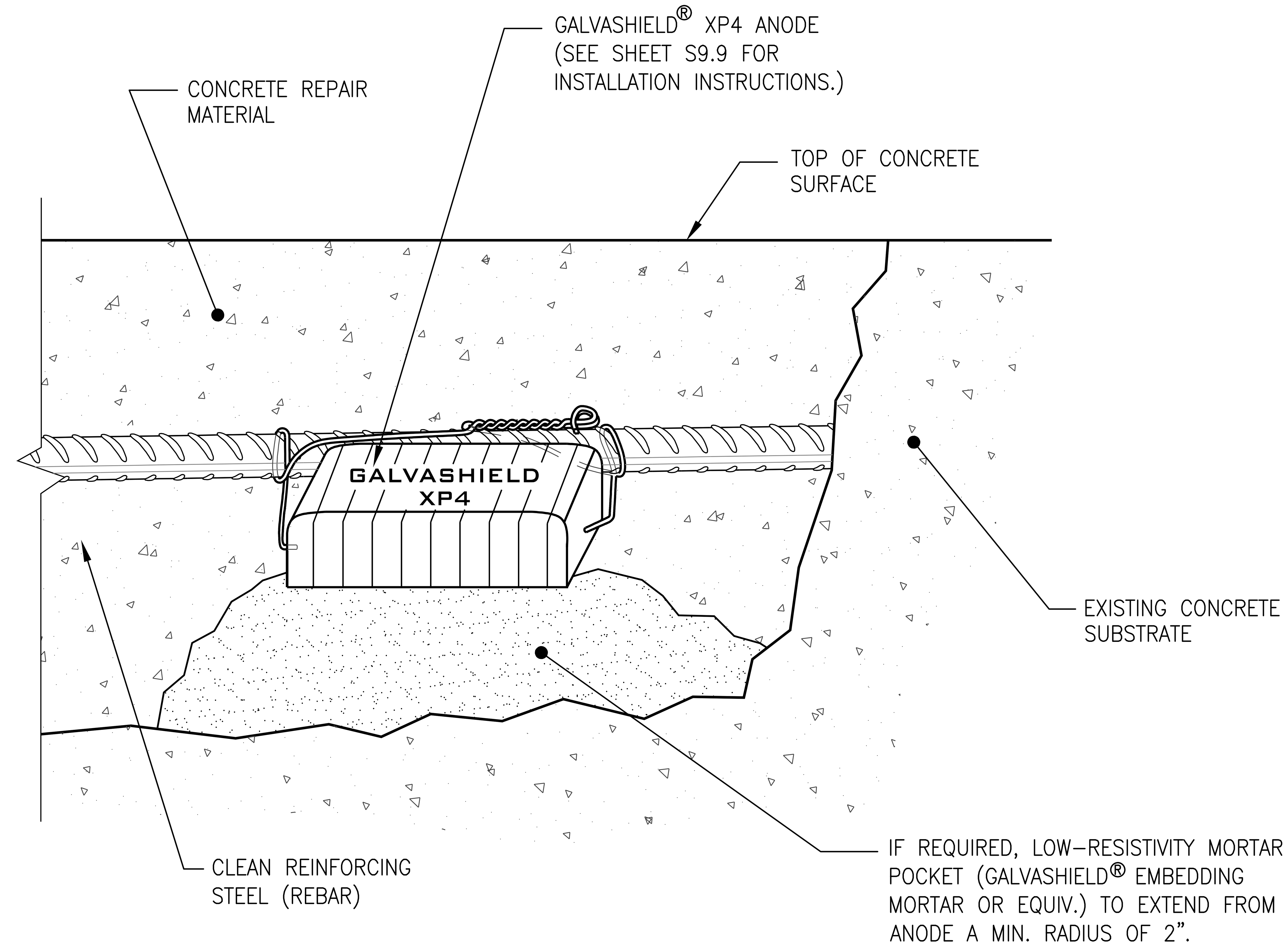
2. ENSURE EXPOSED REINFORCING STEEL IS SECURELY FASTENED WITH TIE WIRE TO PROVIDE GOOD ELECTRICAL CONTINUITY.

3. ATTACH GALVASHIELD® XP4 ANODES TO CLEAN STEEL AT AN EVEN SPACING WITHIN THE REPAIR AREA. PLACE THE ANODE AS CLOSE AS POSSIBLE TO THE INTERFACE BETWEEN THE REPAIR AND THE PARENT CONCRETE (WITHIN 4 INCHES WHILE STILL ALLOWING THE REPAIR MATERIAL TO ENCASE THE ANODE.

4. GALVASHIELD® XP4 ANODES ARE TO BE INSTALLED PER THE DESIGN DRAWINGS AND SPECIFICATIONS ALONG THE PERIMETER OF THE REPAIR AREA AFTER ALL CHLORIDE CONTAMINATED CONCRETE HAS BEEN REMOVED. ADDITIONALLY, IF ANY CHLORIDE CONTAMINATED CONCRETE REMAINS WITHIN OR BELOW THE REPAIR AREA AND IS IN CONTACT WITH ANY LAYER OF REINFORCING STEEL THEN IT MAY BE NECESSARY TO PLACE GALVASHIELD®XP4 ANODES IN A GRID PATTERN WITHIN THE INTERIOR OF THE REPAIR AREA.

5. TEST ELECTRICAL CONTINUITY OF THE REINFORCING STEEL BEFORE INSTALLATION AND REPAIR AS NECESSARY. TEST ELECTRICAL CONTINUITY OF ANODE CONNECTION TO REINFORCING STEEL AFTER INSTALLATION. A DC VOLTAGE MEASUREMENT OF $\leq$1mV CONFIRMS GOOD CONTINUITY.

6. POUR BACK REPAIR AREA WITH COMPATIBLE REPAIR MATERIAL AS PER PROJECT SPECIFICATIONS.



REQUIRED WHERE CONCRETE REPAIR MATERIAL HAS A HIGHER SATURATED BULK RESISTIVITY THAN 50,000 OHM-CM.

1 SECTION VIEW
GALVANIC ANODE INSTALLATION DETAL
SCALE: N.T.S.

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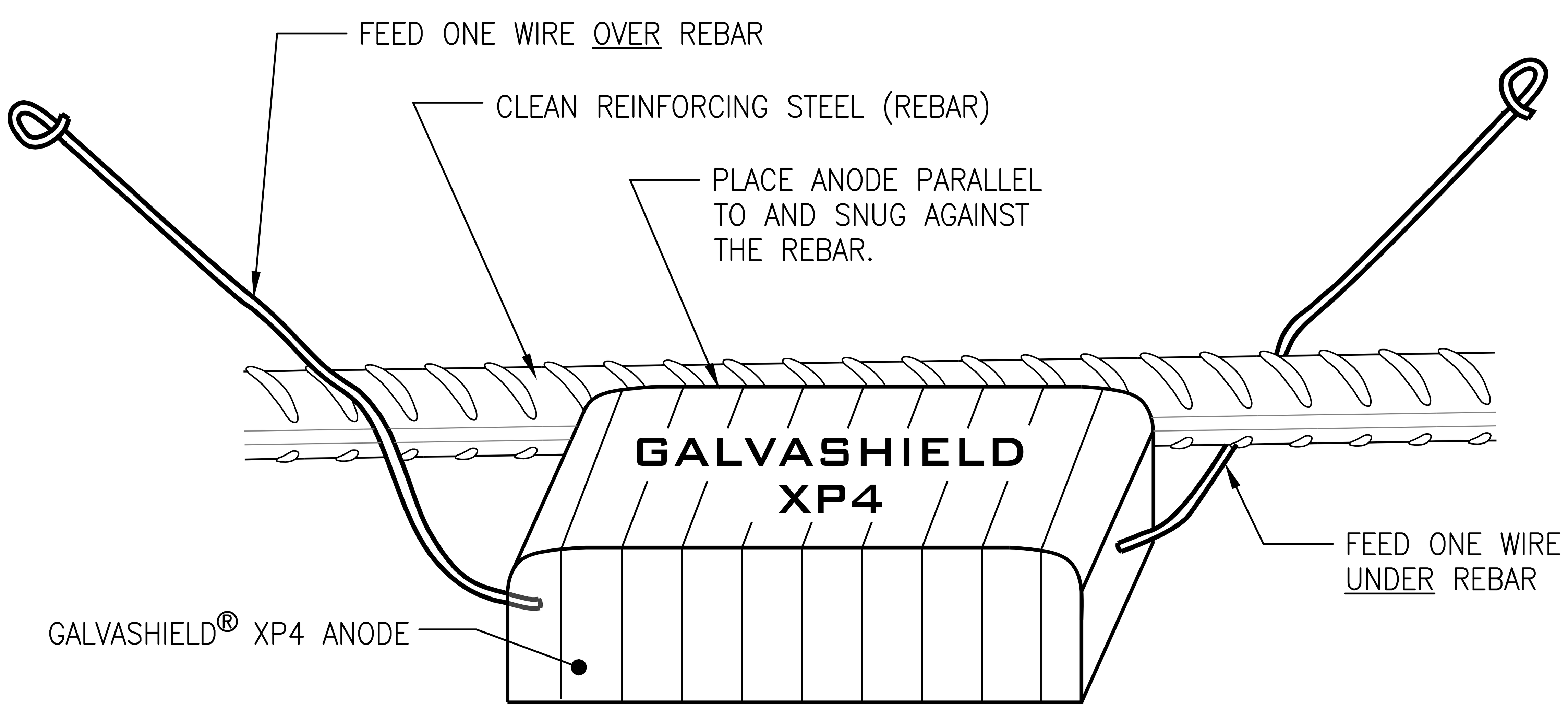
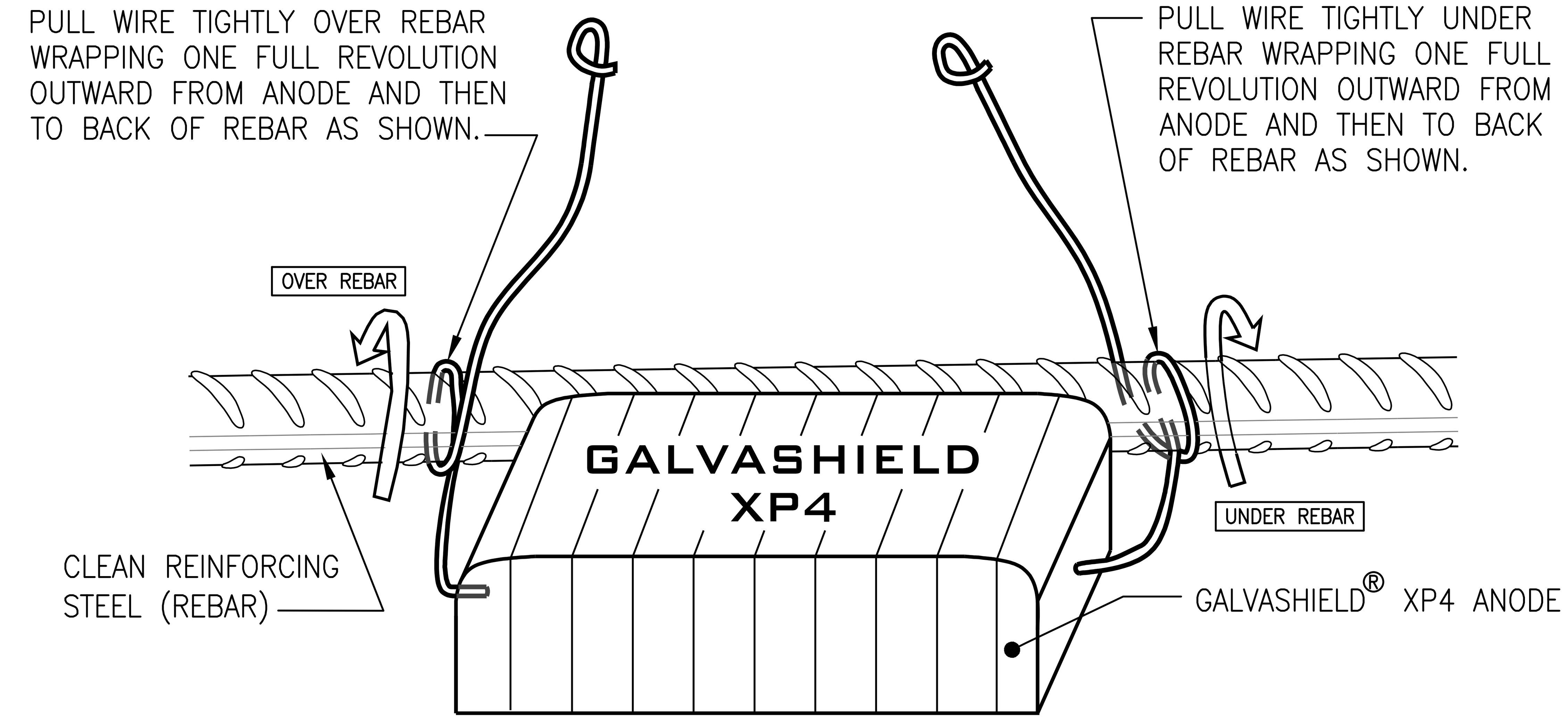
SHEET CONTENTS
GALVASHIELD XP4 SINGLE WIRE CONNECTION GENERAL NOTES

SHEET NUMBER
S9.8

FILE PATH: G:\Shared drives\Vector Corrosion Services\VCS 2022\Jobs 2022\F22004WI - MP Squared - Dane County CP\Drawings\Design Phase - Updated Border - rev 2\CAD\Dane County Drawings - Design Phase.dwg

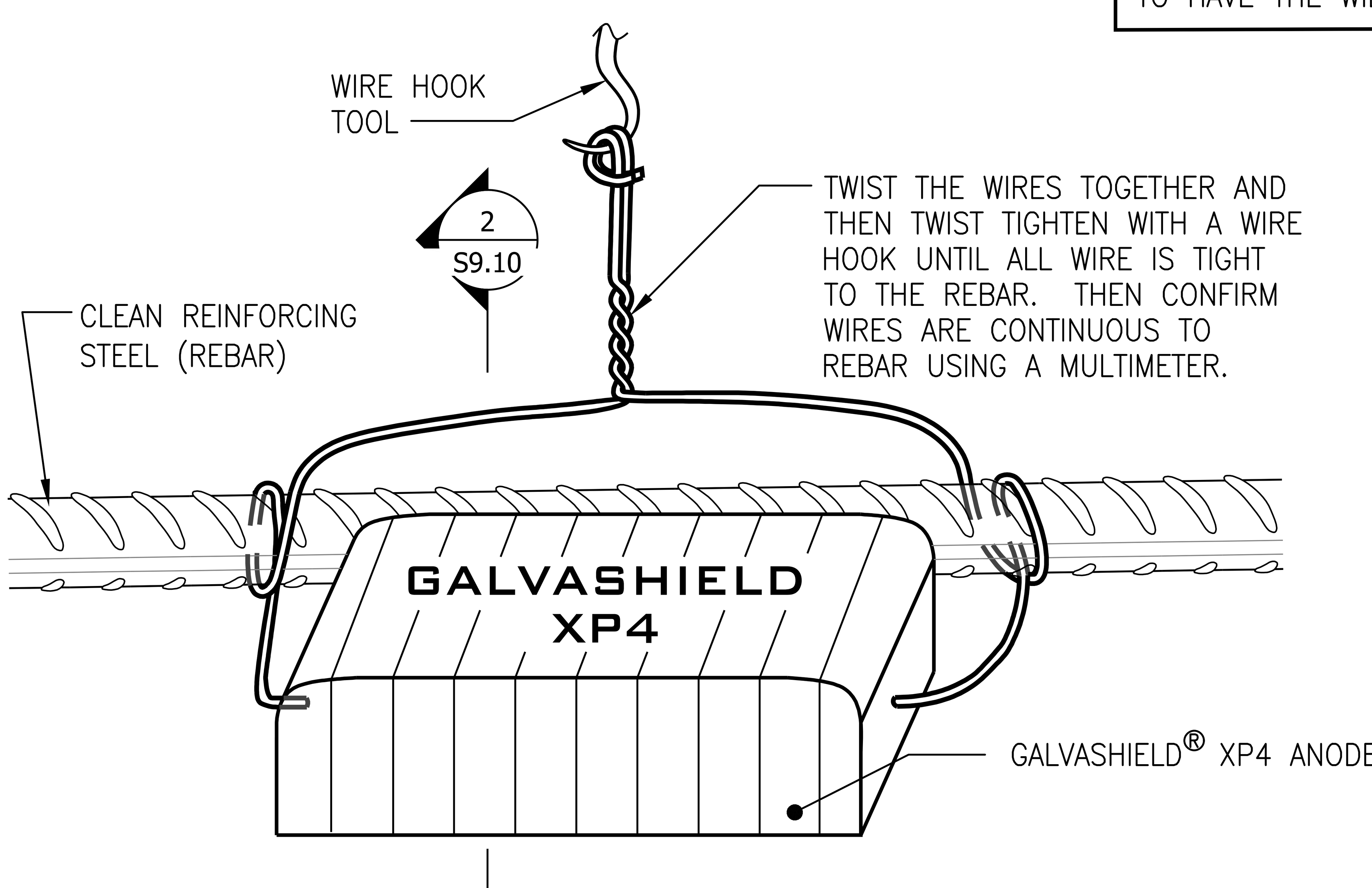


1 INSTALLATION STEP #1
SCALE: N.T.S.

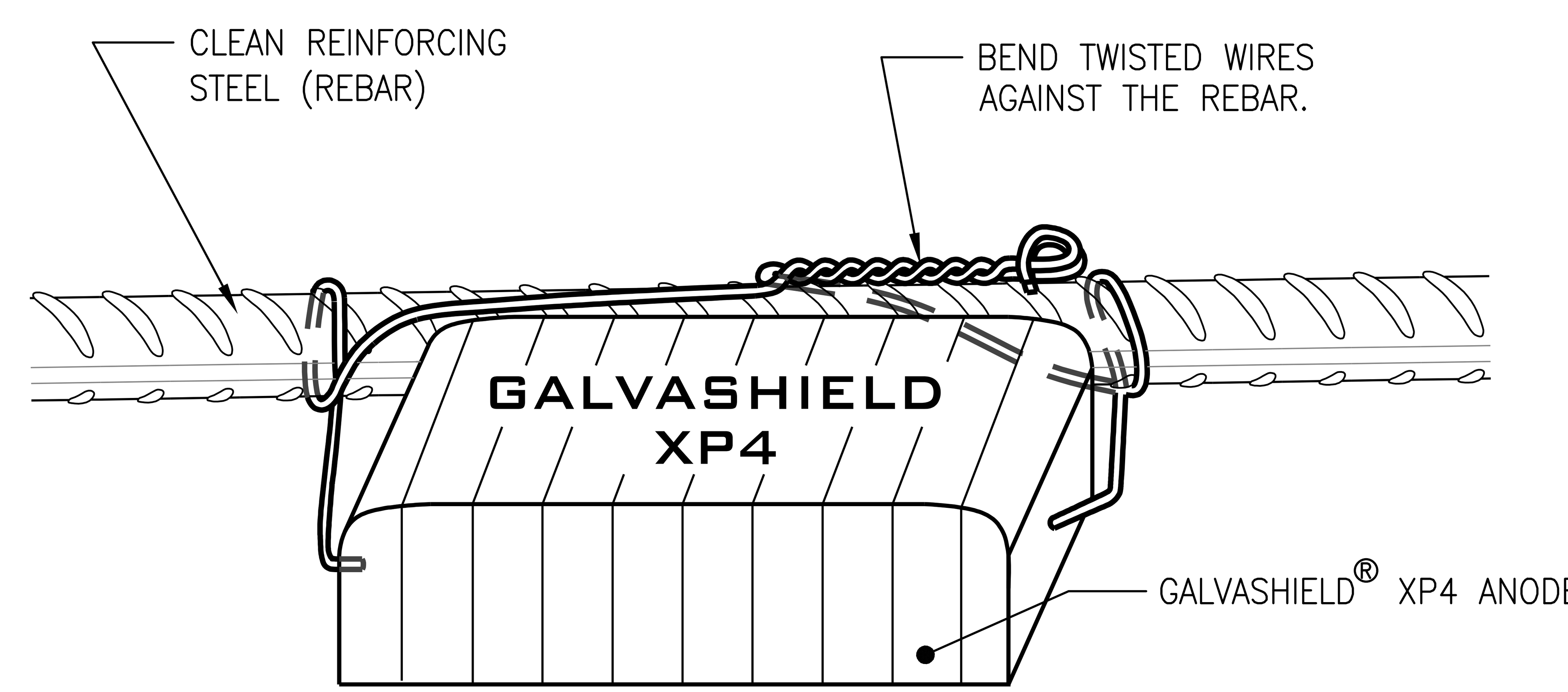


2 INSTALLATION STEP #2
SCALE: N.T.S.

ANODE ORIENTATION NOTE: ANODES MAY BE INSTALLED AS SHOWN WITH THE WIDER SIDE ON THE BOTTOM, OR MAY BE ROTATED 180-DEGREES TO HAVE THE WIDER SIDE AT THE TOP.



3 INSTALLATION STEP #3
SCALE: N.T.S.



4 INSTALLATION STEP #4
SCALE: N.T.S.

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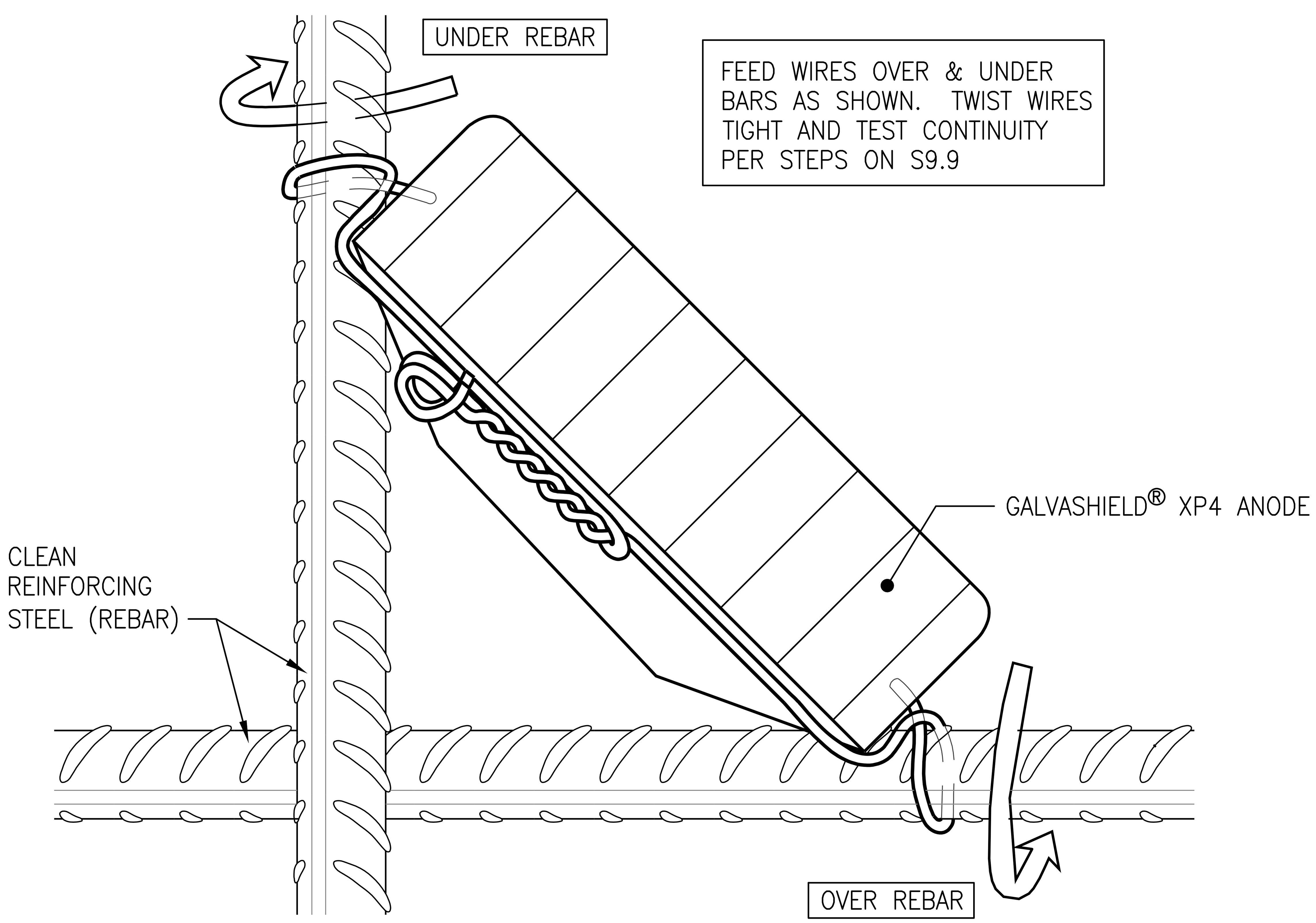
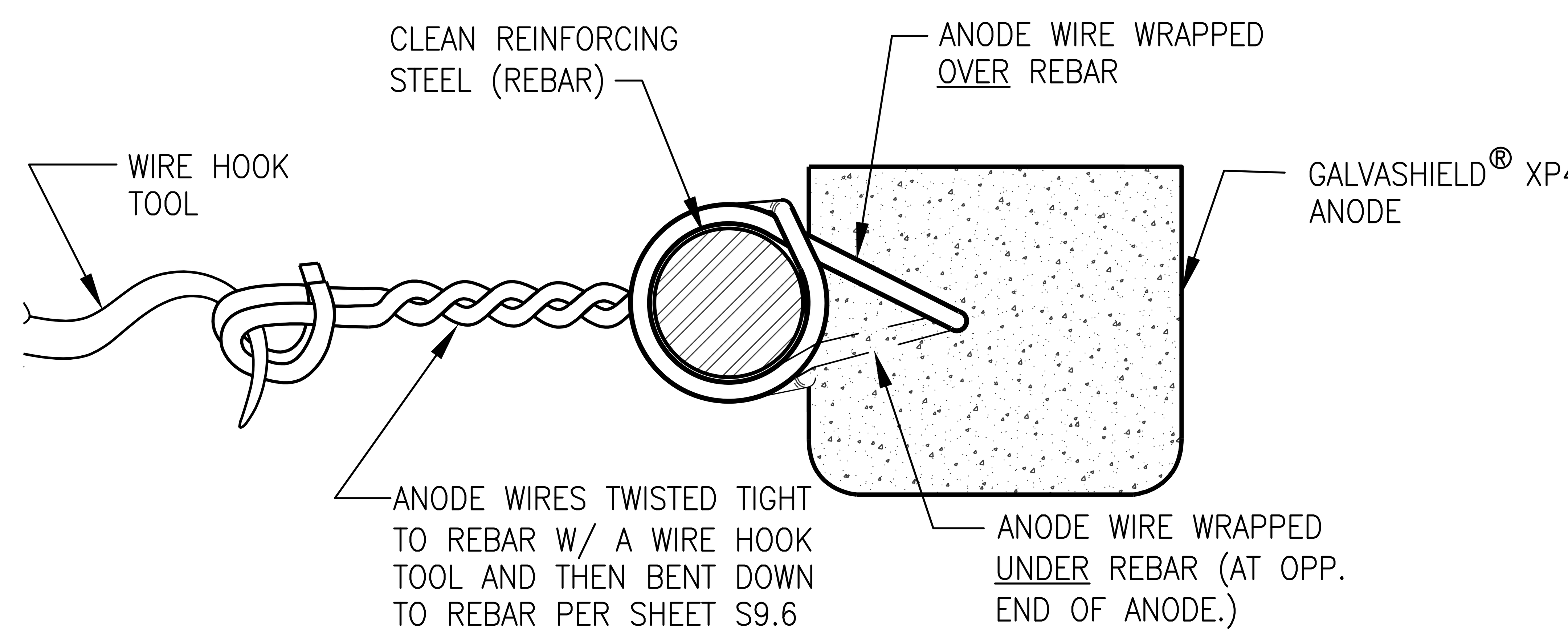
SHEET CONTENTS
GALVASHIELD XP4 SINGLE WIRE CONNECTION INSTALLATION STEPS

SHEET NUMBER
S9.9



1 ALTERNATE INSTALLATION AT REBAR INTERSECTION
SCALE: N.T.S.



2 ALTERNATE INSTALLATION AT REBAR INTERSECTION
SCALE: N.T.S.

2022 RESTORATION
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SHEET CONTENTS
GALVASHIELD XP4 SINGLE WIRE CONNECTION SECTION & DETAILS

SHEET NUMBER
S9.10

FILE PATH: G:\Shared drives\Vector Corrosion Services\VCS 2022\Jobs 2022\F22004WI - MP Squared - Dane County CP\Drawings\Design Phase - Updated Border - rev 2\CAD\Dane County Drawings - Design Phase.dwg

	Anode Spacing Schedule - Columns					
	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
A-1	24	24	24	24	24	24
A-2	24	24	24	24	24	24
A-3	24	24	24	24	24	24
A-4	24	24	24	24	24	24
A-5	24	24	24	24	24	24
A-6	24	24	24	24	24	24
A-7	24	24	24	24	24	24
A-8	24	24	24	24	24	24
A-9	24	24	24	24	24	24
A-10	24	24	24	24	24	24
A-11	24	24	24	24	24	24
B-1	20	20	20	20	20	20
B-2	14	14	14	14	14	14
B-3	14	14	14	14	14	14
B-4	14	14	14	14	14	14
B-5	14	14	14	14	14	14
B-6	14	14	14	14	14	14
B-7	14	14	14	14	14	14
B-8	14	14	14	14	14	14
B-9	14	14	14	14	14	14
B-10	14	14	14	14	14	14
B-11	20	20	20	20	20	20
C-1	20	20	20	20	20	20
C-2	14	10	14	14	14	14
C-3	14	14	14	14	14	14
C-4	14	14	14	14	14	14
C-5	14	14	14	14	14	14
C-6	14	14	14	14	14	14
C-7	14	14	14	14	14	14
C-8	14	14	14	14	14	14
C-9	14	14	14	14	14	14
C-10	14	14	14	14	14	14
C-11	20	20	20	20	20	20
D-2	16	20	24	24	24	24
D-3	20	20	20	24	24	24
D-4	20	20	20	24	24	24
D-5	20	20	20	24	24	24
D-6	20	20	24	24	24	24
D-7	20	20	20	24	24	24
D-8	20	20	20	24	24	24
D-9	20	20	20	24	24	24
D-10	20	20	20	24	24	24
E-1	20	20	20	20	20	20
E-2	16	20	20	20	20	20
E-3	10	10	14	14	14	14
E-4	10	10	14	14	14	14
E-5	10	10	14	14	14	14
E-6	10	10	14	14	14	14
E-7	10	10	14	14	14	14
E-8	10	10	14	14	14	14
E-9	10	10	14	14	14	14
E-10	10	14	14	14	14	14
E-11	20	20	20	20	20	20

	Anode Spacing Schedule - Columns					
	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6
F-1	20	20	20	20	20	20
F-2	16	20	20	20	20	20
F-3	10	10	14	14	14	14
F-4	10	10	14	14	14	14
F-5	10	10	14	14	14	14
F-6	10	10	14	14	14	14
F-7	10	10	14	14	14	14
F-8	10	10	14	14	14	14
F-9	10	10	14	14	14	14
F-10	10	14	14	14	14	14
F-11	20	20	20	20	20	20
G-2	16	20	24	24	24	24
G-3	20	20	24	24	24	24
G-4	20	20	24	24	24	24
G-5	20	20	24	24	24	24
G-6	20	20	24	24	24	24
G-7	20	20	20	24	24	24
G-8	20	20	20	24	24	24
G-9	20	20	20	24	24	24
G-10	20	20	20	24	24	24
H-1	20	20	20	20	20	20
H-2	14	10	14	14	14	14
H-3	14	14	14	14	14	14
H-4	14	14	14	14	14	14
H-5	14	14	14	14	14	14
H-6	14	14	14	14	14	14
H-7	14	14	14	14	14	14
H-8	14	14	14	14	14	14
H-9	14	14	14	14	14	14
H-10	14	14	14	14	14	14
H-11	20	20	20	20	20	20
J-1	20	20	20	20	20	20
J-2	14	14	10	14	14	14
J-3	14	14	10	14	14	14
J-4	14	14	10	14	14	14
J-5	14	14	10	14	14	14
J-6	14	14	14	14	14	14
J-7	14	14	10	14	14	14
J-8	14	14	10	14	14	14
J-9	14	14	10	14	14	14
J-10	14	14	14	14	14	14
J-11	20	20	20	20	20	20
K-1	20	20	20	20	20	20
K-2	16	20	20	24	24	24
K-3	20	20	20	20	20	20
K-4	20	20	20	20	20	20
K-5	16	20	20	24	24	24
K-6	20	20	20	20	20	20
K-7	20	20	24	24	24	24
K-8	20	20	24	24	24	24
K-9	16	20	20	24	24	24
K-10	16	20	20	24	24	24
K-11	24	24	24	24	24	24

NOTE:

1. ALL COLUMN ANODES ARE TO BE PLACED IN AN ON CENTER SPACING BASED ON ABOVE SPACING SCHEDULE.
2. REFER TO SHEET S9.5 FOR COLUMN LINE IDENTIFICATION.
3. REFER TO SHEET S9.7 FOR ANODE INSTALLATION LAYOUT FOR COLUMNS.

Anode Spacing Schedule - Other Structure Elements			
Element	Anode Type	Spacing	Installation Layout
Deck	DAS 0.6 lb/ft	26 inches O.C.	S9.1
Parapet	XP4	26 inches O.C.	S9.6
Vertical Walls	XP4	26 inches O.C.	S9.6
Transverse Beams	XP4	26 inches O.C.	S9.7
Longitudinal Beams	XP4	22 inches O.C.	S9.7
Slab	XP4	28 inches O.C.	S9.7

Estimated Anode Quantity					
Level	Vertical Wall/Parapet	Slab	Longitudinal Beam	Transverse Beam	Total Anode Quantity
Level 1	53	2009	147	19	2228
Level 2	17	424	4	7	452
Level 3	160	770	11	14	955
Level 4	69	180	5	3	257
Level 5	91	434	20	23	568
Level 6	173	1027	42	4	1246
Level 7	103	0	0	0	103
Total	**666**	**4844**	**229**	**70**	**5809**

NOTE:

THE PROVIDED ANODE QUANTITIES ARE AN ESTIMATION AND PURELY FOR BIDDING PURPOSES AND DOES NOT INCLUDE COLUMN ANODE QUANTITIES. ACTUAL ANODE QUANTITIES FOR EACH ELEMENT SHALL BE VERIFIED IN FIELD BY CONTRACTOR.

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SHEET CONTENTS
ANODE SPACING SCHEDULE

SHEET NUMBER
S9.11