

**PROJECT MANUAL FOR
CITY OF CRESTON – CITY HALL
MASONRY REPAIRS
Contract Number 14-091**

OWNER: City of Creston
116 West Adams Street
Creston, Iowa 50801

ARCHITECT: Walker Coen Lorentzen Architects, Inc.
3706 Ingersoll Ave.
Des Moines, Iowa 50312

BIDS DUE: March 24th, 2015
2:00 p.m.
116 West Adams Street
Creston, Iowa 50801

**NON-MANDATORY
PREBID MEETING:** March 10th, 2015
2:00 p.m.
116 West Adams Street
Creston, Iowa 50801

ISSUED FOR BID: March 3rd, 2015



I hereby certify that the portion of this technical submission described below was prepared by me or under my direct supervision and responsible charge. I am a duly Registered Architect under the laws of the State of Iowa.

Signature: _____ Date: _____
Name: Mathew C. Coen, AIA 06120

Registration Expires: 6/30/2016 Date Issued: 5/8/2008

Pages, Sheets, or Divisions covered by this seal:

**Contract Documents for
CRESTON CITY HALL – MASONRY REPAIRS**

TABLE OF CONTENTS

Category I	Bidding Information and Contract Forms	Page Number
	Notice to Bidders.....	1
	Instructions to Bidders	3
	Bid Form	11
	Form of Bid Bond	12
	Form of Contract	13
	Form of Performance and Payment Bond	14
Category II	General Requirements	
	Standard Terms, Conditions, and Definitions	1
	General Notes for Construction	6
	Special Provisions.....	9
Category III	Detailed Specifications / Drawings	

All work and materials on this project shall conform to the General Conditions of the Contract for Construction A201 – 2007 prepared by the American Institute of Architects, unless otherwise noted on the plans or contract documents.

CONTACT INFORMATION

For questions concerning the project specifications, please contact:

Walker | Coen | Lorentzen Architects, Inc: Mathew Coen, AIA
Phone: 515-279-8818
E-mail: mcoen@realizeyourvision.com

City Representative: Mike Taylor, City Manager
Phone: 641-782-2000 ext. 4
E-mail: mike@crestoniowa.org

**NOTICE OF PUBLIC HEARING AND TO BIDDERS
CITY OF CRESTON, IOWA**

**CRESTON CITY HALL – MASONRY REPAIRS
PUBLIC IMPROVEMENT PROJECT**

Notice is hereby given that the City Council of the City of Creston, Iowa, will meet at the Council Chambers in the City Hall, 116 West Adams Street, Creston, Iowa, at 6:00 p.m. on March 3, 2015, at which time and place the City Council will approve updated drawings and specifications for the Creston City Hall – Masonry Repairs Project, as well as set a Public Hearing for April 7, 2015, to hear objections to the proposed plans, specifications and form of contract. The Council will also review and award the contract for construction of said project.

Sealed bids will be received by the City Council for said project in accordance with the plans and specifications now on file in the City Clerk's office, and said bids **shall be filed in the City Clerk's office prior to 2:00 p.m. local time** according to the clock in the reception area of the City Clerk's office, **on the 24th day of March, 2015**, at which time bids will be publicly opened and read aloud in Council Chambers in the City Hall. All bids received after the deadline for submission of bids as stated herein shall not be considered and shall be return to the late bidder unopened. Contractor assumes all risk associated with delivery of his or her bid to the office of the city clerk prior to the specified time deadline.

The City Manager shall announce the results of the bidding, together with his recommendations thereon, to the Council at its meeting to be held at 6:00 o'clock p.m. local time on April 7, 2015.

A pre-bid meeting will be at 2:00 pm local time on March 10th, 2015 commencing at 116 West Adams Street, Creston, Iowa. This meeting will include site inspection. It is the responsibility of potential bidders to obtain the information from this meeting and site inspection.

The plans and specifications are now on file in the office of the City Clerk. Digital Copies of the Bidding documents may be viewed by Bidders and Sub-bidders at the following online locations;

Beeline and Blue
<http://www.beelineandblue.com/>
Master Builders of Iowa
<http://www.isqft.com/>
Dodge Lead Center
<http://dodgeprojects.construction.com/>
Reed Construction Data
<http://www.reedconstructiondata.com/>

Omaha Builders Exchange
<http://www.buildersbureau.com>
Lincoln Builders Bureau
<http://www.buildersbureau.com>
Minneapolis Builders Exchange
<http://www.mbex.org>
ePlan Online Plan Room
<http://www.eplanbidding.com>

Hard copies of the Bidding documents may be obtained from Beeline and Blue, 2507 Ingersoll Ave., Des Moines, Iowa 50312, in accordance with the Instructions to Bidders upon depositing the sum of ten (\$10.00) for each set of documents. Contact Beeline and Blue at 515-244-1611. The deposit will be refunded in full upon return of the documents in good condition within ten days of receipt of bids. Shipping fees shall be the responsibility of the bidder. The services listed above are the only authorized source of bid forms. Bid forms obtained from any other source may have an incomplete set of documents. Bidders using a bid form not obtained from an authorized source are advised to contact one of the approved plan services for current copies. Reproduction of these documents without the express permission of the City of Creston is prohibited.

All bids shall be submitted to said City Clerk on or before the time set herein for the bid opening. Bids shall be made on the Bid Form furnished by the City of Creston, in a **sealed and plainly marked envelope** indicating it is a bid in response to this notice.

Each bid shall be accompany its bid with bid security as defined in Code of Iowa Section 26.8 and as specified in the Instructions to Bidders.

The City of Creston reserves the right to defer acceptance of any bid for a period not to exceed sixty (60) days after receipt of bids, and no bid may be withdrawn during this period.

Each successful bidder shall be required to furnish a corporate surety bond in an amount equal to one hundred percent (100%) of its contract price. Said bond to be issued by a responsible surety approved by the City Council and shall guarantee the faithful performance of the contract and the terms and conditions therein contained and shall guarantee the prompt payment of all material and labor, and protect and save harmless the City from claims and damages of any kind caused by the operations of the contract and shall also guarantee the maintenance of the improvement in good repair for a period of one (1) year from and after the completion and acceptance by the City.

The contractor shall not include sales or use taxes in the bid. Pursuant to Iowa Code and Iowa Administrative Code, the contractor will be authorized to purchase building materials that will be incorporated into real property on this project tax-free. Iowa Construction Sales Tax Exemption Certificates will be issued by the City which will authorize suppliers of building materials to sell materials exempt from Iowa sales tax and any applicable local option sales tax and school infrastructure local option sales tax to the entity listed on the certificate. Upon award of the contract, the successful contractor will be required to provide project information on the contractor, and each subcontractor and supplier requiring the exemption certificates.

After award and approval of contract and performance bond, work on this contract shall be substantially completed no later than July 31, 2015.

The City does hereby reserve the right to reject any or all bids, to waive informalities, and to enter into such contract, or contracts, as it shall deem to be in the best interest of the City.

By virtue of statutory authority, preference will be given to products and provision grown and coal produced within the State of Iowa, and to Iowa labor, to the extent lawfully required under Iowa statutes.

This notice is given by order of the City Council of the City of Creston, Iowa

Warren Woods, Mayor
Lisa Williamson, City Clerk

INSTRUCTIONS TO BIDDERS

1. STANDARD GENERAL CONDITIONS

- 1.1 General Conditions AIA A201 – 2007.

2. BIDDING DOCUMENTS

- 2.1 Complete sets of bidding documents may be obtained from the issuing office(s) as stated in the Notice of Public Hearing and to Bidders. Bidding documents obtained from any other source may be incomplete.
- 2.2 Complete sets of bidding documents shall be used in preparing bids. Prospective bidders assume full responsibility for errors or misinterpretations resulting from the use of incomplete sets of bidding documents. Neither the City of Creston nor any other authorized issuer of bidding documents shall be responsible for errors, omissions, or misinterpretations resulting from the use of incomplete sets of bidding documents.

3. BIDDERS KNOWLEDGE

- 3.1 Examination of Bidding Documents: It is the responsibility of each bidder, before submitting a bid, to examine the complete bidding documents, other related data identified in the bidding documents, and any addenda, and to make sure that the requirements are fully understood.
- 3.2 Examination of Site: It is the responsibility of each bidder, before submitting a bid, to visit the site and satisfy themselves by actual examination of the site as to the general, local, and other site conditions that may affect the cost, progress, performance, and all other conditions that may affect the performance of the contract. Bidders shall document site visits with the engineer or owner's representative if called for in the bidding documents.
- 3.3 Each bidder shall carefully examine all reports, drawings, tests, and other data of conditions at or contiguous to the site, of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the site, and environmental conditions at or contiguous to the site.
- 3.4 It is the responsibility of each bidder to obtain and carefully examine all additional or supplementary reports, drawings, investigations, explorations, tests, studies, and other data concerning conditions at or contiguous to the site which may affect cost, progress, or performance of the work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction to be employed by the bidder, including applying any specific means, methods, techniques, sequences, and procedures of construction expressly required by the bidding documents and safety precautions and programs incidental thereto.
- 3.5. By submitting a bid, each bidder agrees that at the time of submitting his bid no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of his bid for performance of the work at the bid prices and within the times and in accordance with all other terms and conditions of the bidding documents.
- 3.6 It is the responsibility of each bidder to correlate the information known to bidder and information and observations obtained from site visits, reports, drawings, investigations, explorations, tests, studies, and other data concerning conditions at or contiguous to the site.

- 3.7 Laws and Regulations: It is the responsibility of each bidder, before submitting a bid, to become familiar and to satisfy themselves as to all federal, state, and local laws and regulations that may affect the cost, progress, performance, and all other conditions that may affect the performance of the contract.

4. PRE-BID MEETING

- 4.1 The time, date, and location of scheduled pre-bid meetings will be stated in the Notice of Public Hearing and to Bidders. Representatives of the owner and architect will be present at pre-bid meetings to discuss the project. The pre-bid meeting will include site inspection if so stated in the Notice.
- 4.2 No written report of the pre-bid meeting is provided. It is the responsibility of prospective bidders to obtain the information from the pre-bid meeting and site inspection.
- 4.3 Oral statements may not be relied upon and shall not be binding or legally effective. The owner will transmit to all prospective bidders of record any addenda the engineer considers necessary in response to questions arising at the pre-bid meeting.

5. EXAMINATION OF BIDDING DOCUMENTS

- 5.1 It is the responsibility of each bidder to give the engineer written notice of all conflicts, errors, ambiguities, or discrepancies bidder discovers in the bidding documents and to confirm that the written resolution thereof is acceptable to the bidder, and to determine that the bidding documents are generally sufficient to indicate and convey understanding of all terms, conditions, and other requirements for performance of the work.

6. INTERPRETATION OF BIDDING DOCUMENTS AND ADDENDA

- 6.1 If any bidder is in doubt as to the intent or meaning of any part of the bidding documents or the performance of work, it is his responsibility to contact the engineer, owner's representative, or purchasing agent in time to receive a written reply before submitting his bid.
- 6.2 If considered necessary by the engineer, responses to questions about the meaning or intent of the bidding documents will be issued by addenda. Addenda will be distributed to all parties recorded by the City as having received the bidding documents.
- 6.3 Addenda may be issued to clarify, correct, and/or change the bidding documents, and/or to approve material substitutions, as deemed advisable by the engineer or owner's representative.

7. BIDDERS QUALIFICATIONS

- 7.1 Competency of Bidder: Bidders must be capable of performing the work bid upon. They may be required to supply a detailed statement covering experience on similar work, list of machinery, plant, and other equipment that will be used on the proposed work, and such statement of their financial resources or other in data as may be deemed necessary. Such information will be provided by the bidder within five business days of owner's request for evidence of qualifications.
- 7.2 See also 10: Substitute and "acceptable equivalent" items.

8. TAXES

- 8.1 The contractor shall not include sales or use taxes in the bid. Pursuant to Iowa Code and Iowa Administrative Code, the contractor will be authorized to purchase building materials that will be incorporated into real property on this project tax-free. Iowa Construction Sales Tax Exemption Certificates will be issued by the City which will authorize suppliers of building materials to sell materials exempt from Iowa sales tax and any applicable local option sales tax and school infrastructure local option sales tax to the entity listed on the certificate. Upon award of the contract, the successful contractor will be required to provide project information on the contractor, and each subcontractor and supplier requiring the exemption certificates.

9. METHOD OF BIDDING.

- 9.1 The Bid Form is included with the bidding documents. Additional copies may be obtained by contacting the authorized source(s) of bid forms as stated in the Notice.
- 9.2 Preparation of Bid: Bids shall be submitted on a unit price or lump sum basis as stated on the Bid Form. In preparing a bid, the bidder shall specify the price, written legibly in ink or with a typewriter, at which he or she proposes to do each item of work. A response shall be stated with respect to each and every alternate item, whether an add-alternate or a deduct-alternate. Failure to state a response for any alternate bid item shall constitute a non-responsive bid that will not be considered. The prices shall be stated in figures. In items where unit price is required, the total amount for each item shall be computed at the unit prices bid for the quantities given in the estimate. In the event of discrepancies in the unit price extensions listed in the bidder's response, unit prices shall govern.
- 9.3 For all work let on a unit price basis, the architect's estimate of quantities shown on the Bid Form is understood to be approximate only, and will be used only for the purpose of comparing bids. For work let on a lump sum basis, any estimate of quantities provided is furnished for the convenience of bidders and is not guaranteed.

10. SUBSTITUTE AND "ACCEPTABLE EQUIVALENT" ITEMS

- 10.1 Requests for approval of "or-equal" materials and equipment shall be submitted to the architect in writing at least fifteen days prior to receipt of bids. Each request shall conform to the terms and conditions of the bidding documents and to the type, function, and quality standards of approved materials and equipment. The burden of proof of the merit of proposed "or-equal" materials and equipment is upon the bidder. The architect's decision of approval or disapproval of a proposed "or-equal" item will be final. No substitution shall be approved except by a written addendum issued to all prospective bidders.

11. SUBCONTRACTORS

- 11.1 If requested on the Bid Form or in the bidding documents, bidders shall include with the Bid Form a list of proposed major subcontractors and suppliers.

12. SUBMISSION OF BIDS

- 12.1 Use of Bid Form: Bidders will be furnished with the Bid Form giving the estimate of quantities needed to complete the work and the amount of bid security the bidder is submitting with a bid, all of which must be in accordance with the official publications relating to the proposed improvement. To ensure against accidental errors, the bidder should read carefully the official publications before preparing a bid. If any addenda included revised bid forms, bidders shall submit the bid on the last revision of the official Bid Form unless otherwise directed by addendum.
- 12.2 Signatures on Bids: If the bid is made by an individual, his or her name and post office address must be shown. If made by a firm or partnership, the name and post office address of the firm or partnership must be shown. If made by a corporation, the person signing the bid must name the state under the laws of which the corporation is chartered, and the name, title, and business address of the executive head of the corporation. Anyone signing a bid as agent may be required to submit satisfactory evidence of his or her authority to do so.
- 12.3 Irregular Bid Prohibited: Any changes or alterations made in the official Bid Form, or any additions thereto, may cause the rejection of the bid. No bid will be considered which contains a clause in which the bidder reserves the right to accept or reject a contract awarded by the Council. Bids in which the unit prices are obviously unbalanced may be rejected.
- 12.4 Delivery of Bid: Bids shall be placed in an envelope and the envelope sealed and marked to indicate its contents. The bid shall be accompanied by bid security as required in the Notice. If forwarded by mail, the envelope shall be mailed to the city clerk. An envelope is provided with these documents that may be used for this purpose. All bids shall be filed with the city clerk before the time specified for closing bids. Specifications need not be included in the envelope with the Bid Form. The bid shall include acknowledgement of receipt of all addenda. Addenda numbers shall be filled in on the Bid Form.
- 12.5 Each bidder shall determine the best method of delivery of the Bid. The bidder is totally responsible for the mail or other delivery system delivering the bid at the place and prior to the time indicated in the Notice.
- 12.6 The submission of a bid constitutes an incontrovertible representation by the bidder that he has complied with every requirement of the bidding documents, that without exception the bid is premised upon performing and furnishing the work required by the bidding documents and applying any specific means, methods, techniques, sequences, and procedures of construction that may be shown or indicated or expressly required by the bidding documents, that the bidder has given the engineer/owner's representative written notice of all conflicts, errors, ambiguities, and discrepancies that bidder has discovered in the bidding documents and the written resolutions thereof by the engineer/owner's representative are acceptable to bidder, and that the bidding documents are sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the work.

- 12.7 The release of information by the City to the public is subject to Iowa Code Chapter 22 and other applicable provisions of the law relating to the release of records in the possession of the City. Bidders are encouraged to familiarize themselves with these provisions prior to submitting a bid. All information submitted by a vendor may be treated as public information by the City unless the bidder properly requests that information be treated as confidential and cites to applicable open records exception, in which case the City will notify the bidder of any pending public records requests to allow the bidder to seek court protection. In the event the bidder marks each page of the bid as proprietary or confidential without adhering to the requirements of the Section, the City may reject the bid as noncompliant.

13. REPRODUCTION OF SUBMITTAL DOCUMENTS

- 13.1 By submitting a bid the bidder agrees that the City may copy the bid for purposes of facilitating the evaluation or to respond to request for public records. The bidder consents to such copying by submitting a bid and warrants that such copying will not violate the rights of any third parties. The City will have the right to use ideas or adaptations of ideas which are presented in the bids. In the event the vendor copyrights its bid, the City may reject the bid as noncompliant.

14. BID SECURITY

- 14.1 Bid Guaranty: Each bid shall be accompanied by a bid deposit in the form of a bid bond, money order, or cashier's or certified check drawn on a bank in Iowa or a bank chartered under the laws of the United States, in an amount equal to least 5% of the amount of the total bid as security that the bidder, if his or her bid is accepted, will enter into a contract in accordance therewith.
- 14.2 Said bid bond, money order, or cashier's or certified check may be cashed by the City as liquidated damages in the event the bidder fails or refuses to enter into a contract within thirty (30) days and post performance bond satisfactory to the City insuring the faithful fulfillment of the contract and maintenance of said improvement as required by law and the specifications.
- 14.3 Should the bidder receiving the award fail to execute a satisfactory contract and file an acceptable contract bond within thirty (30) days after the acceptance of the bid, the certified check may be cashed and the full amount retained by the City as fixed and liquidated damages.
- 14.4 To be acceptable, the certified check shall bear on its face the endorsement of a solvent bank as to the amount certified. The check shall be endorsed by an official authorized to bind the bank by his or her acts.
- 14.5 Return of Bid Guaranty: The bid guaranty of unsuccessful bidders will be returned promptly after the award has been made. In no case will the bid guaranty be held longer than sixty (60) days without written permission of the bidder, except that the bid guaranty of the bidder to whom the contract is awarded will be retained until he or she has entered into a contract and filed an acceptable bond.

15. VENDOR FORMS, TERMS, AND CONDITIONS

- 15.1 If a bidder intends to request that the City of Creston complete any vendor application form, or any vendor agreement form, or agree to any vendor terms or conditions in connection with the proposed contract, the proposed forms and/or terms or conditions must be submitted with the bid for review by the City's legal counsel during the evaluation of bids. This includes, but is not limited to vendor credit application and customer agreement forms, vendor lease forms, vendor

terms/conditions of sale, vendor shipping or delivery terms, and vendor billing/payment terms.

- 15.2 Bidders are advised that in the event any such forms or terms contradict City of Creston specifications or other contract requirements, the bid may be rejected due to the contradiction unless bidder has indicated deletion of such clauses prior to submission to the City. If such forms/terms indicate a firm other than the bidder is in any way a party to the proposed contract, the proposed party must also indicate concurrence with deletion of such clauses.
- 15.3 If such forms or terms or conditions require that payments be remitted to other than the bidder, bidder shall indicate the name and address of the firm to whom bidder would request payments to be made, and the firm's relationship to the bidder.
- 15.4 If no vendor forms or terms or conditions are included with the bid, no such forms or terms or conditions will be approved by the City during the evaluation or award processes or following award of contract. If the bid does not indicate the proposed contractor, vendor, or payee to be a person or company other than the bidder 1) only the bidder will be considered as contractor/vendor, and 2) payments will be made only to the bidder to whom the contract is awarded. If the bid does not clearly indicate that a person or company other than or in addition to the bidder would in any way be a party to the proposed contract, only the bidder would be considered the contractor/vendor.
- 15.5 The City of Creston will in no case agree to contract terms or conditions not in compliance with City of Creston specifications and/or not submitted for review with bids.

16. MODIFICATION AND WITHDRAWAL OF BIDS

- 16.1 Bidders will be permitted to withdraw their bid after they have been filed with the city clerk, if a request is made in writing to the city clerk before the time specified for closing of bids. No bid may be withdrawn for a period of sixty (60) days after the scheduled closing time for the receipt of bids.
- 16.2 A bid may be modified by withdrawing it in accordance with 15.1, and then resubmitting the bid in accordance with the bidding documents.

17. OPENING OF BIDS

- 17.1 Bids will be publicly opened and, unless obviously non-responsive, read aloud at the time and place indicated in the Notice.
- 17.2 A preliminary summary of base bid amounts and major alternatives, if any, will be available to bidders after the opening of bids.

18. EVALUATION OF BIDS

- 18.1 The City will be permitted to consider various bid prices and other factors, to the extent permitted by law, in determining the bid in the best interests of the City.
- 18.2 Rejection of Bids: The City hereby reserves the right to reject any and all bids, unresponsive bids, to waive informalities, and to enter into such contract or contracts as it shall deem to be for the best interest of the City of Creston.

- 18.3 Disqualification of Bidder: No bidder shall submit more than one bid under the same or different names. Reasonable grounds for believing that any bidder is interested in more than one bid for the work may cause the rejection of all bids in which such bidder is interested, or may cause the disapproval of any contract awarded such bidder. The attention of bidders is directed to Chapter 553.23, *Code of Iowa*, regarding unlawful combinations in making public contracts.
- 18.4 Basis of Bid: For bid items described as unit price on the Bid Form, the bid evaluation total of all prices will be determined as a sum of the products of the estimated quantity of each item and the unit price bid for the item, and lump sum items, if any, on the Bid Form. In cases of discrepancies between the multiplication of quantities or units of work and unit prices bid, unit price shall prevail.
- 18.5 Discrepancies between the sum shown on the Bid Form and the correct sum thereof will be resolved in favor of the correct sum. Correct sums will be calculated as stated above (by multiplying the quantity of each item as shown on the Bid Form and the unit price bid).
- 18.6 If requested by the City during the evaluation process, bidder shall submit a preliminary schedule of values. This shall include quantities and prices of items included in the work which when added together equal the contract price. If requested by the owner, the bidder shall divide the schedule into component parts. Requested schedules shall be submitted within two (2) business days following the request.
- 18.7 Communication During Evaluation: In order to ensure the proper and fair evaluation of bids, unsolicited communication by the bidder to City officials or staff evaluating the bids is prohibited prior to the time a bid decision of recommendation for award has been made. Communication between the bidder and the City will be initiated by the appropriate City official or employee in order to obtain information or clarification needed to develop a proper and accurate evaluation of the bid.

19. CONTRACT AWARD

- 19.1 The City of Creston reserves the right to reject any or all bids, including without limitation, non-conforming, non-responsive, unbalanced, and/or conditional bids.
- 19.2 The City reserves the right to reject the bid of any bidder whom it finds, after reasonable inquiry and evaluation, to not be responsible.
- 19.3 To the extent allowed by law, the City of Creston reserves the right to reject any bid of any bidder who has previously failed to perform adequately after having once been awarded a prior contract for work similar in nature to that in this bid.
- 19.4 Bids will be reported to the City Council of the City of Creston, Iowa, in accordance with the Notice of Public Hearing and to Bidders for action thereon.
- 19.5 Prior to award of contract, the successful bidder shall complete the City's Assurance of Compliance with the City's Affirmative Action Program and Employee Utilization Report.

20. EXECUTION OF CONTRACT

- 20.1 The City will notify the successful bidder. The notification of award will be accompanied by the required number of unsigned counterparts of the contract. Within fifteen (15) days after notification of award, the successful bidder shall sign and deliver the required number of counterparts of the contract together with the required corporate surety bonds as called for in the Notice, and evidence of insurance coverages as called for in the bidding documents.
- 20.2 No bid shall be considered binding upon the City until the contract is properly executed by both parties and the contract bond filed with the city clerk and approved by the City Council.
- 20.3 The contract and bond will be presented to the City Council for approval in accordance with applicable laws, regulations, and City policies.
- 20.4 If the contract and bond are approved by the City Council, the City shall deliver one fully signed copy of the contract to the successful bidder.
- 20.5 The contract, when executed, shall be deemed to include the entire agreement between parties. The contractor shall not claim any modification resulting from representation or promise made by representative of the owner or other persons.

End of Section

**BID FORM
Creston City Hall – Masonry Repairs**

To the City of Creston, Iowa:

The undersigned bidder submits herewith bid security in the amount of 5% of the bid in accordance with the terms set forth in the "Instructions to Bidders".

The undersigned as bidder, having examined and determined the scope of the contract documents, hereby proposes to provide the required labor, equipment, materials, services, transportation, and other components, and to perform the work as described in the contract documents, F.O.B. Creston, Iowa, including addenda ____, ____, and ____ as follows.

DESCRIPTION	LUMP SUM BID AMOUNT
BASE BID: Provide all labor, equipment, materials, insurance, and other components necessary to complete the Creston City Hall masonry repairs in accordance with the drawings and specifications.	\$

Attachments: The following documents are attached to and made a condition of this bid:

- Bid security in the form of 5% Bid Bond

The undersigned bidder certifies that this bid is made in good faith without collusion or connection with any other person or persons bidding on the work.

The undersigned bidder states that this bid is made in conformity with the contract documents and agrees that, in the event of any discrepancies or differences between any conditions of this bid and the contract documents prepared by the City of Creston, Iowa, the provisions of the latter shall prevail.

The contractor shall not include sales or use taxes in the bid. Pursuant to Iowa Code and Iowa Administrative Code, the contractor will be authorized to purchase building materials that will be incorporated into real property on this project tax-free.

Submitted this _____ day of _____, 2015.

Company Name of Bidder _____

Address of Bidder _____

City, State, & Zip Code _____

Signature of Authorized Agent _____

Printed Name and Title _____

Telephone Number _____

Fax Number _____

E-mail Address _____

Check appropriate box:

- Individual/Sole Proprietor Corporation Partnership Other

Please Provide Taxpayer Identification Number (TIN): ____ - _____

FORM OF BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we _____, as Principal, and _____, as Surety, are held and firmly bound unto the City of Creston, Iowa, hereinafter called "Municipality" in the penal sum of \$_____ lawful money of the United States, for the payment of which sum will and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents. The condition of this obligation is such that whereas the Principal has submitted the accompanying bid dated March 17, 2015, for the Creston City Hall Masonry Repairs.

NOW, THEREFORE, if the Principal shall not withdraw said bid within the period specified therein after the opening of the same, or, if no period specified, within thirty (30) days after said opening, and shall within the period specified therefore, or, if no period be specified, within seven (7) days after the prescribed forms are presented to him for signature, enter into a written contract with the Municipality, in accordance with the bid as accepted, and give bond with good and sufficient surety or sureties, as may be required, for the faithful performance and proper fulfillment of such contract, then the above obligation shall be void and of no effect, otherwise to remain in full force and virtue.

By virtue of statutory authority, the full amount of this bid bond shall be forfeited to the Municipality in liquidation of damages sustained in the event that the aforescribed bidder, Principal, fails to execute the contract and provide the bond as provided in the specifications or by law.

IN WITNESS WHEREOF, the above-bounden parties have executed this instrument under their several seals this _____ day of _____, _____, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative pursuant to authority of its governing body.

Date _____

Principal

Date _____

Surety

CONTRACT

THIS AGREEMENT, made and entered into this ____ day of _____, _____, by and between the City of Creston, Iowa, party of the first part, hereinafter referred to as the "City" and _____, party of the second part, hereinafter referred to as the "Contractor".

WITNESSETH:

THAT, WHEREAS, the City has heretofore caused to be prepared certain plans, specifications, and bid blanks, dated the ____ day of _____, _____, for the _____ Department, _____ under the terms and conditions therein fully stated and set forth, and

WHEREAS, said plans, specifications and bid accurately and fully describe the terms and conditions upon which the Contractor is willing to perform the work specified.

NOW, THEREFORE, IT IS AGREED:

- 1. That the City hereby accepts the bid of the Contractor for the work and for the sums listed below:
- 2. That this Contract consists of the following component parts which are made a part of this agreement and Contract as fully and absolutely as if they were set out in this Contract.
 - a. Addenda Numbers _____.
 - b. Contract documents for the Creston City Hall Masonry Repairs.
 - c. Contractor's Bid.
 - d. This instrument.

Above components are complementary and what is called for by one shall be as binding as if called for by all.

- 3. That payments are to be made to the Contractor in accordance with and subject to the provisions embodied in the documents made a part of this Contract.
- 4. That this Contract is executed in three copies.

IN WITNESS, WHEREOF, the parties hereto have hereunto set their hands and seals the date first written above.

CITY OF CRESTON, IOWA

CONTRACTOR

By: _____
Warren Woods, Mayor

By: _____

Attest: _____
Lisa Williamson, City Clerk

Attest: _____

PERFORMANCE AND PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS THAT _____

(Here insert the name and address or legal title of the Contractor) a Principal, hereinafter called the Contractor, and _____

(Here insert the legal title of Surety)
as surety, hereinafter called the Surety, are held and firmly bound unto _____

(Here insert the name and address or legal title of Owner) as obligee, hereinafter called the Owner in the amount of _____ DOLLARS (\$ _____) for the payment whereof Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, Contractor has by written agreement dated _____, _____, entered into a Contract with Owner for _____
In accordance with drawings and specifications prepared by _____ which Contract is by reference made a part hereof, and is hereinafter referred to as the Contract.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if Contractor shall promptly and faithfully perform said Contract, then the obligation of this bond shall be null and void; otherwise it shall remain in full force and effect.

- I. The Surety hereby waives notice of any alteration or extension of time made by the Owner.
- II. Whenever Contractor shall be, and is declared by the Owner to be, in default under the Contract, the Owner having performed Owner's obligations thereunder, the Surety may promptly remedy the default, or shall promptly:
 - A. Complete the Contract in accordance with its terms and conditions or,
 - B. Obtain a bid or bids for submission to Owner for completing the Contract in accordance with its terms and conditions and upon determination by Owner and Surety of the lowest responsible bidder, arrange for a contract between such bidder and Owner, and make available as work progresses (even though there should be a default or a succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the Contract Price; but not exceeding, including other costs and damages for which the Surety may be liable hereunder, the amount set forth in the first paragraph hereof. The term "balance of the Contract Price", as used in this paragraph, shall mean the total amount payable by Owner to Contractor under the Contract and any amendments thereto, less the amount properly paid by Owner to Contractor.
- III. The Contractor and his surety shall, in accordance with the provisions of the *Code of Iowa* be obligated to keep the improvements covered by this bond in good repair for a period of _____ years from the date of acceptance of the improvements by the Owner.
- IV. Any suit under this bond must be instituted before the expiration of _____ years from the date on which final payment under the Contract falls due.
- V. No right of action shall accrue to or from the use of any person or corporation other than the Owner named herein or the heirs, executors, administrators or successors of Owner.

IT IS A FURTHER CONDITION OF THIS OBLIGATION that the principal and surety shall, in accordance with the provisions of Chapter 573 of the *Code of Iowa*, pay to all persons, firms or corporations having contracts directly with the principal or with subcontractors all just claims due them for labor performed or materials furnished in the performance of the Contract on account of which this bond is given. The provisions of Chapter 573, *Code of Iowa*, are a part of this bond to the same extent as if they were extent as if they were expressly set out herein.

SIGNED AND SEALED THIS ____ DAY OF _____ ,AD ____ . IN THE PRESENCE OF:

PRINCIPAL

WITNESS

TITLE

WITNESS

SURETY

TITLE

STANDARD TERMS, CONDITIONS, AND DEFINITIONS

1. STANDARD SPECIFICATIONS

- 1.1 General Conditions of the Contract for Construction A201 – 2007 prepared by the American Institute of Architects, unless otherwise noted on the plans or contract documents.

2. SUBSTITUTIONS

- 2.1 The required type, function, and quality standards are established by the specifications and descriptions in the contract documents. Substitute and/or “or-equal” materials and equipment will be considered only when approved by the architect and identified by addendum unless otherwise specified in the specifications. The contract, if awarded, will be based on materials and equipment specified or described in the contract documents and those approved by addendum.

3. ORAL STATEMENTS NOT BINDING

- 3.1 It is understood and agreed that the written terms and provisions of the contract shall supersede all oral statements of any and every official or other representative of the purchaser, and oral statements shall not be effective or be construed as entering into, or forming a part of, or altering this contract in any way whatsoever.

4. SCOPE, NATURE, AND INTENT OF THESE CONTRACT DOCUMENTS

- 4.1 These contract documents are intended to supplement, but not necessarily duplicate each other. Any requirement specified in one shall be binding just as if it had been set forth in all. It is the intent of these contract documents to include all components necessary for the performance of the work.

In case of a discrepancy in the bidding documents, the order of precedence is as follows:

- 4.1.1 Addenda.
- 4.1.2 Technical specifications.
- 4.1.3 Plans and drawings and other data.
- 4.1.4 Special Provisions.
- 4.1.5 Standard specifications.
- 4.1.6 General requirements.
- 4.1.7 Other bidding documents.

5. GOVERNING LAW

- 5.1 This contract is governed by the law of the State of Iowa with venue in Union County District Court.

6. PREFERENCE FOR LABOR AND MATERIALS

- 6.1 The contractor shall observe all laws of the State of Iowa with regard to preference for labor and materials.
- 6.2 So far as may be done under the law, the contractor shall give preference to labor residing in the vicinity of Creston and to local concerns in the purchase of materials, insurance, and bonds.

7. SUBCONTRACTORS

- 7.1 Identification of subcontractors
 - 7.1.1 The contractor shall provide a list of proposed subcontractors upon request within 48 hours after notice.
- 7.2 If a subcontractor or supplier is replaced, or the subcontract or the work under the subcontract is changed, the bidder/contractor shall disclose the name of the new proposed subcontractor.
- 7.3 The City may reject a proposed subcontractor after due investigation. If a proposed subcontractor is rejected, the contractor shall submit an acceptable replacement for the rejected subcontractor and the contract price will be adjusted by the difference in the actual subcontract cost and an appropriate change order will be issued.
- 7.4 No acceptance of any subcontractor, supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of any right of the City or the City's representative to reject defective work or materials.
- 7.5 Prior to the start of work, the contractor shall provide certificates of insurance for major subcontractors and suppliers as identified by the Architect or owner's representative.
 - 7.5.1 Unless otherwise stated in the project technical requirements or supplemental conditions, each certificate shall evidence coverages and limits equal to those required of the general contractor.
 - 7.5.2 All insurance certificates shall show the City of Creston as the certificate holder and shall reference the project.
- 7.6 Compliance with the requirements of this section shall not result in any claim for additional project work days.

8. CHANGE ORDERS

- 8.1 The contract may be amended to provide for additions, deletions, and revisions in the work or to modify the terms and conditions of the work only by written change order fully executed by owner and contractor.
- 8.2 If any changes are made, the contract shall be adjusted accordingly, and the amount of increase or decrease, if any, in the contract price shall be determined by the unit prices submitted in the bid; if such prices are not submitted or are not applicable, then by mutual agreement between the contractor and the purchaser. The contractor shall provide documentation and analysis of costs relating to any increase in sufficient detail as may be requested by the owner.
- 8.3 The contractor shall furnish an additional corporate surety bond in conjunction with change orders when the total of change orders exceeds the existing bond amount by more than \$100,000. Said bond shall be in an amount as directed by the City. Including the additional bond(s), the total of bonds would be at least 100% of the revised contract price. Said bond shall be issued by a responsible surety approved by the City of Creston and shall guarantee the faithful performance of the contract and the terms and conditions therein contained and shall guarantee the prompt payment of all material and labor, and protect and save harmless the City from claims and damages of any kind caused by the operations of the contract and shall also guarantee the maintenance of the improvement in good repair for the period as stated in the Notice.

- 8.4 The contractor shall not be entitled to a change in the contract price, terms or conditions, or an extension of the contract times with respect to any work performed that is not required by the contract documents as amended, modified, or supplemented as provided herein.
- 8.5 The combined overhead and profit included in the total cost to the Owner for a change in the Work shall be based on the following schedule:
- 8.5.1 For the Contractor, for Work performed by the Contractor's own forces, ten percent of the cost.
 - 8.5.2 For the Contractor, for Work performed by the Contractor's Subcontractor's own forces, ten percent of the cost.
 - 8.5.3 For each Subcontractor involved, for Work performed by that Subcontractor's own forces, ten percent of the cost.
 - 8.5.4 For each Subcontractor involved, for Work performed by the Subcontractor's Subcontractor, five percent of the amount due to the Sub-Subcontractor.
 - 8.5.5 Cost to which overhead and profit is to be applied shall be determined in accordance with the following schedule:
 - a) Costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and worker's compensation insurance;
 - b) Cost of materials, supplies and equipment, including cost of transportation, whether incorporated or consumed;
 - c) Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
 - d) Cost of premiums for all bonds and insurance, permit fees, and sales, use or similar taxes related to the Work; and
 - e) Additional costs of supervision and field office personnel directly attributable to the change.
 - 8.5.6 In order to facilitate check of quotations for extras or credits, all proposals except those so minor that their propriety can be seen by inspection, shall be accompanied by a complete itemization of costs including labor, materials and Subcontracts. Labor and materials shall be itemized in the manner prescribed above. When major cost items are Subcontracts, they shall be itemized also. In no case will a change involving over \$500.00 be approved without such itemization.

9. PAYMENT

- 9.1 Payment will be from City of Creston funds.
- 9.2 Monthly progress payment requests may be submitted by the contractor on the first day of each month for work completed during the preceding month.
- 9.3 Payment to the contractor shall be made on the basis of ninety-five percent (95%) upon the certification of the completed work as recommended by the architect or owner's representative and approved in accordance with City of Creston standard payment procedures. Such payment is in no way an act of acceptance of the equipment furnished or the work done.

- 9.4 Upon completion of the work, final payment will be made not earlier than thirty (30) days after the final acceptance of the completed contract by resolution of the City Council.
 - 9.4.1 Final payment is subject to the further condition that the contractor furnishes a list of all persons furnishing labor and material with evidence that such persons have been paid in full.
- 9.5 Retained funds may be released in accordance with *Code of Iowa* Chapter 573 for work that is substantially complete.
 - 9.5.1 Requests for early release of retained funds shall be accompanied by a sworn statement from the contractor that, ten calendar days prior to filing the request, notice was given as required in Section 7 of Chapter 38.13 to all subcontractor, sub-subcontractors, and suppliers, and to whom paid on all materials which have become part of the work for which the contractor is requesting payment.
 - 9.5.2 An amount equal to two-hundred percent of the value of the labor or materials yet to be provided, as determined by the architect, will be withheld until such labor or materials are provided.
 - 9.5.3 An amount equal to two-hundred percent of the amount of any claims of subcontractors or suppliers will be withheld.

10. SMOKE-FREE AIR ACT

- 10.1 Effective July 1, 2008, in accordance with the *Code of Iowa* Section 142D and the *Smokefree Air Act*, smoking is prohibited and no person shall smoke in any City owned building, in any City vehicle, on the grounds of any building owned, leased, or operated by or under the control of the City, or in any area under the control of the City including but not limited to work areas, private offices, conference and meeting rooms, classrooms, auditoriums, employee lounges and cafeterias, hallways, medical facilities, restrooms, elevators, stairways and stairwells.
- 10.2 The Contractor shall communicate to its employees and subcontractors working on the project the smoking prohibitions prescribed by *Code of Iowa* Section 142D. Additionally, a “no smoking” sign or the international “no smoking” symbol shall be conspicuously posted by the Contractor in and at every entrance to the work site, including temporary structures. All signs shall contain the telephone number for reporting complaints and the Internet site of the department of public health.

11. DEFINITIONS

- 11.1 **Bid/Proposal/Offer** shall mean the entire submittal including the bid form, data sheet, and all attachments required as listed on the Bid Form and all other attachments and supplemental documents submitted at the time of bidding. The terms bid, proposal, and offer may be used interchangeably in the bidding documents.
- 11.2 **Bidding documents** shall include the contract documents and all other bidding requirements.
- 11.3 **Change order** shall mean a document issued after the effective date of the contract and signed by the contractor and owner authorizing an addition, deletion, or revision in the work, or an adjustment in the contract price, contract terms, or contract times.

- 11.4 **City or purchaser** shall mean the City of Creston, Iowa, which is the Party of the First Part in the accompanying contract acting through its authorized representatives.
- 11.5 **Contract documents** shall include the Notice of Public Hearing and to Bidders; Instructions to Bidders; Bid Form; Estimate Reference Information; Contract; certifications; bonds; Standard Terms, Conditions and Definitions; General Notes for Construction; Special Provisions; special conditions; general requirements; specifications; supplemental specifications; all addenda; and any plans, drawings, or other data, including but not limited to the items designated in the contract, that may be furnished to clarify the requirements.
- 11.6 **Council** shall mean the duly elected Council of the City of Creston, Iowa.
- 11.7 **Architect** shall mean the owner's designated architectural or engineering representative.
- 11.8 **Inspector** shall mean the authorized representatives of the architect, assigned to the detailed inspection of the work, or materials therefore, and to such other duties as may be delegated to him/her in these specifications.
- 11.9 **Owner** shall mean the City of Creston, Iowa.
- 11.10 **Owner's representative** shall mean the city manager of Creston, Iowa, or its authorized representatives.
- 11.11 **Plans** or **drawings** shall mean all drawings furnished by the architect to define in greater detail the intent of the specifications.
- 11.12 **Specifications** shall mean the directions and requirements of the detailed technical specifications as contained herein, as supplemented by such detailed specification requirements as may be provided, pertaining to the manner of performing the work or the quantities and quality of materials to be furnished under the contract.
- 11.13 **Work or project** shall be as described in the Notice of Public Hearing and To Bidders.

End of Section

GENERAL NOTES FOR CONSTRUCTION

1. NOTICE TO PROCEED

- 1.1 The contractor shall proceed with the work upon receiving a notice to proceed from the owner's representative according to the conditions as given in the Notice to Bidders.

2. GENERAL CONDUCT OF PROJECT

- 2.1 The contractor shall take all possible steps to avoid inconvenience to property owners and the general public during the conduct of this project. Such measures shall include dust control, and efforts to minimize noise and inconvenience to pedestrians and vehicular traffic. The project area shall be kept orderly on a daily basis. All work, employees, equipment and material shall be limited to the right-of-way and easements. Care will be taken to ensure maximum cooperation with the City and the property owners concerning scheduling of the work.

3. CODES AND STANDARDS

- 3.1 The contractor shall conform to the safety requirements of the Williams-Steiger Occupational Safety and Health Act of 1970 and all current amendments.
- 3.2 The contractor shall also comply with all applicable laws, building and construction codes, and other requirements of the City of Creston.
- 3.3 The contractor shall procure all necessary permits for the construction of the work. The costs for all required jurisdictional permits and licenses will not be waived by the jurisdiction. The contractor's costs for permits and licenses shall be included in the bid and shall not be considered as an extra.
- 3.4 In case of conflict between various codes, requirements of the more stringent code shall apply.

4. UTILITIES

- 4.1 The contractor shall exercise all due caution when working in the vicinity of pipelines carrying combustible or toxic materials which are present on this project. Pipeline locations shown on the plans represent the best information available at the time of plan preparation. Before performing earthwork, tiling, or excavation within three hundred feet of an existing pipeline, the contractor shall notify the pipeline company and the pipeline company shall mark the location of the pipeline as required by section 479.47 of the *Code of Iowa*.
- 4.2 The location and elevations of utilities indicated on the plans are taken from existing public records. The exact location and elevation of all utilities must be determined by the contractor. It shall be the duty of the contractor to ascertain whether any additional facilities other than those shown on the plans may be present. Utilities damaged or broken by contractor's operations shall be repaired at no additional cost to owner.
- 4.3 Prior to construction, the contractor shall uncover all utilities to verify their location and elevation and to identify potential conflicts. Contractor shall immediately notify the architect of any potential conflicts.

- 4.4 Existing utility facilities such as utility poles, underground conduit, guy wires, underground carrier pipe, and service lines shall be relocated, removed or adjusted by the respective utility companies. All utility work does not appear on the plans. Coordination with utilities companies for the location and access for relocation of their lines shall be the responsibility of the contractor.
- 4.5 The contractor shall be responsible for such utilities as water appurtenances, storm and sanitary sewer manholes, and intakes that are to be constructed or adjusted.
- 4.6 If the contractor damages a water service line, a licensed plumber must be retained to complete repairs to said service. In addition, if a curb stop must be adjusted, this will require the services of a licensed plumber.
- 4.7 All service connections to mains and sewers (water, sanitary, and sump) must be made by a licensed plumber.
- 4.8 Coordination with others (utility companies and other contractors) for relocation or installation of utilities or items not in this contract shall be the responsibility of the contractor and the cost shall be considered incidental to this project.
- 4.9 The City of Creston's underground facilities do not include service lines and laterals providing service to private properties. All City of Creston service locates are completed as a courtesy for the contractor. No guaranty of accuracy is offered, nor shall any be implied. It shall be up to the excavator to verify exact locations and ascertain the presence of any unmarked lines.

5. CERTIFICATIONS AND TESTS

- 5.1 Material Samples: Before a contract is awarded, the bidder may be required to furnish a statement of the origin, composition, and manufacture of any or all materials proposed for use in the performance of the contract, together with samples of the material. These samples will be considered as representative and typical of the material to be obtained from any particular source.
- 5.2 Material Tests: At any time during the course of the contract, the architect may require that tests be conducted on any or all materials used in the performance of the contract.
- 5.3 Supplier Certification: Prior to the use of a product in the performance of the contract, the supplier of said product shall submit to the architect a certificate informing the architect that the supplier has examined the specifications contained herewith, and that his/her product satisfies the standards required of that type of product.

6. WASTE MATERIALS

- 6.1 All waste materials shall be disposed of at an approved landfill site or other waste disposal site. Disposal of waste materials shall be in accordance with all applicable Federal, State of Iowa, and local requirements. Applicable dumping fees will be the responsibility of the contractor.

7. WATER SOURCE FOR CONSTRUCTION

- 7.1 It shall be the responsibility of the contractor to supply the water needed for his/her construction operations through the use of a tank wagon or similar type machinery.
- 7.2 Water shall not be drawn from fire hydrants without the use of a hydrant meter. Application for use of a hydrant meter is made by contacting the Water Meter Division of the City of Creston.

7.3 No person except an authorized employee of the City shall open or close any hydrant connected to the City water supply.

8. FINAL SUBMITTALS

8.1 Upon completion of the contract work, the contractor shall submit copies of such documents as requested by the owner. This may include, but is not limited to, as-built drawings certified by an architect or engineer licensed in the state of Iowa; final inspection documents; warranty certificates; operation and maintenance manuals.

End of Section

SPECIAL PROVISIONS

1. GENERAL

1.1 These Special Provisions shall apply to the Creston City Hall – Masonry Repairs.

2. INSURANCE REQUIREMENTS

2.1 Minimum Scope of Insurance: Coverage shall be at least as broad as:

2.1.1 Insurance Services Office form number CG 00 01 covering Commercial General Liability.

2.1.2 Insurance Services Office form number CA 00 01 covering Automobile Liability, comprehensive form.

2.1.3 Worker's Compensation insurance as required by the Laws of the State of Iowa and Employers Liability insurance.

2.2 Minimum Limits of Insurance: Contractor shall maintain limits no less than:

2.2.1 General Liability: \$1,000,000 combined single limit per occurrence for bodily injury, personal injury and property damage.

2.2.2 Automobile Liability: \$1,000,000 combined single limit per accident for bodily injury and property damage.

2.2.3 If required by statute, Workers' Compensation and Employers Liability: Statutory Workers' Compensation limits as required by the laws of the State of Iowa.

2.3 Deductibles and Self-insured Retentions: Any deductibles or self-insured retentions must be declared to and approved by the City of Creston. At the option of the City of Creston, either the insurer shall reduce or eliminate such deductibles or self-insured retentions as respects the City of Creston, its officials and employees; or the contractor shall procure a bond guaranteeing payment of losses and related investigations, claim administration and defense expenses.

2.4 Other Insurance Provisions: The policies are to contain, or to be endorsed to contain, the following provisions:

2.4.1 General Liability and Automobile Liability Coverages.

2.4.1.1 The City of Creston, its officials, employees, and volunteers are to be covered as insured as respects: liability arising out of activities performed by or on behalf of the contractor; products and completed operations of the contractor, premises owned, occupied or used by the contractor, or automobiles owned, leased, hired, or borrowed by the contractor. The coverage shall contain no special limitations on the scope of protection afforded to the Agency, its officers, officials, employees, or volunteers.

2.4.1.2 Any failure to comply with reporting provisions of the policies shall not affect coverage provided to the City of Creston, its officials, employees, or volunteers.

2.4.2 Workers' Compensation and Employers Liability Coverage.

- 2.4.3 To the fullest extent provided by the laws of Iowa, the insurer shall agree to waive all rights of subrogation against the City of Creston, its officials, employees, and volunteers for losses arising from work performed by the contractor for the City.
- 2.5 All Coverages: Each insurance policy required by this clause shall be endorsed to state that coverage shall not be suspended, voided, cancelled by either party, reduced in coverage or in limits except after thirty (30) days' prior written notice by certified mail, return receipt requested, has been given to the City.
- 2.6 Acceptability Of Insurers: Insurance is to be placed with insurers with a Bests' rating of no less than A:VII.
- 2.7 Verification Of Coverage: Contractor shall furnish the City with certificates of insurance and with original endorsements effecting coverage required by this clause. The certificates and endorsements for each insurance policy are to be signed by a person authorized by that insurer to bind coverage on its behalf. The certificates and endorsements are to be on standard insurance company forms or forms provided by the City and are to be received and approved by the City before work commences. The City reserves the right to require complete, certified copies of all required insurance policies, at any time.
- 2.8 Subcontractors: Contractor shall include all subcontractors as insured under its policies or shall furnish separate certificates and endorsements for each subcontractor. All coverages for subcontractors shall be subject to all of the requirements stated herein.
- 2.9 Indemnification: To the fullest extent permitted by law, the contractor shall indemnify and hold harmless the City of Creston, their agents, and employees from and against all claims, damages, losses, and expenses, including, but not limited to attorneys' fees arising out of or resulting from the performance of the work, provided that any such claim, damage, loss, or expense (1) is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the work itself) including the loss of use resulting therefrom; and (2) is caused in whole or in part by any negligent act or omission of the contractor, any subcontractor, anyone directly or indirectly employed by any of them or any one for whose acts, any of them may be liable.
- 2.10 In no case will the contractor's coverage be constructed to provide coverage for acts of negligence alleged to be caused by the sole negligence of employees of the City of Creston.

3. WARRANTIES AND GUARANTEES

- 3.1 Maintenance Of The Work: The contractor shall provide a maintenance bond for the improvements of this project. Unless otherwise stated, the length of the maintenance bond shall be one (1) year.

End of Section

SECTION 04100.01
REMOVAL OF MORTAR JOINTS AND REPOINTING

PART 1 – GENERAL

1.01 DESCRIPTION

- A. This specification provides procedures appropriate for removing mortar and repointing historic masonry.
- B. This specification has been developed for use on historic properties (defined as any district, site, building, structure, or object that is listed in or eligible for listing in the National Register of Historic Places) and provides an overview of accepted practices.
- C. All work described herein and related work must conform to the Secretary of the Interior’s Standards for the Treatment of Historic Properties.
- D. The Contractor shall provide all labor, materials, equipment, and operations required to complete the rehabilitation work indicated herein.
- E. All work described herein and related work must have the approval of a Cultural Resources Manager, Conservator, Historic Architect, or other professional who meets the standards outlined in the Secretary of the Interior’s Standards – Professional Qualifications Standards pursuant to 36 CFR 61. Such person is referred to in this document as the *Architect*.
- F. Site-specific specifications, when appropriate, will be provided by the Architect.

1.02 SECTION INCLUDES

- A. Removal of mortar joints
- B. Repointing

1.03 RELATED SECTIONS

- A. Section – 04100.02 Preparation of Lime and Cement-Amended Mortars
- D. Section – 04500 Masonry Restoration

1.04 REFERENCES

**SECTION 04100.01
REMOVAL OF MORTAR JOINTS AND REPOINTING**

- A. Repointing shall conform to *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring & Reconstructing Historic Buildings*.
- B. Techniques employed for repointing shall be as outlined in *Preservation Brief No. 2: Repointing Masonry Joints in Historic Masonry Buildings*, available online at the NPS website at <http://www.nps.gov/history/hps/tps/briefs/brief02.htm>.
- C. Techniques employed for cleaning masonry prior to repointing shall be as outlined in Preservation Brief #1: Assessing Cleaning and Water-Repellent Treatments for Historic Masonry Buildings.
- D. U.S. General Services Administration Historic Preservation Technical Procedures for mortar, available online at
<http://www.gsa.gov/gsa/cm_attachments/GSA_DOCUMENT/Preservation_Note_01_R2RQ4-y_0Z5RDZ-i34K-pR.doc>;
<<http://w3.gsa.gov/web/p/hhttp.nsf/a533f1f859737bc9852565cc0058d0b6/7de342045d4c63f6852565c50054b3a7?OpenDocument>>; and
<<http://w3.gsa.gov/web/p/hhttp.nsf/a533f1f859737bc9852565cc0058d0b6/e7518da3d776f026852565c50054b3c5?OpenDocument>>.
- E. Masonry restoration work shall comply with ACI / ASCE 530.1-88. Contractor shall maintain at least one copy of ACI / ASCE 530.1-88 on site.

1.05 SUBMITTALS

The Contractor will submit a detailed schedule of the areas to be repointed, including an assessment of the problem areas and a detailed procedure for repointing, to the Architect for approval. Documentation shall include:

1. Existing general masonry failures that contribute mortar losses shall be noted and should be scheduled for repair prior to repointing.
2. Analysis of mortar type and color shall be conducted, the extent and type of analysis to be determined by the Architect.
3. 'Before' photo documentation of areas to be worked.

1.06 QUALITY ASSURANCE

- A. Work Experience: The Contractor & masons to perform the work in this section shall have demonstrated experience in the repointing of historic masonry, ideally a minimum of five (5) years. He/she shall demonstrate a working knowledge of the Secretary of the Interior's Standards for Guidelines for Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings.
- B. Mortar removal will be undertaken by an experienced mason. The mason operating mechanical tools or power tools (when necessary) shall have demonstrated proficiency with the tools which must be approved by the Architect. The Mason/operator using the equipment must have demonstrated expertise in their proper use on historic structures, ideally a minimum of five years experience.

**SECTION 04100.01
REMOVAL OF MORTAR JOINTS AND REPOINTING**

1.07 MOCK-UPS

- A. The Contractor shall prepare mock-up installations prepared with each of the removal methods and tools that will be used for this Work at locations selected by the Architect. Test panels should not be undertaken in areas that are highly visible. Use of power and mechanical tools shall be approved by the Architect.
- B. The Contractor shall prepare two mock-up installations of each type of masonry joint style and mortar color to be installed at locations selected by the Architect. If cleaning tests are also to take place, test panels should be placed in the same area. Test panels should not be undertaken in areas that are highly visible. Each test panel shall be executed in the same manner as the final installation. Mock-ups will be reviewed after the mortar removal and again after completion of repointing. Test panels shall be a minimum area 3x3 feet for brick facades, and larger for stone facades. Test panels will be inspected for color, texture, and installation technique.
- C. If the first mock ups are unacceptable, the Contractor shall prepare up to three additional mock-ups of each mortar, joint type, and mortar color without further compensation, for approval by the Architect. Approved test area(s) shall become part of the work and shall serve as the quality standard for all subsequent work.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. Materials shall be delivered to the site in original packaging, unopened, with manufacturer's name and product identification thereon. Cementitious materials shall be protected from contamination by foreign matter and deterioration by moisture or temperature. Contaminated or deteriorated material shall not be used.
- B. Masonry materials shall be stored in such a manner as not to interfere with the operation and daily maintenance of the facility. Proposed storage locations shall be approved by the Owner prior to the delivery of materials.

1.09 PROJECT / SITE CONDITIONS

- A. The normal temperature range for the work of this Section shall be when the air and surface temperatures are 40 degrees F and rising, or less than 90 degrees F and falling. When temperatures are expected to fall outside this range, the Contractor shall employ hot and cold weather procedures as published by the Masonry Institute of America, when approved by the Architect.
- B. The Contractor is responsible for protecting existing adjacent materials and surfaces during the execution of the work, and shall provide all necessary protection and follow all necessary work procedures to avoid damage to existing material assemblies not a part of the work in the Section.
- C. The Contractor shall provide visible barriers and / or warning tape around the perimeter of the work area for visitor protection and shall also provide that nearby vehicles and adjacent structures and foliage will be protected from damage during the course of the work.

**SECTION 04100.01
REMOVAL OF MORTAR JOINTS AND REPOINTING**

- D. The Contractor shall coordinate masonry repointing with the other trades involved in exterior and interior rehabilitation work, as applicable, including but not limited to masonry cleaning, sealing, and painting.

PART 2 – PRODUCTS

2.01 EQUIPMENT FOR RAKING AND REPOINTING

- A. Equipment for raking joints:
1. Hand chisels and mash hammers
 2. With Architect's approval: Power tools including small pneumatically-powered chisels, scaler (power chipper), and thin diamond-bladed grinders. Power saws are not generally recommended. Use of power tools on head joints should be minimized and special care shall be taken when employed. Top and bottom of the head joints shall be finished with a chisel
- B. Equipment for repointing:
1. Mortar pan mill or equipment for mortar mixing
 2. Plastic buckets, hoe, wooden mallet
 3. Mortar board, hawk, trowels, pointing rod
 4. Natural bristle or nylon brushes (metal bristle brushes are NOT to be used)

2.02 MORTAR SELECTION CRITERIA: See Sections 04100.02

- A. Repair mortar shall match as closely as possible the characteristics of the historic pointing mortar.
- B. Repair mortar shall match the color, texture, strength and tooling of the historic pointing.
- C. Sand shall match the sand of the historic mortar.
- D. Mortar shall have greater vapor permeability and be softer, measured in compressive strength, than the masonry units.
- E. Mortar shall be as vapor permeable and be as soft or softer, measured in compressive strength, than the existing historic mortar.

PART 3 - EXECUTION

3.01 GENERAL

- A. The restoration methods and materials selected for a specific structure shall take into account the total construction system of the building to be worked upon, including different masonry and mortar materials, as well as non-masonry elements that may be affected by the work.
- B. The extent of the repointing, whether partial or sectional repointing, complete facades or features, or total structure or building, shall be reviewed by the Architect on site prior to

SECTION 04100.01
REMOVAL OF MORTAR JOINTS AND REPOINTING

beginning operations. The Contractor shall submit a repointing schedule, including methods and materials to be used for approval before work starts.

- C. Prior to commencing the work, the Contractor shall complete a schedule to be approved by the Architect of the proposed work, to address the condition of the mortar and masonry.
- D. The Contractor shall protect adjacent materials, installed non-masonry materials, and openings.
- E. Manufacturer's instructions for mixing mortar and installation of masonry and equipment shall be followed. Masonry shall conform to ASTM C270 - 07a Standard Specification for Mortar for Unit Masonry
- F. Masonry cleaning shall be completed prior to beginning raking and repointing work. Cleaning shall be in accordance with the Secretary's Standards and in conformance with National Park Service, Technical Preservation Services Preservation Brief #1: Assessing Cleaning and Water-Repellent Treatments for Historic Masonry Buildings.

3.02 SYSTEM FOR JOINT REMOVAL

- A. The areas selected for repointing, if partial or selective repointing is to be done, shall be designated and marked off with an impermanent material.
- B. Removal Methods:
 - 1. Preferred Method: removal of mortar by hand with a hand chisel and mash hammer. This method produces the least damage and is preferred for masonry with thin joints and for brick.
 - 2. Alternative Method #1: removal with power tools such as pneumatic chisels and grinders. Power saws are not recommended for use on most brick walls or thin joints. Small pneumatically powered chisels are generally effective for use on historic buildings, providing the operator is skilled. Grinders with thin diamond blades can be used for horizontal joints on hard portland cement mortars. Top and bottom of the head joints shall be finished with a chisel.
 - 3. Alternative Method #2: combined use of power tools and hand chiseling methods are generally recommended and achieve the highest degree of success when properly executed.
- C. Specifications for Removal:
 - 1. Mortar shall be removed to a minimum depth of 2 to 2 ½ times the width of the joint but not less than ¾ inch.
 - 2. Chisels and power tools are to be the appropriate size to fit cleanly into mortar joints without damage to surrounding surfaces.
 - 3. Loose or disintegrated mortar beyond the minimum depth shall be removed.
 - 4. Removal of the mortar shall be done in a manner that does not score, chip, or otherwise damage masonry units or adjacent elements.

SECTION 04100.01
REMOVAL OF MORTAR JOINTS AND REPOINTING

5. Mortar should be removed cleanly from the masonry units, leaving square corners at the back of the cut.
6. If using a grinder to rake head joints, the Contractor shall switch to the smallest diameter blade possible to make the deepest cut without overrunning the ends of the joint and cutting into the material above or below. Top and bottom of the head joints shall be finished with a chisel.
7. Use a hand chisel to finish joints adjacent to door and window openings to avoid damage to frames and trim.
8. If work is found unacceptable by the Architect, all raking shall cease without additional cost to the Owner until deficiencies in tools, workmanship, or methodology have been corrected to the Architect's satisfaction.

3.03 SYSTEM FOR REPOINTING

- A. The Contractor shall inspect all joints to receive mortar prior to commencing work:
 1. After removal of the old mortar, joints shall be blown clean with compressed air (40-60 psi) to remove all loose particles and dust.
 2. Prior to repointing, joints shall be dampened with pressurized water (100-150 psi). Joints shall be damp with no visible standing water.
 3. Dampen absorbent masonry surfaces, such as limestone, sandstone, and common brick, to which mortar will adhere.
- B. Filling Joints:
 1. Fill the deeper areas first, compacting the new mortar in several successive layers.
 2. Apply successive amounts of mortar in 1/4-inch layers.
 3. Allow each layer to harden before application of the next layer.
 4. Apply the final layer flush with masonry units, except where old bricks or stones have worn, rounded edges, the final mortar layer should be recessed slightly from the face of the masonry. Do not feather-edge mortar over chipped or damaged edges.
- C. Finishing:
 1. Allow the final layer to set until "thumb-print hard" and tool to match the historic joint. Proper timing is important for uniform color and appearance of the mortar.
 2. Remove excess mortar from the edges of the joints with a natural bristle or nylon brush after mortar has dried but before the mortar is initially set (approximately 1-2 hours).
- D. Curing:

SECTION 04100.01
REMOVAL OF MORTAR JOINTS AND REPOINTING

1. Periodically wet mortar joints after the mortar joints are thumb-print hard and have been tooled (especially important with high-lime content mortars, such as Type O, Type K, and especially Type L). Misting with a hand sprayer with a fine nozzle for one to two days is recommended.
2. Where ambient temperatures exceed 80 degrees F or where wind speeds exceed 20 mph, cover walls with burlap after repointing to keep walls damp and protected from direct sunlight. If plastic is used, it must be tented out and not placed directly against the wall.
3. Allow new mortar to cure for at least 30 days prior to exposure to other repairs.

3.04 FINAL REPORT

The Contractor and Architect shall:

- A. Revisit the site after the new mortar has cured at least 30 days to compare the finish and color of the repair to see if the desired affect has been achieved.
- B. Document the work and finished product with photographs, both 'before' and 'after'.
- C. Provide a written summary of the project and results upon final inspection and approval. The summary shall outline steps taken or new findings not specified in the initial documentation.

END OF SECTION

SECTION 04100.02
PREPARATION OF LIME AND CEMENT-AMENDED MORTARS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This specification provides procedures appropriate for preparing lime and cement-amended mortars for use in repointing historic masonry.
- B. This specification has been developed for use on historic properties (defined as any district, site, building, structure, or object that is listed in or is eligible for listing in the National Register of Historic Places) and provides an overview of accepted practices.
- C. All work described herein and related work must conform to the Secretary of the Interior's Standards for the Treatment of Historic Properties.
- D. The Contractor shall provide all labor, materials, equipment, and operations required to complete the rehabilitation work indicated herein.
- E. All work described herein and related work must have the approval of a Cultural Resources Manager, Conservator, Historic Architect, or other professional who meets the standards outlined in the Secretary of the Interior's Standards – Professional Qualifications Standards pursuant to 36 CFR 61. Such person is referred to in this document as the *Architect*.
- F. Site-specific specifications, when appropriate, will be provided by the Architect.

1.02 SECTION INCLUDES

- A. Mortar selection
- B. Preparation of lime mortar
- C. Preparation of cement-amended mortar

1.03 RELATED SECTIONS

- A. Section 04100.01 – Removal of Mortar Joints and Repointing
- E. Section 04500 – Masonry Restoration

1.04 REFERENCES

SECTION 04100.02
PREPARATION OF LIME AND CEMENT-AMENDED MORTARS

- A. *The Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring & Reconstructing Historic Buildings*, available at the National Park Service (NPS) website.
- B. Use and types of mortar are found in *Preservation Brief No. 2: Repointing Masonry Joints in Historic Masonry Building*, available online at the NPS website at <http://www.nps.gov/history/hps/tps/briefs/brief02.htm>.
- C. U.S. General Services Administration Historic Preservation Technical Procedures for Mortar, available online at <http://w3.gsa.gov/web/p/hptp.nsf/a533f1f859737bc9852565cc0058d0b6/7de342045d4c63f6852565c50054b3a7?OpenDocument> and <http://w3.gsa.gov/web/p/hptp.nsf/a533f1f859737bc9852565cc0058d0b6/e7518da3d776f026852565c50054b3c5?OpenDocument>.
- D. Weaver, Martin E. *Conserving Buildings: A Manual of Techniques and Materials*. Revised edition. New York: John Wiley & Sons and the Preservation Press, 1997.
- E. ASTM C207, *Standard Specification for Hydrated Lime for Masonry Purposes*
- F. ASTM C206, *Standard Specification for Finishing Hydrated Lime*
- G. ASTM C144, *Standard Specification for Aggregate for Masonry Mortar*.
- H. ASTM C150, Type II, *Standard Specification for Portland Cement*.
- I. ASTM C979, *Specification for Pigments for Integrally Pigmented Concrete*.
- J. ASTM C170 – Compressive Strength of Natural Building Stone
- K. ASTM C5 Standard Specification for Quicklime for Structural Purposes

1.05 SUBMITTALS

- A. The Contractor shall submit a detailed schedule of the areas to be repointed, including an assessment of the problem areas, a historic mortar analysis, and a detailed procedure for repointing, to the Architect for approval:
 - 1. Submit data indicating proportion or property specifications used for mortar.
 - 2. Submit test reports for mortar materials and report proportions resulting from laboratory testing used to select mortar mix.
- B. Product Literature: The Contractor shall submit the manufacturer's product literature to the Architect for all proprietary products specified for repointing. Product literature shall include specification data, Material Safety Data Sheets, and instructions for storage, handling, and use.
- C. Historic Mortar Analysis: The Contractor shall utilize the laboratory report from completed mortar analysis – see appendix A.

SECTION 04100.02
PREPARATION OF LIME AND CEMENT-AMENDED MORTARS

- D. Samples: No masonry restoration work shall proceed until all samples are approved by the Architect. The Contractor shall submit samples of the following masonry repair and replacement materials for approval of color and texture match:

Cured pointing mortar. Portable samples shall be prepared using drywall channel or similar material the approximate width of a mortar joint. Once a matching mortar color is achieved, placement of on-site mock-ups may begin.

1.06 QUALITY ASSURANCE

- A. Work Experience: The Contractor and Masons to perform the work in this section shall have demonstrated experience approved by the Architect, ideally a minimum of ten (10) years of experience with historic mortars and masonry repairs and repointing. He/she shall demonstrate a working knowledge of the Secretary of the Interior's Standards for Guidelines for Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings.
- B. The Contractor shall not change sources or manufacturers of mortar materials during the course of the work.

1.07 MOCK-UPS

- A. The Contractor shall prepare two mock-up installations of each type of mortar color for each type of masonry to be installed at locations selected by the Architect. If cleaning tests are also to take place, test panels should be in the same area. Test panels should not be undertaken in areas that are highly visible.
- B. Each test panel shall be executed in the same manner as the final installation. Test panels shall be a minimum area of 3x3 feet for brick facades, and larger for stone facades.
- C. After the test panels have cured for a period of two to three weeks (or otherwise specified by the Architect), the test panels will be inspected for color, texture, and installation technique.
- D. If the Architect finds the first two mock-ups unacceptable, the Contractor shall prepare up to three additional mock-ups of each mortar and mortar color without further compensation. Test area(s) approved by the Architect shall become part of the work and shall serve as the quality standard for all subsequent work.

1.08 DELIVERY, STORAGE, AND HANDLING

- A. The Contractor shall deliver all products to the site in original packaging, unopened and undamaged, with manufacturer's name and product identification visible thereon and manufacturer's instructions and Material Safety Data Sheets.
- B. The Contractor shall store products in a dry location and protect them from dampness and freezing following manufacturer's instructions.

SECTION 04100.02
PREPARATION OF LIME AND CEMENT-AMENDED MORTARS

- C. The Contractor shall stockpile and handle aggregates in a manner to prevent contamination from foreign materials.

1.09 PROJECT / SITE CONDITIONS

- A. Mortar installation shall be executed only when the air and surface temperatures are 40 degrees F and rising or less than 80 degrees F and falling. Minimum temperature for masonry repointing shall be 50 degrees F and above for at least 2 hours after completion and above freezing for at least 24 hours after completion. Work shall not commence when rain, snow, or below-freezing temperatures are expected within the next 24 hours. All surfaces shall be free of standing water, frost, and ice.
- B. The Contractor is responsible for protecting existing adjacent materials and surfaces during the execution of the work, and will provide all necessary protection and follow all necessary work procedures to avoid damage to existing material assemblies not a part of the work in the Section.
- C. The Contractor shall provide visible barriers and / or warning tape around the perimeter of the work area for visitor protection, and shall also provide that nearby vehicles and adjacent structures and foliage are protected from damage during the course of the work.
- D. Contractor shall coordinate masonry repointing with the other trades involved in exterior and interior rehabilitation work, including but not limited to masonry cleaning, sealing, and painting.

PART 2 - PRODUCTS

2.01 MORTAR SELECTION CRITERIA:

- A. Repair mortar shall be compatible with the material, quality, color, strength and texture of the existing mortar.
- B. Sand shall match the gradation of the historic mortar and be free from impurities. The color, size, and texture of the sand should be similar to the original sand.
- C. Mortar shall have greater vapor permeability and be softer, measured in compressive strength, than the masonry units.
- D. Mortar shall be as vapor permeable and be as soft or softer, measured in compressive strength, than the existing historic mortar.
- E. Testing and Mortar Selection for Masonry Units:
 - 1. Selection of Mortar for Brick Units:
 - a. Identify type and strength of brick.
 - b. Identify the composition, strength, and hardness of the historic mortar.
 - c. Lime and Sand mortars are preferred for historic brick masonry.

SECTION 04100.02
PREPARATION OF LIME AND CEMENT-AMENDED MORTARS

- d. Portland cement generally should not be used for historic brick, depending on historic resource.
- e. Mortar should have a lower compressive (psi) strength than brick.

3. Stone:

- a. Identify type of stone.
- b. Identify geological and mineralogical nature of stone.
- c. Identify the Compressive or Crushing Strength of stone both wet and dry: ASTM C170-87 – Compressive Strength of Natural Building Stone.
- d. Mortar should have a lower compressive (psi) strength than stone: general about 1/3 the compressive or crushing strength of the stone units.
- e. Hard, portland cements are generally not appropriate for historic mortars, depending on the historic resource.

2.02 MORTAR TYPE AND MIX

- A. Depending on the desired strength and consistency, lime mortars should conform to ASTM C207 and ASTM C206, Mortar for Masonry, such as:
 - 1. Type M (2,500 psi): 3:1:12
 - 2. Type S (1,800 psi): 2:1:9
 - 3. Type N (750 psi): 1:1:6
 - 4. Type O (350 psi): 1:2:9
 - 5. Type K (75 psi): 1:3:11
 - 6. Type L: 0:1:3

SECTION 04100.02
PREPARATION OF LIME AND CEMENT-AMENDED MORTARS

2.03 POINTING MATERIALS AND MIXES (JOB-MIXED MORTAR)

- A. Portland cement: ASTM C150, Type I, non-staining and without air entrainment. Gray and white Portland cement may be combined as required to match the desired color.
 - 1. Non-staining white cement, preferred for historic applications, unless grey cement was used in the original mortar.
- B. Hydrated Lime: ASTM C207, Type S.
- C. Lime Putty (slaked lime): should conform to ASTM C5.
- D. Sand: ASTM C144 Standard Specification for Aggregate for Masonry Mortar, free of clay, silt, soluble salts, and organic matter; shall match the color, size gradation, and texture of the original mortar sand. The Contractor may request from the Architect a sample of the original mortar sand, when available, for use in color and texture matching.
- E. Water: Potable, free from injurious amounts of oil, soluble salts, alkali, acids, organic impurities and other deleterious substances which impair mortar strength or bonding.
- F. Masonry Cement (premixed, bagged mortar): shall NOT be used.

2.04 PRE-MIXED MORTARS: Pre-mixed mortars that have been designed for use on historic buildings may be used for repointing. All such mortars must be approved by the Architect.

2.05 ACCESSORY MATERIALS

- A. Historic Materials include other components that enhance the color and texture matching and may include materials such as crushed oyster shells and animal hair, and historic pigments such as brick dust and lamp black.
- B. Colorants (if required for exact color match): Non-fading, mineral oxide masonry pigment as approved by the Architect.
 - 1. Pigments should not exceed 10% by weight of the portland cement in the mix.
 - 2. Carbon black should not exceed 2% of the Portland cement in the mix.

2.06 ADMIXTURES

- A. No air-entraining admixtures or material containing air-entraining admixtures shall be added to the mortar.
- B. No antifreeze compounds shall be added to mortar.
- C. No admixtures containing chlorides shall be added to mortar.

2.07 EQUIPMENT FOR MORTAR PREPARATION

SECTION 04100.02
PREPARATION OF LIME AND CEMENT-AMENDED MORTARS

A. Equipment:

1. Trough, plastic buckets, hoe, wooden mallet, or similar implements
2. Mortar pan mill
3. Paddle or drum type mixers
4. Undyed, unprinted burlap

PART 3 – EXECUTION

3.01 GENERAL

- A. Testing and Mortar Selection shall be approved by the Architect. Mortar mix shall comply with the results of the Historic Mortar Analysis – See Appendix A.
- B. Mortar components should be measured and mixed carefully (in a consistent manner) to assure uniformity of visual and physical characteristics.
- C. Pre-mixed mortar should be mixed and handled following manufacturer’s specifications.

3.02 FIELD MIXING FOR LIME MORTARS

- A. Measure dry ingredients by volume.
- B. In a clean trough, wheelbarrow, or mixer (depending on quantities needed) combine and mix all dry ingredients thoroughly (before adding water).
- C. Add just enough clean water to “hold together,” thus allowing the mixture to stand for a period prior to the addition of the remaining water.
- D. Prior to use, add half of the water and mix thoroughly for five (5) minutes.
- E. Add the remaining water in small portions until the desired consistency is reached. Keep the amount of water added to a minimum.
- F. Mortar should be used within approximately 30 minutes of final mixing. Do not retemper or add more water after final mixing.

3.03 FIELD MIXING FOR MORTAR USING LIME

- PUTTY A. Materials are measured by volume.
- B. Do not add additional water.
 - C. Proportion sand first, and then add the lime putty.
 - D. Mix in a clean trough for five (5) minutes or until all the sand is thoroughly coated with the lime putty by beating with a wood mallet, interspersed by chopping with a hoe to achieve the maximum workability and performance.

SECTION 04100.02
PREPARATION OF LIME AND CEMENT-AMENDED MORTARS

OR

- E. Mix in a mortar pan mill when large quantities are needed, following the sequence above. Modern paddle and drum mixers do not achieve the desired results.
- F. Protect the mixture from the air by covering with wet burlap or seal in a large plastic bag.
- G. The sand/lime putty mix can be stored indefinitely if placed in a sealed bag or container. Recombine mixture as specified in D above into a workable plastic state. *Do not add water.*

3.04 FIELD MIXING FOR PORTLAND CEMENT –LIME PUTTY-SAND MORTARS (Type O or Type K)

- A. Materials are measured by volume.
- B. Combine sand and lime putty as described above and mix. Do not add water at this point.
- C. Mix the portland cement into a slurry paste using clean water.
- D. Combine the portland cement slurry with the sand/lime putty mixture.
- E. Add color pigments, if any.
- F. Mix for five (5) minutes.
- G. Mixture should be used within 30 minutes to 1 ½ hours. Do not retemper mixture. Once F portland cement is added, the mortar can no longer be stored.

3.05 FINAL REPORT

The Contractor and Architect shall:

- A. Document the work, testing, and mortar mixes used, and finished product, including photographs (both ‘before’ and ‘after’) and final mortar schedules.
- B. Provide a written summary of the project and results upon final inspection and approval. The summary shall outline steps taken or new findings not specified in the initial documentation.

END OF
SECTION

SECTION 04500
MASONRY RESTORATION AND CLEANING

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings, photos and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

1.02 DESCRIPTION OF WORK

- A. Extent of masonry restoration work is indicated on drawings and photos.
- B. Masonry restoration work includes the following:
 - 1. Tuckpointing mortar joints where shown.
 - 2. Stone repair where shown.
- C. Stone and brick cleaning all surfaces.
 - 1. Stone and brick cleaning.
 - 2. Stone and brick sealing all surfaces.
 - 3. Caulking of cut stone covered in Section 07900
 - 4. Finial cleaning

1.03 QUALITY ASSURANCE

- A. Restoration Specialist: Work must be performed by a firm having not less than 5 years successful experience in comparable masonry restoration projects and employing personnel skilled in the restoration processes and operations indicated.
- B. Repointing: SEE SECTION 04100.01 and 04100.02

1.04 SUBMITTALS

- A. Product Data: Submit manufacturer's technical data for each product indicated including recommendations for their application and use. Include test reports and certifications substantiating that products comply with requirements.
- B. Samples: Submit, for verification purposes, samples of the following:
 - 1. Each new exposed masonry mortar to be used for replacing existing materials. Include in each set of samples the full range of colors and textures to be expected in completed work.
 - 2. Each type of chemical cleaning material data.
 - 3. Each type of chemical clear sealer provide manufacturers data.
 - 4. Stone masonry patching materials product data and application instructions

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials to site in manufacturer's original and unopened containers and packaging, bearing labels as to type and names of products and manufacturers.
- B. Protect masonry restoration materials during storage and construction from wetting by rain, snow or ground water, and from staining or intermixture with earth or other types of materials.
- C. Protect grout, mortar and other materials from deterioration by moisture and temperature. Store in a dry location or in waterproof containers. Keep containers tightly closed and away from open flames.

SECTION 04500
MASONRY RESTORATION AND CLEANING

Protect liquid components from freezing. Comply with manufacturer's recommendations for minimum and maximum temperature requirements for storage.

1.06 PROJECT CONDITIONS

- A. Do not repoint mortar joints or repair masonry unless air temperatures are between 40 deg.F (4 deg.C) and 80 deg.F (27 deg.C) and will remain so for at least 48 hours after completion of work.
- B. Prevent grout or mortar used in repointing and repair work from staining face of surrounding masonry and other surfaces. Remove immediately grout and mortar in contact with exposed masonry and other surfaces.
- C. Protect sills, ledges and projections from mortar droppings.

1.07 SEQUENCING/SCHEDULING

- A. Perform masonry restoration work in the following sequence:
 - 1. Chemically clean brick, cut stone and rough cut stone masonry
 - 2. Rake-out existing mortar from joints indicated to be repointed.
 - 3. Repoint existing mortar joints of masonry indicated to be restored.
 - 4. Chemically seal brick, cut stone and rough cut stone masonry.
 - 5. Caulk stone joints specified under Section 07900

PART 2 PRODUCTS

2.01 MASONRY MATERIALS

- A. Mortar materials: SEE SECTION 04100.01 and 04100.02

2.02 CLEANING MATERIALS AND EQUIPMENT

- A. Limestone Cleaner: Manufacturer's as indicated below for cleaning for cut and rough cut limestone.
- B. Approved Manufactures
 - 1. Prosoco Inc.
 - 2. Cathedral Stone Products maonrRE Cleaners
- D. For All Masonry, excluding polished surfaces
 - 1. Basis of Design: Enviro Klean SafRestorer Cleaner
- E. Water for Cleaning: Clean, potable, free of oils, acids, alkalis, salts, and organic matter.
 - 1. Warm Water: Heat water to temperature of 140 deg.F-180 deg.F (60 deg.C-82 deg.C).
- F. Brushes: Fiber bristle only.
- G. Spray Equipment: Provide equipment for controlled spray application of water and chemical cleaners, if any, at rates indicated for pressure, measured at spray tip, and for volume.
 - 1. For spray application of chemical cleaners provide low-pressure tank or chemical pump suitable for chemical cleaner indicated, equipped with cone-shaped spray-tip.
 - 2. For spray application of water provide fan-shaped spray-tip which disperses water at angle of not less than 15 degrees.

SECTION 04500
MASONRY RESTORATION AND CLEANING

2.03 STONE REPAIR

- A. For Repairing Limestone, sandstone, brownstone, precast concrete.
1. Product: Jahn Restorative Mortars by Cathedral Stone Products M70 or equal.
 2. Color: Match Existing.
 3. Product: MASONRE Adhesive by Cathedral Stone Products, Inc. or equal.
 4. Setting Anchors in existing masonry: Jahn Anchor Setting Mortar (M80)
 5. Mechanical Anchors and dowels: Stainless Steel Threaded rod (ASTM F593) with a diameter as indicated on Contract Drawings, ben and cut lengths required to achieve embedments required for repair.

2.04 CHEMICAL SEALERS

- A. Chemical penetrating sealer is for brick, cut stone and rough cut stone. Is to be one of the following.
1. ProsoCo Siloxane PD
 2. Sika Corporation Silane/ Siloxane water repellent
 3. Thoro Silane/siloxane water repellent

PART 3 EXECUTION

3.01 MASONRY CLEANING

A. PREPARATION

1. General: Comply with recommendations of manufacturers of chemical cleaners for protecting building surfaces against damage from exposure to their products.
2. Protect persons, motor vehicles, surrounding surfaces of building whose masonry surfaces are being restored, building site, mask windows and window frames.
3. Prevent chemical cleaning solutions from coming into contact with pedestrians, motor vehicles, landscaping, buildings and other surfaces, which could be injured by such contact.
4. Do not clean masonry during winds of sufficient force to spread cleaning solutions to unprotected surfaces.
5. Dispose of run-off from cleaning operations by legal means and in manner which prevents soil erosion, undermining of paving and foundations, damage to landscaping, and water penetration into building interiors.
6. Erect temporary protection covers over pedestrian walkways and at points of entrance and exit for persons and vehicles, which must remain in operation during course of masonry restoration work.
7. Protect glass and unpainted metal trim from contact with chemical cleaners by covering them with liquid strippable masking agent or polyethylene film and waterproof masking tape. Apply masking agent to comply with manufacturer's recommendations. Do not apply liquid masking agent to painted or porous surfaces.

B. Chemical Cleaner Application Methods:

General: Apply chemical cleaners to masonry surfaces to comply with chemical manufacturer's recommendations using brush or spray application methods, at Contractor's option, unless otherwise indicated. Do not allow chemicals to remain on surface for periods longer than that indicated or recommended by manufacturer.

C. CLEANING APPLICATION FOR BRICK MASONRY

SECTION 04500
MASONRY RESTORATION AND CLEANING

1. Working from the bottom to the top, thoroughly pre-wet the surface with fresh water.
2. Apply the cleaning solution freely from the bottom of the work area to the top.
3. Let the cleaning solution stay on the wall 5-15 minutes. If the cleaner starts to dry, reapply.
4. Reapply the cleaning solution to heavily soiled areas. Scrub gently.
5. Working from the bottom to the top, thoroughly rinse treated surfaces with clean water. Make sure to flush all spent cleaner and dissolved soiling from the surface, surface pores and adjacent non masonry surfaces.

3.02 STONE REPAIR

- A. Carefully remove loose stone fragments in areas which are indicated for repair. Reuse only pieces of spalled stone which are in sound condition.
- B. Remove soil, loose stone particles, mortar, and other debris and foreign material from surfaces to be bonded of both fragment and building stone from which it was removed by cleaning with stiff brush.
- C. Apply adhesive to comply with adhesive manufacturer's directions. Coat bonding surface of building stone with stone-to-stone adhesive completely filling all voids and covering all surfaces. Fit stone fragments onto building stone while adhesive is still tacky and hold fragment securely in place until adhesive has cured.
- D. After adhesive has cured fully, further anchor stone fragments larger than 6"x 6" x 6" in any dimension with 1/4" diameter plain stainless steel rods set into 1/4" diameter holes drilled at a 45 degree downward angle through face of stone. Center and space anchor rods not more than 5" nor less than 3" apart and not less than 2" from any edge. Insert rods not less than 2" into backing stone and 2" into fragment with end countersunk at least 3/4" from exposed face of stone.
- E. Clean any residual adhesive from edges. Wet stone and fill any chipped areas and frill holes with patching mortar. Avoid featheredging. Finish patched areas to match texture of, and be level with adjoining surrounding stone surfaces. Keep patching mortar damp for 72 hours.

3.03 STONE PATCHING

- A. Remove loose particles, soil, debris, oil and other contaminants from existing stone units at locations indicated by cleaning with stiff brush.
- B. Brush coat stone surfaces with mortar-to-stone adhesive to comply with manufacturer's directions.
- C. Place patching mortar in layers no thicker than 2". Roughen surface of each layer to provide key for next layer.
- D. Keep each layer damp for 72 hours or until mortar has set.
- E. Unacceptable patches are defined as those with hairline cracks or showing separation from stone at edges. Remove patches and refill to provide patches free of those defects.

3.04 REPOINTING EXISTING MASONRY

- A. Joint Raking: SEE SECTION 04100.01 and 04100.02
- B. Joint Pointing: SEE SECTION 04100.01 and 04100.02

3.05 FINAL CLEANING

SECTION 04500
MASONRY RESTORATION AND CLEANING

- A. After mortar has fully hardened thoroughly clean exposed masonry surfaces of excess mortar and foreign matter using stiff nylon or bristle brushes and clean water, spray applied at low pressure.
- B. Use of metal scrapers or brushes will not be permitted.
- C. Use of acid or alkali cleaning agents will not be permitted.

3.06 MASONRY SEALING

- A. Protection: mask windows and window frames as sealer is being applied.
- B. Do not apply sealer in windy when air temperature is above 95 degrees F
- C. Test each surface to be covered. Wet each surface with as a test too determine suitability and results. Wet surfaces without creating drip or rundowns.
- D. Spray apply from bottom up creating 4 to 8 inch rundown below the spray contact point. Brush out heavy runs and drips that do not penetrate.
- E. Treated surfaces are dry too tough in one hour and protect from rain for six hours following application.

END OF SECTION 04500

SECTION 07240
STUCCO RESURFACING SYSTEMS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Stucco Resurfacing System: A finish system consisting of Base Coat, Reinforcing Mesh and Finish Coat.
- B. Schedule of Finish Coat.

1.02 SUBMITTALS

- A. Samples:
 - 1. Submit a 18.8 cm x 18.8 cm (7" x 7") sample for each finish color and texture specified.
 - 2. Each sample shall be prepared using the same tools and techniques as required for the actual application.
 - 3. An approved sample shall be available and maintained at the job site.
- B. Shop drawings:
 - 1. The applicator shall prepare and submit schedules and complete shop drawings to the Architect for approval.
 - 2. The drawings shall show all details, sizes, types, finishes, anchorage and sealant joints and other items as required or specified so that a proper evaluation can be made of the proposed materials and construction.
- C. Test Reports and Manufacturer's Literature
 - 1. Manufacturer's literature and instructions for installation of the system. Include manufacturer's recommended details for corner treatment, sills, soffits, dentils, quoins, lintels, openings and other special applications.
 - 2. Summary of test results by the Exterior Finish System manufacturer to substantiate compliance with the specified performance requirements. Furnish complete test reports as required.
 - 3. Statement by Exterior Finish System manufacturer that all components of the system proposed for use on this project are approved by that manufacturer.
 - 4. Statement by the Installer of the Exterior Finish System that they are experienced with the installation, having done at least three (3) projects using this system and can furnish names and locations of these projects if required.

1.03 QUALITY ASSURANCE MEASURES

- A. Manufacturer: More than 10 years in the architectural coatings industry, with more than 1000 completed architectural coatings projects.
- B. Applicator: Approved by Manufacturer.
- C. Regulatory Requirements: Conform to applicable code requirements for finish system.
- D. Field Samples
 - 1. Construct one field sample panel for each color and texture, illustrating method of attachment, surface finish, color and texture, prepared using the same tools and techniques to be used for the actual application.
 - 2. Locate sample panel where directed.

1.04 DELIVERY, STORAGE, HANDLING AND SITE CONDITIONS

Comply with manufacturer's recommendations regarding environmental conditions for its materials.

1.05 SEQUENCING AND SCHEDULING

- A. Coordinate and schedule installation of Surfacing System with related work of other sections.
- B. Coordinate and schedule installation of trim, flashing, and joint sealers to prevent water infiltration behind the System.

1.06 WARRANTY

- A. Exterior Finish system shall be warranted against water leakage past the weather resistive barrier and other defects in materials and workmanship, and shall be subject to the terms of Article "Warranty of Construction", FAR clause 52.246-21, except that the warranty period shall be ten years.

SECTION 07240
STUCCO RESURFACING SYSTEMS

1.07 QUALITY ASSURANCE

A. Qualifications:

1. The Stucco Resurfacing System Applicator shall provide satisfactory evidence of qualifications to apply the System.

B. Design and Detailing a Stucco Wall System:

1. General

- a. The system shall be installed in strict accordance with current recommended published details and product specifications from the system's manufacturer.
- b. Sealants and closed cell backer rod as required at dissimilar materials and expansion joints within the Stucco Wall System shall provide a complete watertight system.

2. Substrate Systems

- a. Deflection of the substrate systems shall not exceed L/360.
- b. Acceptable substrate shall be a clean, sound stucco wall that is free of chalking, flaking, peeling, blistering, efflorescence or any other condition that inhibits or prevents the bond of the Stucco Resurfacing System.
- d. Other substrates shall be approved by the system's manufacturer in writing prior to the application.
- e. The applicator shall verify that the proposed substrate is acceptable prior to the Stucco Resurfacing System installation.

3. System Joints

- a. Expansion joints are required in the underlying stucco as is required by the local code jurisdiction.
- b. Control joints are required in the underlying stucco, typically at a minimum of every 13.4 m² (144 ft²) and as specified by the design professional. The maximum uncontrolled length or width is 5.5 lineal meters (18 lineal feet) and a maximum uncontrolled length to ratio of 2 ½ : 1.
- c. Expansion/control joint selection, design and location are the responsibility of the design professional.

4. Coordination with Other Trades

Architect, builder or owner shall evaluate adjacent materials such as windows, doors, etc. for conformance to manufacturer's details. Adjacent trades shall provide scaled shop drawings for review.

C. Evaluations, Listings, and Classifications

1. The Finish shall be tested as having a flame spread of less than or equal to 25.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Deliver to the job site all materials in unopened, undamaged containers, clearly marked and identified with the system manufacturer's name and description of contents.
- B. Store materials inside, or under cover and off the ground and keep them dry, protected from the weather, direct sunlight, surface contamination, damaging temperatures, damage from construction traffic and other causes.
- D. Store pail materials in temperatures not less than 4°C (40°F) or more than 43°C (110°F).

1.07 PROJECT/SITE CONDITIONS

- A. Existing Conditions: The contractor shall refer to Section 01010 for project requirements and this contractor's responsibility there under.
- B. Environmental Requirements
The contractor under this section shall verify site conditions to assure that the requirements of storage of materials and installation procedures conform to the system manufacturer's current product storage and application requirements as applicable to warranty conditions.
- C. Protection of Work
 1. Protect surrounding areas and surfaces during the application of the system.
 2. The system shall be protected when work ceases for the day or when an area is completed so that water will not infiltrate behind the system or damage system materials.

1.08 SEQUENCING AND SCHEDULING

SECTION 07240
STUCCO RESURFACING SYSTEMS

- A. Coordinate and schedule installation of Stucco Resurfacing System with related work of other sections.
- B. Coordinate and schedule installation of trim, flashing, and joint sealers to prevent water infiltration behind the system.
- C. Coordinate and schedule installation of windows, doors, A/C units, air seals etc.

PART 2 – PRODUCTS

2.01 PERFORMANCE REQUIREMENTS:

<u>Property</u>	<u>As Required Test Method</u>	<u>Requirement</u>
Surface Burning Characteristics	ASTM E 84	Class A
Abrasion Resistance	ASTM D 968	500 liters of light smoothing. No loss of film integrity.
Bond Strength (with cement board)	ASTM C 297	50 psi
Salt Spray Resistance	ASTM B 117	300 hours exposure. No deleterious effects
Freeze/Thaw Resistance (with cement board)	ASTM C 666 proc. B	100 Cycles. No deterioration, no delamination
Accelerated Weathering	ASTM G 90	2000 hours. No deterioration
Rapid Deformation	ASTM D2794	No cracking or impact failure

1. Sealant: ASTM C 920, material having a minimum joint movement of 50% with 100% recovery. Type, grade and use shall be as recommended by the sealant manufacturer.//
2. All penetrations and terminations shall be flashed.
3. Reinforcing Fabric: Balanced, open weave, glass fiber fabric made from twisted multi-end strands specifically treated for compatibility with the other materials of the system. Minimum weight 4.3 oz/sq. yd.
4. Base Coat: For PB system, manufacturer's standard product. Minimum thickness of 1-1/2 times reinforcing fabric thickness but not less than 2.4 mm (3/32 inches) wet thickness.
5. Finish Coat: For PB system, manufacturer's standard product. Minimum thickness 1.6 mm (1/16 inch), complying with Performance Requirements in paragraph B.
6. Sealant: ASTM C 920; material having a minimum joint movement of 50% with 100% recovery. Type, grade and use shall be as recommended by the sealant manufacturer. When required, primer, bond breaker and backer rods shall be non-staining as recommended by the sealant manufacturer. Do not use absorptive materials as backer rods.

2.02 MANUFACTURERS

Basis of Design: Senergy Stucco Resurfacing System manufactured by BASF Wall Systems – or approved equivalent

SECTION 07240
STUCCO RESURFACING SYSTEMS

2.03 MATERIALS

- A. Base Coats: ALPHA GENIE BASE COAT: fiber-reinforced, 100% acrylic base coat, field-mixed with Portland cement; manufactured by BASF Wall Systems or equivalent.
- B. Portland cement: conform to ASTM C150, Type I, II, or I/II, grey or white; fresh and free of lumps.
- C. Water: clean and potable without foreign matter.
- D. Reinforcing Mesh to achieve the desired impact resistance.
- E. TINTED PRIMER/STUCCOPRIME: 100% acrylic-based primer.
- F. SENERLASTIC® Finish: Elastomeric factory-mixed formulation of 100% acrylic polymers and aggregate, integrally pigmented and formulated for specific textures. Senergy SENERLASTIC Finish or approved equal. Texture shall be FINE.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Verify project site conditions under provisions of Senergy Project Remediation Recommendations form
- B. Examine surfaces to receive Stucco Resurfacing System and verify that substrate and adjacent materials are dry, clean, cured, sound and free of releasing agents, paint, or other residue or coatings. Verify substrate surface is flat, free of fins.
- D. Control/Expansion joint type and placement shall be the responsibility of the architect/engineer and substrate manufacturer.
- E. Unsatisfactory conditions shall be reported to the general contractor and corrected before application of the Stucco Resurfacing System.

3.02 PREPARATION

- A. Remove existing stucco finish system where material is loose, spawling, significantly cracked or shows evidence of separation from the substrate. In addition, remove areas where stucco thickness exceeds 1/2" or otherwise compromises the original profile and details of the limestone substrate. Use care when removing stucco finish to minimize damage to the substrate or surrounding materials.
- B. Repair limestone substrate where material has been damaged or is significantly cracked in accordance with section 04500 Masonry Restoration.
- B. Prepare all wall surfaces as per recommendations noted in completed Senergy Project Remediation Recommendations form.
- B. All surfaces to receive Resurfacing System components must be clean, dry and free of airborne contaminants.
- C. Protect all surrounding areas and surfaces from damage and staining during application of Stucco Resurfacing System.
- D. Protect finished work at end of each day to prevent water penetration.

3.04 APPLICATION

General: Apply Stucco Resurfacing System materials in accordance with Specifications and Manufacturer requirements.

- A. Base Coat/Reinforcing Mesh shall be applied so as to achieve Reinforcing Mesh embedment with no Reinforcing Mesh color visible. Double layers of mesh must be applied at all inside and outside corners. Overlap edges of Reinforcing Mesh a minimum of 2.5 inches.
- B. Apply TINTED PRIMER to the dry Base Coat/Reinforcing Mesh].
- C. Apply Finish Coat to match the specified Finish type, texture and color after Primer and/or Base Coat are dry.

3.3 SEALANTS:

- A. Apply according to manufacturer's recommendations and the following:
- B. Direct Exterior Finish System: Caulk all intersections of cement board with windows, doors, control joints, other openings and locations as shown on drawings. Do not caulk locations intended for water drainage.

SECTION 07240
STUCCO RESURFACING SYSTEMS

3.2 CONTROL JOINTS

- A. See drawings for location of building control joints and surface control joints. Install surface control joints as follows:
- B. Direct Exterior Finish: Install at 20 feet o.c. maximum in either direction, erecting the continuous vertical joints first at building expansion joints, intersection of dissimilar substrates or finishing materials where concentrated stresses or movement is anticipated. Leave a 1/2" minimum continuous gap between board panels to receive control joint.

3.05 CLEANING

Clean adjacent surfaces and remove excess material, droppings, and debris.

3.06 PROTECTION

Protect finished work.

End of Section

Mortar Analysis
Creston Depot
Creston, Iowa
July 15, 2014



On Friday, July 11, 2014, David Arbogast, architectural conservator, of Davenport, Iowa received a pair of mortar samples from Matthew Coen, AIA, of Walker, Coen, Lorentzen of Des Moines, Iowa. The samples were collected from the Creston Depot in Creston, Iowa and were submitted for analysis to determine their formulations.

The analysis was begun on Monday, July 14, utilizing the acid digestion testing procedure developed by E. Blaine Cliver, former Regional Historical Architect of the North Atlantic Region of the National Park Service. This relatively simple procedure dissolves the lime and/or cement content of the mortar using a 20% solution of hydrochloric acid. The carbon dioxide released as a result of the reaction displaces water, which is then measured and used to calculate the soluble content of the mortar. The insoluble fines and sand remaining from the reaction are factored into the equation resulting in a final result. In the case of cement samples, the remaining fines are used to calculate the cement content of the mortar. The remaining sand is then carefully sieved and graded by grain size to provide a means of identification of the various sand types encountered.

The first sample was from the east portion of the building. It was brown in color with visible white specks, and was soft in its consistency. It had a fast and foamy reaction which displaced a very large amount of water. Its filtering time was quick. All of these factors point to a composition of lime and sand without any Portland cement. Assuming that the fines are a mostly a colorant added to the mortar, the mortar analysis revealed a ratio of eight parts lime to five parts sand. This is not at all a reasonable ratio and should be ignored. The sand sieve analysis revealed ultra-fine sand of which all easily passed the three largest sieves and a marginal amount was trapped in the next largest sieve. Almost 58% passed all of the sieves and over 39% was trapped in the finest sieve.

The second sample was from the west portion of the building. It was similar to the first sample, although half the size of the standard twenty grams. Tan in color, it was moderately soft in consistency, displacing a relatively large volume of water considering the small sample size. It had a fast and foamy reaction with a quick filtering time. Its calculations revealed a lime and sand mortar without Portland cement, this time having a ratio of seven parts sand to five parts lime. The sand sieve analysis again revealed extremely fine sand, with all of the sand easily passing the three largest sieves. Over 53% passed all of the sieves and over 45% was trapped in the finest sieve. Because of the close similarity with the sand of the first sample it is reasonable to conclude that both mortars were mixed at the same period of construction.

Mortar/Plaster/Stucco Analysis Test Sheet

Sample No. One
 Building: Creston Depot, Creston, Iowa
 Location: East portion of building
 Sample Description: Brown with white specks, soft, fast and foamy reaction, rapid filtering

Test No. 1 – Soluble Fraction

Data:

1.	<u>192.6</u>	Container A weight	8.	<u>no</u>	Hair or fiber
2.	<u>212.6</u>	Container A and sample	9.	<u>3.5</u>	Fines and paper weight
3.	<u>758.7</u>	Barometric pressure (mm)	10.	<u>2.7</u>	Filter paper weight
4.	<u>26</u>	Temperature (°C)	11.	<u>201.4</u>	Sand and Container A weight
5.	<u>1.44</u>	Liters of water displaced	12.	<u>6.2</u>	cc. of sand
6.	<u>yellow-green</u>	Filtrate color	13.	<u>13.9</u>	Weight of graduated cylinder and sand
7.	<u>ochre</u>	Fines color	14.	<u>5.1</u>	Weight of graduated cylinder

Computations:

15.	<u>20.0</u>	Starting weight of sample: No. 2 - No. 1
16.	<u>0.8</u>	Weight of fines: No. 9 - No. 10
17.	<u>8.8</u>	Weight of sand: No. 11 - No. 1
18.	<u>0.7045455</u>	Sand density: No. 12 ÷ (No. 13 - No. 14)
19.	<u>10.4</u>	Weight of soluble content: No. 15 - (No. 16 + No. 17)
20.	<u>0.0584318</u>	Mols. of CO ₂ : No. 5 × No. 3 × 0.016 ÷ (No. 4 + 273.16 C.)
21.	<u>5.84</u>	Gram weight of CaCO ₃ : 100 × No. 20
22.	<u>4.56</u>	Gram weight of Ca(OH) ₂ : No. 19 - No. 21
23.	<u>0.0615787</u>	Mols. of Ca(OH) ₂ : No. 22 ÷ 74
24.	<u>8.88</u>	Gram total weight of Ca(OH) ₂ : 74 × (No. 20 + No. 23)
25.	<u>2.57</u>	Gram weight CO ₂ : No. 20 × 44
26.	<u>5.28</u>	Gram weight total possible CO ₂ : 44 × (No. 20 + No. 23)
27.	<u>48.69%</u>	%CO ₂ gain: No. 25 ÷ No. 26

Conclusions:

28.	<u>17.43</u>	Gram weight of sample: No. 15 - No. 25
29.	<u>4.59</u>	Fines parts/volume: No. 16 ÷ No. 28
30.	<u>35.57</u>	Sand parts/volume: (No. 17 ÷ No. 28) × No. 18
31.	<u>56.05</u>	Lime parts/volume: (No. 24 ÷ No. 28) × 1.1

Cement (if present):

32.	<u> </u>	Portland cement parts/volume: (No. 16 ÷ No. 28) × 0.78
33.	<u> </u>	Natural cement parts/volume: (No. 16 ÷ No. 28) × 0.86
34.	<u> </u>	Lime with cement parts/volume: (No. 16 × 0.2) ÷ No. 28 × 1.1

Test No. 2 – Sand Sieve Analysis

Sieve	Sieve w/ Sand weight	Sieve weight	Sand weight	Sand ratio
No. 4	<u>158.4</u>	<u>158.4</u>	<u>0</u>	<u>0.00%</u>
No. 8	<u>140.2</u>	<u>140.2</u>	<u>0</u>	<u>0.00%</u>
No. 16	<u>132.7</u>	<u>132.7</u>	<u>0</u>	<u>0.00%</u>
No. 30	<u>123.9</u>	<u>123.6</u>	<u>0.3</u>	<u>2.80%</u>
No. 50	<u>118.1</u>	<u>113.9</u>	<u>4.2</u>	<u>39.25%</u>
Base	<u>84.8</u>	<u>78.6</u>	<u>6.2</u>	<u>57.94%</u>

Mortar/Plaster/Stucco Analysis Test Sheet

Sample No. Two
 Building: Creston Depot, Creston, Iowa
 Location: Western portion of building
 Sample Description: Tan, moderately soft, fast and foamy reaction, rapid filtering

Test No. 1 – Soluble Fraction

Data:

1.	<u>192.3</u>	Container A weight	8.	<u>no</u>	Hair or fiber
2.	<u>202.5</u>	Container A and sample	9.	<u>2.9</u>	Fines and paper weight
3.	<u>758.15</u>	Barometric pressure (mm)	10.	<u>2.7</u>	Filter paper weight
4.	<u>26</u>	Temperature (°C)	11.	<u>198.9</u>	Sand and Container A weight
5.	<u>0.45</u>	Liters of water displaced	12.	<u>4.5</u>	cc. of sand
6.	<u>yellow-green</u>	Filtrate color	13.	<u>11.7</u>	Weight of graduated cylinder and sand
7.	<u>ochre</u>	Fines color	14.	<u>5.1</u>	Weight of graduated cylinder

Computations:

15.	<u>10.2</u>	Starting weight of sample: No. 2 - No. 1
16.	<u>0.2</u>	Weight of fines: No. 9 - No. 10
17.	<u>6.6</u>	Weight of sand: No. 11 - No. 1
18.	<u>0.6818182</u>	Sand density: No. 12 ÷ (No. 13 - No. 14)
19.	<u>3.4</u>	Weight of soluble content: No. 15 - (No. 16 + No. 17)
20.	<u>0.0182467</u>	Mols. of CO ₂ : No. 5 × No. 3 × 0.016 ÷ (No. 4 + 273.16 C.)
21.	<u>1.82</u>	Gram weight of CaCO ₃ : 100 × No. 20
22.	<u>1.58</u>	Gram weight of Ca(OH) ₂ : No. 19 - No. 21
23.	<u>0.0212883</u>	Mols. of Ca(OH) ₂ : No. 22 ÷ 74
24.	<u>2.93</u>	Gram total weight of Ca(OH) ₂ : 74 × (No. 20 + No. 23)
25.	<u>0.80</u>	Gram weight CO ₂ : No. 20 × 44
26.	<u>1.74</u>	Gram weight total possible CO ₂ : 44 × (No. 20 + No. 23)
27.	<u>46.15%</u>	%CO ₂ gain: No. 25 ÷ No. 26

Conclusions:

28.	<u>9.40</u>	Gram weight of sample: No. 15 - No. 25
29.	<u>2.13</u>	Fines parts/volume: No. 16 ÷ No. 28
30.	<u>47.89</u>	Sand parts/volume: (No. 17 ÷ No. 28) × No. 18
31.	<u>34.25</u>	Lime parts/volume: (No. 24 ÷ No. 28) × 1.1

Cement (if present):

32.		Portland cement parts/volume: (No. 16 ÷ No. 28) × 0.78
33.		Natural cement parts/volume: (No. 16 ÷ No. 28) × 0.86
34.		Lime with cement parts/volume: (No. 16 × 0.2) ÷ No. 28 × 1.1

Test No. 2 – Sand Sieve Analysis

Sieve	Sieve w/ Sand weight	Sieve weight	Sand weight	Sand ratio
No. 4	<u>158.4</u>	<u>158.4</u>	<u>0</u>	<u>0.00%</u>
No. 8	<u>140.2</u>	<u>140.2</u>	<u>0</u>	<u>0.00%</u>
No. 16	<u>132.7</u>	<u>132.7</u>	<u>0</u>	<u>0.00%</u>
No. 30	<u>123.8</u>	<u>123.7</u>	<u>0.1</u>	<u>1.52%</u>
No. 50	<u>116.9</u>	<u>113.9</u>	<u>3</u>	<u>45.45%</u>
Base	<u>82.1</u>	<u>78.6</u>	<u>3.5</u>	<u>53.03%</u>