

PROJECT MANUAL

for

2021 Exterior Wall Repairs

at the

North Iowa Community School

111 3rd Avenue NW

Buffalo Center, Iowa

Construction Manager



SitelogIQ

2125 2nd Street

White Bear Lake, MN 55110

BCG Project Number: R1149-20-1

Date: November 25, 2020

PROJECT MANUAL

For

2021 Exterior Wall Repair Program

North Iowa Community School
111 3rd Avenue NW
Buffalo Center, Iowa

OWNER:

North Iowa School District
111 3rd Avenue North West
Buffalo Center, Iowa 50424

PROJECT MANAGER:

SitelogIQ
2125 2nd Street
White Bear Lake, MN 55110

ENGINEER:

Buildings Consulting Group, Inc.
2855 Anthony Lane So., Suite 200
Minneapolis, MN 55418
BCG Project Number: R1149-20-1

Date: November 25, 2020

SECTION 00 00 05

CERTIFICATION PAGE



I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

A handwritten signature in blue ink that reads "Lewis Y. Ng".

Lewis Y. Ng
Date: November 25, 2020 Reg. No.: 20633

My license renewal date is December 31, 2020

Pages or sheets covered by this seal:
Division 00 through Division 07

PROJECT MANUAL

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INVITATION FOR BIDS

PART 1 - GENERAL

1.01 INVITATION FOR BIDS

- A. The Owner invites Bidders to submit sealed bid proposals to the owner for the repair/improvement work at the following project.

North Iowa Community School Exterior Wall Repairs

- B. Submit sealed bids to the location indicated on the Bid Form before the time shown below. The bids will be opened publicly. Bids submitted after the time indicated will not be accepted.
- C. Bid Due time: as shown on the Bid Form.
- D. A **mandatory** pre-bid conference will be held on **Wednesday, December 9, 2020, at 10:00am**. Meeting will be held outside the main entry of the North Iowa Community School at 111 3rd Ave NW, Buffalo Center, IA 50424.

1.02 RELATED SECTIONS

- A. Section 00 41 00 - Bid Form.
- B. Section 00 43 00 – Description of Work Items.
- C. Section 01 10 00 – Summary of Work.

1.03 PROJECT:

- A. 2021 Exterior Wall Repairs at the North Iowa Community School
111 3rd Ave NW
Buffalo Center, IA 50424

1.04 SCOPE OF REPAIR CONTRACT:

- A. The Work generally includes exterior wall repair on the 1922 original building elevations at the North Iowa School building as indicated on the Drawings.
1. Masonry repairs generally include spot repointing and unit replacement at brick and stone masonry.
 2. 100% joint sealant replacement within the work boundaries.
 3. Reseal terra cotta parapet coping joints.

1.05 OWNER:

North Iowa Schools
111 3rd Avenue North West
Buffalo Center, IA 50424
Phone: 641-562-2525

1.06 OWNER'S REPRESENTATIVE:

SitelogIQ, Inc.
2125 2nd Street
White Bear Lake, MN 55110
Attn: Matt Boatman
Phone: 612-423-9411
Email: matt.boatman@sitelogiq.com

1.07 PROJECT ENGINEER:

Buildings Consulting Group, Inc.
2855 Anthony Lane South, Suite 200
Minneapolis, MN 55418
Attn.: Lewis Ng, P.E.
Phone: (612) 789-2662
Email: lng@bcgminnesota.com
Ryan Riley
Phone: (651)-247-9346
Email: riley@bcgminnesota.com

1.08 COMPLETION SCHEDULE AND SPECIAL REQUIREMENTS:

- A. Indicate on the Bid Form both the substantial and full completion dates of the Project for both the Base Bid and the Alternate Bid. Refer to the Summary of the Work for details of the required completion schedule and project special requirements.

1.09 BID QUANTITIES:

- A. The owner reserves the right to modify the bid quantities stated in the bid form, and accept or reject any or all bids.
- B. Contractor to verify building dimensions. Drawings (plans and elevations) are shown for reference and based on building design drawings. Existing conditions may vary.

1.10 PROJECT MANUAL:

- A. The Project Manual consists of plans and specifications dated November 25, 2020, prepared by Buildings Consulting Group, Inc., which is issued via email in pdf file format.

END OF SECTION

SECTION 00 21 13

INSTRUCTIONS TO BIDDERS

PART 1 - GENERAL

1.01 BIDDING DOCUMENTS

- A. The Bidding Documents include:
 - 1. Project Manual:
 - a. Bidding Requirements
 - b. Bid Form
 - c. Technical specifications
 - d. Details
 - 2. Plans/Drawings
- B. **Bids** are sums stipulated on the Bid Form for which Bidders propose to complete the Work in accordance to the Conditions of the Project Manual.
- C. **Base Bids** are sums stipulated on the Bid Form for which Bidders propose to perform the Work described in the Bidding Documents as the Base Bids, to which Work may be added or deducted for sums stated in Alternate Bids.
- D. **Alternate Bids** are sums which may be added to, or deducted from, Base Bids as directed by the Engineer or Owner that may be delineated in the Bidding Documents.
- E. **Unit Prices** are Work items in which the final quantities may be adjusted from the Base Bids and Alternate Bids as directed by the Engineer or Owner when actual site conditions differ from design conditions and which may be delineated in the Bidding Documents. Engineer or Owner reserves the right to make such adjustment to the Bid quantities as deemed necessary and the final sum shall be the actual quantity completed times the unit price proposed.

1.02 RELATED SECTIONS

- A. Section 00 41 00 - Bid Form.
- B. Section 00 43 00 – Description of Work Items.
- C. Section 01 10 00 – Summary of Work.
- D. Section 01 23 00 – Alternates and Alternatives.
- E. Section 00 61 00 –Bonds.
- F. Section 00 72 00 – General Conditions.
- G. Section 00 73 00 – Supplementary General Conditions of the Contract.

1.03 BIDDING DOCUMENTS

- A. Complete sets of the Bidding Documents may be obtained from the Engineer in PDF format.
- B. Use complete sets of Bidding Documents in preparing Bids; neither the Owner nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.
- C. Owner and Engineer, in making copies of Bidding Documents available on the above terms, do so only for the purpose of obtaining Bids on the Work and do not confer a license or grant for any other use.

1.04 QUALIFICATIONS OF BIDDERS

- A. To demonstrate qualifications to perform the Work, submit within five (5) days of Owner's request:
 - 1. Written evidence of financial data.
 - 2. Previous experience and evidence of authority to conduct business in jurisdiction where the Project is located.
 - 3. Each Bid must contain evidence of Bidder's qualification to do business in the state where the Project is located or covenant to obtain such qualification prior to award of the contract.
- B. If the Supplementary Conditions require the identity of certain Subcontractors and other persons and organizations to be submitted to Owner in advance of the Notice of Award, submit to Owner within ten (10) days after the day of the Bid Opening a list of all Subcontractors and other persons and organizations (including those who are to furnish the principal items of material and equipment) proposed for those portions of the Work as to which such identification is so required.
 - 1. Submit an experience statement with pertinent information as to similar projects and other evidence of qualification for each such Subcontractor, person and organization if requested by Owner.
 - 2. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor, other person or organization, either may before giving Notice of Award, request the apparent Successful Bidder to submit an acceptable substitute without an increase in Bid Price.

3. If the apparent Successful Bidder declines to make any such substitution, the contract will not be awarded to such Bidder, but his declining to make any such substitution will not constitute grounds for sacrificing his Bid Security.

4. Any Subcontractor, other person or organization so listed and to whom Owner or Engineer does not make written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer.

C. In contracts where the Contract Price is on the basis of Cost-of-the-Work Plus a Fee, prior to the Notice of Award Bidder must identify in writing to Owner those portions of the Work that such Bidder proposes to subcontract. After the Notice of Award Bidder may only subcontract other portions of the Work with Owner's written consent.

D. No Contractor is required to employ a Subcontractor, other person or organization against whom he has a reasonable objection.

1.05 SUBSTITUTE MATERIAL AND EQUIPMENT

A. The materials, products and equipment described in the Bidding Documents establish a standard of required function, dimension, appearance, durability and quality to be met by any proposed substitution.

B. The contract, if awarded, will be on the basis of material and equipment described in the Bidding Documents without consideration of possible substitute or "or-equal" items. Whenever it is indicated in the Drawings or specified in the Specifications that a substitute or "or-equal" item of material or equipment may be furnished or used by Contractor if acceptable to Engineer, application for such acceptance will not be considered by Engineer until after the "effective date of the Agreement".

C. If the Engineer approves a proposed substitution prior to the Bid Opening, such approval will be set forth in an addendum which will be issued to each Bidder on record of receiving a set of Bidding Documents. Do not rely upon approvals of substitutions made in any other manner.

D. No Requests for Substitution will be considered after seven (7) days prior to the Bid Opening, except as specifically provided in the Contract Documents.

E. The procedure for submittal of any such application by Contractor and consideration by Engineer is set forth in paragraph 3.4.2, 3.5, and 7.3.8 of the "General Conditions of

the contractor for Construction).

1.06 BID SECURITY

A. If required in the Bid Form, provide Bid Security, payable to Owner, in an amount of five (5) percent of the Bidder's maximum Bid price and in the form of a certified or bank check or a Bid issued by a Surety meeting the requirements of Section 00 61 00.

B. The Bid Security of the Successful Bidder will be retained until such Bidder has executed the Agreement and furnished the required Contract Security, whereupon it will be returned; if the successful Bidder fails to execute and deliver the Agreement and furnish the required Contract Security within fifteen (15) days of the Notice of Award, Owner may annul the Notice of Award and the Bid Security of that Bidder will be forfeited. The Bid Security of any Bidder whom Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of the seventh day after the "effective date of the Agreement" (which term is defined in the General Conditions) by Owner to Contractor and the required Contract Security is furnished or the sixty-first (61st) day after the Bid opening. Bid Security of other Bidders will be returned within seven (7) days of the Bid opening.

1.07 CONTRACT TIME

A. The number of days within which, or the date by which, the Work is to be completed (the Contract Time) is set forth in the Bid Form and will be included in the Agreement.

1.08 LIQUIDATED DAMAGES

A. Provisions for liquidated damages, if any, are set forth in the Bid Form.

PART 2 - FORMS FOR BIDDING

2.01 BID FORMS

A. Indicate on the Bid an acknowledgment of receipt of all Addenda (the numbers of which shall be filled in on the Bid Form).

B. Provide the address to which communications regarding the Bid is to be directed.

PART 3 - BIDDING PROCEDURES

3.01 EXAMINATION OF SITE AND DOCUMENTS

A. Before submitting a Bid:

1. Examine the Bidding Documents thoroughly.

2. Visit the site to familiarize each bidder with local conditions that may in any

- manner affect cost, progress or performance of the Work, and record his own investigations,
3. Verify building dimensions. Drawings (plans and elevations) are shown for reference, and based on building design drawings. Existing conditions may vary.
 4. Familiarize himself with federal, state and local laws, ordinances, rules and regulations that may in any manner affect cost, progress or performance of the Work
 5. Study and carefully correlate Bidder's observations with the Bidding Documents.
- B. On request, Owner will provide each Bidder access to the site to conduct such investigations as each Bidder deems necessary for submission of his Bid.
- C. The submission of a Bid will constitute an incontrovertible representation by the Bidder that he has complied with every requirement of this Article and that the Contract Documents are sufficient in scope and details to indicate and convey understanding of all terms and conditions for performance of the Work.

3.02 INTERPRETATIONS

- A. Submit all questions about the meaning or intent of the Contract Documents to the Engineer in writing.
- B. Replies will be issued by Addenda mailed or delivered to all parties recorded by Engineer as having received the Bidding Documents.
- C. Questions received less than seven (7) working days prior to the date for opening of Bids will not be answered.
- D. Only questions answered by formal written Addenda will be binding.
- E. Oral and other interpretations or clarifications will be without legal effect.

3.03 PREPARATION OF BIDS

- A. Submit on the Bid Form furnished. Fill in completely the blank spaces in Bid Form with ink or typewriter. The bidders are responsible for their calculations of all figures on the Bid Form.
- B. Prepare a bid on each Base Bid item included on the Bid Form. If the Bid form includes Alternates, bid on each Alternate as required.
- C. Sign the Bid Form as follows:
 1. Individual if it is submitted by a sole owner
 2. Two partners if it is a partnership

3. President, or other authorized officer if it is a Corporation, together with the title of the officer. If a Bid Form submitted by a corporation is signed by an officer other than the president, a certified copy of the resolution of the board of directors showing the authority of the officer to sign must be attached to the Bid Form.

3.04 SUBMISSION OF BIDS

- A. Submit Bids:
1. At the time and place indicated in the Invitation to Bid and include in an opaque sealed envelope, marked with the Project title and name and address of the Bidder.
 2. Accompanied by the Bid Security, if required, and other required documents.
 3. If the Bid is sent through the mail or other delivery system enclose the sealed envelope in a separate envelope with the notation "BID ENCLOSED" on the face thereof.
- B. Email or fax a copy of the submitted bid to the Engineer's office after the time as indicated for the Owner.

3.05 MODIFICATION AND WITHDRAWAL OF BIDS

- A. Bids may be modified or withdrawn by an appropriate document duly executed (in the manner that a Bid must be executed) and delivered to the place where Bids are to be submitted at any time prior to the opening of Bids.

3.06 BID OPENING

- A. Bids will be opened privately, unless specifically stated otherwise in the Bid Form. Keep all bids open for sixty (60) days after the day of the Bid opening, but Owner may, at his sole discretion, release any Bid and return the Bid Security, if required, prior to that date.

3.07 AWARD OF CONTRACT

- A. Owner reserves the right to reject any and all Bids, to waive any and all informalities and to negotiate contract terms with the Successful Bidder, and the right to disregard all non-conforming, non-responsive or conditional Bids. Discrepancies between words and figures will be resolved in favor of words. Discrepancies between the indicated sum of any column of figure and the correct sum thereof will be resolved in favor of the correct sum.
- B. In evaluating Bids, Owner will consider the qualifications of the bidders, whether or not the Bids comply with the prescribed requirements, alternates and unit prices.

Owner may accept alternates in any order or combination in which they are listed in the Bid Form.

- C. Owner may consider the qualifications and experience of Subcontractors and other persons and organizations (including those who are to furnish the principal items of material or equipment) proposed for those portions of the Work as to which the identity of Subcontractors and other persons and organizations must be submitted as provided in the Supplementary Conditions. Operating costs, maintenance considerations, performance data and guarantees of materials and equipment may also be considered by Owner.
- D. Owner may conduct such investigations as he deems necessary to assist in the evaluation of any Bid and to establish the responsibility, qualifications and financial ability of the Bidders, proposed Subcontractors and other persons and organizations to do the Work in accordance with the Contract Documents to the Owner's satisfaction within the prescribed time.
- E. Owner reserves the right to reject the Bid of any Bidder who does not pass any such evaluation to Owner's satisfaction.
- F. If the contract is to be awarded it will be awarded to the lowest Bidder whose evaluation by Owner indicates to Owner's best interests of the project.
- G. If the contract is to be awarded, Owner will give the Successful Bidder a Notice of Award after the day of the Bid opening.

3.08 PERFORMANCE AND OTHER BONDS AND INSURANCE CERTIFICATE

- A. Refer to the Article 11 of the *Standard General Conditions of the Contract*, Section 00 72 00, and the Supplementary Conditions set forth in the Owner's requirements as to performance and other Bonds. When the Successful Bidder delivers the executed Agreement to Owner, provide the required Contract Security. No such Contract will be in force and effect until the Payment and Performance Bond, if stipulated, and the Insurance Certificates have been received and approved by the Owner, and the contract has been executed by all parties.

3.09 CONTRACT

- A. When the Owner gives a Notice of Award to the Successful Bidder, it will be accompanied by at least three (3) unsigned counterparts of the Agreement and all other Contract Documents. Thereafter Owner will deliver a fully signed counterpart to Contractor. Engineer will identify those portions of the Contract Documents not fully signed by Owner and Contractor and such identification shall be binding on all parties.
- B. If the Subcontractors and products list form is not included in the Bid Form, submit within ten (10) calendar days after the date of written Contract Award to the Engineer for approval, a complete list of all Work items which Contractor proposes to subcontract and the name of Subcontractors, major Suppliers and Manufacturers to whom they propose to subcontract the Work.

END OF SECTION

SECTION 00 41 00

BID FORM - PRIME CONTRACTOR

SUBMITTED BY:

(Insert Firm Name - Hereafter is referred to as "Bidder")

To: North Iowa Schools
111 3rd Ave NW
Buffalo Center, IA
Attn: **Joe Erickson**

Bid Date: December 16, 2020
Due Time: 2:00 pm

2021 Exterior Wall Repairs at the North Iowa
Community School
111 3rd Ave NW
Buffalo Center, IA 50424

PROPOSAL FOR CONTRACT WORK

1. The Undersigned Bidder, has carefully examined and being familiar with the Bidding Documents prepared by **Buildings Consulting Group, Inc.** and the local conditions affecting the cost of the Work, hereby proposes to provide all labor, materials and equipment required for the Work in accordance with the Contract Documents.
2. The Work governed by the Bidding Documents is generally described as:
 - A. The Work generally includes exterior wall repair on selected elevations of the Glen Lake Elementary School building as indicated on the Drawings.
 1. Masonry repairs generally include spot repointing and unit replacement at brick and stone masonry.
 2. 100% joint sealant replacement within the work boundaries.
 3. Reseal terra cotta parapet coping joints.
3. The total proposed **Base Bid estimate** is:

(In words)

(in figures)

The proposed Unit Prices are shown on Section **00 41 00, Table A**. The final project sum will be based on the actual quantities completed for each item times the unit price proposed above.

4. For any time and material work, if required, the hourly rates for typical workers are proposed on Section **00 41 00, Table B**.
5. **Schedule:** The Bidder agrees to complete the Work listed above in accordance with the following schedule:

All Work in the Base Bid:

- A. To be started on: June 1, 2021 (non-noisy work can begin after April 5th with District approval._____)
- B. To be substantially completed by: August 13, 2021
- C. To be 100 % completed by: August 20, 2021

The Bidder hereby agrees that if awarded the Contract, he will submit a preliminary Schedule within ten (10) working days after the date of written Notice to Proceed.

6. **Liquidated Damages:** Not required
7. **Bid Security:** Accompanying this Bid is a Bid Security in the form of _____ in the amount of _____ dollars (\$_____). This check or bond is submitted as a bid security conditioned upon the Bidder's entering into a Contract with the Owner in accordance with the terms of the bid. It is agreed by the Bidder that said bid security of the successful Bidder will constitute liquidated damages, not a penalty, for the failure or refusal of the successful Bidder to execute and deliver the contract Documents in a correct form, within ten (10) working calendar days after receipt of the Contract Document Forms.
8. **Performance Bond:** The Bidder agrees that if awarded the Contract, and if so stipulated in the Contract Document, furnish to the owner a Performance Bond, a Labor and Material Bond and certified proof of insurance with coverage as stated in the Contract Documents within ten (10) days after receipt of the notice of award.
9. **Sub-Contractors:** The Owner reserves the right to reject any Sub-contractors. Contractor proposed the Sub-contractors as listed on Section **00 41 00, Table C.**
10. **Reference Projects:** The Contractor is to provide a list of five (5) reference projects of similar size, repair scope, and repair methods and materials as listed on Section **00 41 00, Table D.**
11. **Addenda:** The Bidder has received the following addenda and proposes to perform the Work according to the Contract Document and the Addenda.

Addendum No.	Date

12. **Alternations/Erasures:** A bid will be rejected if it contains any alternations or erasures unless they are as instructed in the addenda. An alternation or erasure may be crossed out and the correction printed in ink or typewriter adjacent hereto and initialed in ink by the person signing the Bid Form.
13. **Contract Provisions:** The Bidder understands that the Owner reserves the right to accept or reject any Base Bid and any or all Alternates they may consider in the best interest of the Owner.

The Bidder agrees that this bid may not be withdrawn for a period of forty-five (45) calendar days after the Bid Opening date.

14. **Bid Execution:** The Bidder hereby respectfully submits and executes this Bid as hereinafter indicated:

Bidder's status: the Undersigned operates as a:

- _____ Sole Proprietor
- _____ Partnership
- _____ Corporation, incorporated in the State of _____ (State Full Name)
- _____ Other, (specify)

Legal Company Name: _____

Official Address: _____

City, State, Zip: _____

Telephone Number: _____

Fax Number: _____

By: _____ Title: _____

_____ Date: _____
(signature)

Attested: _____

 (signature)

Title: Secretary _____
 Date: _____

Table A: Proposed Unit Price Listing - Base Bid Work

Item	Description	Estimated Quantity (*)	Unit	Unit Price	Extension
101	Contractor's Overhead and Mobilization	1	LS		
102	Miscellaneous Repair Allowance	1	LS	\$5,000	\$5,000
103	Performance Bond	1	LS		
381	Shoring and Protection	Incidental	To	Other	Items
401	Brick Unit Replacement	500	Each		
407	Brick Masonry Repointing	4,300	SF		
408	Stone Masonry Repointing	1300	SF		
432	Repair Stone Masonry Surface Patch	100	SF		
436A	Replace Stone Masonry Water Table Unit	5	Each		
436B	Replace Stone Masonry Window Sill or Capstone Unit	20	Each		
781	Reseal Wall, Capstone, and Sill Joints	600	LF		
783	Reseal Wall Opening Joints	1	LS		
785	Reseal Parapet Cap Joints	410	LF		

Base Bid Total Estimate

LS: Lump Sum
 SF: Square Foot
 LF: Lineal Foot
 LB: Pounds

(*): Quantities indicated herein are approximate only and are for bidding and contract purposes only. They will be subject to increase or decrease by actual site conditions and requirements to complete the Work. The Contractor hereby agrees to perform all quantities of Work as either increased or decreased, as required by the Engineer in accordance with the provisions of the Contract Documents. The final payment to the Contractor will be based on the Unit Prices bid and the actual quantities completed.

Table B: Time and Material Unit Rate Listing

Item	Classification	Base Hourly Rate	Overtime Rate (1)
1.	Foreman		
2.	Carpenter		
3.	Mason		
4.	General Laborer		

(1) Contractor defines terms of overtime rates as follows: _____

Table C: List of Sub-contractors and Products

Division	Product/Material	Sub-Contractor	Product Proposed
04 45 23	Wall Ties		
04 21 00	Brick Masonry		
04 01 40	Stone Masonry		
07 92 00	Joint Sealants		

Table D: List of Reference Projects

Complete table below, or provide separate reference list

Item	Name of Project	Location of Project	Date of Project	Project Budget
1				
2				
3				
4				
5				

END OF SECTION

SECTION 00 43 00

DESCRIPTION OF WORK ITEMS

<u>Work Item</u>	<u>Description</u>		
101	<p>Contractor's Overhead and Mobilization</p> <p>This work item includes scheduling and assembling all permits, equipment, and incidentals needed to perform the Work Items described in this contract.</p>		<p>C. The Contractor will be responsible for providing adequate shoring and proper protection and maintaining them safely in the work areas.</p> <p>D. Submit shop drawings for the shoring to the Engineer for approval.</p> <p>E. Refer to Section 04 05 00 and 04 11 13.</p> <p>The cost for the shoring is part of the cost for other work items.</p>
102	<p>Miscellaneous Repair Allowance</p> <p>This work item includes any miscellaneous repair work that is not covered by any of the listed repair items, and will be paid for based on a time and material basis in accordance with the Contract.</p> <p>This allowance includes allowance for:</p> <p>A. Repair or upgrade of any defective electrical and mechanical equipment, including light fixtures, conduit, ductwork, or piping as directed by the Owner or the Engineer. This work will not include any damage caused by the contractor.</p> <p>B. Replacement of school sign at west media center wall.</p> <p>C. Other repairs requested by SiteLogIQ or the Engineer.</p> <p>For all mechanical and electrical fixtures within the work areas that could be damaged from construction activities, temporarily remove them and store at designated areas. Upon completion of repairs, re-install such fixtures and equipment to their original location and original condition. The cost of such work is incidental to repair Work Items and is not a part of the mechanical and electrical allowance.</p>	401	<p>Brick Unit Replacement</p> <p>This work includes:</p> <p>A. Providing any necessary scaffolding.</p> <p>B. Locating and removing deteriorated brick masonry as required.</p> <p>C. Preparing and providing the repair area with new brick units and fully bedded mortar joints matching existing joint widths.</p> <p>D. Deteriorated brick masonry is any brick unit that is cracked or crazed greater than hairline width, spalled or delaminated, crushed, or missing the hard glazed face due to past weathering/sandblasting.</p> <p>E. Refer to Sections 04 05 00, 04 05 23, and 04 01 21, and Detail 401.</p> <p>Payment for item will be per brick unit replaced</p>
103	<p>Performance Bond</p> <p>This work item includes all expenses associated with obtaining a performance bond, and payment and material bond according to the Contract Documents.</p>	407	<p>Brick Masonry Repointing</p> <p>This work includes:</p> <p>A. Providing any necessary scaffolding.</p> <p>B. Locating and removing deteriorated masonry mortar joints.</p> <p>C. Furnishing, preparing and providing new masonry mortar in the repair area.</p> <p>D. Deteriorated mortar joints consist of any joint with missing mortar, cracked joints (greater than hairline width, or weathering greater than 1/8" depth from the original profile).</p> <p>E. Refer to Sections 04 05 00 and 04 01 21, and Detail 407.</p>
381	<p>Install Shoring and Protection</p> <p>This work includes:</p> <p>A. Providing any necessary shoring, bracing, dust and security protection, and overhead protection prior to any demolition.</p> <p>B. The shoring shall be in-place until the repair concrete or mortar has attained seventy five percent (75%) of the design strength.</p>	408	<p>Stone Masonry Repointing</p> <p>This work includes:</p> <p>Work includes repointing 100% of the north elevation, 100% of the parapet backsides, and about the top 4' of the masonry at the east, west, and south elevations.</p> <p>Payment for this item is per square foot of masonry repointed.</p>

- A. Providing any necessary scaffolding.
- B. Locating and removing deteriorated masonry mortar joints.
- C. Furnishing, preparing and providing new masonry mortar in the repair area.
- D. Deteriorated mortar joints consist of any joint with missing mortar, cracked joints (greater than hairline width, or weathering greater than 1/8" depth from the original profile).
- E. Refer to Sections 04 05 00 and 04 01 40, and Detail 408.

Payment for this item is per square foot.

433A Repair Stone Masonry – Surface Patch

This work includes:

- A. Providing all necessary shoring and protection.
- B. Locating and removing deteriorated limestone masonry.
- C. Furnishing, preparing and installing the repair area with new stone masonry patch material.
- D. Deteriorated limestone is any unit that is spalled or delaminated to a depth greater than 1", and a diameter of greater than 3".
- E. Refer to Sections 04 05 00, 04 01 30, 04 01 40, and Detail 433A.

The intent of this item is to patch limestone chips and spalls greater than 3" in diameter, unless unit is highly visible to the public, and deeper than 1".

Payment for this work item is per square foot of installed patch. For payment purposes, each repair location will be considered to be a minimum of 1 square foot, and rounded to the nearest 1/2 square foot thereafter

436A Replace Limestone Water Table Units
436B Replace Limestone Window Sill Units

This work includes:

- A. Supplying new Indiana limestone specialty units as shown on the drawings and bid form.
- B. Verify replacement locations with the Engineer.
- C. Refer to sections and elevations on Drawing for typical stone unit designations.
- D. Providing any necessary shoring or bracing for all work areas.
- E. Locating and removing deteriorated stone masonry as shown on the drawings or as directed by the Engineer.
- F. Providing secure and weather tight building envelope protection during all stages of construction.
- G. Preparing the removed stone area, including providing all new stainless

steel ties and anchors, and stone setting shims as needed.

- H. Removing and replacing adjacent stone masonry as needed to remove and replace limestone units.
- I. Providing access for the Engineer to observe and document the repair area during repairs.
- J. Cleaning and painting any exposed steel within the repair area.
- K. Providing new stone units.
- L. Refer to Sections 04 05 00, 04 01 40, 04 05 23, and 04 11 13, and Details 436A, and 436B.

Payment for this work item is per stone replaced

781 Reseal Wall, Capstone, and Sill Joints

The work includes:

- A. Providing any necessary scaffolding
- B. Locating joint sections at masonry, EIFS, capstone, and cast stone sill joints.
- C. Cleaning out sealant and mortar sections and cleaning masonry surfaces as required.
- D. Providing new primer, sealant and backer rod in joint sections.
- E. Refer to Section 07 92 00 and Detail 781.

Payment for this item is per lineal foot.

783 Reseal Wall Opening Joints

The work includes:

- A. Providing any necessary scaffolding.
- B. Locating sealants at all wall openings including windows, doors, louvers, vents, etc.
- C. Cleaning out sealant sections and cleaning masonry surfaces as required.
- D. Providing new sealant and backer rod in wall opening joints.
- E. Refer to Section 07 92 00 and Detail 783.

Payment for this item is per lineal foot.

785 Reseal Parapet Cap Joints

The work includes:

- A. Providing any necessary scaffolding
- B. Locating existing mortar and sealant sections at terra cotta cap joints.
- C. Cleaning out mortar and sealant sections and cleaning masonry surfaces as required.
- D. Providing new primer, sealant and backer rod in joint sections.
- E. Refer to Section 07 92 00 and Detail 785.

Payment for this item is per lineal foot

END OF SECTION

SECTION 00 52 00

AGREEMENT, NOTICE TO PROCEED, COMMENCEMENT OF WORK

PART 1 - GENERAL

1.01 OWNER/CONTRACTOR AGREEMENT

- A. The Agreement between the Owner and the Contractor will be written on the American Institute of Architects (AIA) Document No. A101, "Standard Form of Agreement Between Owner and Contractor - Where the basis of payment is a stipulated sum (2017 Edition)".
- B. The executed Contract, the General Conditions, Supplementary Conditions, and the other Contract Documents will be the entire, integrated Contract between the Owner and the awarded Contractor.
- C. The completed Contract forms will be sent to the awarded Prime Contractor.
- D. The awarded Contractor shall review the Contract Document forms upon receipt for completeness and accuracy, execute them, and return them to the Owner, within ten (10) working days.
- E. Provide to the Owner all the following required Post-Bid Documents within ten (10) working days after receipt of the Contract Document forms, all as a prerequisite to final execution of the Contract:
 - 1. Payment and Performance Bonds, if required.
 - 2. Certificates of Insurance.
- F. The Owner will execute the Contract only after it has been properly executed by the awarded Contractor, and after all required

Post-Bid Documents have been submitted and accepted.

1.02 RELATED SECTIONS

- A. Section 00 73 00 – Supplementary General Conditions.

1.03 NOTICE TO PROCEED

- A. The Owner will issue a written Notice to Proceed only after execution of the Contract.
- B. Upon receipt of a Notice to Proceed, commence Work in accordance with the conditions contained in the Notice to Proceed.

1.04 COMMENCEMENT OF WORK

- A. Do not commence the Work nor allow any Subcontractor or Sub-subcontractor to commence the Work until:
 - 1. The Owner has received and approved the Contractor's Payment and Performance Bond, if required.
 - 2. The Owner has received and approved evidence of the Contractor's Liability Insurance, Owner's Protective Liability Insurance and any other insurance required to be purchased by the Contractor.
 - 3. The Contract has been fully executed by the Contractor and Owner and the Owner has issued a written Notice to Proceed.
- B. Commence Work under the Contract not later than ten (10) consecutive calendar days after the date of written Notice to Proceed.

END OF SECTION

SECTION 00 61 00

BONDS

PART 1 - GENERAL

1.01 BID SECURITY

- A. Provide Bid Security in the amount of five percent (5%) of the Base Bid, if stipulated in the Bidding Form.
 - 1. Bid Security is to pledge that the Bidder will enter into a Contract with the Owner on the terms stated in the Proposal Form, and will furnish bonds as described in this Section.
 - 2. Should the Bidder refuse to enter into such Contract or fail to furnish such bonds, the amount of the bid security will be forfeited to the Owner as liquidated damages, not as a penalty.
 - 3. Bid security may be in the form of a bid bond, cashier's check, certified check or money order.
 - 4. Make the Bid Security payable to the Owner.
- B. Bid security in the form of a bid bond will not be returned to Bidders.

1.02 RELATED SECTIONS

- A. Section 00 41 00 - Bid Form.

1.03 PAYMENT AND PERFORMANCE BONDS

- A. Provide a Payment and Performance Bond for the amount of One Hundred Percent (100%) of the Contract Sum, if stipulated in the Bidding Documents.

- 1. Furnish to the Owner upon execution of the Contract, and issued by a surety company authorized to do business in the State of Minnesota, approved by the Owner and in accordance with the Minnesota Statutory requirements.
- 2. The Bond must allow for any additions or deductions to the Contract.
- 3. Provide Payment and Performance Bonds written on AIA Document A312, "Performance Bond".
- 4. The Payment and Performance Bonds are required through the complete construction period and the first (1st) year of the warranty period following total Project Substantial Completion. Said Bonds are not be required for extended warranty periods beyond one (1) year.
- 5. Extended warranties are limited to the Contractor and applicable Subcontractors and/or Manufacturers.

1.04 BOND COSTS IN BIDS

- A. Include all costs for bonds in the Contractor's bid.

1.05 SUBMISSION OF BONDS

- A. Submit Bonds by the awarded Prime Contractor to the Owner within ten (10) working days after receipt of the Contract Document forms from the Owner.

END OF SECTION

SECTION 00 62 16

INSURANCE

PART 1 - GENERAL

1.01 CERTIFICATE OF INSURANCE

- A. Provide Contractor's Certificates of Insurance to the Owner within ten (10) working days after receipt of the Contract Document forms from the Owner. Provide coverage amounts as shown below.
- B. Provide all Certificates of Insurance prior to beginning any Work on the Project site and include the following companies as additional insured.
 - 1. **North Iowa Schools**
 - 2. **SitelogIQ, Inc.**
 - 3. **Buildings Consulting Group, Inc.**
- C. Issue all Certificates to the above named companies.
- D. The cost of the insurance will be the Contractor's responsibility. Contractor is responsible for payment of the deductible amounts under all insurance.

1.02 CONTRACTOR'S INSURANCE

- A. Do not commence Work under the Contract until Contractor has obtained all the insurance required by the Specifications, provided an insurance certificate as evidence of insurance coverage and such insurance has been approved by the Owner. The policies and certificates must provide that the policies remain in force and effect except on ten (10) days' written notice to the Owner before cancellation, expiration or change in any way which would affect the coverage afforded the named insured as respects to this Project. Use certificates such as those of the Construction Industry Cooperative Committee, Form 701. Endorse all policies of insurance to include the Owner, Property Manager and the Engineer, as an additional insured.
- B. General Liability Insurance
 - 1. Comprehensive General Liability Insurance minimum coverage and limits:
 - a. General Aggregate \$2,000,000
 - b. Products - Completed Operations
 - i. Aggregate \$1,000,000
 - ii. Each Occurrence \$1,000,000
- C. Property Damage Coverage
 - 1. Include coverage for explosion, collapse

and damage to underground facilities unless waived or modified.

- D. Automobile Liability Insurance
 - 1. Automobile Liability Insurance:
 - a. \$1,000,000 each occurrence aggregate, covering owned, non-owned and hired vehicles.
- E. Protective (Contingent) Public Bodily Injury Liability and Public Property Damage Insurance
 - 1. Procure and maintain Public Bodily Injury Liability and Public Property Damage Insurance for and in behalf of the Contractor from claims for damage arising out of acts of Subcontractors for bodily injury and property damage in the same amounts as required for Public Bodily Injury Liability and Public Property Damage specified in Sub-paragraph "A" above.
- F. Contractual (Hold Harmless) Liability
 - 1. It will become a part of the Contract that the Contractor will hold the Owner, officers and employees of the Owner, the Engineers and their agents harmless from any liability with respect to claims for damage as a result of bodily injury, sickness, disease, death or property damage resulting from the Contractor's operations for the Project.
- G. Completed Operations (Products) Liability Insurance
 - 1. Procure and maintain Public Liability and Property Damage Insurance, in the same amounts as specified for Public Bodily Injury Liability and Public Property Damage Insurance in Sub-Subparagraph "A" above for and in behalf of the Contractor, which will pay on behalf of the Contractor all sums which they may become legally obligated to pay as damages caused by occurrence and arising out of (a) goods or products manufactured, sold, handled, or distributed by the Contractor, and (b) operations, if the occurrence occurs after such operations have been completed or abandoned and occurs away from the premises owned, rented or controlled by the Contractor.
 - 2. Maintain such insurance a minimum time of the year after final completion or throughout the warranty period, whichever is longer. Any renewal

Certificate of Insurance for the warranty period shall be filed with the Owner.

H. Worker's Compensation Insurance

1. Provide Worker's Compensation Insurance for all its employees. In case any Work is sublet, the Subcontractor is required to provide Worker's Compensation Insurance in accordance with Statutory requirements. File evidence of Subcontractor's insurance with the Contractor.

I. Umbrella or Excess Liability

1. Provide an excess or Umbrella Liability Insurance policy with a limit of liability of not less than \$2,000,000 each occurrence.

J. Builder's Risk Coverage

1. Procure and maintain such insurance for and on behalf of the Owner and his agent, the Contractor, Subcontractors and lower tier Sub-subcontractors and Suppliers as joint insured.
2. Provide the insurance covering the full value of the Contract, together with all materials located on the site during the entire period of construction, and until said Project is finally accepted in writing

by the Owner. The Contractor is responsible for payment and all deductibles resulting from losses under the coverage provided herein.

3. Provide the insurance of the type known as "Multiple Peril Builders Risk" policy on a completed value form, and provide minimum coverage as recommended by the Construction Industry Cooperative Committee of Minnesota.
4. Notify the insurance company and obtain a "Use and Occupancy Waiver" such that the policy will not be invalidated by occupancy in the event of partial or full occupancy by the Owner prior to acceptance, the Contractor will file such endorsement with the Owner.
5. State on the Certificate of Insurance if any of the Contractor's insurance policies contain an pollution exclusion, asbestos exclusion, or any other exclusion relevant to the Contractor's work pursuant to these Construction Documents.

END OF SECTION

SECTION 00 72 00

GENERAL CONDITIONS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. The "AIA A201-2017 General Conditions of the Contract for Construction", are hereby made a part of these Contract Documents, except as amended by the Supplementary

Conditions of the Contract in Section 00 73 00 of this Project Manual.

- B. Copies of this document can be purchased from the American Institute of Architects.

END OF SECTION

SECTION 00 73 00

SUPPLEMENTARY GENERAL CONDITIONS OF THE CONTRACT

PART 1 - GENERAL

1.01 SUPPLEMENTS

- A. DESCRIPTION: The Articles contained in the Supplementary General Conditions of the Contract contain modifications to the AIA General Conditions of the Contract for Construction, AIA Document A201 - 2017, in the form of additions, amendments, deletions, and substitutions. The unaltered provisions remain in effect where any part of the AIA General Conditions is not modified by a provision of these Supplementary General Conditions.

1.02 ARTICLES AMENDED BY SUPPLEMENTARY CONDITIONS

- A. Replace the terms in the AIA General Conditions referenced to "Architect" and "Architecture" with "Engineer" and "Engineering".

B. ARTICLE 1 - GENERAL PROVISIONS

1. Subparagraph 1.1.1, the Contract Documents: Delete the last sentence of Subparagraph 1.1.1 and replace with the following:

The Contract Documents may also include Bidding Requirements consisting of the Invitation for Bids, Instructions to Bidders, Bid Forms, the Contractor's Bid Security, and any addenda thereto. The Agreement Between the Owner and the Contractor also includes the Contractor's Performance and Payment bonds, if required, and the Contractor's Insurance Certificates.

2. Subparagraph 1.1.6, The Specifications: Add Sub-Subparagraph 1.1.6.1, and 1.1.6.2 as follows:

1.1.6.1 Whenever any building component or material is specified as a proprietary product, or by using the name of a manufacturer, understand that the term 'or equal', if not inserted, and the Specification shall be regarded as establishing minimum standards as to the type, function, standard of design, durability, efficiency and quality desired and do not exclude other manufacturers' products of comparable quality, design and efficiency.

1.1.6.2 Makes and models of items alleged to be equal to the makes and models of items named in the Specifications are subject to written approval by the Engineer. The use of substitute items will not be permitted without the written approval of the Owner and the Engineer.

The Contractor is not to be relieved from the responsibility of furnishing articles or materials equal in quality, design, and efficiency to those specified because of the approval or rejection of such substitute items by the Engineer. The Engineer's approval or rejection of a proposed substitute may or may not be based on any of the previous considerations, and the decision, which may or may not express reasons for rejection, is final.

Requests for Substitutions received after Bid Opening originate with and are submitted only by the Contractor, not a Subcontractor. Use material or equipment sufficiently described to enable the Engineer to easily identify the salient features. Furnish to the Engineer comparative data of the items specified and those proposed for substitution in accordance with the procedures established by the Engineer.

3. Paragraph 1.1. Basic Definitions: Add Subparagraphs 1.1.9, 1.1.10, 1.1.11, 1.1.12, 1.1.13, 1.1.14, 1.1.15, and 1.1.16 as follows:

1.1.9 Addenda: Addenda are written and/or graphic instruments prepared and issued by the Engineer prior to the Bid Opening dates which modify or interpret the Bidding Documents by additions, deletions, clarifications, or corrections.

1.1.10 Application and Certificate for Payment: A voucher, issued by the Contractor to the Owner, stipulating the amount of the Contract Sum properly due as payment to the Contractor as of a specific date.

1.1.11 Engineer's Supplemental Instructions: A written order, instructions or interpretation prepared and issued by the Engineer to the Contractor making

minor changes in the Work, not involving a change in the Contract Sum or Contract Time.

1.1.12 Change Order: A written request prepared and issued by the Engineer to the Contractor to provide a cost for a possible change in the Work and/or a possible adjustment in the Contract Sum or Contract Time.

1.1.13 Clarification: A written interpretation and/or drawing prepared and issued by the Engineer using an "Architect's Supplemental Instructions" form to the Contractor after execution of the Contract, providing additional explanations of the Contract Documents.

1.1.14 Indicated: As used in the Contract Documents, the term "Indicated" means as stated within the Project Manual or on the Drawings.

1.1.15 Contractor: As referred to in the Contract Documents means the Contractor with whom the Owner enters into the Contract for Construction for execution of the Project Work.

1.1.16 Working Day: Week day, Monday through Friday, typically not including Saturday, Sunday or public holidays.

4. Paragraph 1.2, Correlation and Intent of the Contract Documents: Add Subparagraphs 1.2.4, 1.2.5, 1.2.6, and 1.2.7 as follows:

1.2.4 The term "Furnish" as used in the scope of Sections of the Specifications, means to supply and deliver to the Project site, ready for installation, without limitations, all products, materials, equipment, accessories and other related items required for a complete installation of the Work.

1.2.5 The term "Install" as used in the scope of Sections of the Specifications, means to place in position for service or use.

1.2.6 The term "Provide" as used in the scope of Sections of the Specifications, means "furnish and install" and includes, without limitations, all labor, products, materials, equipment, accessories, transportation, services and other items required to install and complete the indicated and referenced Work.

1.2.7 Items indicated "N.I.C." (Not in Contract) on the Drawings or in the Specifications are items furnished,

installed, and connected by the Owner or others and work required for such items is excluded from the Contract.

C. ARTICLE 3 - CONTRACTOR

1. Paragraph 3.2, Review of Contract Documents and Field Conditions by Contractor: Add Subparagraphs 3.2.5, and 3.2.6 as follows:

3.2.5 No change in the Contract Sum will be allowed because of minor differences between actual field conditions and the Contract Documents.

3.2.6 The location of repair areas shown on the Drawings is provided to the Contractor for reference only, who is to perform their own investigation and be responsible to locate and mark the repair areas in accordance with Contract Documents. Report any significant inconsistencies on the repair quantities to the Engineer within the repair boundary prior to commencing the Work.

2. Paragraph 3.5, Warranty: Add Sub-subparagraphs 3.5.1 and 3.5.2 as follows:

3.5.1 The Contractor warrants to the Owner and Engineer that materials and equipment furnished under the Contract meet or exceed the requirements of the Contract Documents. Guarantees, special guarantees and any other guarantees required by the Contract Documents do not exclude or otherwise limit the Owner's possible remedies in law and are not be construed as a waiver by the Owner of any other remedy.

3.5.2 Warranties provided by manufacturers are in addition to, not in lieu of the Contractor's general warranty and these do not relieve the Contractor of their total Contract Warranty obligations.

3. Paragraph 3.9, Superintendent: Add Subparagraph 3.9.4 as follows:

3.9.4 Do not change the Contractor's assigned superintendent to the Project as approved by the Engineer and the Owner for the duration of the Work until the Project Substantial Completion Punch List has been completed and the Project has been accepted by the Owner as Substantially Complete or until the Engineer or the Owner finds the superintendent unacceptable.

4. Paragraph 3.10, Contractor's Construction and Submittal Schedules:

Add Sub-subparagraphs 3.10.4, 3.10.5 as follows:

3.10.4 Continuously employ a sufficient number to satisfy the Engineer or the Owner that the Work will be completed by the dates and times established in the Contract Documents.

3.10.5 If it should become necessary in order to accomplish completion of a portion or the total scope of the Work within times stipulated in the Contract Documents, the Contractor and Subcontractors will arrange overtime work, multiple work shifts, additional equipment, or any other selected means and methods approved by the Owner, all without additional costs to the Owner.

D. ARTICLE 5 - SUBCONTRACTORS

1. Paragraph 5.1, Definitions: Add Sub-subparagraph 5.1.1.1 as follows:

5.1.1.1 Wherever the term "Subcontractor(s)" appears in the Contract Documents, it means material and equipment Suppliers, and extends to them the same contractual responsibilities and rights afforded Subcontractors.

2. Paragraph 5.2, Award of Subcontracts and Other Contracts for Portions of the Work: In Subparagraph 5.2.1, in the first sentence, delete the words "... as soon as practicable after award of the Contract..." and replace with the following:

...within fifteen (15) working days after the date of written Contract Award...

E. ARTICLE 6 - CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

1. Paragraph 6.2, Mutual Responsibility: Add to Subparagraph 6.2.5 the following:

Separate prime Contractors are to promptly attempt settlement of any dispute they may have with any other separate prime Contractor. The Contractor will indemnify, defend and hold harmless the Owner, and any of its agents against any claims arising from any such dispute.

F. ARTICLE 7 - CHANGES IN THE WORK

1. Paragraph 7.3. Construction Change Directives: Delete Subparagraph 7.3.3 in its entirety and replace with the following:

7.3.3 If the Construction Change

Directive provides for an adjustment to the Contract Sum, the value of such additional, deleted or changed Work will be determined in either or both of the ways described hereinafter:

By unit price contained in the Contractor's original bid and incorporated in the Contract for Construction.

On the basis of the actual cost of materials and labor on the job site plus a maximum of ten percent (10%) on material, labor and equipment for the Contractor's total overhead and profit, which includes the cost of insurance, field supervision, general expense, and the use of small tools and equipment. Provide the following supporting document for the pay request:

7.3.3.1 An itemized breakdown of all materials, an hourly breakdown of labor and other direct costs shall be shown for each change directive.

7.3.3.2 Date all corrections and initial by the Contractor and the Engineer.

7.3.3.3 Provide a Contractor summary that is complete and with adequate justification and supporting documentation with each Change Directive.

7.3.3.4 The extent to which the Contract time changes as a result of the Change Directive.

G. ARTICLE 8 - TIME

1. Paragraph 8.1, definitions: Add Sub-subparagraph 8.1.2.1 as follows:

8.1.2.1 Do not commence the Work nor allow any Subcontractor to commence the Work until:

8.1.2.1.1 The Owner has approved the Contractor's Performance and Payment Bonds, if required in the Contract Documents.

8.1.2.1.2 The Owner has approved evidence of the Contractor's Liability Insurance, Owner's Protective Liability Insurance and any other insurance required to be purchased by the Contractor.

8.1.2.1.3 The Contract has been fully executed; and the Owner has issued a written Notice to Proceed.

2. Paragraph 8.3.1, Delays and Extensions of Time, add the following to the end of the paragraph:

"The Contractor recognizes that certain portion of the Work may be impacted by weather conditions during the contract period. In preparing the bid and construction schedule, take into consideration such weather factors that will affect the completion schedule of the contract. The Contractor will not be granted an extension of the completion schedule stated in the Bid form except the conditions stated in Paragraph 8.3.1 or additional work is the added to the Contract."

H. ARTICLE 9 - PAYMENTS AND COMPLETION

1. Paragraph 9.2, Schedule of Values: in the first sentence, delete the words "Before the first Application for Payment", and replace with the following:

Within fifteen (15) days after the date of written Contract Award,...

2. Paragraph 9.10, Final Completion and Final Payment: Add Sub-subparagraphs 9.10.2.1, 9.10.2.2, and 9.10.2.3 as follows:

9.10.2.1 The Owner may, at its discretion, withhold final payment until the Contractor has filed with the Owner a final total lien waiver in a form acceptable to the Owner and an affidavit showing evidence that all claims against them by reason of the Contract have been paid or satisfactorily secured. In case such evidence is not furnished, the Owner may retain from any amount due said Contractor sums sufficient to cover all claims unpaid.

9.10.2.2 The Engineer will make one Final Completion Inspection for all Work of the Project. If additional inspections are required due to the Contractor's failure to complete previously listed corrective or uncompleted Work, the Engineer will be properly compensated for their time, both in inspection and in review and processing of requirements, in full by the Contractor and such compensation will be accomplished by a deduct Supplemental Agreement to the Contract between the Owner and the Prime General Contractor.

9.10.2.3 Final Completion or the Date of

Final Acceptance for the purpose of these Specifications means the date on which the Engineer and Owner accept the building in writing. Due not construe Final Completion to mean acceptance of any Work subsequently found to be inferior, substandard, missing or not in accord with the Contract Documents. Remedy such work as directed by the Engineer, the same as though the Work had not been approved.

I. ARTICLE 10 - PROTECTION OF PERSONS AND PROPERTY

1. Article 10.1, Safety Precautions and Programs: Add Sub-subparagraphs 10.1.1 and 10.1.2 as follows:

10.3.1.1 By entering into Contract with the Owner and providing all the services and materials required by said Contract, Contractor warrants that no materials installed in the Work of the Project will contain asbestos or polychlorinated biphenyl (PCB) materials.

10.3.1.2 If the Contractor discovers materials suspected to be hazardous materials during the execution of the Work, cease activity in the area of the suspected materials, notify the Engineer, and await further instructions.

J. ARTICLE 11 - INSURANCE AND BONDS

1. Article 11, Insurance and Bonds: Delete Paragraphs 11.1 through Subparagraph 11.5.2 in their entirety and replace the insurance requirements and stipulations as stated in Section 00 62 16.

K. ARTICLE 13 - MISCELLANEOUS PROVISIONS

1. Paragraph 13.4, Tests and Inspections: Delete the second sentence of Subparagraph 13.4.1 and replace with the following:

The Owner may employ and bear the costs for the services of consulting engineering firm to conduct structural inspections, tests and approvals as specified in the Contract Documents. The Contractor bears all costs of such inspections, tests, or approvals conducted by public authorities other than the Owner.

2. Paragraph 13.5, Interest: Delete Paragraph 13.5 in its entirety.

END OF SECTION

SECTION 00 91 13

ADDENDA

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Addenda are written and/or graphic instruments prepared and issued by the Engineer prior to the Bid Opening dates which modify or interpret the Bidding Documents by additions, deletions, clarifications or corrections.
- B. Addenda are included in the Bidding Documents and the Contract Documents.
- C. Addenda will be issued and distributed by

the Engineer as necessary to facilitate the Work.

1.02 BIDDERS' AND CONTRACTORS' RESPONSIBILITIES

- A. Each Bidder is responsible for obtaining all addenda, and for ascertaining that all Addenda issued prior to the Bid Opening have been considered in preparing their Bid Form.
- B. Perform all Work in accordance with Addenda.

END OF SECTION

SECTION 01 10 00

SUMMARY OF WORK

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Work Description.
- B. Work by Owner.
- C. Owner- supplied Products.
- D. Owner occupancy.
- E. Contractor use of site (and premises).
- F. Communication.
- G. Work Schedule.
- H. Restrictions.

1.02 RELATED SECTIONS

- A. Section 01 50 00 - Construction Facilities and Temporary controls.

1.03 GENERAL WORK DESCRIPTION

- A. This Contract includes all Work as required in Section 00 41 00 - Bid Form, Section 00 43 00 – Description of Work and related Drawings included as a part of the Construction Documents.
- B. The Work generally includes exterior wall repair on selected elevations of the Glen Lake Elementary School building as indicated on the Drawings.
 - 1. Masonry repairs generally include spot repointing and unit replacement at brick and stone masonry.
 - 2. 100% joint sealant replacement within the work boundaries.
 - 3. Reseal terra cotta parapet coping joints.

1.04 OWNER OCCUPANCY

- A. Owner will occupy the facility which will remain in operation uninterrupted during the entire period of construction. Stage the construction into phases to allow the conduct of normal operations.

1.05 CODES, REGULATIONS AND LAWS

- A. All applicable codes, including but not limited to, the International Building Code, the Minnesota State Building Code in effect at the time the Application for Plan Review is submitted to Building Codes and Standards apply to all work.

1.06 CONTRACTOR USE OF SITE

- A. Cooperate with Owner to minimize conflict, and to facilitate Owner's operations.
- B. Limit use of site to allow:

- 1. Owner occupancy.
- 2. Work by other trades and/or by Owner.
- 3. Access through work areas by the public.
- C. Maintain a safe condition for walks, driveways, entrances, exits, corridors, stair towers, lobbies and all public areas adjacent to the work and storage areas in a manner acceptable to the Engineer, Owner, Property Manager, User, and local Fire Marshall.
- D. Coordinate with the Owner and the property manager in scheduling of work areas. Provide a minimum of two (2) days notice in advance to coordinate work areas.
- E. Assume full responsibility for protection and safekeeping of products, materials, and equipment stored on site. Pay for the use of additional storage areas as needed for Construction.

1.07 COMMUNICATION

- A. Direct all inquiries, information and coordination related to scheduling of Work for the project to **Matt Boatman**, who is designated as the Owner's representative for the project.
- B. Direct all inquiries, information, and interpretation of the Contract Documents and approval of Work to the Engineer.

1.08 WORK SCHEDULE

- A. Construction schedule:

Substantial completion:	8/13/2021
Final completion:	8/20/2021

- B. Conduct Work in stages to accommodate Owner's occupancy and noise restriction requirements during the construction period and coordinate the construction schedule and operations with Owner or Project Engineer if designated.
- C. Schedule work hours and activities to comply with the requirements of noise ordinances by the City where the project is located.
- D. Vary normal work hours only with prior approval from the Owner.
- E. Extra compensation will not be paid to the Contractor unless the work schedule deviates from the Contract Documents and the change order is approved by both the

Engineer and the Owner.

1.09 RESTRICTIONS

A. The following restrictions apply during the Construction activities:

1. Work Hours and Noise Restrictions

- a. Limit jack hammering, chipping, grinding, sandblasting, and all other equally noisy operations hours to 8:00 a.m. to 6:00 p.m. each day, or as restricted by the City of Minnetonka Noise Ordinance.

2. Protective Barriers

- a. Provide security barriers, barricades, fencing, guard rail and temporary lighting systems to protect the public and to maintain the security of the work areas.
- b. The installed security measures must comply with the local requirements and codes.

3. Warning Signs

- a. Provide an adequate amount of warning signs at entrances and exits under the swing stage/scaffolding work areas, sidewalks, driveways, and lobby access areas to provide proper information and warning to the public.

4. Protection of Mechanical and Electrical Fixtures

- a. Cover, protect, or temporarily remove and store (at designated areas) all mechanical and electrical fixtures within the work areas that could be damaged from construction activities.
- b. Upon completion of repairs, reinstall such fixtures and equipment to their original location and original condition.
- c. The cost of such work is incidental to the Work Items.

END OF SECTION

SECTION 01 22 13

MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Measurement and payment criteria applicable to the Work performed under a unit price payment method.
- B. Defect assessment and non-payment for rejected work.

1.02 AUTHORITY

- A. Measurement methods delineated in the individual specification sections complement the criteria of this section.
- B. The Engineer will take all measurements and compute quantities.
- C. Provide personnel to accompany the Engineer to assist and verify measurements and quantities.

1.03 UNIT QUANTITIES SPECIFIED

- A. Quantities indicated in the Bid Form are for bidding and contract purposes only. Final quantities completed for the Work determine payment.
- B. The Contractor agrees:
 - 1. That the quantities mentioned herein are approximate only, and are subject to increase or decrease by actual site conditions and requirements to complete the Work.
 - 2. To perform all quantities of Work as either increased or decreased, in accordance with the provisions of the Contract Documents, at the Unit Prices bid and as contained in the Contract.
- C. No allowance, except as specifically provided by the payment provisions of the Contract, will be made for any increased expenses, loss of expected reimbursement, or loss of anticipated profits suffered or claimed by the Contractor, whether resulting directly from changes in the Work or indirectly from unbalanced allocation of overhead expenses among the Unit Prices or from any other cause.

1.04 MEASUREMENT OF QUANTITIES

- A. Measurements by Weight: Concrete reinforcing steel, rolled or formed steel or other metal shapes will be measured by handbook weights. Welded assemblies will be measured by handbook or scale weight.
- B. Measurement by Volume: Measured by cubic dimension using mean length, width

and height or thickness.

- C. Measurement by Area: Measured by square dimension using mean length and width or radius.
- D. Linear Measurements: Measured by linear dimension, at the item centerline or mean chord.
- E. Stipulated Sum/Price Measurement: Items measured by weight, volume, area, or linear means or combination, as appropriate, as a completed item or unit of the Work.

1.05 PAYMENT

- A. Unit prices include all costs for the Work, including labor, materials, equipment and services, taxes, bonds, freight, overhead, profit, insurance and all other incidental expenses to cover the Work specified.
- B. Final payment for Work governed by unit prices will be made on the basis of the actual measurements and quantities accepted by the Engineer multiplied by the unit sum/price for Work which is incorporated in or made necessary by the Work.

1.06 DEFECT ASSESSMENT

- A. Any work that does not meet the requirements of the Contract documents is the responsibility of the Contractor to correct the deficiency. Prior to implementing any corrective actions, submit proposed scheme and materials to the Engineer for review and approval.
- B. If, in the opinion of the Engineer, it is not practical to remove and replace the Work, the Engineer will direct one of the following remedies:
 - 1. The defective Work may remain, but the unit price will be adjusted to a new reduced price at the recommendation of the Engineer.
 - 2. The defective Work will be partially repaired to the instructions of the Engineer, and the unit price will be adjusted at the recommendation of the Engineer.
- C. The individual specification sections may modify these options or may identify a specific formula or percentage sum/price reduction.
- D. The authority of the Engineer to assess the defect and identify payment adjustment is final.

1.07 NON-PAYMENT FOR REJECTED

PRODUCTS

- A. Payment will not be made for any of the following:
 - 1. Products wasted or disposed of in a manner that is not acceptable.
 - 2. Products determined as unacceptable before or after placement.
 - 3. Products not completely unloaded from the transporting vehicle.
 - 4. Products placed beyond the lines and

levels of the required Work.

- 5. Products remaining on hand after completion of the Work.
- 6. Loading, hauling, and disposing of rejected Products.

PART 2 - PRODUCTS

2.01 NOT USED

PART 3 - EXECUTION

3.01 NOT USED

END OF SECTION

SECTION 01 22 16

APPLICATION FOR PAYMENT

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Procedures for preparation and submittal of applications for payment.

1.02 RELATED SECTIONS

- A. Section 00 52 00 - Agreement, Notice to Proceed, Commencement of Work.
- B. Section 00 72 00 - General Conditions.
- C. Section 00 73 00 - Supplementary Conditions.
- D. Section 01 33 00 - Submittals: Submittal procedures.
- E. Section 01 77 00 - Contract Closeout: Final payment.

1.03 FORMAT

- A. AIA G702 - Application and Certificate for Payment and AIA G703 - Continuation Sheet.
- B. For each item, provide a column for listing each of the following:
 1. Item Number.
 2. Description of work.
 3. Scheduled Values.
 4. Previous Applications.
 5. Work in Place and Stored Materials under this Application.
 6. Authorized Change Orders.
 7. Total Completed and Stored to Date of Application.
 8. Percentage of Completion.
 9. Balance to Finish.
 10. Retainage.

1.04 PREPARATION OF PAYMENT APPLICATIONS

- A. Present required information in typewritten form or on computer printout.
- B. Execute certification by signature of authorized officer.
- C. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored Products.
- D. List each authorized Change Order as an extension on AIA G703 - Continuation Sheet,

listing Change Order number and dollar amount as for an original item of Work.

- E. Prepare Application for Final Payment as specified in Section 01 77 00.

1.05 SUBMITTAL PROCEDURES

Submittal Procedures - Application For Payment	Contractor	Engineer	Owner
Number of paper copies required	3		
Information required:			
• Updated construction schedule			
• Transmittal letter		✓	
• Substantiating data:			
• Number of copies:	1		
• Partial release of liens from major subcontractors and vendors		✓	
• Record documents for review by the Owner which will be returned to the Contractor		✓	
Distribution of copies by Engineer		1	2

- A. Payment Period: Submit at intervals stipulated in the Agreement.
- B. Engineer will distribute submitted Pay Applications if the Application is properly completed and correct, otherwise, the Pay Application will be returned to the Contractor for corrections.
- C. When Engineer requires substantiating information, submit data justifying dollar amounts in question.

1.06 PROGRESS PAYMENT

- A. The Owner will make a progress payment to the Contractor's Application for Payment as recommended by the Engineer. The amount of each payment will be equal to ninety percent (90%) of the Work completed.
- B. The Owner will retain ten percent (10%) of the amount of each pay request. Such retainage will be retained by the Owner until substantial completion of the Work.
- C. At substantial completion of the Work, the amount of retainage will be reduced to five percent (5%) of the total contract amount.

Such reduced retainage will be retained by the Owner until the Work is certified to be one-hundred percent (100%) complete in accordance with the Contract Documents.

2.01 NOT USED

PART 3 - EXECUTION

3.01 NOT USED

PART 2 - PRODUCTS

END OF SECTION

SECTION 01 26 00

CHANGE ORDER PROCEDURES

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Develop and implement change order procedures as follows:
 - 1. Provide written response to Engineer's Request for Change Order.
 - 2. Provide full written data and record system required to evaluate proposed changes.
 - 3. Provide full documentation to Engineer on Bulletins, Construction Change Directives and Change Orders.
 - 4. Maintain detailed records of all Work done on a proposed materials and labor basis.

1.02 DEFINITIONS

- A. Architect's Supplemental Instructions (ASI), AIA Document G710; A written order, instructions or interpretation, prepared and issued by the Engineer to the Contractor making minor changes in the Work, not involving a change in the Contract Sum or Contract Time.
- B. Bulletin: A written request prepared and issued by the Engineer to the Contractor to provide a cost for a possible change in the Work and/or a possible adjustment in the Contract Sum or Contract Time.
- C. Work Change Directive, Construction Change Directive, AIA Document G714; A written order, prepared by the Engineer and signed by the Owner and Engineer, directing a change in the Work and stating a proposed basis for adjustment, if any, in the Contract Sum or Contract time, or both.

1.03 PRELIMINARY PROCEDURES

- A. Architect's Supplemental Instruction Form: the request of the Owner, Engineer or Contractor for a clarification of the contract Documents, the Engineer may prepare and issue to the Contractor three (3) original copies of an Architect's Supplemental Instruction (ASI).
 - 1. Review the ASI, sign the ASI if in agreement with it, retain one (1) copy and return two (2) copies to the Engineer.
 - 2. The Engineer will retain one (1) original copy of the ASI, and transmit one (1) original copy to the Owner.
- B. When a possible change in the Work is

being considered, the Engineer will prepare and issue to the Contractor a Bulletin. Bulletins will include:

- 1. Detailed description and location of the proposed change in the Work.
 - 2. Supplementary or revised Drawings and Specifications.
- C. The Bulletin request is for information only, and is not an instruction to execute the proposed changes.
 - D. When a change in the Work is desired by the Owner, the Engineer will prepare and issue to the Contractor a Construction Change Directive. Construction Change Directives may result from previous Bulletins.

1.04 DOCUMENTATION OF PROPOSAL FOR CHANGE

- A. Promptly reply to each Bulletin, each Construction Change Directive and provide a proposal to the change directive based on one or a combination of the following:
 - 1. Each unit price not previously established, with sufficient substantiating data to allow the Engineer to evaluate the proposed costs.
 - 2. By unit price contained in the Contractor's original bid and incorporated in the Contract for construction.
 - 3. By actual cost plus as defined as follows:
 - a. Actual cost of material purchased and equipment rental for the additional work plus ten percent (10%).
 - b. Actual time incurred for such work times the labor unit rate indicated in the bid form. Unit rates shall include:
 - i. Worker's base salary
 - ii. Contractor's overhead and profit
 - iii. Cost of taxes, insurance and bonds
 - iv. Field supervision and general expense
 - v. Use of small tools and equipment
- B. Provide an itemized breakdown of all

materials, its supporting documentation, and justification for any change in contract time.

1.05 REVIEW OF PROPOSAL FOR CHANGE

- A. The Engineer and the Owner will evaluate and review the Contractor's response to each Bulletin and Construction Change Directive against recognized cost estimating references.
- B. The Owner will have fifteen (15) days to accept or reject the Contractor's proposal after its submission. Do not modify or withdraw the proposal during this period without the consent of the Owner.

1.06 CONSTRUCTION CHANGE DIRECTIVE

AUTHORIZATION

- A. The Engineer will issue a Construction Change Directive directing the Contractor to proceed with changes in the Work.
- B. At completion of the change, submit the itemized accepted change order items with the Base Bid "Request For Payment" request to the Engineer.

PART 2 - PRODUCTS

2.01 NOT USED

PART 3 - EXECUTION

3.01 NOT USED

END OF SECTION

SECTION 01 31 13

PROJECT COORDINATION

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. General: The Work of this Contract includes coordination of all Work as required in the Base Bid, all alternates and all change directives authorized as selected, including preparation of general coordination diagrams and schedules, and control of site utilization, from beginning of construction activity through Project close-out and warranty periods. Coordinate all Work solely by the Contractor, who is responsible for scheduling all Work.

1.02 WORK ASSIGNMENTS

- A. Nothing contained in the Contract Documents is construed as a work assignment to any construction industry trade. Each Subcontractor is responsible for their own decisions on Work assignments and in accordance with the prevailing practice in the area of the Project, and in such a way that neither their progress nor the progress of others will be adversely affected.
- B. Settle disputes that may arise over improper assignments or over assignments claimed by more than one Subcontractor immediately by the Contractor and in no case result in a slow-down or stoppage of the Work of any Subcontractor.

1.03 COORDINATION AND MEETINGS

- A. General: Prepare a written memorandum on required coordination activities. Include such items as required notices, scheduling, Pre-installation Conferences, interfacing of Work, reports and attendance at meetings. Distribute this memorandum to each Subcontractor performing Work at the Project site.

1.04 MATERIAL AND EQUIPMENT EXPEDITING

- A. Initiate and coordinate an expediting program on the Owner's behalf with each Subcontractor, incorporating all critical items of material and/or equipment provided under the Contract.
- B. Each Subcontractor is to cooperate by providing order and acknowledgment documentation, as required by the Contractor on the Owner's behalf.
- C. Each Subcontractor is to keep the Contractor informed of all changes in the commitments previously incorporated in the expediting

program, and, when deemed necessary by the Engineer or Owner, provide source contacts for direct expediting by the Contractor.

- D. Each Subcontractor is to require all manufacturers to notify the job site Contractor Superintendent at least forty-eight (48) hours in advance of the arrival of deliveries to the job site so the Contractor can arrange for unloading of equipment/materials.
- E. The Contractor's expediting activities are to be considered a back-up program, and not in any way relieve individual Subcontractors of performance responsibilities under the Contract Documents.

1.05 SUBCONTRACTOR PRE ON-SITE ACTIVITY AND PRE-INSTALLATION MEETINGS

- A. Meet on the site with the Contractor prior to beginning their Work. The purpose of this Pre On-Site Activity meeting is to review the intent of the Contract Documents as they pertain to the Subcontractor's Work and to integrate the Subcontractor's schedule into the Construction Schedule for the Project. Notify the Engineer and the Owner in writing prior to these meetings to enable them to attend.
- B. At each Pre-installation Meeting, review progress of other Work and preparations for the particular Work under consideration, including specific requirements for the following:
 1. Acceptability of Substrates
 2. Access
 3. Contract Documents
 4. Construction Schedule
 5. Deliveries
 6. Inspection and Testing Requirements
 7. Protection
 8. Record Documents Requirements
 9. Related Supplemental Agreements
 10. Required Quality Requirements
 11. Safety
 12. Shop Drawings, Product Data and Samples
 13. Storage
 14. Submittals

15. Temporary Facilities

16. Weather Limitations

- C. Take minutes and record the significant items of each pre-Installation Meeting, along with the final plan of action. Distribute meeting minutes promptly, to everyone concerned, including the Engineer and the Owner.
- D. Do not proceed with the Work if the Pre-Installation Meeting cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the Pre-Installation Meeting at the earliest feasible date to complete the planning and coordination needed.

1.06 RETURN ACTIVITIES

- A. Each Subcontractor must report to the Contractor prior to resuming Work on the Project after an absence from the site of one (1) or more working days to make the Prime Contractor aware of the Subcontractor's re-

involvement with the Project, and to provide an update regarding any conditions that could affect the continuing Work of the Subcontractor.

1.07 PERFORMANCE OF THE WORK

- A. All Subcontractors are to provide schedule input to the Contractor for the Construction Progress Schedule by which the Project will be built. Consequently, it is the responsibility and obligation of each Subcontractor to utilize their manpower and resources according to the commitments made during the scheduling process.

1.08 PROMPTNESS OF EXECUTION

- A. It is the intention of the Owner to complete the Project in the fastest practical time frame. Whereas varying conditions inherent in the construction process will affect the progress of the Work, it is in the interest of the Contract that the Contractor maintain the progress pace set forth in the original and revised Construction Schedules.

END OF SECTION

SECTION 01 33 00

SUBMITTALS

PART 1 - GENERAL

1.01 RELATED SECTIONS

- A. Section 01 45 23 – Testing.
- B. Section 01 77 00 - Project Close-Out.
- C. Section 01 78 36 – Warranties.

1.02 REFERENCES

- A. Associated General Contractors of America (AGC) publication "The Use of CPM in Construction - A Manual for General Contractors and the Construction Industry".

1.03 SUBMITTAL PROCEDURES

Submittal Procedures	Provided by		
	Contractor	Engineer	Owner
Number of paper copies required	3		
General Information required:			
• Project Name and Location	✓		
• Contractor's Name and Address	✓		
• Engineer's Name and Address	✓		
• Submittal Date	✓		
For each submittal:			
• Transmittal letter	✓		
• Separate brochure for each system	✓		
• Reference drawing, detail, and specification number	✓		
• Contractor's Stamp	✓		
• Space for Engineer's Stamp	✓		
• Variations from contract documents	✓		
• Product limitations	✓		
Distribution of submittal copies:			
• By Contractor before execution of contract:	1	2	
• By Contractor – all other submittals	3		
• Distribution of approved submittals by Engineer:	1	1	1

- A. Submit all submittals for all materials and/or equipment in a given system at one time.
- B. Submittals may be submitted either as paper

copies or electronically in PDF format.

- C. Apply Contractor's Stamp. Stamp will include:

- 1. Signed or initialed certifying that review, approval, verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents.

- D. Allow ten (10) days for review and response for each submittal for review. This excludes delivery time to and from the Contractor.

- E. When revised for resubmission, identify all changes made since previous submission.

- F. Submittals not requested will not be recognized or processed.

1.04 SUBMITTAL SCHEDULE

Submittal Schedule
Before execution of contract:
• Certificates of Insurance.
• Payment and Performance Bond, if stipulated.
• Subcontractors, Products, Suppliers And Manufacturers List
Within ten (10) working days after date of written Contract Award:
• Construction Submittal Log
• Proposed Product List
Within fifteen (15) working days after date of written Notice to Proceed:
• Construction Progress Schedule
• Schedule of Values
• Indicate submittal dates required for:
o Shop drawings
o Product data
o Samples
o Product delivery dates, including those furnished by Owner and required by Allowances.
As required during the Work:
• Shop Drawings
• Product Data
• Samples
• Design Data
• Field and Test Data
• Certificates

1.05 CONSTRUCTION SUBMITTAL LOG

- A. Provide a Construction Submittal Log prepared to identify all required submittals from the Contractor.
 - 1. Failure to include an item on such Log does not alter the responsibility of the Contractor to furnish all required submittals and to complete all Work in accordance with the Contract Documents.
- B. Provide:
 - 1. Written statement identifying any:
 - a. Requested changes
 - b. Revisions
 - c. Corrections
 - d. Additions
 - e. Reasons for the request
- C. Provide proposed dates for delivery of all submittals
 - 1. Highlight critical, long lead product deliveries.
- D. Coordinate dates for delivery of all other submittals to the Construction Schedule.
- E. The reviewed Construction Submittal Log is the basis for the submission of the required Shop Drawings, Product Data and Samples of the Work.
 - 1. The Engineer will review with reasonable promptness as to cause no delay in the Work by the Contractor and in relation to the dates indicated in the Construction Schedule.
 - 2. The Engineer's review of Shop Drawings, Product Data and Samples, however, is contingent upon their conformance with the design concept of the Project and with the requirements of the Contract Documents.

1.06 CONSTRUCTION PROGRESS SCHEDULES

- A. Revise and resubmit as required during the construction duration after each progress meeting where revisions to the schedule have been made or activities have been reorganized.
- B. Submit revised schedules with each Application for Payment, identifying changes since previous version, and indicate estimated percentage of completion for each item of Work at each submission.
- C. Indicate submittal dates required for shop drawings, product data, samples, and product delivery dates, including those

furnished by Owner and required by Allowances.

1.07 SCHEDULE OF VALUES

- A. General: Submit to the Engineer and the Owner for approval, a Schedule of Values allocated to the various portions of the Work.
- B. Supporting Data: Support the values with back-up data which will substantiate their accuracy, if requested.
- C. Use of Schedule: The Schedule of Values, unless objected to by the Engineer, divides the Work into a sufficient number of individual cost elements to be used as the basis for the Contractor's Applications for Payment.
- D. Form and Content of Schedule of Values:
 - 1. Form: Prepare Schedule on AIA Forms G702A and G703. Similar forms are approved by the Engineer and the Owner, such as a Contractor's automated printout.
 - 2. Order of Listing: Follow the Project Manual Table of Contents as the format for listing component items. Identify each line item with the number and title of the respective major Specification Section.
 - 3. Sub-Values: For each major line item, list sub-values of major products or operations under the item.
 - 4. Values for General Conditions, Construction Facilities and Temporary Controls: Provide each item provided in sufficient detail so that payment may be approved as the Work is completed.
 - 5. Values for Overhead and Profit: Include a directly proportional amount of the Contractor's overhead and profit for each item.
 - 6. Values for Stored Materials: For items on which progress payments will be requested for stored materials, break down the value into cost of materials, delivered and unloaded, with taxes paid and total installed value.
 - 7. Total Sum of Values: The sum of all values listed in the Schedule is to equal the total Contract Sum.
 - 8. Values Detail: If the Schedule of Values initially submitted does not divide the Work as completely as desired by the Engineer or the Owner, the Engineer will recommend additional elements and the Contractor is to revise and resubmit the schedule of Values within five (5) working days.

- E. Revisions: Revise schedule of Values to list Supplemental Agreements only after they have been fully executed, for each subsequent Application for Payment.

1.08 PROPOSED PRODUCTS LIST

- A. Submit a list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
- B. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.

1.09 SHOP DRAWINGS

- A. Shop Drawings are technical drawings, diagrams, schedules and other data specially prepared for this Project to illustrate some portion of the Work, including, but not limited to the following items:
 - 1. Fabrication and installation drawings.
 - 2. Shopwork manufacturing drawings.
 - 3. Setting diagrams.
 - 4. Templates and Patterns.
 - 5. Schedules.
 - 6. Contractor's engineering calculations.
 - 7. Field Measurement data.
- B. Shop Drawings For Review:
 - 1. Submitted to Engineer for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
 - 2. After review, produce copies and distribute in accordance with SUBMITTAL PROCEDURES article above and for record documents purposes described in Section 01 77 00 - PROJECT CLOSE-OUT.
- C. Shop Drawings For Information:
 - 1. Submitted for the Engineer's knowledge as contract administrator or for the Owner.
- D. Shop Drawings For Project Close-out:
 - 1. Submitted for the Owner's benefit during and after project completion.

1.10 PRODUCT DATA

- A. Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams and other information furnished to illustrate materials or equipment for some portion of the Work, including standard printed information on manufactured products that has not been specially prepared for this Project, including, but not limited to the following items:
 - 1. Manufacturer's product literature,

specifications and installation instructions.

- 2. Manufacturer's Instructions and Certificates.
 - 3. Product catalog cuts.
 - 4. Standard color charts.
 - 5. Test and certification reports.
 - 6. Roughing-in diagrams and templates.
 - 7. Standard wiring diagrams.
 - 8. Printed performance curves, charts and data.
 - 9. Product installation, operating and maintenance data.
 - 10. Standard product operating and maintenance manuals.
- B. Product Data For Review:
 - 1. Submitted to Engineer for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
 - 2. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article above and for record documents purposes.
 - C. Product Data For Information:
 - 1. Submitted for the Engineer's knowledge as contract administrator or for the Owner.
 - D. Product Data For Project Close-out:
 - 1. Submitted for the Owner's benefit during and after project completion.
 - E. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturer's standard data to provide information specific to this Project.

1.11 SAMPLES

- A. Samples are physical examples which illustrate materials, equipment or workmanship and establish standards by which the Work will be judged, including, but not limited to the following items:
 - 1. Partial sections of manufactured or fabricated work.
 - 2. Small cuts or containers of materials.
 - 3. Complete units of repetitively-used materials.
 - 4. Color charts or swatches showing colors, textures or patterns.
 - 5. Color range sets.

6. Units or/material of work to be used for independent inspection and testing.
 7. Mock-ups are a special form of Samples, which are too large or otherwise inconvenient for handling in the manner specified for transmittal of Sample submittals.
- B. Samples For Review:
1. Submitted to engineer for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
 2. After review, produce duplicates and distribute in accordance with 1.03 - SUBMITTAL PROCEDURES article above and for record documents purposes.
- C. Samples For Information:
1. Submitted for the Engineer's knowledge as contract administrator or for the Owner.
- D. Samples For Selection:
1. Submitted to Engineer for aesthetic, color, or finish selection.
 2. Submit samples of finishes from the full range of manufacturers' standard colors or in custom colors selected as required, textures, and patterns for Engineer selection.
 3. After review, produce duplicates and distribute in accordance with SUBMITTAL PROCEDURES article above.
 4. For record documents for purposes.
 5. Submit samples to illustrate functional and aesthetic characteristics of the Product, with integral parts and attachment devices. Coordinate sample submittal for interfacing work.
 6. Do not use samples for testing purposes unless specifically stated in the specification section.

1.12 DESIGN DATA

- A. Submit for the Engineer's knowledge as contract administrator or for the Owner.
- B. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.

1.13 FIELD AND TEST REPORTS

- A. Submit for the Engineer's knowledge as contract administrator or for the Owner.
- B. Submit test reports for information for the

limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.

1.14 CERTIFICATES

- A. When specified in individual specification sections, submit certification by the manufacturer, installation/application subcontractor, or the Contractor to Engineer, 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.
- C. Certificates may be recent or previous test results on material or Product, but must be acceptable to Engineer.

1.15 ERECTION DRAWINGS

- A. Submit drawings for the Engineer's benefit as contract administrator or for the Owner.
- B. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.
- C. Data indicating inappropriate or unacceptable Work may be subject to action by the Engineer or Owner.

1.16 OTHER SUBMITTALS

- A. Provide other submittals as specified in each section.

PART 2 - PRODUCTS

2.01 NOT USED

PART 3 - EXECUTION

3.01 SUBMITTALS PREPARATION

- A. Stamp submittals with Contractor's approval.
- B. Transmit all submittals required by the Contract Documents or subsequently by the Engineer as covered by Modifications with reasonable promptness and in orderly sequence so as to cause no delay in the Work or in the Work of any other contractor.

3.02 SUBMITTALS REVIEW

- A. The Engineer will review submittals with reasonable promptness and will return them with the Action of the Engineer's Review noted thereon. Each submittal will be noted with the appropriate action as follows:
 1. "REVISE AND RESUBMIT" means that submittals do not comply with the Contract Documents, and do not proceed with the fabrication or manufacture. Make revisions and resubmit.

2. "MAKE CORRECTIONS NOTED" means that fabrication, manufacture or construction may proceed providing submittal complies with the Engineer's notations and the Contract Documents. If, for any reason, Contractor cannot comply with the notations, resubmit as described for submittals stamped "REVISE AND RESUBMIT"
3. "NO EXCEPTION TAKEN" means that fabrication, manufacture or construction may proceed providing submittal complies with the Contract Documents.
4. "REJECTED" means make revisions and resubmit.

- B. Do not construe the Engineer's review as an indication that submittal is correct or suitable nor that Work represented by submittal complies with the Contract Documents, except as to matters of finish, color and other aesthetic matters left to the Engineer's decision by the Contract Documents.

3.03 REPETITIVE REVIEW

- A. Shop drawings and other submittals will be reviewed no more than three (3) times.
- B. All subsequent reviews will be performed at the times convenient to the Engineer, and at the Contractor's expense, based on the Engineer's then prevailing fee schedule.
- C. Submittals are required until approved.
- D. Any need for more than one submittal submission, or any other delay in obtaining Engineer's review of submittals, will not entitle Contractor to an extension of the contract time.

3.04 ENGINEER DISTRIBUTION OF APPROVED SUBMITTALS

- A. The Engineer will distribute submittals as provided in paragraph 1.02 of this section. retain:
- B. The Engineer may hold submittals in cases where partial submission cannot be reviewed until the complete submission has been received or where correlated items have not yet been received. When such submittals are held by the Engineer, they will advise the Contractor that the items submitted will not be reviewed until all related information has been received.

3.05 CONTRACTUAL DISTRIBUTION OF APPROVED SUBMITTALS

- A. Upon receipt of "NO EXCEPTION TAKEN" and "MAKE CORRECTIONS NOTED" submittals, have sufficient sets of prints or copies made for distribution to Subcontractors, field crews, fabricators, manufacturers, and suppliers who require them for coordination of their Work. Maintain one copy of reviewed Shop Drawings and Product Data at the site with the Record Drawings.

3.06 RESUBMITTAL

- A. For submittals noted "REVISE AND RESUBMIT" and "REJECTED", materials will be returned from the Engineer to the Contractor.
- B. Make corrections required by the Engineer and resubmit as soon as possible. Direct specific attention to revisions.

END OF SECTION

CONSTRUCTION SUBMITTAL LOG

Project Name: **2021 Exterior Wall Repairs at the North Iowa Community School**

Date Last Revised: _____

Engineer: **Buildings Consulting Group, Inc.**

Contractor: _____

Spec. Section	Submittal Description	Completed By Sub-contractor (if required)	Completed and Sent to Engineer	Completed Copy to Contractor & Owner
Preconstruction Submittals				
00 62 16	Certificate of Insurance			
01 33 00	Proposed Subcontractor List			
01 33 00	Proposed Products List			
01 33 00	Preliminary Construction Schedule			
01 33 00	Schedule of Values			
Product/Shop Drawing/ Sample/Data Submittals				
04 01 21	Brick Units			
04 01 21	Masonry Mortar			
04 01 30	Masonry Cleaning Materials			
04 01 40	Stone Masonry Mortar			
04 01 40	Stone Masonry Units			
04 05 19	Masonry Ties and Anchors			
07 92 00	Joint Sealants			
Post-Construction Administrative Submittals				
01 77 00	Project Record Documents			
01 77 00	Operation and Maintenance Instructions			
01 78 36	Warranties			

MATERIALS COLOR SCHEDULE

Project: 2021 Exterior Wall Repairs at North Iowa Community School

Owner: North Iowa Schools

Engineer: **Buildings** Consulting Group, Inc.

Contractor:

Revision:

Section	Material	Product	Location	Color	
				Description	Color Formulation
04 01 21	Brick Units				
04 01 21	Brick Masonry Mortar				
04 01 21	Repointing Trial Cutting Area				
04 01 21	Replacement Brick				
04 01 40	Stone Masonry Mortar				
04 01 40	Stone Masonry				
07 92 00	Joint Sealants				

To be filled out by Contractor as colors are approved and submitted to Owner and Engineer.

SECTION 01 45 23

TESTING

PART 1 - GENERAL

1.01 GENERAL

- A. Inspection and testing services are required to verify certain aspects of the Work for compliance with requirements specified or indicated for the Owner. These services do not relieve the Contractor of responsibility for compliance with Contract Document requirements.

1.02 RELATED SECTIONS

- A. Section 01 33 00 - Submittals: Submission of manufacturers' instructions and certificates.
- B. Section 01 60 00 - Materials and Equipment: Requirements for material and product quality.

1.03 STRUCTURAL INSPECTION:

- A. As required by the Iowa State Building Code, 2015, Chapter 17, Structural Tests and Special Inspections, the following items are required to be inspected:
 - 1. Section 04 01 21 –Masonry Restoration
 - 2. Section 04 01 40 – Stone Masonry Restoration
 - 3. Section 04 05 23 – Masonry Accessories and Flashing
 - 4. Section 04 11 13 – Masonry Shoring
- B. Unless otherwise noted, Structural inspection as required by the Document as performed by the Engineer will be paid for by the Owner.
- C. Reports will be submitted by the Engineer, including structural inspection observations and indicating compliance or non-compliance with Contract Documents.
- D. Contractor to cooperate with the Engineer and furnish safe access and assistance by providing incidental labor as requested to facilitate the inspection. Notify Engineer two (2) days prior to expected time for operations requiring services.
- E. Inspection does not relieve Contractor of the responsibility to perform Work to contract requirements.

1.04 QUALITY CONTROL TESTING

- A. Owner will appoint, employ, and pay for specified services of an independent firm to perform quality control testing.
 - 1. Section 04 01 21 –Masonry Restoration

2. Section 07 92 00 – Joint Sealants

- B. Contractor to arrange and pay for the tests and design mixes specified and required for the Project before construction begins.
- C. Contractor to arrange and pay for all tests specified and/or required by code, permit or regulatory requirements, unless noted otherwise.
- D. Reports on tests from both the Owner's Testing Laboratories and the Contractor's laboratory will be sent to the Contractor, the Engineer (in duplicate), and the Owner, giving observations and results of tests, indicating compliance or noncompliance with specified standards and with Contract Documents.
- E. The independent firm will perform tests and other services specified in individual specification sections and as required by the Engineer, Owner and Authority Having Jurisdiction.
- F. Testing and source quality control may occur on or off the project site. Perform off-site testing as required by the Engineer or the Owner.
- G. Testing does not relieve Contractor of the responsibility to perform Work to contract requirements.
- H. Perform re-testing required because of non-conformance to specified requirements by the same independent firm on instructions by the Engineer. Payment for re-testing will be charged to the Contractor by deducting testing charges from the Contract Sum.

1.05 TESTING AGENCY QUALIFICATIONS

- A. Approved Independent Testing Agency means an independent testing agency acceptable to the Owner and the Engineer, and possessing the professional qualifications and equipment to perform the specified tests and to evaluate and report the results.
- B. Laboratory to comply with requirements of ASTM D3740 and ASTM E329.
- C. Laboratory designated to test concrete shall comply and be certified in accordance with ASTM C1077
- D. Laboratory to maintain a full-time registered Engineer on staff to review services.
- E. Laboratory is authorized to operate in the State in which the Project is located.
- F. Testing equipment is calibrated at

reasonable intervals with devices of accuracy traceable to either NIST Standards or accepted values of natural physical constants.

G. References

1. ASTM E329 - Standard Recommended Practice for Inspection and Testing Agencies for Concrete, steel, and Bituminous Materials as used in Construction.
2. ASTM C1077 - Standard Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation.

1.06 TESTING AGENCY AUTHORITY LIMITATION

- A. Agency or laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.
- B. Agency or laboratory may not approve or accept any portion of the Work.
- C. Agency or laboratory may not assume any duties of Contractor.
- D. Agency or laboratory has no authority to stop the Work.

1.07 CONTRACTOR'S RESPONSIBILITIES

- A. Contractor to give a minimum of two (2) days notice of its readiness for inspection and testing and a reasonable date fixed for such inspection should the Specifications, Engineer's instructions, laws, ordinances or any public authority require any Work to be inspected or approved. If any Work requiring inspection should be covered up without approval or consent of the approving agency, it must be uncovered for examination at Contractor's expense.
- B. Contractor to cooperate with the Owner's Structural Inspection and Testing Agency personnel, and provide all scaffolding, staging or temporary heat necessary for Owner's Testing Agency to access the Work, and the manufacturer's operations.
- C. Contractor to provide to the Owner's Testing Agency without cost, samples of proposed material which require testing and pay shipping costs of such samples to the Owner's Testing Agency and other testing location and facility.
- D. Contractor to provide to the Owner's Testing Agency the approved design mix(es) proposed to be used for concrete and other materials which require testing by the Owner's Testing Agency.
- E. Contractors to furnish copies of test reports

as required.

F. Contractors to furnish incidental labor and facilities necessary:

1. To provide access to Work to be tested.
2. To obtain and handle samples at the Project site or at the source of the product to be tested.
3. To facilitate inspections and tests.

G. It is the Contractor's responsibility to make arrangements with the Owner's Testing Agency and pay for additional samples and tests taken for Contractor's convenience.

1.08 PAYMENT FOR TESTS

- A. In general, it is intended the Owner will pay for those field tests necessary to determine the quality of materials and workmanship at the site.
- B. The Owner will not pay for testing of mechanical and electrical systems.

1.09 QUALITY ASSURANCE BY CONTRACTOR - CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, Products, services, site conditions, and workmanship to produce Work of specified quality.
- B. Follow the manufacturers' instructions in strict accordance, including each step in sequence. Pre-approve any deviation from the manufacturer's instructions from the manufacturer and the Engineer.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Engineer before proceeding.
- D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Perform work by persons qualified to produce required and specified quality.
- F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- G. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

1.10 TOLERANCES

- A. Monitor fabrication and installation tolerance control of Products to produce acceptable Work. Do not permit tolerances to accumulate.

- B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Engineer before proceeding.
- C. Adjust Products to appropriate dimensions; position before securing Products in place.

1.11 MANUFACTURERS' FIELD SERVICES

- A. When specified in individual specification sections, require material or Product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship and approve installation procedures as applicable, and to initiate instructions when necessary.
- B. Submit qualifications of manufacturer's technical representative to Engineer fifteen (15) days in advance of required observations for approval of Engineer and Owner.
- C. Report observations and site decisions or Instructions given to applicators or installers that are supplemental or contrary to manufacturer's written instructions.

- D. Refer to Section 01 33 00 – SUBMITTALS, PARAGRAPH 1.13, FIELD TEST[s] AND REPORTS.

1.12 REINSPECTION AND RETESTING RESPONSIBILITIES

- A. Where results of required inspections, tests or similar prove unsatisfactory and do not indicate compliance of related work with requirements of the Contract Documents, it is the responsibility of the Contractor, regardless whether the original test was the Contractor's responsibility, to pay for the cost associated to such re-test/re-inspection. Re-testing of Work revised or replaced by the Contractor is also the Contractor's responsibility. The retesting and re-inspection costs will be deducted from the Contract Sum.
- B. Re-inspection and re-testing are to be performed by the same independent testing agency or inspection consultant.

PART 2 - PRODUCTS

2.01 NOT USED

PART 3 - EXECUTION

3.01 NOT USED

END OF SECTION

SPECIAL STRUCTURAL TESTING AND INSPECTION PROGRAM SUMMARY SCHEDULE

Project Name: 2021 Exterior Wall Repairs at the North Iowa Community School Project No. R1149-20-1
 Location: 111 3rd Ave NW Permit No. _____(1)
 Buffalo Center, IA 50424

Technical (2)		Description (3)	Type of Inspector (4)	Report Frequency (5)	Assigned Firm (6)
Section	Article				
04 01 21		Masonry Repair	SER	Monthly	BCG
01 01 40		Stone Masonry Repairs	SER	Monthly	BCG
04 05 19		Wall Ties	SER	Monthly	BCG

Notes: This schedule shall be filled out and included in the Special Structural Testing and Inspection Program.

- (1) Permit No. to be provided by the Building Official.
- (2) Referenced to the specific technical scope section in the program.
- (3) Use descriptions per IBC Section 1701, as adopted by Iowa State Building Code.
- (4) Special Inspector – Technical, Special Inspector – Structural.
- (5) Weekly, monthly, per test/inspection, per floor, etc.
- (6) Firm contracted to perform services.

ACKNOWLEDGEMENTS

Each appropriate representative shall sign below:

Owner: _____ Firm: _____ Date: _____
 Contractor: _____ Firm: _____ Date: _____
 Architect: _____ Firm: None Date: _____
 SER: _____ Firm: Buildings Consulting Group, Inc. Date: _____
 SI-S: _____ Firm: Buildings Consulting Group, Inc. Date: _____
 SI-T: _____ Firm: Buildings Consulting Group, Inc. Date: _____
 TA: _____ Firm: _____ Date: _____
 F: _____ Firm: _____ Date: _____

If requested by engineer/architect of record or building official, the individual names of all prospective special inspectors and the work they intend to observe shall be identified.

Legend: SER = Structural Engineer of Record SI-T = Special Inspector - Technical TA = Testing Agency
 SI-S = Special Inspector - Structural F = Fabricator

Accepted for Building Department By _____ Date _____

SECTION 01 50 00

CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Temporary Utilities: Electricity, lighting, heat, ventilation, telephone service, water, and sanitary facilities.
- B. Temporary Controls: Barriers, enclosures and fencing, protection of the Work, and water control.
- C. Construction Facilities: Parking, progress cleaning and project signage.

1.02 RELATED REQUIREMENTS

- A. Section 01 10 00 – Summary of Work: Contractor use of premises.
- B. Section 01 77 00 – Project Closeout: Cleaning during work and final cleaning.

1.03 QUALITY ASSURANCE

- A. Regulations: Comply with industry standards and applicable laws and regulations of authorities having jurisdiction.
- B. Standards: Comply with NFPA Code 241, Building Construction and Demolition Operations, ANSI-A10 Series standards for Safety Requirements for Construction and Demolition, and NECA Electrical Design Library, Temporary Electrical Facilities.
- C. Electrical Service: Comply with NEMA, NECA and UL standards and regulations for temporary electric service. Install service in compliance with National Electric Code (NFPA 70).

1.04 TEMPORARY UTILITIES

- A. Temporary Utilities Schedule

Temporary Utilities	Provided By:	
	Contractor	Owner
Construction Electricity		✓
Lighting For Construction	✓	
Heating	✓	
Ventilation	✓	
Water Service		✓
Hand Washing Station	✓	
Sanitary Services	✓	

B. Construction Electricity

1. Contractor is responsible to provide and pay for power service required for the use of the Contractor and all subcontractors.
2. Contractor and his Subcontractors are permitted to connect to Owner's existing power service, and Owner will pay for cost of energy used. All necessary wiring and connections, however, are the responsibility of the Contractor. Take reasonable precautions to prevent excessive use and overload of the existing system.
3. Remove the temporary light and power system when no longer required.
4. Provide only temporary lighting and power systems that meet all code, safety and OSHA requirements.

C. Temporary Lighting For Construction Purposes

1. Provide and maintain incandescent lighting for construction operations within work areas and areas adjacent to the work areas.
2. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails and lamps as required.
3. Maintain lighting and provide routine repairs.

D. Temporary Heating

1. Provide and pay for heating devices and heat as needed to maintain specified conditions for construction operations.
2. Prior to operation of permanent equipment for temporary heating purposes, verify that installation is approved for operation, equipment is lubricated and filters are in place. Provide and pay for operation, maintenance and regular replacement of filters and worn or consumed parts.
3. Maintain minimum ambient temperature of 50 degrees F in areas where construction is in progress, unless indicated otherwise in project sections.

E. Temporary Ventilation

1. Contractor is responsible to ventilate enclosed areas to achieve curing of materials, to dissipate humidity, and to

prevent accumulation of dust, fumes, vapors, or gases as a result of construction.

2. Work with the building engineering staff to ensure proper ventilation is achieved.

F. Temporary Water Service

1. Contractor is permitted to connect to existing water source for construction operations at time of construction. Owner will pay for cost of water used.
2. Extend branch piping with outlets located so water is available by hoses with threaded connections.
3. Provide drinking water for his construction crew on the site during construction.

G. Temporary Hand Washing Station

1. Contractor is to provide and maintain a temporary hand washing station. One hand washing station is required per pair of sanitary facilities. Station facility only at areas designated by the Owner.

H. Temporary Sanitary Facilities

1. Contractor is to provide and maintain required facilities and enclosures. Station the temporary sanitary facilities only at areas designated by the Owner.

1.05 TEMPORARY CONTROLS

A. Temporary Controls Schedule

Temporary Controls	Provided By:	
	Contractor	Owner
Security Barriers and Fencing	✓	
Water Control	✓	
Exterior Enclosures	✓	
Interior Enclosures	✓	
Protection of Installed Work	✓	
Protection of Existing Traffic Coating	✓	
Dust and Debris Protection	✓	

B. Security Barriers/Fencing

1. Provide barriers or fencing to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent properties from damage from construction operations and demolition.

2. Provide barricades and covered walkways required by governing authorities for public rights-of-way and for public access to existing building.
3. Provide protection for plants and shrubs adjacent to the work areas. Replace damaged plants at Contractor's cost.
4. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

C. Water Control

1. Provide a water barrier system to protect the existing facilities and drains from damage and clogging during construction, particularly areas located above retail and occupied spaces.
2. Protect site from puddling or running water. Provide temporary drain and water runoff system, if necessary.

D. Exterior Enclosures

1. Provide temporary weather tight closure of exterior openings to accommodate acceptable working conditions and protection for Products, to allow for temporary heating and maintenance of required ambient temperatures identified in individual specification sections, and to prevent entry of unauthorized persons. Provide access doors with self-closing hardware and locks.

E. Interior Enclosures

1. Provide temporary partitions and ceilings as indicated to separate work areas from Owner occupied areas, to prevent penetration of dust and moisture into Owner-occupied areas, and to prevent damage to existing materials and equipment.
2. Construction: Framing and reinforced polyethylene sheet materials with closed joints and sealed edges at intersections with existing surfaces.
3. Paint surfaces exposed to view from Owner occupied areas to match surrounding wall paint colors and texture.

F. Protection Of Installed Work

1. Protect installed Work and provide special protection where specified in individual specification sections.
2. Provide temporary and removable protection for installed Products. Control activity in immediate work area to prevent damage.
3. Provide protective coverings at walls, projections, jams, sills, and soffits of

openings.

4. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects by protecting with durable sheet materials.
5. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
6. Prohibit traffic from landscaped areas.

G. Protection Of Existing Traffic Coating

1. Provide and maintain proper protection of the existing traffic coating in the facility, particularly those areas that are under and adjacent to work areas.
2. Contractor is responsible for repair of any damaged coating to its original condition by the original installer.

H. Temporary Dust/Debris Protection

1. Provide and maintain full height dust barriers around all repair areas to contain dust and debris during construction. Any dust and debris resulting from construction activities to the property and public vehicles is the Contractor's responsibility to correct.

1.06 CONSTRUCTION FACILITIES

A. Construction Facilities Schedule

Construction Facilities	Provided By:	
	Contractor	Owner
Progress Cleaning and Waste Removal	✓	
Field Offices and Sheds	✓	
Fire Extinguishers	✓	
Signs for Construction Information	✓	

B. Parking

Provide off-site parking. Only company trucks are allowed to park inside the repair area. Refer to Section 01 10 00 for any parking restrictions stipulated by the Owner.

C. Progress Cleaning And Waste Removal

1. Maintain areas free of waste materials, debris, and rubbish, and avoid stockpiling of construction debris.
2. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces,

and other closed or remote spaces, prior to enclosing the space.

3. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.
4. Collect and remove waste materials, debris, and rubbish from site periodically and dispose off-site.
5. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

D. Field Offices And Sheds

1. Temporary field office: Weather tight, with lighting, electrical outlets, heating, ventilating equipment.
2. Contractor is responsible for the construction, security, maintenance and removal of the temporary field office.

E. Fire Extinguishers

1. Provide hand-carried, portable UL-rated class AA fire extinguishers for temporary offices and similar spaces. In other locations provide hand-carried, portable, UP-rated, class AABC dry chemical extinguishers, or a combination of extinguishers of NFPA recommended classes for the exposure.
2. Comply with NFPA 10 and 241 for classification, extinguishing agent and size required by location and class of the exposures.

F. Temporary Signs

1. Provide and maintain temporary warning signs, directional signs and other temporary signs required for the safe and proper execution of the Work.
2. Provide temporary signs throughout construction to mark and identify building entrances within construction areas. Signs are to be on 2" plywood, 3' high by 4' wide, with white painted background and approximately 10" high black letters. Prepare signs with various texts, including, but not limited to the following:
 - a. Repair in Progress, Sorry for the Inconvenience
 - b. Caution, Swing stage Work Above
3. No individual identification signs by the Contractor or Subcontractor(s) are acceptable on the Project.

G. Removal Of Utilities, Facilities, And Controls

1. Remove temporary utilities, equipment, facilities, and materials, prior to Final Application for Payment inspection.

2. Clean and repair damage caused by installation or use of temporary work.
3. Restore existing and permanent

facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

END OF SECTION

SECTION 01 60 00

MATERIALS AND EQUIPMENT

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Products.
- B. Transportation and handling.
- C. Storage and protection.
- D. Product options.
- E. Substitutions.

1.02 RELATED SECTIONS

- A. Document 00 21 13 – Instructions to Bidders: Product options and substitution procedures.
- B. Section 00 73 00 – Supplementary Conditions: Substitutions.
- C. Section 01 33 00 – Submittals: Submittal of manufacturers' instructions.
- D. Section 01 45 23 – Quality Control, Inspection & Testing.

1.03 PRODUCTS

- A. Do not use materials and equipment removed from existing premises, except as specifically permitted by the Contract Documents.
- B. Provide interchangeable components of the same manufacturer for components being replaced.

1.04 TRANSPORTATION AND HANDLING

- A. Transport and handle Products in accordance with manufacturer's instructions and construction schedules.
- B. Promptly inspect shipments to ensure that Products comply with requirements, quantities are correct and Products are undamaged.
- C. Provide equipment and personnel to handle Products by methods to prevent soiling, disfigurement or damage.
- D. Comply with Owner's restrictions on delivery location and schedule.

1.05 STORAGE AND PROTECTION

- A. Store and protect Products in accordance with manufacturers' instructions.
- B. Store with seals and labels intact and legible.
- C. Store sensitive Products in weather tight,

climate controlled enclosures in an environment favorable to Product.

- D. For exterior storage of fabricated Products, place on sloped supports above ground.
- E. Provide off-site storage and protection when site does not permit on-site storage or protection.
- F. Cover Products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of Products.
- G. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- H. Provide equipment and personnel to store Products by methods to prevent soiling, disfigurement or damage.
- I. Arrange storage of Products to permit access for inspection. Periodically inspect to verify Products are undamaged and are maintained in acceptable condition.

1.06 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Any products meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers: Products of manufacturers named and meeting specifications, no options or substitutions allowed.
- C. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named in accordance with the following article.

1.07 SUBSTITUTIONS

- A. Only bidders may provide a request for substitution. A Request for Substitution submitted by others (not bidders) will not be considered for review.
- B. No Requests for Substitution will be considered after seven (7) days prior to the Bid Opening, except as specifically provided in the Contract Documents.
- C. Requests for Substitution received after Bid Opening will not be considered except in such cases where it is necessary to make a substitution due to strikes, lockouts, bankruptcy, discontinuance of a product and similar circumstances. Make such Request

for Substitution of materials after Contract Award in writing to the Engineer within ten (10) days of the date that the Contractor ascertains they cannot obtain the material or equipment specified.

- D. After bid(s), substitutions may only be considered when a Product becomes unavailable through no fault of the Contractor.
- E. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.
- F. A request constitutes a representation that the Bidder:
 - 1. Has investigated proposed Product and determined that it meets or exceeds the quality level of the specified Product.
 - 2. Will provide the same warranty for the Substitution as for the specified Product.
 - 3. Will coordinate installation and make changes to other Work, which may be required for the Work to be complete with no additional cost to Owner.
 - 4. Waives claims for additional costs or time extensions, which may subsequently become apparent.
- G. Substitutions will not be considered when:
 - 1. They are indicated or implied on shop drawing or product data submittals.
 - 2. Are without a separate written request.
 - 3. When acceptance will require revision to the Contract Documents.
- H. Substitution Submittal Procedure:
 - 1. Submit three (3) copies of Request for Substitution Form (01 60 00 - 3) for consideration. Limit each request to one (1) proposed Substitution.
 - 2. Submit shop drawings, product data, and certified test results attesting to the proposed Product equivalence. Burden

of proof is on proposer.

- 3. The Engineer will notify Contractor in writing of decision to accept or reject request.

1.08 MANUFACTURER'S INSTRUCTIONS

- A. When the Contract Documents require that installation comply with printed Manufacturer's Instructions, obtain and distribute copies of such instructions to parties involved in the installation. Submit copies of Manufacturer's Instructions for approval by the Engineer in accordance with Section 01 33 00.
- B. Maintain one complete set of Manufacturer's Instructions at the site field office during installation, until completion.
- C. Handle, install, connect, clean, condition and adjust products in strict accord with such instructions and in conformity with specified requirements.
 - 1. Should job conditions or specified requirements conflict with Manufacturer's Instructions, consult with the Engineer for further clarifications.
 - 2. Do not proceed with such Work without clear direction.
- D. Perform work in accord with Manufacturer's Instructions. Do not omit any preparatory step or installation procedure unless specifically modified or exempted by the Contract Documents or the Engineer.

PART 2 - PRODUCTS

2.01 NOT USED

PART 3 - EXECUTION

3.01 NOT USED

END OF SECTION

To:	Buildings Consulting Group, Inc. 2855 Anthony Lane So., Suite 200 Minneapolis, MN 55418	Project:	2021 Exterior Wall Repairs at the North Iowa Community School
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REQUEST FOR SUBSTITUTION FORM

SPECIFICATION SECTION _____ PARAGRAPH _____

SPECIFIED PRODUCT _____

PROPOSED SUBSTITUTION _____

REASON FOR SUBSTITUTION _____

ATTACH COMPLETE TECHNICAL DATA, LITERATURE AND SAMPLE IF APPLICABLE

- A. Does proposed substitution fail to satisfy, in any respect, Characteristics specified for original product(s)? ___ Y ___ N
- B. Does substitution affect dimensions shown on Drawings? ___ Y ___ N
- C. Does substitution affect other trades? ___ Y ___ N
- D. Does warranty differ from that specified? ___ Y ___ N
- E. Does substitution affect cost to Owner? ___ Y ___ N
 If so, how much? Add \$_____ Deduct \$_____

- F. If you indicated "Yes" to any of the items above, attach thorough explanation on your Company letterhead as follows:
 - a. Explain any difference between proposed substitution and specified product.
 - b. Summarize experience with product and manufacturer in Project area.

The undersigned states that the function, appearance and quality of the proposed substitution is equivalent or superior to the specified item, unless noted otherwise, and that all information above and attached is true and correct.

For use by Engineer:

Submitted by:	
Signature:	
Title:	
Company:	
Address:	
Date:	

Accepted	
Accepted as Noted	
Not Accepted	
Received Too Late	
Included in Addendum:	Yes ___ No ___
Addendum No. _____	
By:	
Date:	

Remarks:

SECTION 01 74 00

PROJECT CLEANUP

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Cleaning of Project.

1.02 RELATED SECTIONS

- A. Document 00 72 00 —General Conditions: Clean-up.
- B. Section 01 50 00 – Construction Facilities and Temporary Controls: Cleaning during construction.
- C. Individual Specification Sections: Specific cleaning for product or work.

1.03 DESCRIPTION

- A. Execute cleaning regularly during the progress of the Work, and at completion of the Work, as required by the General Conditions and the Specifications.
- B. Maintain premises and public properties free from accumulations of waste, debris, and rubbish caused by operations. Maintain public use areas free of debris at all times.
- C. Conform to the requirements of authorities having jurisdiction.
- D. At completion of Work, remove waste materials, rubbish, tools, equipment, machinery and surplus materials, and clean all sight-exposed surfaces; leave Project clean and ready for occupancy.

1.04 SAFETY REQUIREMENTS

- A. Standards: Maintain Project in accordance with requirements of all authorities having jurisdiction.
- B. Hazards Control:
 - 1. Store volatile wastes in covered metal containers and remove from premises weekly.
 - 2. Prevent accumulation of wastes which create hazardous conditions.
 - 3. Provide adequate ventilation during use of volatile or noxious substances.
- C. Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.
 - 1. Do not burn or bury rubbish and waste materials on Project site.
 - 2. Do not dispose of volatile wastes, such as mineral spirits, oils, or paint thinner, in storm or sanitary drains.

- 3. Do not dispose of wastes into streams or waterways.

1.05 SOLID WASTE DISPOSAL SERVICE

- A. Provide containers on the site for the disposal of all types and quantities of construction debris, and include the cost of these services in their bid.
- B. Determine and comply with all applicable special requirements and regulations affecting solid waste disposal of materials from the Project site to a legal, off-site disposal location.
- C. Each Subcontractor must cooperate with the Prime Contractor regarding the disposal service. Any anticipated disposal requirement that is beyond normal work scope operations must be approved in advance by the Prime Contractor.
- D. Locate containers only at those locations as approved in advance by the Engineer and Owner.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. Use only those cleaning materials which will not create hazards to health or property, and which will not damage surfaces.
- B. Use only those cleaning materials and methods recommended by the manufacturer of the surface material to be cleaned.
- C. Use cleaning materials only on surfaces recommended by the cleaning material manufacturer.
- D. Provide or arrange for cleaning materials and equipment.

PART 3 - EXECUTION

3.01 REGULAR HOUSEKEEPING AND CLEAN-UP

- A. Execute regular daily housekeeping to keep the Work, the site and adjacent properties free from accumulations of waste materials, rubbish and windblown debris, resulting from construction demolition and operations.
- B. Each Contractor is responsible for the cost of his own clean-up operations. Perform clean-up in a timely and thorough manner in order to meet safety regulations and permit other Subcontractors to perform without hindrance from dirt and debris. Coordinate Project housekeeping, and take appropriate steps to maintain clean, safe working conditions. Subcontractors failing to meet housekeeping

requirements will be charged for services arranged by the Contractor.

3.02 DURING CONSTRUCTION

- A. Responsibilities of the Contractor and each Subcontractor are to:
 - 1. Conform to environmental protection requirements of authorities having jurisdiction.
 - 2. Handle materials in a controlled manner.
 - 3. Remove debris produced by the Work as it occurs on a daily basis, to solid waste disposal containers.
 - 4. Execute cleaning at the end of each day's operations to ensure that building, grounds and public properties are maintained free from accumulations of waste materials, debris and rubbish.
 - 5. Provide on-site containers for collection of waste materials, debris and rubbish.
 - 6. Remove waste materials, debris and rubbish from site and legally dispose of off Owner's property.

3.03 FINAL CLEANING

- A. Employ experienced workers, or professional cleaners, for final cleaning caused by Contractor operations.
- B. In preparation for and prior to Substantial Completion or Owner Occupancy, remove protective coatings, barriers and other protective devices and all temporary Work.

Conduct an inspection of exposed interior and exterior surfaces and all Work areas, to verify the entire Project is clean.

- C. In preparation for and prior to Substantial Completion or Owner Occupancy, installing Subcontractors must conduct their own final inspection of sight-exposed interior and exterior surfaces, and of concealed spaces.
- D. In addition to removal of debris and cleaning specified in other Sections, clean interior and exterior exposed-to-view surfaces.
- E. Repair, patch, replace and touch-up marred surfaces to specified finish, to match adjacent surfaces.
- F. Remove temporary protection and labels not required to remain.
- G. Clean finishes free of dirt, dust, stains, films and other foreign substances.
- H. Clean transparent and glossy materials to a polished condition; wash and polish glass on both faces; remove foreign substances. Polish reflective surfaces to a clear shine.
- I. Wash down completely and broom clean all paved surfaces.
- J. Remove waste, debris and surplus materials from the site. Clean grounds; remove stains, spills, and foreign substances from paved areas and sweep clean. Wash or rake clean other exterior surfaces.
- K. Maintain cleaning until Final Completion.

END OF SECTION

SECTION 01 77 00

PROJECT CLOSEOUT

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Substantial completion of the contract and inspection procedures.
- B. Final inspection procedure.
- C. Final completion and final payment conditions.
- D. Project record documents.
- E. Operation and maintenance data.
- F. Extra products.
- G. Warranties and bonds.

1.02 RELATED SECTIONS

- A. Section 01 33 00 – Submittals: Final Record Documents

1.03 SUBSTANTIAL COMPLETION OF THE CONTRACT AND INSPECTION PROCEDURE

Substantial Completion	Provided By:		
	Contractor	Engineer	Owner
Written request to Engineer and Owner	✓		
Schedule inspection		✓	
Substantial Completion Inspection	✓	✓	✓
Prepare Punch List		✓	
Correct all items on Punch List	✓		
Issue Certificate of Substantial Completion		✓	

- A. When the Contractor considers their Work substantially complete, submit a written request to the Engineer and Owner for an inspection to determine Substantial Completion, together with a comprehensive list of items to be completed or corrected.
- B. By the act of requesting an Inspection to determine Substantial Completion, the Contractor represents that they have:
 - 1. Reviewed the Contract Documents, and inspected their Work for compliance with the Contract Documents.
 - 2. Substantially completed their Work in accordance with the Contract

Documents and all pertinent submittals.

- 3. All equipment and systems have been tested in the presence of necessary governing authorities and the Owner's Representatives and are operational.
- 4. The Work is ready for an Inspection to determine Substantial Completion.
- C. When the Engineer considers the Work or designated portion thereof to be sufficiently complete, they will establish a date for the Substantial Completion Inspection which will be held approximately fourteen (14) calendar days prior to the estimated date for Substantial Completion.
- D. The Engineer, accompanied by the Owner and the Contractor, will conduct the Substantial Completion Inspection and, with input from the Owner, prepare a written list, the Substantial Completion Punch List, of Work items to be completed or corrected before the Work can be determined to be Substantially Complete. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.
- E. The Contractor is to proceed promptly to complete and correct all items on the Substantial Completion Punch List as soon as possible. When the items on the Substantial Completion Punch List have been completed or corrected, return the Substantial Completion Punch List to the Engineer indicating in writing, action taken for each item, those items completed and not completed and their reasons for not completing remaining items. Remaining items to be completed or corrected shall be minor and few in number.
- F. When the Engineer determines that the Work is Substantially Complete, they will prepare a Certificate of Substantial Completion to establish the Date of Substantial Completion, state the responsibilities of the Owner and Contractor for security, maintenance, heating, ventilation and air conditioning, utilities, damage to the Work and insurance and fix the Contractor's time to all remaining items on the Substantial Completion Punch List accompanying the Certificate.
- G. Warranties required by the Contract Documents commence on the Date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial

Completion. The Certificate of Substantial Completion will be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in such Certificate.

1.04 FINAL INSPECTION PROCEDURE

Final Completion	Provided By:		
	Contractor	Engineer	Owner
Documentation Substantial Completion Punch List items completed	✓		
Required documentation to Engineer	✓		
Schedule Final Inspection		✓	
Final Inspection	✓	✓	✓
Prepare Final Inspection Punch List		✓	
Correct Final Inspection Punch List	✓		
Documentation for Final Completion:	✓		
• Warranties	✓		
• Updated Supplier & Manufacturer List	✓		
• Final application for Payment	✓		
• Project Record Documents		✓	

- A. Contractor to submit to the Engineer, when all remaining items on the Substantial Completion Punch List have been fully completed or corrected, and when all other Project Work and requirements of the Contract Documents have been completed, a written request for Final Inspection.
- B. Contractor to provide to the Engineer for approval and delivery to the Owner, the following as a condition of and prior to the Date of Final Completion of the Contract:
 - 1. Evidence of compliance with requirements of governing authorities, including copies of Certificates of Inspection.
 - 2. An original, signed Certificate of Occupancy, issued by governing authorities.
 - 3. All Mechanical Systems certified Test and Balance Reports.
 - 4. All Operating and Maintenance Data as specified in Article 1.07.
 - 5. Confirmed specific written arrangements for the Owner's designated operating

and maintenance personnel to receive instructions in the operation, adjustment and maintenance of all products, equipment and systems as specified.

- C. The Engineer will establish a date for the Final Inspection.
- D. The Engineer, accompanied by the Owner and the Contractor, will conduct the Final Inspection and, with input from the Owner, prepare a written list, the Final Punch List, of Work items to be completed or corrected before the Work can be determined to have reached Final Completion. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.
- E. The Contractor is to proceed promptly to complete and correct all items on the Final Punch List as soon as possible. When the items on the Final Punch List have been completed or corrected, the Contractor is to return the Final Punch List to the Engineer, indicating in writing, final action taken for each item.
- F. As a condition of and prior to Project Final Completion of the Contract, the Contractor is to prepare and submit to the Engineer for approval and deliver to the Owner, original, signed copies of each of the following:
 - 1. Final Application for Payment.
 - 2. Updated Subcontractors, Suppliers and Manufacturers List and Products List indicating final Record information for the following: Firm name, address, telephone and contact person, type of work or product, brand name or manufacturer's name, and model number, all in the sequential order of the Project Manual.
 - 3. All Project Record Documents as specified submitted in final form.
 - 4. All written Warranties and Guarantees as specified per individual Specifications Sections, submitted as required.
 - 5. Refer to Sections 00 72 00 and 00 73 00 for further information regarding Final Completion Submittals.
- G. When the Engineer has determined that the Work is acceptable, all requirements of the Contract Documents are satisfied and Project Final Completion has been accomplished, they will inform the Owner and the Contractor in writing.

1.05 FINAL COMPLETION AND FINAL PAYMENT CONDITIONS

- A. The Owner may, at its discretion, withhold final payment until the Contractor has filed

with the Owner a final total lien waiver in a form acceptable to the Owner and an affidavit showing evidence that all claims against them by reason of the Contract have been paid or satisfactorily secured. In case such evidence is not furnished, the Owner may retain from any amount due said Contractor sums sufficient to cover all claims unpaid.

- B. The Engineer will make one Final Completion Inspection for all Work of the Project. If additional inspections are required due to the Contractor's failure to complete previously listed corrective or uncompleted Work, the Engineer shall be properly compensated for their time, both in inspection, and in review and processing of requirements, in full by the Contractor and such compensation shall be accomplished by a deduct Supplemental Agreement to the Contract between the Owner and the Contractor.
- C. Final Completion of the Date of Final Acceptance for the purpose of these Specifications, shall mean the date on which the Engineer and Owner accept the Project in writing. Final Completion shall not be construed to mean acceptance of any Work subsequently found to be inferior, substandard, missing or not in accordance with the Contract Documents. Such Work shall be remedied as directed by the Engineer, the same as though the Work had not been approved.

1.06 PROJECT RECORD DOCUMENTS

- A. Contractor to maintain on site one (1) set of the following record documents; record actual revisions to the Work:
 - 1. Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders and other modifications to the Contract.
 - 5. Reviewed Shop Drawings, Product Data, and Samples.
 - 6. Manufacturer's instructions for assembly, installation, and adjusting.
- B. Ensure entries are complete and accurate, enabling future reference by Owner.
- C. Store record documents separate from documents used for construction.
- D. Record information concurrent with construction progress.
- E. Specifications: Legibly mark and record at each Product section description of actual Products installed, including the following:

- 1. Manufacturer's name and product model and number.
- 2. Product substitutions or alternates utilized.
- 3. Changes made by Addenda and modifications.

- F. Record Drawings and Shop Drawings. Legibly mark each item using an erasable colored pencil to record actual construction including the following. Call attention to each entry by drawing a "Cloud" around the area(s) affected.
 - 1. Field changes of dimension and details.
 - 2. Details not on original Contract drawings.
- G. Use all means necessary to maintain the Job Set of Record Documents completely protected from deterioration, loss and damage until completion of the Work and transfer of the recorded data to the Final Record Documents. In the event of loss of recorded data, use all means necessary to secure the data for the Engineer's approval; such means shall include, if necessary, removal and replacement of concealing materials, and in such case, all replacements shall be to the standards originally specified in the Contract Documents.
- H. Submit the completed set of Final Record Documents to Engineer for review and make all required changes in the Final Record Documents, and promptly deliver the Final Record Documents to the Engineer for delivery to the Owner.

1.07 WARRANTIES AND BONDS

- A. Provide duplicate notarized copies.
- B. Execute and assemble transferable warranty documents from Subcontractors, suppliers, and manufacturers.
- C. Provide Table of Contents and assemble in a binder with durable plastic cover.
- D. Submit three (3) copies of each set to the Engineer for review and approval prior to final Application for Payment.
- E. For items of Work delayed beyond date of Substantial Completion, provide updated submittal within ten (10) days after acceptance, listing date of acceptance as start of warranty period.

PART 2 - PRODUCTS

2.01 NOT USED

PART 3 - EXECUTION

3.01 NOT USED

END OF SECTION

SECTION 01 78 36

WARRANTIES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Preparation and submittal of warranties.
- B. Time and schedule of submittals.

1.02 RELATED SECTIONS

- A. Section 00 72 00 – General Conditions - AIA: Warranties and correction of work.
- B. Section 01 77 00 – Project Closeout: Contract closeout procedures.
- C. Individual Specifications Sections: Warranties required for specific Products or Work.

1.03 FORM OF SUBMITTALS

- A. Provide two original paper copies of warranty and any supporting documentation provided by the Manufacturer.

1.04 PREPARATION OF SUBMITTALS

- A. Obtain warranties executed in duplicate by responsible Subcontractors, suppliers and manufacturers, within ten (10) days after completion of the applicable item of work. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial completion is determined.
- B. Verify that documents are in proper form, contain full information, and are notarized.
- C. Co-execute submittals when required.
- D. Retain warranties until time specified for submittal.

1.05 TIME OF SUBMITTALS

- A. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within ten (10) days after acceptance.
- B. Make other submittals within ten (10) days after Date of Substantial Completion, prior to final Application for Payment.
- C. For items of Work for which acceptance is delayed beyond Date of Substantial Completion, submit within ten (10) days after acceptance, listing the date of acceptance as the beginning of the warranty period.

1.06 SCHEDULE OF SUBMITTALS

- A. Section 07 92 00 Sealants

PART 2 - PRODUCTS

2.01 NOT USED

PART 3 - EXECUTION

3.01 NOT USED

END OF SECTION

SECTION 02 26 00

HAZARDOUS MATERIALS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Follow the procedures in this section to notify the Owner of hazardous or potentially hazardous substances during performance of the work.

1.02 RELATED SECTIONS

- A. Section 01 77 00 – Project Closeout

PART 2 - PRODUCTS

2.01 NOT USED

PART 3 - EXECUTION

3.01 NOTIFICATION PROCEDURES

- A. When suspect substances are encountered, immediately cease operations in the vicinity if normal construction operations may disturb these substances or cause release of hazardous substances.
- B. Immediately after ceasing operations, promptly notify the Owner, Property Manager, and Engineer of the following:
 - 1. Location and extent of the suspect substance.
 - 2. Condition of the suspect substance(s), including notification of any possible

release of the substance into the atmosphere, if it was disturbed.

- 3. Description of the substance requested for analysis.
- 4. Provide immediate verbal notification, followed by written notification by the Contractor as soon as possible.

- C. Follow the General Conditions, Article 4.06, "Hazardous Environmental Condition at site" (AIA version) or Article 10, (Protection of Persons and Property) notification procedures. This is a mandatory procedure, and applies to all contractors and their subcontractors, suppliers, agents or representatives. The Contractor will be held responsible for contamination of the premises and consequential damages if these procedures fail to be followed.

3.02 IDENTIFIED HAZARDOUS SUBSTANCES

- A. No substances have been identified as hazardous.

3.03 DOCUMENTATION

- A. Provide shipping manifests and all other documentation as required by state regulatory requirements regarding hazardous materials. Refer to Section 01 77 00 – Project Closeout.

END OF SECTION

SECTION 04 01 21

BRICK MASONRY RESTORATION

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Providing all brick masonry restoration work indicated in Section 00 43 00 and the drawings.

1.02 RELATED SECTIONS

- A. Section 01 33 00 – Submittals
- B. Section 01 50 00 - Construction Facilities and Temporary Controls
- C. Section 01 74 00 - Project Cleanup
- D. Section 01 77 00 - Project Closeout
- E. Section 04 01 30 – Masonry Cleaning
- F. Section 04 01 40 – Stone Masonry Restoration
- G. Section 04 05 19 – Masonry Ties, Anchors, and Reinforcing Steel
- H. Section 04 11 13 - Shoring
- I. Section 07 92 00 - Joint Sealants

1.03 REFERENCES

- A. Appropriate ASTM Standards
- B. Brick Industry Association (BIA) - Tech Notes 1, Cold and Hot Weather Construction.
- C. BIA – Tech Notes 3A, Brick masonry Material Properties.
- D. BIA – Tech Notes 3B, Brick Masonry Section Properties.
- E. BIA – Tech Notes 7, Water Penetration Resistance – Design and Detailing.
- F. BIA – Tech Notes 7A, Water Penetration Resistance – Materials.
- G. BIA - Tech Notes 7B, Water Penetration Resistance – Construction and Workmanship.
- H. BIA - Tech Notes 8, Mortars for Brickwork.
- I. BIA – Tech Notes 8B, Mortars for Brickwork – Selection and Quality Control.
- J. BIA – Tech Notes 15, Salvaged Brick.
- K. BIA - Tech Notes 20, Cleaning Brick Masonry.
- L. BIA – Tech Notes 21A, Brick Masonry Cavity Walls – Selection of Materials.
- M. BIA – Tech Notes 21B, Brick Masonry Cavity Walls – Detailing.

- N. BIA - Tech Notes 21C, Brick Masonry Cavity Walls – Construction.
- O. BIA – Tech Notes 28, Anchored Brick Veneer, Wood Framed Construction.
- P. BIA – Tech Notes 28A, Adding Brick Veneer to Existing Construction.
- Q. BIA – Tech Notes 28B, Brick Veneer/Steel Stud Walls.
- R. Portland Cement Association - Mortars for Masonry Walls.
- S. International Building Code.
- T. Iowa State Building Code.
- U. TMS 402, “Building Code Requirements for Masonry Structures”.
- V. TMS 602, “Specifications for Masonry Structures”.

Use the latest edition of the Standards/Specifications indicated in this section unless otherwise noted.

1.04 SUBMITTALS FOR REVIEW

- A. Contractor to employ, at their own expense, a testing agency who is experienced with conditions and materials to design masonry mix designs and aggregate tests.
- B. Submit the mortar mix design(s) and aggregate tests to the Engineer for approval two weeks prior to placing mortar. Do not use any mortar mix design or aggregate test more than 1 year old from the date it is submitted to the Engineer. Refer to Section 01 33 00 - Submittals.
- C. Design the mortar mix in accordance with the property specifications of ASTM C270 or C1714 [Standard Specification For Preblended Dry Mortar Mix for Unit Masonry], whichever is appropriate, and include the following:
 1. Type and brand of Portland cement.
 2. Brand of hydrated lime.
 3. Supplier of masonry sand, gradation and quality according to ASTM C 144.
 4. Proportions of dry materials.
 5. Flows (initial and after suction).
 6. Per cent water retention.
 7. Compressive strength at 7 and 28 days.
 8. Statement of compliance of the mix design to project specifications.

- D. If a preblended mortar is used, provide a batch ticket depicting all weights of dry materials used in the blend as well as the specific gravity of those materials for each batch/lot delivered.
- E. Do not place mortar until all required submittals are reviewed and approved by the Engineer.
- F. Provide all materials from a single source and lot for the entire project.
- G. Provide the following masonry stain submittals:
 - 1. Product Data: Manufacturer's data sheets on each product to be used, including:
 - a. Product characteristics.
 - b. Preparation instructions and recommendations.
 - c. Storage and handling requirements and recommendations.
 - d. Installation methods.
 - 2. Preliminary Samples: To be provided as required for the specific project.
 - 3. Verification Samples: To be provided on the specific materials to be treated when they are available in plant or on site.
 - 4. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect and handle products to site under provisions of Section 01 60 00 - Materials and Equipment.

1.06 QUALITY ASSURANCE

- A. Use materials and mix proportions that Contractor has successfully used in the past on similar masonry restoration projects.
- B. Use masons who have a minimum of three years experience with masonry wall restoration, and are completely familiar with the equipment and materials used, and the requirements of this section.
- C. Stain Installer Qualifications: Stain Installer is to be licensed by the stain manufacturer to apply the stain products specified and with a minimum of three years documented experience in applying stains and coatings similar in type and scale to this Project.

1.07 EXTRA MATERIALS

- A. Submit under provisions of Section 01 77 00 - Project Closeout.
- B. Provide 25 of each size, color, and type of stone unit.

1.08 PROTECTION

- A. Protect elements surrounding the work of this section from damage or disfiguration.
- B. Immediately remove stains, efflorescence, or other excess resulting from the work of this section.
- C. Protect roof membrane and flashings from damage. Lay ½ inch plywood on roof surfaces over full extent of work area and traffic route.
- D. Provide waterproof dams to divert flowing water to exterior catch basin.

1.09 MASONRY STAIN SERVICE WARRANTY

- A. Masonry Staining: At project closeout, prior to the final pay application, provide to the Owner's Representative an executed copy of the Manufacturer's, Contractor's, or Combination Manufacturer's and Contractor's warranty for defective product and color retention. The warranty against any defects of materials and workmanship and color retention will cover both labor and materials to repair the defective product for a minimum period of twenty-five (25) years. The warranty will be effective from the date of acceptance of the work.

PART 2 - PRODUCTS

2.01 BRICK MASONRY

At the time of placement, provide units meeting the following:

- A. Salvage existing face brick for patching, extending and filling holes in existing face brick. Remove mortar and clean face brick to be reused. Use only approved face brick.
- B. New Face Brick: ASTM C216, Type FBS, Grade SW; exactly match and color of existing masonry. Use new face brick where acceptable salvage face brick do not exist in sufficient quantity for the work.
- C. Building Brick: ASTM C62, Grade SW; solid units.
- D. Hollow Facing and Building Brick: ASTM C652, Grade SW, Type HBS; color as selected.
- E. Ceramic Glazed Face Brick: ASTM C126, Grade S -Select, Type I - Single faced units.
- F. Size and Shape: Nominal standard brick modular size of 2¼ x 3¾ x 8 inches. Provide special units for where shown on the drawings.

2.02 MORTAR

Proportion mortar according to ASTM C270 property requirements, Type N or S. Use Type N when specifically approved by the Engineer. Use the following materials:

- A. Portland cement: Type I, meeting ASTM C150 requirements (non-air entrained). Type III may be used for cold weather construction. Do not exceed 0.60% equivalent alkalis per ASTM C150 Optional Chemical Requirements.
- B. Mortar Cement: meeting ASTM C1329 requirements. Do not exceed 0.60% equivalent alkalis per ASTM C150 Optional Chemical Requirements.
- C. Lime: meeting ASTM C207, Type "S".
- D. Mortar Sand: meeting ASTM C144 - "Aggregate for Masonry Mortar." Adjust the blending and grading as necessary within the above tolerances to match the color and texture of the existing mortar.
- E. Water: clean, potable and free from deleterious substances.
- F. Admixtures: colored mortar pigment meeting ASTM C979 and comprised of natural and synthetic iron and chromium oxides compounded for use in mortar mixes. Use only pigments with a record of satisfactory performance in masonry mortars.

Do not use mortar that has a compressive strength greater than the net compressive strength of the masonry units based on 1997 UBC Standard 21-16 tests.

2.03 CLEANING MATERIALS

- A. Refer to Section 04 01 30 – Masonry Cleaning.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.

3.02 ENVIRONMENTAL REQUIREMENTS

- A. Maintain substrate, new materials and surrounding air temperatures to within the following temperature ranges prior to, during, and 48 hours after completion of masonry work.

1. Minimum 45° F.
2. Maximum 90°F.

When the ambient, substrate, and/or new material temperatures are outside the above range, follow the requirements in Sections 1.8C and 1.8D of TMS 602, "Specifications for Masonry Structures." Replace all references to 40° F in the TMS 602, Section 1.8C and 1.8D to read 45° F. Also, review conditions and requirements with Engineer.

3.03 PREPARATION

- A. Direct and coordinate placement of metal anchors supplied in Section 04 05 23 - Masonry Accessories.

- B. Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.
- C. Cover and protect windows, doors, fixtures, landscaping, and surfaces not receiving work of this section to protect from damage.

3.04 MASONRY REBUILDING

- A. Cut out damaged and deteriorated brick masonry with care in a manner to prevent damage to any adjacent remaining materials. Remove masonry units in the Work area that are:
 1. Loose
 2. Cracked (greater than hairline width or crazing cracks)
 3. Broken
 4. Chipped
 5. As directed by the Engineer.
- B. Shore structure as necessary in advance of cutting out units.
- C. Cut away loose or unsound adjoining masonry, mortar and stone as directed, to provide firm and solid bearing for new work.
- D. Ensure that anchors, ties, reinforcing, and flashings are correctly located and built in where indicated on the drawings.
- E. Install built in masonry to match and align with existing, with joints and coursing true and level, faces plumb and in line. Build in all openings, accessories and fittings.
- F. Do not re-temper colored mortars.

3.05 REPOINTING

- A. Pointing mortar mixing:
 1. Measure cement, lime and sand volumetrically, using a cubic foot box, five gallon pail or similarly calibrated container. Measure the sand in a loose, damp condition. Do not use the "shovel" method for measuring sand.
 2. Pre-hydrate the repoint mortar to reduce excessive shrinkage.
 3. Thoroughly mix all dry ingredients (no water).
 4. Mix again; adding only enough water to produce a damp and workable mix which will retain its shape when pressed into a ball.
 5. Let the mortar sit undisturbed for one to two hours.
 6. Add sufficient water to bring it to a proper consistency, somewhat drier than conventional masonry mortars.

7. Use a paddle type mechanical mixer for mortar mixing. Charge the mixer to its full design capacity.
 8. Discard mortar with a life older than 2½ hours from the introduction of water.
- B. Remove the mortar using hand chisels and/or a special pointing grinder. Utilize power tools only after test cuts determine no damage to masonry units will result. Do not damage masonry units. Use means, methods, and tools that prevents over cutting into adjacent units to remain. DO NOT OVERCUT mortar joints.
 - C. Cut out loose or disintegrated mortar in brick joints to minimum ¾" depth or until sound mortar is reached, whichever is greater.
 - D. For stone and terra cotta masonry mortar joints, remove mortar to a minimum depth of 2 times the width of the joint or until sound mortar is reached, whichever is greater.
 - E. When cutting is complete, remove dust and loose material by brushing or with air jet.
 - F. Pre-moisten joint until masonry surrounding the joint is saturated surface dry. Apply

mortar in tightly packed layers, ¼" thick. Form a smooth, compact concave joint to match existing.

- G. Do not re-temper colored mortars.
- H. Remove all mortar smears and stains from the newly repointed and existing masonry resulting from the repointing work. The cost for cleaning the masonry as a result of repointing work is incidental to the cost of the repointing.

3.06 MASONRY CLEANING OF REPAIR AREAS

- A. Refer to Section 04 01 30 – Masonry Cleaning.

3.07 CLEANUP

- A. As work proceeds and on completion, remove excess mortar, smears, droppings, clean work per Section 01 74 00.
- B. Clean surrounding surfaces.

END OF SECTION

SECTION 04 01 30

MASONRY CLEANING

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Providing all masonry cleaning work indicated in Section 00 43 00 and the drawings.

1.02 RELATED SECTIONS

- A. Section 01 33 00 – Submittals
- B. Section 01 50 00 - Construction Facilities and Temporary Controls
- C. Section 01 74 00 - Project Cleanup
- D. Section 01 77 00 - Project Closeout
- E. Section 04 05 23 - Masonry Accessories
- F. Section 04 01 21 – Brick Masonry Restoration
- G. Section 04 01 40 – Stone Masonry Restoration
- H. Section 07 92 00 - Joint Sealants

1.03 REFERENCES

- A. ASTM C1515, Standard Guide for Cleaning of Exterior Dimension Stone, Vertical and Horizontal Surfaces, New or Existing.
- B. Brick Industry Association (BIA) - Tech Notes 20, Cleaning Brick Masonry.
- C. BIA – Tech Notes 23, Stains – Identification and Prevention.
- D. BIA – Tech Notes 23A, Efflorescence – Causes and Prevention.
- E. Indiana Limestone Institute of America (ILI) – Indiana Limestone Handbook
- F. Marble Institute of America – Dimension Stone Manual
- G. Masonry Institute of America (MIA) – Marble and Stone Slab Veneer

Use the latest edition of the Standards/Specifications indicated in this section be the, unless otherwise noted.

1.04 SUBMITTALS FOR REVIEW

- A. Submit the following information:
 - 1. Contractor is to submit a written description of the proposed cleaning plan to the Engineer and Owner for approval two weeks prior to performing any cleaning. The plan should describe the method and materials proposed for each masonry material and location on the building. It should also describe that the cleaning will use the most

appropriate and gentlest method to achieve the Owners desired level of cleanliness, and no more. It shall also describe the progressive levels of aggressiveness of cleaning that are anticipated and to be done on the trial area(s) first for approval. The Owner will select the level of cleanliness from the trial cleaning area(s) and only the gentlest cleaning method will be approved for the remainder of the building.

- 2. Product Data: Submit three copies of manufacturer's product data including product characteristics and limitations.
- 3. Safety Data: Submit three copies of the manufacturer's materials safety data sheets.
- 4. Letter of Appropriateness: Submit a letter written and endorsed by the cleaning material manufacturer's representative identifying the appropriate cleaner(s) and methods for each type of stain, cleaning situation, and substrate.

1.05 TRIAL CLEANING/REPAIR AREA

- A. Provide a trial cleaning/repair area a minimum of 100 square feet in area to demonstrate the cleaning process, representing all the differing building materials. More than one trial area may be required to demonstrate the cleaning methods on the full spectrum of material types of the building specified to be cleansed.
- B. Locate where directed by the Engineer and Owner.
- C. If found acceptable by the Owner and Engineer, trial cleaning area may remain as part of the Work. The accepted trial cleaning/repair area will be the standard by which the remainder of the work will be judged.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect and handle products to site under provisions of Section 01 60 00 - Materials and Equipment.

1.07 QUALITY ASSURANCE

- A. Use materials and mix proportions that Contractor has successfully used in the past on similar masonry restoration projects.
- B. Use masons who have a minimum of three years experience with masonry wall

restoration, and are completely familiar with the equipment and materials used, and the requirements of this section.

1.08 PROTECTION

- A. Protect elements surrounding the work of this section from damage or disfiguration.
- B. Immediately remove stains, efflorescence, or other excess resulting from the work of this

section.

- C. Protect roof membrane and flashings from damage. Lay ½ inch plywood on roof surfaces over full extent of work area and traffic route.
- D. Provide waterproof dams to divert flowing water to exterior catch basin.

PART 2 - PRODUCTS

2.01 CLEANING DETERGENTS

- A. Non-ionic detergent/surfactant designed for the type of cleaning required. Clean, potable water and non-ionic detergent/surfactant mixed according to the manufacturer's recommendations. Approved products and manufacturers are:
 1. ["Orvus"](#), Proctor & Gamble.
 2. ["Triton X-100"](#) and ["Triton X-114"](#), Dow Chemical Company.
 3. ["Surfonic JL-80X"](#), Huntsman Corporation.
 4. Equals approved by the Engineer.

2.02 RESTORATION CHEMICAL CLEANERS

- A. Clean, stain free, commercial cleaning system, mixed with potable water according to the manufacturer's instructions. Use a cleaning system designed for the type of cleaning required and as recommended by the masonry unit and mortar manufacturers as well as the cleaner manufacturer. The following products are for general cleaning.
 1. Approved Products for general atmospheric soil removal are:

Product	pH at recommended dilution	Tan, pink, and salmon colored brick not subjected to metallic oxidation.	Red and other dark colored brick.	Soft burnt white, gray, buff and brown colored brick and all others subjected to metallic staining.	Glazed units.	Structural Tile.	Unglazed Terra Cotta	Non-calcareous or non-dolomitic unpolished stones	Calcareous or dolomitic unpolished stones	Non-calcareous or non-dolomitic polished stones	Calcareous or dolomitic polished stones	Colored Concrete Units and Mortar	Regular Concrete Block or Uncolored Concrete	Cast or Simulated Stone	EIFS & Stucco
a. "Sure Klean Heavy Duty Restoration Cleaner NE" , ProSoCo, Inc.	2.2	F H	F H			F H		F H							
b. "Sure Klean Heavy Duty Restoration Cleaner" , ProSoCo, Inc.	2.2	H	H			H	H	H							
c. "101 Masonry Restorer Super Concentrate" , Diedrich technologies, Inc.	5.3	H	H			H	H	H							
d. "Enviro Klean EK Restoration Cleaner" , ProSoCo, Inc.	5.5	M H	M H	M H		M H	M H	M H							
e. "Envirestore 100" , Diedrich	<1.0	M	M	M		M	M	M							

	Technologies, Inc.		H	H	H		H	H	H							
f.	"Enviro Klean BioKlean" , ProSoCo, Inc.	1.09	M H	M H	M H		M H	M H	M H	M H			M H	M H	M H	
g.	"Sure Klean Restoration Cleaner" , ProSoCo, Inc.	2.2	M	M	M		M	M	M	M						
h.	"101-G Granite, Terra Cotta & Brick Cleaner" , Diedrich Technologies, Inc.	5.4	M	M	M	M	M	M	M	M						
i.	"Light Duty Restoration Cleaner" , ProSoCo, Inc.	2.0	L M	L M	L M		L M	L M	L M	L M				L M	L M	
j.	"Enviro Klean SafRestorer" , ProSoCo, Inc.	2.9	L	L	L		L	L	L	L			L	L	L	L
k.	"Enviro Klean EIFS Clean N Prep" , ProSoCo, Inc.	12.2	M	M	M	M	M	M	M	M	M	M	M	M	M	M

l. Equals approved by the Engineer.

Key

- EH = Extra Heavy Soiling
- H = Heavy Soiling
- MH = Moderate to heavy Soiling
- M = Moderate Soiling
- LM = Light to Moderate Soiling
- L = Light Soiling

2. Stone: Approved products are:

Products	pH at recommended dilution	Bluestone	Field Stone	Polished Granite.	Unpolished Granite	Polished Limestone	Unpolished Limestone	Polished Marble	Unpolished Marble	Non-Calcareous Sandstone	Slate	Unpolished Travertine
a. "Sure Klean Vana Trol" , ProSoCo, Inc.	0.3	X	X		X					X	X	X
b. "202V Vana-Stop" , Diedrich Technologies, Inc.	1.0	X	X		X					X	X	X
c. "766 Limestone & Masonry Prewash" and "Limestone and Masonry Afterwash" , ProSoCo, Inc.	13.6/ 1.10					X				X		
d. "707X Limestone Cleaner Pre-Rinse" and "707N Limestone Neutralizer After-Wash" , Diedrich Technologies, Inc.						X				X		
e. "Restoration Cleaner" , ProSoCo, Inc.	2.2				X					X		
f. "101-G Granite, Terra Cotta and Brick Cleaner" , Diedrich Technologies, Inc.	5.4				X					X		
g. "Sure Klean 942 Limestone & Marble Cleaner" , ProSoCo, Inc.	8.3					X	X		X			X
h. "910 Marble Cleaner (Acidic)" , Diedrich technologies, Inc.									X			
i. "Stand Off Liquid Marble Cleaner" , ProSoCo, Inc.	10.0			X				X				

j.	"910 Polished Marble Cleaner" , Diedrich Technologies, Inc.	10.6			X					X				
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k. Equals approved by the Engineer.

B. Do not use cleaners with a pH less than 7 on calcareous or dolomitic stones and glazed or polished manufactured masonry or stone.

2.03 STAIN SPECIFIC CHEMICAL CLEANERS

A. Clean, stain free, commercial cleaning system, mixed with potable water according to the manufacturer's instructions. Use a cleaning system designed for the specific stain at isolated locations. Follow manufacturer's written instructions for use on each specific type of masonry. The following approved products are for specific stains.

Products	pH at recommended dilution	Acid Burn	Algae and Lichen.	Asphalt and tar	Copper	Efflorescence	Encrusted Carbon	Hard Water Deposits	Lime Run	Manganese	Iron	Straw	Vanadium	Oil & grease	Silicone Sealant	White scum
a. "800 Stain Remover" , ProSoCo, Inc.	1.056	X			X					X	X		X			
b. "950 Stain Remover" , Diedrich Technologies, Inc.	<1.0	X			X								X			
c. "Enviro Klean BioKlean" , ProSoCo, Inc.	13.7/ 2.40		X													
d. "Enviro Klean BioWash" , ProSoCo, Inc.	6.0		X													
e. "Sure Klean Ferrous Stain Remover" , ProSoCo, Inc.	1.168										X	X				
f. "940 Iron & Manganese Stain Remover" , Diedrich Technologies, Inc.	<1.0									X	X	X				
g. "Sure Klean 600" , ProSoCo, Inc.	0.10					X										
h. "202 New Masonry Detergent" , Diedrich Technologies, Inc.	1.0					X										
i. "766 Limestone & Masonry Prewash" and "Limestone and Masonry Afterwash" , ProSoCo, Inc.	13.6/ 1.10						X									
j. "808X Black Encrustation Remover-Super Strong" and "707N Limestone Neutralizer After-Wash" , Diedrich Technologies, Inc.							X									
k. "Sure Klean Asphalt & Tar Remover" , ProSoCo, Inc.				X										X		
l. "ASPIR Solv" , Diedrich technologies, Inc.				X										X		
m. "White Scum Remover" , ProSoCo, Inc.	1.6															X
n. "930 White Scum Remover" , Diedrich Technologies, Inc.	<1.0															X
o. "1261 Hard Water Deposit Remover" , ProSoCo, Inc.	<1.0							X								

p.	"Dicone NC9" , ProSoCo, Inc.	<1.0																X	
q.	"Dicone NC15 Gel" ProSoCo, Inc.	<1.0																X	

r. Equals approved by the Engineer.

B. Do not use cleaners with a pH less than 7 on calcareous or dolomitic stones and glazed or polished manufactured masonry or stone.

2.04 MASKING AGENTS

A. Used for masking glass, metal, wood and other sensitive building materials during cleaning using corrosive cleaners and application of coatings. Approved masking agents are:

1. ["Sure Klean Acid Stop"](#), ProSoCo, Inc.
2. "Diedrich Acid Guard", Diedrich Chemicals.
3. Equals approved by the Engineer.

2.09 ACCESSORIES

A. Accessories used to assist with cleaning include:

1. Fiber bristle brushes.
2. Water: clean potable water without salts and materials the cause staining.
 - a. Use heated water less than 180°F.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.
- B. Provide testing of proposed cleaning products on stone veneer by manufacturer's approved technical representative. Test in area approved by Owner's Representative.

3.02 ENVIRONMENTAL REQUIREMENTS

- A. Perform cleaning when air and masonry temperatures meet the following requirements:
 1. Minimum 40°F. Ensure there is no likelihood of freezing within 48 hours after cleaning work.
 2. Maximum 90°F.

3.03 PREPARATION

A. Cover and protect windows, doors, fixtures, landscaping, and surfaces not receiving work of this section to protect from damage.

3.04 MASONRY CLEANING

- A. Verify existing materials conditions, including recent repair work:
 1. That mortar is fully set and cured.
 2. That stone patching mortar is fully set

and cured.

3. That joint sealants are adequately set and cured.
4. Verify painted lintels and shelf angles are fully set and cured.

B. Clean indicated masonry of dust, dirt, loose material, efflorescence and other undesirable materials. Include removing from surface cracks and voids. Use tools which will not adversely affect adjoining surfaces.

C. Comply with recommendations of cleaning material manufacturer for mixing, application, rinsing, and cleanup. Apply cleaning material to avoid streaks and to produce an even effect.

D. Apply the gentlest cleaning material first, starting with water misting/rinsing. Use the least aggressive cleaning method possible that will produce the desired cleanliness.

1. Provide a second application if required by preliminary test of sample area.
2. Allow sufficient time for solution to remain on masonry. If necessary, agitate with soft fiber brush or sponge.
3. Rinse from the bottom up with potable water applied at 500 psi or less and at a rate of 4 gal/min.

E. The following is a list of cleaning methods in chronological order from the gentlest to most aggressive:

1. Water Misting: This method only use low pressure application of water to the surface to be cleaned. Misting heads are set at proper elevations and water is misted onto the surface of the masonry to be cleaned. Set misting heads on a timer so they cycle on and off to allow the building to dry and prevent over-saturation of the masonry. This is the gentlest method and is acceptable and most appropriate for use on historically designated facades.
2. Hydraulic: Water is directed against the masonry surfaces at varying pressures between 200 and 600 psi. The water may be at municipal water temperature or heated (less than 180°F). Exercise care in selecting nozzle tip, never use less than a 15 degree nozzle tips.

3. Pressure Washing: This method is similar to Hydraulic cleaning except the water is directed through high pressure water jets of up to 1,000 psi. Do not exceed 1,000 psi even though modern pressure washers can produce pressures in excess of 2500 psi, which is capable of permanent damage to many types of masonry. Maximum allow pressure should be determined in a test area and by slowly increasing pressure until the desired level of cleanliness is achieved with the minimum pressure, less than 1,000 psi. A fan tip nozzle is to be used from a distance no closer than one foot from the water application surfaces. Only workers with 5 years minimum documented experience using this type of cleaning method and equipment are allowed to do the cleaning using this method.
4. Non-Ionic Detergent Cleaning: This method is a combination of applying a detergent to the surface to be cleaned in unison with hydraulic or pressure washing. It is common to use a soft fiber brush to gently scrub the surface when the detergent is applied.
5. Poultices: Commonly used to remove isolated areas of stains. These materials typically include kaolin, fuller's earth, whiting, diatomaceous earth, powdered caulk, white molding plaster and talc. They may have filler materials to assist with holding moisture such as white cotton balls, white paper towels or gauze pads and may be used with volatile solvents such as acetone, bleach, hydrogen peroxide, ammonia, and mineral spirits, depending on the stain type.
6. Chemical Cleaning: This method is used in combination with one or several of the water cleaning methods above. Some of the chemicals include
 - a. Natural Cleaners: Chemicals with a pH near or equal to 7 with surfactants.
 - b. Acids: Chemicals with a pH less than 7.
 - c. Alkalis: Chemicals with a pH greater than 7.
 - d. Solvents: Waterless chemicals such as mineral spirits and acetones. Typically are highly flammable.
 - e. Organic Cleaners: Use UV and/or bacteria to "eat" dirt and salts.
7. Abrasive Cleaning: This type of cleaning is not allowed unless written approval is provided by the Engineer. This method is generally not approved for historic masonry. A test are should be cleaned first to determine the least aggressive media under the lowest pressures to achieve the level of cleanliness desired. The medias available include and may be used dry or with water:
 - a. Sodium bicarbonate (may leave harmful salt residue in masonry).
 - b. Nut shells.
 - c. Washed and ground sea shells.
 - d. Micro-abrasive units using aluminum oxide.
 - e. Glass powder and beads.
 - f. Grain hulls.
 - g. Pelletized dry ice.
 - h. Sandblasting is not permitted.
- F. Remove existing coatings using approved stripping agents. Apply to trial area and receive approval from the Engineer before applying to the remainder of the building.
 1. Collect and legally dispose of all loosened materials.
 - a. Divert runoff to catch basins and drains, or where directed by the Owner.
 - b. Prevent erosion, damage to landscaping, and leakage into the building.
 - G. Protect adjacent surfaces from cleaning agents and loosened material, Apply masking agents as needed, in accordance with the manufacturer's recommendations.

3.05 CLEANUP

- A. As work proceeds and on completion, remove excess mortar, smears, droppings, clean work per Section 01 74 00.
- B. Clean surrounding surfaces.

END OF SECTION

SECTION 04 01 40

STONE MASONRY RESTORATION

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Providing all stone masonry restoration work indicated in Section 00 43 00 and the drawings.

1.02 RELATED SECTIONS

- A. Section 01 33 00 – Submittals
- B. Section 01 50 00 - Construction Facilities and Temporary Controls
- C. Section 01 74 00 - Project Cleanup
- D. Section 01 77 00 - Project Closeout
- E. Section 04 01 30 – Masonry Cleaning.
- F. Section 04 01 40 – Stone Masonry Restoration
- G. Section 04 05 19 – Masonry Ties, Anchors, and Reinforcing Steel
- H. Section 04 11 13 – Masonry Shoring
- I. Section 07 92 00 - Joint Sealants

1.03 REFERENCES

- A. Appropriate ASTM Standards
- B. Portland Cement Association - Mortars for Masonry Walls
- C. Indiana Limestone Institute of America (ILI) – Indiana Limestone Handbook
- D. Marble Institute of America – Dimension Stone Manual
- E. Masonry Institute of America (MIA) – Marble and Stone Slab Veneer
- F. National Building Granite Quarry Association, Inc (NBGQA) – Stone Granite Specs.
- G. International Building Code.
- H. Minnesota State Building Code.
- I. TMS 402 - Building Code Requirements for Masonry Structures".
- J. TMS 602 - Specifications for Masonry Structures.

Use the latest edition of the Standards/Specifications indicated in this section, unless otherwise noted.

1.04 SUBMITTALS FOR REVIEW

- A. Contractor to employ, at their own expense, a testing agency who is experienced with conditions and materials to design masonry mix designs and aggregate tests.

- B. Submit the mortar mix design(s) and aggregate tests to the Engineer for approval two weeks prior to placing mortar. Do not use any mortar mix design or aggregate test more than 1 year old from the date it is submitted to the Engineer. Refer to Section 01 33 00 - Submittals.

- C. Design the mortar mix in accordance with the property specifications of ASTM C270 or C1714 [Standard Specification For Preblended Dry Mortar Mix for Unit Masonry], whichever is appropriate, and include the following:

1. Type and brand of Portland cement.
2. Brand of hydrated lime.
3. Supplier of masonry sand, gradation and quality according to ASTM C144.
4. Proportions of dry materials.
5. Flows (initial and after suction).
6. Per cent water retention.
7. Compressive strength at 7 and 28 days.
8. Statement of compliance of the mix design to project specifications.

- D. If a preblended mortar is used, provide a batch ticket depicting all weights of dry materials used in the blend as well as the specific gravity of those materials for each batch/lot delivered.

- E. Do not place mortar until all required submittals are reviewed and approved by the Engineer.

- F. Provide all materials from a single source and lot for the entire project.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect and handle products to site under provisions of Section 01 60 00 - Materials and Equipment.

- B. Accept stone masonry units on site. Inspect for damage.

1.06 QUALITY ASSURANCE

- A. Use materials and mix proportions that Contractor has successfully used in the past on similar masonry restoration projects.

- B. Use masons who have a minimum of three years experience with masonry wall restoration, and are completely familiar with the equipment and materials used, and the requirements of this section.

1.07 PROTECTION

- A. Protect elements surrounding the work of this section from damage or disfiguration.
- B. Immediately remove stains, efflorescence, or other excess resulting from the work of this section.
- C. Protect roof membrane and flashings from damage. Lay ½ inch plywood on roof surfaces over full extent of work area and traffic route.
- D. Provide waterproof dams to divert flowing water to exterior catch basin.

PART 2 - PRODUCTS

2.01 STONE MASONRY

- A. Limestone: meeting the requirements of ASTM C568, with the density category to match the existing limestone. Match the color, grade, profile and finish of the existing limestone.
 - 1. Minimum compressive strength per ASTM C170: 4,000 psi.
 - 2. Maximum absorption per ASTM C97: 7.5%
- B. Patching material for small nicks and crack seeding: provide prepackaged two-part, high-strength, moisture insensitive epoxy or epoxy hybrid adhesive. Approved products are:
 - 1. "Match", Bonstone Materials Corporation.
 - 2. "Last Patch Gel with Liquid Tint", Bonstone Materials Corporation (Epoxy Hybrid).
 - 3. "Last Patch Limestone", Bonstone Materials Corporation (Epoxy Hybrid).
 - 4. "Gold Knife Grade with Coloring Paste", Superior adhesives (Acrylic/Epoxy Hybrid).
 - 5. "E-2010 with Coloring Paste", Superior Adhesives.
 - 6. "Domo 10 with Tepox Epoxy Colorant", Tamex
 - 7. "Rivo 50 with Tepox Epoxy Colorant", Tamex
 - 8. Equivalents approved by the Engineer.

2.02 MORTAR

Proportion mortar according to ASTM C270 or C1714 property requirements, Type N or S. Use Type N when specifically approved by the Engineer. Use the following materials:

- A. Portland cement: Type I, meeting ASTM C150 requirements (non-air entrained). Type III may be used for cold weather construction. Do not exceed 0.60%

equivalent alkalis per ASTM C150 Optional Chemical Requirements.

- B. Mortar Cement: meeting ASTM C1329 requirements. Do not exceed 0.60% equivalent alkalis per ASTM C150 Optional Chemical Requirements.
- C. Lime: meeting ASTM C207, Type "S".
- D. Mortar Sand: meeting ASTM C144 - "Aggregate for Masonry Mortar." Adjust the blending and grading as necessary within the above tolerances to match the color and texture of the existing mortar.
- E. Water: clean, potable and free from deleterious substances.
- F. Admixtures: colored mortar pigment meeting ASTM C979 and comprised of natural and synthetic iron and chromium oxides compounded for use in mortar mixes. Use only pigments with a record of satisfactory performance in masonry mortars.

Do not use mortar that has a compressive strength greater than the net compressive strength of the masonry units based on UBC Standard 21-16 tests.

2.03 PATCHING MORTAR FOR STONE MASONRY REPAIRS

Patching material: provide prepackaged cementitious mortar designed specifically for patching of existing stone surfaces.

- A. Performance And History Requirements:
 - 1. Shrinkage, ASTM C157, Dry Length Change: Maximum Shrinkage Material: -0.05%.
 - 2. 5-year favorable documented performance history consisting of a minimum of 5 documented projects within the local geographic area.
 - 3. Approved manufacturers are:
 - a. Limestone, Brownstone, and Sandstone
 - i. "Jahn M70 Limestone and Sandstone Repair Mortar", Cathedral Stone Products, Inc.
 - ii. "Matrix", Conproco, Inc.
 - iii. "Mimic or Mimic TR", Conproco, Inc.
 - iv. "Custom System 45 Repair Mortar- LC" (for limestone), Edison Coatings, Inc.
 - v. "Custom System 45 Repair Mortar- SD" (for brownstone), Edison Coatings, Inc.
 - vi. "Custom System 45 Repair Mortar- SD" (for brownstone)

and sandstone), Edison Coatings, Inc.

vii. Equals approved by the Engineer.

b. Casting Mortar for Replication

i. "Jahn M150 Casting Mortar", Cathedral Stone Products, Inc.

ii. "Matrix", Conproco, Inc.

iii. "Mimic", Conproco, Inc.

iv. "Cem-Plast 54", Edison Coatings, Inc.

v. Equals approved by the Engineer.

4. Color and texture: matching existing intact surfaces.

2.04 CLEANING MATERIALS

A. Refer to Section 04 01 30 – Masonry Cleaning.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that field conditions are acceptable and are ready to receive work.

3.02 ENVIRONMENTAL REQUIREMENTS

A. Maintain substrate, new materials and surrounding air temperatures to within the following temperature ranges prior to, during, and 48 hours after completion of masonry work.

1. Minimum 45° F.

2. Maximum 90°F.

When the ambient, substrate, and/or new material temperatures are outside the above range, follow the requirements in Sections 1.8C and 1.8D of TMS 602, "Specifications for Masonry Structures." Replace all references to 40° F in the TMS 602, Section 1.8C and 1.8D to read 45° F. Also, review conditions and requirements with Engineer.

3.03 PREPARATION

A. Direct and coordinate placement of metal anchors supplied in Section 04 05 19 - Masonry Tie, Anchors, and Reinforcing Steel.

B. Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.

C. Cover and protect windows, doors, fixtures, landscaping, and surfaces not receiving work of this section to protect from damage.

3.04 MASONRY REBUILDING

A. Stone masonry: where possible, reuse existing stone. If necessary, remove, safely store, and reused after other work is completed.

1. Where existing stone is damaged beyond repair or missing, provide new stone units. Fabricate new stone to match existing, unless directed otherwise by the Engineer.

2. Provide all stone accessories (e.g. special anchors) as necessary or as directed by the Engineer.

3. Repair all minor defects with a patching mortar comprised of epoxy adhesive and pulverized stone. Blend to match color of existing stone. Thoroughly clean stone surface and apply repair mortar to:

a. Cracks greater than hairline width

b. Resetting of spalled pieces

c. Plugging anchor holes

d. Where directed by the Engineer.

B. Shore structure as necessary in advance of cutting out units.

C. Cut away loose or unsound adjoining masonry, mortar and stone as directed, to provide firm and solid bearing for new work.

D. Ensure that anchors, ties, reinforcing, and flashings are correctly located and built in where indicated on the drawings.

E. Install built in masonry and stone work to match and align with existing, with joints and coursing true and level, faces plumb and in line. Build in all openings, accessories and fittings.

F. Do not re-temper colored mortars.

3.05 REPOINTING

A. Repointing mortar mixing:

1. Measure cement, lime and sand volumetrically measured using a cubic foot box, five gallon pail or similarly calibrated container.

a. Measure sand in a loose, damp condition.

b. Do not use the "shovel" method for measuring sand.

2. Prehydrate the repointing mortar to reduce excessive shrinkage.

3. Thoroughly mix all dry ingredients (no water).

4. Mix again; adding only enough water to produce a damp and workable mix which will retain its shape when pressed into a ball.

5. Let the mortar sit undisturbed for one to two hours.
 6. Add sufficient water to bring it to a proper consistency, somewhat drier than conventional masonry mortars.
 7. Use a paddle type mechanical mixer for mortar mixing and charge it to its full design capacity.
 8. Discard any mortar with a life older than 2½ hours from the introduction of water.
- B. Repoint mortar joints where shown on the drawings, or where directed by the Engineer.
 - C. Remove the mortar using hand chisels and/or a special pointing grinder. Utilize power tools only after test cuts determine no damage to masonry units will result. Do not damage masonry units. Use means, methods, and tools that prevents over cutting into adjacent units to remain. DO NOT OVERCUT mortar joints.
 - D. Cut out loose or disintegrated mortar in joints to a depth of 2 times the width of the joint or until sound mortar is reached, whichever is greater.
 - E. When cutting is complete, remove dust and loose material by brushing or with air jet.
 - F. Pre-moisten joint until masonry surrounding the joint is saturated surface dry.
 - G. Apply mortar in tightly packed layers, ¼" thick. Form a smooth, compact concave joint to match existing.
 - H. Do not re-temper colored mortars.
 - I. Remove all mortar smears and stains from the newly repointed and existing masonry resulting from the repointing work.
 - J. The cost for cleaning the masonry as a result of repointing work is incidental to the cost of the repointing.

3.06 CRACK STITCHING

- A. Identify and verify cracks to be repaired by stitching/re-anchoring on drawings or as directed by the Engineer.
- B. Rout masonry ¾" deep by ¼" wide from center of web to center of web if across hollow units or 3" either side of crack if in solid units. Position slot across and perpendicular to crack.
- C. Drill 3/16" diameter holes at either end of slot to full depth of web or 3" deep, whichever is greater.
- D. Clean out slot and holes with compressed air and flush with water.

- E. Inject non-shrink stitching grout in back of 3/16" of slot and into holes.
- F. Place 3/16" stitching bar with 90° bent ends into holes and back of slot. For bent end legs, use those 3" long or greater.
- G. Point slot with repointing mortar. Strike mortar flush with face of exposed face of unit.
- H. Do not re-temper colored mortars.
- I. Coat filled slot with repair coating/masonry stain after mortar has fully cured, if necessary.
- J. Space stitches no greater than 12" o.c. or a minimum of two stitches per unit with units having a dimension greater than 10" perpendicular to the crack. Do not install stitch within 3" of unit perimeter parallel to stitch.

3.07 STONE MASONRY PATCHING

- A. Preparation:
 1. Verify that surfaces are properly prepared and ready to receive patching mortar.
 2. Install anchors and wire mesh fabric as required in the Drawings and Details. Ensure sufficient clearance exists around reinforcement to permit complete encasement and adequate cover.
 3. Protect adjacent surfaces against mortar droppings and other damage. Remove all mortar droppings and damage as the work progresses. Restore surfaces with methods acceptable to Engineer at no cost to the Owner.
- B. Apply the repair mortar in strict accordance with mortar manufacturer's written instructions.
- C. Provide flush and smooth patch area surface relative to surrounding masonry surfaces.

3.08 MASONRY CLEANING

- A. Refer to Section 04 01 30 – Masonry Cleaning.

3.09 CLEANUP

- A. As work proceeds and on completion, remove excess mortar, smears, droppings, clean work per Section 01 74 00.
- B. Clean surrounding surfaces.

END OF SECTION

SECTION 04 05 00

MASONRY DEMOLITION AND PREPARATION

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Locating and removing brick masonry and its accessories within the Work area boundaries, remove all existing brick ties, and disposing of demolished materials at a legal site.
- B. It is the Contractor's responsibility to verify the actual construction details within each work area prior to submitting the bid proposal. Notify Engineer of any deviation from the Construction Documents.

1.02 RELATED SECTIONS

- A. Section 01 10 00 - Summary of Work
- B. Section 01 50 00 - Construction Facilities and Temporary Controls: Barriers, protection and dust control.
- C. Section 02 26 00 – Hazardous Materials
- D. Section 04 11 13 – Masonry Shoring

1.03 SUBMITTALS FOR REVIEW

- A. Section 01 33 00 - Submittals: Procedures for Submittals.
- B. Shop Drawings: Indicate demolition and removal sequence and location of salvageable items.

1.04 REGULATORY REQUIREMENTS

- A. Conform to City of Buffalo Center building code for demolition work. Requirements required by local ordinance.
- B. Obtain required permits from authorities.
- C. Do not close or obstruct egress to any building or site exit.
- D. Do not disable or disrupt building fire or life safety systems without prior written notice to Owner.
- E. Conform to Section 02 26 00 and procedures applicable when hazardous or contaminated materials are discovered.

1.05 PROJECT CONDITIONS

- A. Provide protection to prevent damage to any existing building property sidewalks, sky lights adjacent to or under work areas low roof and equipment, furnishings and fixtures that are within and adjacent to the work areas.
- B. Conduct masonry removal operations in such a manner so as to protect the safety of all building occupants, pedestrians, and the

workers involved in construction activities.

- C. Install shoring as required. Design shoring adequately for anticipated loads and do not overload any part of the existing structure.
- D. Cease operations immediately if structure appears to be in danger and notify Engineer. Do not resume operations until directed.

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

3.01 PREPARATION

- A. Provide, erect, and maintain temporary partitions to prevent spread of dust or debris, and to permit continued Owner occupancy.
- B. Erect and maintain weatherproof closures for exterior openings when ambient weather will impact the finish product and the long durability of the installed systems.
- C. Protect existing adjacent wall sections, roof and sky lights below and adjacent to the work areas.
- D. Prevent movement of structure; provide bracing and shoring.

3.02 DEMOLITION

- A. Refer to other sections for temporary controls and special requirements.
- B. Perform all demolition work to comply with local codes, regulations, ordinances as related to noise, health and safety, etc.
- C. Remove masonry sections within the work boundary using only pre-approved vacuum collection equipment for dust-control measures to minimize and contain dust from cutting brick, concrete masonry, mortar joints, and related materials, and cleaning the work area. The Owner requires no visible dust be emitted during the cutting work.
- D. Remove masonry sections within the work boundary using 15/30 pound maximum size jack hammers or chipping hammers. Do not use any jackhammer heavier than 30 lbs unless pre-approved by the Engineer to prevent vibrational damage to the existing structure.
- E. Remove all masonry ties on the back-up wall sections to remain flush with wall surface
- F. Do not allow rubble to freefall onto any part of the existing structure below the work area.

G. Remove materials as Work progresses.
Upon completion of Work, leave areas in
clean condition. Dispose of construction

debris and rubble at a legal site.

END OF SECTION

SECTION 04 05 19

MASONRY TIES, ANCHORS, AND REINFORCING STEEL

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. This Section includes all labor, materials, equipment and related services necessary to:
 - 1. Providing unit masonry ties, and stone anchors where indicated in the drawings.

1.02 RELATED SECTIONS

- A. Section 01 33 00 – Submittals
- B. Section 01 77 00 - Project Closeout
- C. Section 04 01 21 – Brick Masonry Restoration
- D. Section 04 01 40 – Stone Masonry Restoration

1.03 REFERENCES

- A. ACI 315 - Details and Detailing of Concrete Reinforcement.
- B. ACI SP-66 - American Concrete Institute - Detailing Manual.
- C. Appropriate ASTM Standards.
- D. Brick Industry Association (BIA) – Tech Notes 44, Anchor Bolts for Brick Masonry.
- E. BIA – Tech Notes 44A, Fasteners for Brick Masonry.
- F. BIA – Tech Notes 44B, Wall Ties for Brick Masonry.
- G. TMS 402, “Building Code Requirements for Masonry Structures”.
- H. TMS 602, “Specifications for Masonry Structures”.

Refer to the latest edition of references indicated in this section, unless otherwise noted.

1.04 SUBMITTALS FOR REVIEW

- A. Shop Drawings: Submit shop drawings for approval per Section 01 33 00. Indicate bar sizes, spacing, locations, and quantities of reinforcing, bending and cutting schedules, and the type and location of all accessories on the shop drawings.
- B. Submit certified copies of mill test report of steel reinforcement analysis.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect and handle products to site under provisions of Section 01 60 00- Materials and Equipment.

PART 2 - PRODUCTS

2.01 WALL TIES

- A. Adjustable Ties: steel wire, hot dip galvanized to ASTM A153; “Zinc Coating (Hot-Dip) on Iron and Steel Hardware”, Class B-2. Size ties to fit wall dimensions, according to manufacturer’s recommendations. Approved manufacturers are:
 - 1. Masonry-to-Masonry Ties. 3/16" diameter wire:
 - a. “No. 262 Double Eye Rod Anchor and No. 263 Double Pintle Tie”, Heckmann Building Products Inc.
 - b. “Adjustable Wall Ties Pintels and Eyes with 2X Hooks”, Hohmann & Barnard, Inc.
 - c. “#1801 Double Eye and #019 Double Hook Pintle”, Wire-Bond.
 - d. Equals approved by the Engineer.
 - 2. Channel Slots and Anchors
Anchor wires: 3/16" diameter wire. Select appropriate channel type (weld-on, masonry or face-types) for back-up, in accordance with the manufacturer’s directions. Channel lots are to be ASTM A366 steel sheet, hot dip galvanized to ASTM A153, class B-2.
 - a. “#130 Weld-On Channel Slots or #132 Screw-On Slots, and #316 Triangle Ties” Heckmann Building Products, Inc.
 - b. “360 Gripstay Channel, and 362 Gripstay Channel and 363 Flexible Gripstay Anchor”, Hohmann & Barnard, Inc.
 - c. “#1302 Channel Slot and #2103 Channel Slot Triangular Tie”, Wire-Bond.
 - d. Equals approved by the Engineer.
- B. Adjustable Ties: ASTM A580, Type 304 stainless steel wire. Size ties to fill wall dimensions, according to manufacturer’s recommendations. Approved manufacturers are:
 - C. Helical Restoration Ties

Helical restoration ties meeting ASTM A580, Type 304 stainless steel with a minimum cross-sectional area of 0.022 square inches. For rubble wall applications, set ties in the tie

manufacturer's approved grout. Approved products and manufacturers are:

1. Dry Installation (Cavity Walls, Brick to Block or Concrete) for Exterior:
 - a. "Helix Spiro-Ties", Hohmann & Barnard, Inc.
 - b. "No. 391 Remedial Wall Tie", Heckmann Building Products, Inc.
 - c. "DryFix Ties", Helifix, Inc.
 - d. "CTP Stitch-Tie", ProSoCo.
 - e. "Spira-Lok", Hohmann & Barnard, Inc. or Blok-Lok
 - f. "Heli-Pin", Dewalt
 - g. "Heli-Tie", Simpson Strong-Tie.
 - h. Equals approved by the Engineer.
2. Grouted Installation (Rubble Walls) from Exterior:
 - a. "Helix Spiro-Ties", Hohmann & Barnard, Inc.
 - b. "No. 391 Remedial Wall Tie", Heckmann Building Products, Inc.
 - c. "CemTie", Helifix, Inc.
 - d. "CTP Stitch-Tie", ProSoCo
 - e. Equals approved by the Engineer.
3. Dry Installation (Cavity Walls, Brick to Block or Concrete) from Interior:
 - a. "Facade Tie Bracket with CTP Stitch-Tie", ProSoCo.

2.02 SMOOTH COPING/SILL DOWELS

- A. Smooth round dowels In accordance with ASTM A267, "Standard Specification for Stainless Steel Bars and Shapes", ANSI Type 304. 3/8" diameter with length and spacing in accordance with the Drawings. Acceptable manufacturers include:
 1. "[#406 Stone Anchor](#)", Hohmann & Barnard, Inc.
 2. "[#155 Dowels](#)", Heckmann Building Products. Inc.
 3. "CTP Dowel", ProSoCo
 4. "[Dowels](#)", MASONPRO, Inc.
 5. "[Type 16 Dowel Anchor](#)", Cold Spring Granite Company
 6. Equivalentents approved by the Engineer.

2.03 SPRING LOADED DOWELS

- A. Spring loaded dowels used for blind anchoring of stone and precast concrete panels are to consist of ASTM A276, ANSI Type 303, 304, or Type 316 round rod and a

stainless steel spring. The dowel length and diameter is to suit the stone or precast concrete panel thickness and are provided on the Drawings. Acceptable products and manufacturers are:

1. "[#355: Spring Loaded Dowels](#)", Heckmann Building Products. Inc.
2. "[3/8" x 3" Spring Loaded Dowel](#)", MASONPRO, Inc.
3. "CTP Tone Anchor Spring Loaded Dowel", ProSoCo.
4. Equals approved by the Engineer.

2.04 STRAP ANCHORS

- A. Strap Anchors: ASTM A480 and ASTM A240, Type 304 flat bar. Strap anchors are to be 1/4" thick by 1 1/2" wide by 24" long. Approved manufacturers are:
 1. "[344 – Rigid Partition Bar](#)", Hohmann & Barnard, Inc.
 2. "[#272: Z-Type Rigid Steel Anchor](#)", Heckmann Building Products. Inc.
 3. "[Rigid Steel Tie \(#3000z\)](#)", Wire-Bond.
 4. Equivalentents approved by the Engineer.

2.05 CORROSION INHIBITIVE COATING FOR EXISTING REINFORCING STEEL AND STRUCTURAL STEEL FRAME

- A. Approved products are:
 1. "[EMACO P 124](#)", BASF.
 2. "[MasterProtect P8100AP](#)", BASF.
 3. "[Sika 110 Armatec EpoCem](#)", Sika Corporation.
 4. "[DURALPREP A.C.](#)", The Euclid Chemical Corporation.
 5. "[ECB](#)", Conproco.
 6. "[3M Scotchkote Liquid Epoxy Coating 323R](#)", 3M.
 7. "[#EEG0034 R-Cure 200 Greenbar Brush and Roll Epoxy Touchup](#)", Valspar Corporation.

2.06 ACCESSORIES

- A. Stainless steel threaded rod dowels conforming to ASTM F593, Type 304. Provided diameter, depth of embedment and spacing a depicted on the Drawings.
- B. Fasteners for Ties, Etc.
 1. Stainless steel screw fasteners as furnished by the wall tie manufacturer.
- C. Fasteners for Patches:
 1. 1/4" diameter x 2" long ANSI 410 stainless steel screw fasteners.

2. Equals approved by the Engineer.

PART 3 - EXECUTION

3.01 EXPOSED STEEL SURFACE OF STRUCTURAL STEEL FRAME MEMBERS

- A. Sandblast all exposed steel surfaces of the structural steel frame, if present, thoroughly to bare metal to remove all corrosion products. Coat the cleaned steel surface with a corrosion inhibitive coating in strict accordance with the manufacturer's recommendations. Provide a dry film coating thickness of 20 mils minimum, with no visible pinholes.
- B. The Engineer is to review all structural steel members with any loss of cross section to determine if reinforcement is required.

3.02 WALL TIES AND ANCHORS PLACEMENT

- A. Provide restoration anchors where shown on the drawings. Install new anchors in new-drilled holes, which are clean of dust.
- B. Provide helical ties at locations shown on Drawings and/or as directed by the Engineer. Use tie type/installation method recommended by manufacture for wall construction type. Install and test ties in accordance manufacturer's written instructions.
- C. Embedded the ends of wall ties in mortar joints. Embedded wall tie ends at least ½" into the outer face shell of hollow units and

at least 1½" into the mortar bed joints of solid masonry units or solid grouted hollow units.

- D. The maximum spacing between ties is 16" in. horizontally and 16" vertically.
- E. Do not bend ties after being embedded in grout or mortar.
- F. Install adjustable ties as follows:
 1. One tie for each 1.77 ft² of wall area.
 2. Do not exceed 16" horizontal or vertical spacing.
 3. The maximum misalignment of bed joints from one wythe to the other is 1¼".
 4. The maximum clearance between connecting parts of the tie is 1/16".
 5. When pintel legs are used, provide ties with at least two legs made of wire size W2.8.
- G. Install wire ties perpendicular to a vertical line on the face of the wythe from which they protrude. Where one-piece ties or joint reinforcement are used, the bed joints of adjacent wythes shall align.
- H. Provide additional ties around all opening larger than 16" in either dimension. Space ties around the perimeter at a maximum of 3' o.c. Place ties within 8" of the opening.

END OF SECTION

SECTION 04 11 13

MASONRY SHORING AND BRACING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Providing shoring and bracing to temporarily support masonry walls during the exterior masonry facade restoration repair work. The Contractor is responsible for the design and maintenance of the shoring and bracing.
- B. Distribute all shoring and bracing loads properly throughout the area being repaired.

1.02 REFERENCES

- A. OSHA 29 CFR Chapter XVII 1926.706 (b)
- B. TMS 402, "Building Code Requirements for Masonry Structures"
- C. TMS 602, "Specification for Masonry Structures"
- D. "Standard Practice for Bracing Masonry Walls Under Construction", Council For Masonry Wall Bracing, February 1999
- E. ASCE 7, "Minimum Design Loads for Buildings and Other Structures"
- F. International Building Code
- G. "Department of Consumer and Industry Services Director's Office Construction Safety Standards – Part 2. Masonry Wall Bracing", November 1989

Use the latest specification/standard indicated in this section, unless otherwise noted.

1.02 SUBMITTALS

- A. Refer to Section 01 33 00, "Submittals".
- B. Submit the following information to the Engineer for review prior to use:
 - 1. Type of shores
 - 2. Layout and number of shores
 - 3. Safe load carrying capacity of the shores
 - 4. Structural calculations verifying the capacity of the shores

PART 2 PRODUCTS

2.01 MATERIALS

- A. Use shoring and bracing system components comprised of timber, metal, or a combination of these materials.
- B. Use adjustable shores to ensure a tight fit.

2.02 SHORING DESIGN

- A. Design the shoring system to sustain full dead, wind, and construction-related loads, and where applicable, live loads as specified by the prevailing Building Code and OSHA.
- B. Use only shoring and bracing designed by a licensed structural engineer.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Brace all masonry walls over eight feet in unsupported height adequately to prevent overturning and to prevent collapse unless the wall is adequately supported so that it will not overturn or collapse. Leave bracing in place until permanent supporting elements of the structure are in place and the masonry has achieved a minimum of seventy five (75%) of its design strength.
- B. Provide shores and/or braces on a maximum of three (3) feet spacing during lintel and shelf angle repair if the masonry above the supporting element is of running bond construction. If the masonry above the shelf angle or lintel proposed to be repaired is laid in a stack bond pattern, provide continuous bracing and/or shoring.
- C. Inspect all shores and shoring materials before installation. Do not use damaged materials.
- D. Install shores snug, tight, plumb and level. Shim shoring to maintain full contact.

3.02 REMOVAL

- A. Leave shoring and/or bracing in-place until the masonry attains seventy five percent (75%) of the design strength (f'_m) and permanent elements supporting the construction are in place.

END OF SECTION

SECTION 07 92 00

JOINT SEALANTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Providing all joint sealant work indicated in Section 00 43 00 - Description of Work Items and the drawings.

1.02 REFERENCES

- A. ACI 504R-77 - Guide to Joint Sealants for Concrete Construction.
- B. ASTM C1193 - Standard Guide to Use of Joint Sealants.
- C. Brick Industry Association (BIA) – Tech Notes 18, Volume Changes – Analysis and Effects of Movement.
- D. BIA – Tech Notes 18A, Accommodating Expansion of Brickwork.
- E. TMS, "Design for Masonry Volume Change".
- F. Use the latest edition of the standards and specifications listed, unless noted otherwise.

1.03 SUBMITTALS

- A. Submit the following information:
 - 1. Product Data: Three copies of manufacturer's product data including product characteristics, limitations, and identify dissolving solvents, fuels, and potential destructive compounds.
 - 2. Samples: Three samples of each product and available color chart for color selection by the Engineer. Indicate the type of primer to be used.
 - 3. Material Safety Data: Three copies of the manufacturer's materials safety data sheets (MSDS).
 - 4. Three copies of a letter/transmittal containing the color description and identification color number for each sealant color selected for the project.
- B. Submit a letter or certification from the system manufacturer's representative stating that the manufacturer:
 - 1. Is aware that their system is being utilized for the purpose of preventing surface water from penetrating into the concrete substrate.
 - 2. Is familiar with the project requirements.
 - 3. Agrees that their system is appropriate for the substrates and intended waterproofing use.

- 4. Agrees that their representative will provide necessary field supervision or direction to ensure proper application by the Contractor.

- 5. Agrees to provide the specified guarantee at the completion of the work.

1.04 WARRANTY

- A. Warranty: Provide a total joint responsibility warranty from the manufacturer and applicator to the Owner prior to the final pay request. The warranty is to cover against any defects, water and salt intrusion and include both the labor and material to repair the defective joint sealants for a period of five (5) years for all sealants. Provide a warranty effective from the date of acceptance of the work. Submit an executed copy of the warranty upon completion and acceptance of the work required by this section.
- B. If the manufacturer does not offer a warranty for the anticipated small quantity of material used on the Project, inform the Engineer per Section 01 33 00 to determine if the proposed product will be acceptable.

1.05 JOB CONDITIONS

- A. Do not proceed with the installation of sealant if actual joint width is less than design requirements. Obtain Engineer's approval before proceeding.
- B. Do not proceed with the installation of sealants under adverse weather conditions when joint to be sealed is damp, wet or frozen, or when temperatures are below or above the manufacturer's recommended limitations for installation. Consult the manufacturer for specific instructions before proceeding.

1.06 DELIVERY AND STORAGE

- A. Deliver materials to the job site in sealed and unopened containers. Label each container with material name, date of manufacture and lot number and legible for the duration of the work.

PART 2 - PRODUCTS

2.01 SINGLE COMPONENT POLYURETHANE BASED JOINT SEALANT SYSTEMS

- A. Primers:
 - 1. Provide non-staining primer compatible with sealant and substrate as approved by the manufacturer.

- B. Approved single component polyurethane joint sealants with minimum 100% extension and 50% compression movement capability are:

1. Vertical Joint Sealants:
 - a. "Dymonic 100", Tremco Commercial Sealants and Waterproofing.
 - b. "Sikaflex – 15 LM", Sika Corporation.

Any substitute sealant must meet ASTM C920, Type S, Grade NS, Class 100/50 for non-sag vertical/cove sealants.

2.02 HYBRID JOINT SEALANT SYSTEMS

- A. Primers:
 1. Provide non-staining primer compatible with sealant and substrate as approved by the manufacturer.
- B. Horizontal Hybrid joint sealants meeting ASTM C920, Type M, Grade NS, Class 50, Use NT. Approved products are:
 1. "MasterSeal NP 100" (formally Sonolastic TF-100), BASF (1 part silyl-modified polyurethane)
 2. "MasterSeal NP 150", BASF (1 part silyl-terminated polyether).
 3. "MasterSeal NP 150 Tint Base", BASF (1 part silyl-terminated polyether).
 4. "GE paintable SFS7000", Momentive Performance Materials, Inc. (General Electric Company) (siliconized hybrid)
 5. "DynaTrol I-XL Hybrid", Pecora Corporation (silyl-terminated polyurethane).
 6. "DynaTrol I-XL FTH", Pecora Corporation (silyl-terminated polyurethane).
 7. "Dymonic FC", Tremco Commercial Sealants and Waterproofing (epoxidized urethane).
 8. "Eucolastic1NS (Non-Staining), The Euclid Chemical Company (silane terminated polyurethane).
 9. "Iso-Flex 825 Sealant", LymTal International, Inc. (silyl-terminated polyether).
 10. "SikaHyflex-150 LM", Sika Corporation (polysulfide).
 11. "3M Hybrid Adhesive Sealant 730, Clear", 3M (Organofunctional Silane Ester).
 12. "3M Hybrid Adhesive Sealant 740UV",

3M (silyl-terminated polyether).

13. Equivalents approved by the Engineer.

2.03 ACCESSORIES

- A. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.
- B. Joint Backer Rod:
 1. Preformed, compressible, resilient, non-waxing, non-extruding, non-staining rods, made of urethane foam or polyethylene foam, as recommended by the manufacturer in writing. Size and shape backer rod to suit site conditions and compatible with sealant, primers, and substrates.
 - a. Horizontal joints: closed cell backer rod.
 - b. Vertical joints: open cell backer rod.
- C. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify that substrate surfaces and joint openings are ready to receive work.
- B. Verify that joint backing and bond breaker tapes are compatible with sealant.

3.02 REMOVAL OF EXISTING SEALANT

- A. Remove all existing sealant and backup material or route joints and cracks per Details and Drawings.
 1. If existing sealant is found to be oil-based, determine whether oil has penetrated the material around the joint and notify the Engineer in writing.
- B. Clean joint using a cleaner recommended by the manufacturer. Test to assure cleaner will not stain or damage adjacent surfaces.
- C. Remove and clean only as much material as can be properly resealed in a normal working day.
- D. Clean the joint surface of dust, dirt, oil, grease, rust, lacquers, release agents, moisture or other matter which may adversely affect adhesion of sealant.

3.03 PREPARATION

- A. Remove loose materials and protective coatings or sealers which might impair adhesion of sealant.
 1. Do not apply sealants to joint surfaces previously treated with any type of

- coating, except as otherwise approved by the manufacturer and the Engineer
- B. Clean and prime joints in accordance with manufacturer's instructions.
 - 1. Prime all joint openings.
 - 2. Primer is not required only if waived in writing by the sealant manufacturer, and approved by the Engineer.
- C. Perform preparation in accordance with manufacturer's instructions.
- D. Protect elements surrounding the work of this section from damage or disfiguration.

3.04 INSTALLATION

- A. Install backer rod to provide backing and uniform depth of sealant.
 - 1. Install backer rods with approximately 30% compression.
 - 2. Do not stretch, twist, puncture or tear backer rods.
 - 3. Butt backer rods at intersections.
- B. Install bond breakers in locations shown to prevent bond of sealant to surfaces where such bond may impair the sealant performance.
 - 1. Install in all joints to receive sealant, unless otherwise recommended by the manufacturer.
- C. Install sealant in accordance with manufacturer's instructions.
 - 1. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
 - 2. Do not install sealant at a temperature below 40°F, unless the manufacturer specifically permits application of his materials at a lower temperature.
 - 3. Apply sealant within recommended time limits from primer application to sealant installation.

- D. Use hand guns and pressure equipment with proper nozzle size. Deposit sealant in uniform and continuous bead, avoiding gaps and air pockets.
- E. Confine sealant to joint areas shown. Use masking tape to prevent staining of adjacent surface due to spillage and migration of compound out of the joints.
- F. Tool joints slightly concave on vertical joints and where non-sag horizontal sealants are used
- G. Tool joints within 10 minutes of sealant application.
- H. Remove excess compound and clean adjoining surfaces as may be required to eliminate any indication of soiling or migration.
- I. Apply sealants to a depth of 50% of the joint width, but in no case less than 3/8".

3.05 CLEANING

- A. As work progresses, remove excess materials from adjacent surfaces, including primer and sealant, with cleaning material recommended by the sealant manufacturer.
- B. Leave finished work in a clean and neat condition.
- C. Clean up all debris and equipment as required.

3.06 FIELD QUALITY CONTROL

- A. Upon completion of sealant work, remove joint sealant samples, each measuring approximately 1" long, at representative areas as requested by the Engineer to verify cross-section dimension of the joint.
 - 1. Repair the sample locations to match adjoining joints.
- B. If more than 20% of the joint profiles at the areas tested do not meet the repair details, the Owner can reject the work, or the Contractor may extend the warranty to an extended period acceptable to the Owner.
- C. Retesting of noncompliant work in accordance with Section 01 45 23.

END OF SECTION