

PROJECT MANUAL

PROJECT NAME:

WRC Campus Utility Decentralization Phase 5

PROJECT ADDRESS:

1251 334th Street
Woodward, Iowa 50276

PROJECT DATE: April 24, 2026

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OWNER:

Iowa Department of Administrative Services
109 Southeast 13th Street
Des Moines, Iowa 50319



OWNER PROJECT NUMBER: 9279.50

OWNER REQUEST FOR BID NUMBER: RFB 927950-01

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CONSTRUCTION MANAGER:

Story Construction
2810 Wakefield Circle
Ames, Iowa 50010



CONSTRUCTION MANAGER PROJECT NUMBER: 25510

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ARCHITECT:

Shive-Hattery Inc.
4125 Westown Parkway Suite 100
West Des Moines, Iowa 50266



ARCHITECT PROJECT NUMBER: 2240007040


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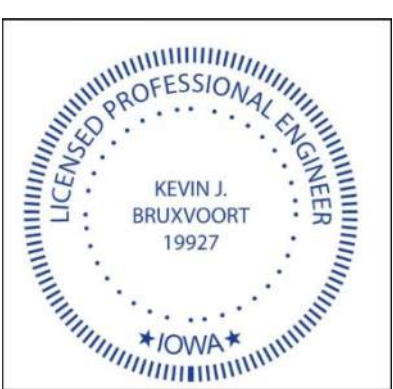
SECTION 00 0105

CERTIFICATIONS PAGE

STATE OF IOWA

	<p>I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.</p> <p><i>Matthew A. Mettemeyer</i> _____ 04/27/2026</p>
	<p>Signature Date Printed or typed name: Matthew A. Mettemeyer License Number: 20396 My license renewal date is: 12-31-2026 Pages, Sheets, or Divisions covered by this Seal: Divisions 02, 03, and 07</p>

	<p>I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.</p> <p><i>John D. Baumhover</i> _____ 04/27/2026</p>
	<p>Signature Date Printed or typed name: John D. Baumhover License Number: 25737 My license renewal date is: 12-31-2026 Pages, Sheets, or Divisions covered by this Seal: Division 22 and 23</p>

	<p>I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.</p> <p><i>Kevin J. Bruxvoort</i> _____ 04/27/2026</p>
	<p>Signature Date Printed or typed name: Kevin J. Bruxvoort License Number: 19927 My license renewal date is: 12-31-2027 Pages, Sheets, or Divisions covered by this Seal: Division 26</p>

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SECTION 00 0110

TABLE OF CONTENTS

PROCUREMENT AND CONTRACTING REQUIREMENTS

1.01 DIVISION 00 – PROCUREMENT AND CONTRACTING REQUIREMENTS

A.	00 0101	Project Title Page
B.	00 0105	Certifications Page
C.	00 0110	Table of Contents
D.	00 0115	List of Drawing Sheets
E.	00 0116	Bid Submittal Checklist
F.	00 1113	Notice to Bidders
G.	00 2113	Instructions to Bidders
H.	00 2113.01	IMPACS Electronic Procurement System Instructions
I.	00 2113.02	Sample Contractor Certificate of Insurance
J.	00 3113	Preliminary Schedule
K.	00 3126	Existing Hazardous Material Information
L.	00 3143	Permit Application
M.	00 4116	Bid Form
N.	00 4116.01	Non Discrimination Clause Information
O.	00 4116.02	Targeted Small Business Information
P.	00 4313	Bid Security Forms
Q.	00 5200	Agreement Form
R.	00 6000	Payment Bond and Performance Bond Forms

SPECIFICATIONS

1.02 DIVISION 01 – GENERAL REQUIREMENTS

A.	01 1200	Contract Summary
B.	01 2500	Substitution Procedures
C.	01 2600	Contract Modification Procedures
D.	01 2900	Payment Procedures
E.	01 3100	Project Management and Coordination
F.	01 3100.01	Web Based Construction Management
G.	01 3200	Construction Progress Documentation
H.	01 3300	Submittal Procedures
I.	01 4000	Quality Requirements
J.	01 5000	Temporary Facilities and Controls
K.	01 6000	Product Requirements
L.	01 7300	Execution
M.	01 7700	Closeout Procedures
N.	01 9000	Asbestos Abatement Specification

1.03 DIVISION 02 – EXISTING CONDITIONS

A.	02 4100	Demolition
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1.04 DIVISION 03 – CONCRETE

- A. 03 3000 Cast-In-Place Concrete

1.05 DIVISION 07 – THERMAL AND MOISTURE PROTECTION

- A. 07 1300 Sheet Waterproofing

1.06 DIVISION 22 – PLUMBING

- A. 22 0500 Common Work Results for Plumbing
- B. 22 0523 General-Duty Valves for Plumbing Piping
- C. 22 0529 Hangers and Supports for Plumbing Piping and Equipment
- D. 22 0700 Plumbing Insulation
- E. 22 1116 Domestic Water Piping

1.07 DIVISION 23 – HEATING, VENTILATING, AND AIR-CONDITIONING (HVAC)

- A. 23 0500 Common Work Results for HVAC
- B. 23 1113 Facility Fuel-Oil Piping
- C. 23 2213 Steam and Condensate Heating Piping

1.08 DIVISION 26 – ELECTRICAL

- A. 26 0505 Selective Demolition for Electrical

END OF SECTION

SECTION 00 0115

LIST OF DRAWING SHEETS

DRAWINGS

1.01	SHEET	TITLE
A.	00-C000	COVER SHEET
B.	00-C001	CONSTRUCTION NOTES
C.	00-C101	OVERALL SITE PLAN
D.	00-C102	SITE PLAN
E.	00-C103	SITE PLAN
F.	00-C104	SITE PLAN
G.	00-C105	SITE PLAN
H.	00-C106	SITE PLAN
I.	00-C107	SITE PLAN
J.	00-C201	OVERALL WATER PLAN
K.	00-C202	WATER PLAN
L.	00-S000	STRUCTURAL GENERAL INFORMATION
M.	00-S110	TUNNEL PLAN
N.	00-S111	TUNNEL PLAN
O.	00-S112	TUNNEL PLAN
P.	00-S113	TUNNEL PLAN
Q.	00-S114	TUNNEL PLAN
R.	00-S300	TUNNEL SECTIONS
S.	00-S301	TUNNEL SECTIONS
T.	00-S500	DETAILS
U.	01-S120	WESTWOOD
V.	02-S121	ADMINISTRATIVE BUILDING
W.	03-S122	LARCHES
X.	04-S123	MYERS HALL
Y.	05-S124	CHAPEL UTILITY CHASE
Z.	06-S125	HEMLOCK
AA.	07-S126	EMPLOYEE HOME
BB.	08-S127	MAPLE LODGE
CC.	10-S128	ELMCREST
DD.	12-S129	MEDICAL CENTER
EE.	13-S130	LINDEN COURT C-D
FF.	14-S131	LAUNDRY
GG.	15-S132	DISPATCH GARAGE
HH.	16-S133	BIRCHES
II.	17-S134	CAR WASH UTILITY CHASE
JJ.	18-S135	POWER HOUSE
KK.	19-S136	SUPPLY DEPOT
LL.	20-S137	OAK HALL
MM.	27-S138	STATE BUILDING 1 UTILITY CHASE
NN.	29-S139	CHILLER BUILDING
OO.	00-M000	MECHANICAL GENERAL INFORMATION
PP.	14-P101	LAUNDRY BUILDING PLUMBING PLANS
QQ.	15-P101	DISPATCH GARAGE PLUMBING PLANS
RR.	16-P001	BIRCHES TUNNEL PLUMBING PLANS
SS.	18-M001	POWERHOUSE MECHANICAL SITE PLAN
TT.	18-M002	POWERHOUSE MECHANICAL TEMPORARY CONNECTION PLAN

UU.	18-MD001	POWERHOUSE BASEMENT MECHANICAL DEMOLITION PLAN
VV.	18-MD002	POWERHOUSE FIRST FLOOR MECHANICAL DEMOLITION PLAN
WW.	18-P001	POWERHOUSE PLUMBING PLANS
XX.	25-P100	CAR WASH PLUMBING PLANS
YY.	29-M001	CHILLER BUILDING DEMOLITION PLAN
ZZ.	00-E001	ELECTRICAL GENERAL INFORMATION
AAA.	00-ESD01	OVERALL TUNNEL ELECTRICAL SITE PLAN
BBB.	18-ED001	POWERHOUSE BASEMENT ELECTRICAL DEMOLITION PLAN
CCC.	18-ED002	POWERHOUSE FIRST FLOOR ELECTRICAL DEMOLITION PLAN
DDD.	29-ED01	CHILLER BUILDING ELECTRICAL DEMOLITION PLAN

END OF SECTION

SECTION 00 0116

BID SUBMITTAL CHECKLIST

PART 1 - GENERAL

1.01 BID SUBMITTAL CHECKLIST

- A. The Bidder is responsible to see that the bid is submitted online at [IMPACS Electronic Procurement System](#) on or before the due date and time specified. Late bids shall not be accepted.
- B. Bids shall be typewritten or in ink. All information requested shall accompany the bid. All blocks shall be completed. Errors shall be lined out and initialed.
- C. The right is reserved to reject any or all bids. The State may waive minor deficiencies or informalities in the best interest of the State of Iowa.
- D. A properly prepared and submitted bid document is the bidder's responsibility.
- E. Bids cannot be changed after the bid opening.
- F. In all cases, no verbal communications by any party will override written communications from the issuing office.
- G. The Bid Form shall be completed in full and signed and submitted by an officer of the bidder with authority to bind in a contract.
- H. If Bid Bond is called for, it shall accompany the Bid submission.
- I. If Non-discrimination Clause information is called for, it shall accompany the Bid submission.
- J. If Targeted Small Business Pre-bid Contact information is called for, it shall accompany the Bid submission.
- K. If Certificate of Site Visit form is called for, it shall accompany the Bid submission.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

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SECTION 00 1113

NOTICE TO BIDDERS

RFB #927950-01

The Iowa Department of Administrative Services will be receiving bids for demolition of utilities in tunnels, re-route water lines, and fill tunnels with grout at Woodward Resource Center, Woodward, Iowa 50276.

The Iowa Department of Administrative Services anticipates construction to begin on July 6, 2026 and end on June 30, 2028.

Bids must be received no later than **2:00 pm, Tuesday, June 9, 2026**. Late bids will not be considered. Bids shall be submitted on [IMPACS Electronic Procurement System](#). The Bid shall be accompanied by a Bid Security as set forth in the Instructions to Bidders in the amount of 5% of the total bid amount. Each bid shall be accompanied by a bid bond, cashier's check or a certified check drawn upon a solvent bank chartered under the laws of the United States of America.

Bid Opening

The time and place of bid opening will be held at <https://teams.microsoft.com/meet/217319566002592?p=qITK3pdh93RyK7Uqpb> and teleconference number +1 469-998-6043 Pin: 480 287 096# at 3:30 pm on June 9, 2026.

The Iowa Department of Administrative Services reserves the right to reject any and all bids, and to waive irregularities and to accept a bid that is deemed in the best interest of the State of Iowa.

Bidders must comply with all affirmative action/equal employment opportunity provisions of the State of Iowa and the Federal Government.

This project is exempt from Iowa Sales Tax. Davis Bacon Wages **will not** apply to this project.

Questions must be submitted by 10:00 am, June 1, 2026, to the Issuing Officer.

Bidding documents may stipulate a specific product. Substitute product will be considered if a written request is received by 10:00 am, June 1, 2026, prior to bid opening. Substitution requests will be considered for all products per Section 01 2500 Substitution Procedures, even if the specification does not include a statement such as "or equal," "equal to," "equivalent to," or "basis of design," unless otherwise noted.

Mandatory pre-bid meetings will be held on Thursday, May 21, 2026 at 10:00 am at Story Construction CP2.0 Trailer at Woodward Resource Center at 1251 334th Street, Woodward, Iowa 50276 and on Wednesday, May 27, 2026 at 10:00 am at Story Construction CP2.0 Trailer at Woodward Resource Center at 1251 334th Street, Woodward, Iowa 50276 Attendance at one of the two mandatory pre-bid meetings is **required** to qualify for bidding.

Bidding Documents, including drawing sheets bearing the project name WRC Campus Utility Decentralization Phase 5, Dated 4/24/2026 and the Project Manual prepared by Shive-Hattery Inc. dated 4/24/2026, may be obtained from Rapids Reproductions by visiting www.rapidsrepro.com or by calling (515) 251-3222 on Monday through Friday 8:00 am to 5:00 pm.

For further information regarding this project contact:
Michael Bradbury – Issuing Officer
Phone: (515) 823-9327
E-Mail: construction.procurement@das.iowa.gov

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SECTION 00 2113
INSTRUCTIONS TO BIDDERS
RFB #927950-01

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Project Description
- B. Owner
- C. State Agency Representatives and Contacts
- D. Proposal Form and Submissions
- E. Taxes
- F. Alternate Bids
- G. Drawings
- H. Bid Security
- I. Due Date and Time for Receipt of Bids
- J. Commencement and Completion Date
- K. Site Visit
- L. Pre-bid Meeting
- M. Questions
- N. Addenda and Interpretations of the Contract Documents
- O. Substitutions
- P. Obligation of Bidder
- Q. Public Records and Requests for Confidential Treatment
- R. Withdrawal of Bid
- S. Bid Closing
- T. Basis of Bids
- U. Informalities/Rejection of Bids
- V. Consideration of Bids
- W. Preference
- X. Qualifications
- Y. Insurance
- Z. Form of Agreement between Owner and Contractor
- AA. Execution of Contract
- BB. Laws and Regulations
- CC. Contract Documents and Order of Precedence
- DD. Conditions of the Work
- EE. Subcontracts
- FF. Project Manual/Drawings

1.02 PROJECT DESCRIPTION

- A. Project Description: Demo utilities in tunnels, re-route water lines, and fill tunnels with grout.

1.03 OWNER

- A. State of Iowa, Department of Administrative Services, 109 SE 13th St, Des Moines, IA 50319

1.04 STATE AGENCY REPRESENTATIVES AND CONTACTS

- A. PURCHASING AGENT: Michael Bradbury – Issuing Officer, State of Iowa, Department of Administrative Services, Hoover State Office Building, 3rd floor, 1305 East Walnut Street, Des Moines, IA 50319-0105, Phone: 515-823-9327; email: construction.procurement@das.iowa.gov

- B. OWNER REPRESENTATIVE: Jennifer Kleene, State of Iowa, Department of Administrative Services, 109 SE 13th Street, Des Moines, IA 50319, Phone: 515-822-8197; email: jennifer.kleene@das.iowa.gov
- C. ON-SITE COORDINATOR: Rodney Carr, Plant Operations Manager, 1251 334th Street, Woodward, IA 50276, Phone: 515-314-6643; email: rodney.carr@hhs.iowa.gov
- D. CONSTRUCTION MANAGER CONTACT: Darren Milliken, Story Construction, 2810 Wakefield Circle, Ames, Iowa 50226, Phone: 515-291-5358; email: darren.milliken@storycon.com
- E. DESIGN PROFESSIONAL CONTACT: Chris Bauer, Shive-Hattery Inc., 4125 Westtown Parkway Suite 100, West Des Moines, IA 50266, Phone: 515-669-0695; email: cbauer@shive-hattery.com

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION

3.01 PROPOSAL FORM AND SUBMISSION

- A. A properly prepared and submitted bid is the bidder's responsibility. Bids are to be made in accordance with these Instructions to Bidders and items included on the Bid submission. Failure to comply may be cause for rejection.
- B. The Bid is to consist of the required Bid information, together with the other information specified below to be submitted with the Bid, in which copies are included with these Bidding Documents.
 - 1. The total bid package submitted is required to include the following:
 - a. An online submission including:
 - 1) Required Bid Form (To be uploaded online)
 - 2) Required Non-discrimination Clause Information
 - 3) Required Targeted Small Business Pre-bid Contact Information
 - 4) Bid Security (documentation provided by Bidder) (To be uploaded online) (Required)
 - 5) Certification of Site Visit (To be uploaded online if Pre-Bid is Mandatory)
- C. Include the amount for performing all work described in the drawings and specifications for Base Bid and for each Alternate Bid requested.
- D. Acknowledge receipt of all Addenda issued, where so indicated on the Bid Form
- E. All required information to be submitted, by an officer of the company having authority to bind the company in a contract.
- F. Commencement of the work of the contract shall begin with the Contractor's receipt of a fully executed contract (signed by both parties).
- G. The Owner reserves the right to award a contract for Base Bid only, or for Base Bid in combination with any, or all, identified Alternate Bids. The Owner reserves the right to award a contract for individual Bid Packages, or any combination of Bid Packages. Each Bidder must comply with all of the General Requirements of the project and any requirements of the Project manual that apply to their scope of work.
- H. The company's Federal I.D. Number and the Iowa Contractors Registration Number shall be included in the Bid Form.
- I. Unless indicated otherwise, the Bid shall be for a single responsibility contract for all work as indicated on the Drawings and specified in the Project Manual, and shall be a lump sum amount. If no change in the Base Bid amount is required with respect to consideration of a particular Alternate Bid, enter "No Change" in the blank for that Alternate Bid.

- J. Where so requested, provide Unit Prices for the designated types of work and in the units specified, in which the Unit Prices would be used as adjustments to the quantities described in the instructions as the basis for the Base Bid and any Alternate Bid work. A Unit Price would be applicable in the event the Owner should request additional work of that type beyond the extent and quantity that has been established as the scope of the work by graphic delineation and notations on the Drawings, or by otherwise stipulating in the Bidding Documents a numerical quantity of the work, for the Bidder's use in determining the lump sum bid amount for the Base Bid and any requested Alternate Bid containing such work. The Unit Prices shall also be used to adjust the Contract Amount for actual quantities of work involved when the work subject to Unit Price adjustment differs by being less in quantity than that contemplated by the original scope of work for the respective Base Bid or Alternate Bid.
- K. Completed State of Iowa Nondiscrimination Clause information and Subcontractor Targeted Small Business Enterprise Pre-Bid Contact Information, included in these Bidding Documents, are to accompany the Bid submission. Bidders shall comply with all affirmative action/equal opportunity provisions of State and Federal laws. The Owner seeks to provide opportunities for Targeted Small Businesses in accordance with the provisions of Chapter 73 of the Code of Iowa.
- L. All Bid information is to be submitted online. Any required Bid Security shall be provided, in the form and amount specified elsewhere in these Instructions to Bidders, at the time of submission of the Bid. When a site visit is mandatory as specified elsewhere in these Instructions to Bidders, and a Certificate of Site Visit is required to be submitted with the Bid as evidence of such visit having occurred for purposes of observing the conditions of the site and the work proposed therein, the Certificate shall be uploaded with the bid submission.

3.02 TAXES

- A. In accordance with Section 423 of the Code of Iowa and 701-19 of the Iowa Administrative Rules, Iowa Construction Sales Tax Exemption Certificates for this project will be issued. Do not include Iowa sales tax or use tax, or any local option sales tax, on construction materials in determining your bid prices. The successful Contractor will be required to notify the Department of Administrative Services project manager of all Subcontractors within forty-eight (48) hours after the published date and time by which bids must be submitted. Information on the Contractor and each Subcontractor shall include the firms' name, address, contact person, federal tax identification number, and the Iowa contractor registration number. For the Contractor and each Subcontractor, designate the type of trade or category of work that is to be provided on the project. The Construction Manager for the Department of Administrative Services must be informed when any Subcontractor is added to the project. Following receipt of the information, the Construction Manager for the Department of Administrative Services will arrange to have an authorization letter and certificate (please see sample, included in the Project Manual) issued on behalf of the Contractor and each Subcontractor and will forward the documents to the Contractor for distribution and use by each in purchasing construction materials for this project. Certificates issued for this project shall be used for tax-exempt purchasing construction materials for this project only.

3.03 ALTERNATE BIDS

- A. Bidders are to bid all Alternates requested on the Bid Form. Alternates quoted will be reviewed and accepted or rejected at the option of the Department of Administrative Services. Accepted Alternates will be identified in the Owner-Contractor agreement. Indicate the price for Alternates described, as shown on the Drawings and specified in the Project Manual, and identify in the correct location on the Bid Form.

3.04 DRAWINGS AND PROJECT MANUAL

- A. Drawings and Project Manual are specified in the Notice to Bidders or any extension thereof made by Addendum.

3.05 BID SECURITY

- A. Each Bid shall be accompanied by Bid Security.
- B. The Bid Security shall be in the form of a Bid Bond, Certified check, or Cashier's check in an amount not less than five percent (5%) of the maximum value of the Bid, including any additive Alternates. NOTE: Checks other than Certified checks and Cashier's checks will not be accepted. Bonds shall be issued by a bonding company licensed to transact business in the State of Iowa. The Attorney in Fact who signs the Bond shall file with the Bond a certified and effectively dated copy of their Power of Attorney. The Bid Security shall be made payable to the Iowa Department of Administrative Services, and shall accompany the Bid. If a Bid Bond is not used, copies of Certified checks or Cashier's checks must be uploaded and hand delivered, in a sealed envelope, or mailed upon request. The Bid Security shall serve as a guarantee that a Bidder who is offered a contract will enter into an Agreement with the State of Iowa and will file an approved surety company's Performance Bond, Payment Bond and the Insurance Certificates as evidence of the required Insurance prior to execution of the contract. Upon failure to comply, the Bid Security shall be forfeited as liquidated damages. The governmental entity shall retain the bid security furnished by the successful bidder until the approved contract form has been fully executed, a bond has been filed by the bidder guaranteeing the performance of the contract, and the contract and bond have been approved by the governmental entity. The provisions of chapter 573, where applicable, apply to contracts awarded under this chapter. The governmental entity shall promptly return the checks or bidder's bonds of unsuccessful bidders to the bidders once the Notice of Intent to Award is issued.

3.06 DUE DATE AND TIME FOR RECEIPT OF BIDS

- A. Properly completed Bids shall be submitted online through [IMPACS Electronic Procurement System](#), no later than the time and date specified in the Notice to Bidder or any extension thereof made by Addendum. Written, emailed, oral or telephonic Bids are invalid, and will not receive consideration. The Bidder shall assume full responsibility for the timely online submission of the Bid. Late bids will not be accepted.

3.07 COMMENCEMENT AND COMPLETION DATES

- A. Commencement of the Work of the Contract shall be the day of receipt by the selected Contractor of the fully-executed contract. Final completion of the Work of the contract shall be acknowledged as a part of the Contractor's proposal.

3.08 SITE VISIT

- A. A site visit by the prospective bidder is highly recommended at the time of the Pre-Bid Meeting of this project.

3.09 PRE-BID MEETING

- A. Pre-Bid Meeting will be specified in the Notice to Bidders or any extension thereof made by Addendum.

3.010 QUESTIONS

- A. Questions on this project may be raised and discussed at the time of the Pre-Bid Meeting or by submitting in writing to the issuing officer as specified in the Notice to Bidders or any extension thereof made by Addendum.

3.011 ADDENDA AND INTERPRETATIONS OF THE CONTRACT DOCUMENTS

- A. Any person contemplating submitting a proposal for the proposed Contract, who is in doubt as to the true meaning of any part of the Bidding Documents, shall submit a written request for an interpretation thereof. The person submitting a request will be responsible for its prompt delivery. Every request for such interpretation should reference the Bid Number specified in the Bidding Documents, and shall be made in writing (email preferred). Questions shall be submitted to the previously identified Purchasing Agent for the Department of Administrative Services. To be given consideration, requests shall be received as specified in the Notice to Bidders or any extension thereof made by Addendum. Replies, which revise or correct the Bidding Documents, or provide necessary clarifications, will be issued in the form of a written Addendum to the Bidding Documents. Interpretations, corrections or changes of the Bidding Documents made in any other manner will not be binding, and Bidders shall not rely upon such interpretations, corrections, or changes. The Bidder is to include any resultant cost changes in the Bid Sum. Addenda will be posted electronically at the respective bid site where the bid is initially posted. Acknowledgment by the Bidder of each issued Addendum shall be noted in the location so indicated on the Bid. All Addenda issued shall become part of the Contract Documents.

3.012 SUBSTITUTIONS

- A. Where the Bidding Documents stipulate a specific product be provided by naming one or more manufacturer and model, a substitute product will be considered when a written request is received as specified in the Notice to Bidders or any extension thereof made by Addendum prior to bid opening. Substitution requests will be considered for all products per Section 01 2500 Substitution Procedures, even if the specification does not include a statement such as “or equal,” “equal to,” “equivalent to,” or “basis of design,” unless otherwise noted. Substitution requests shall be emailed to the Issuing Officer at the email address provided in Instructions to Bidders Section 1.04.

3.013 OBLIGATION OF BIDDER

- A. It shall be the responsibility of each Bidder contemplating the submission of a Bid for the proposed Contract to fully acquaint himself/herself with conditions at the work site, project requirements, and to become acquainted thoroughly with the work, and all conditions that may be related to it. No considerations or revision in the contract price or scope of the project will be considered by the Owner for any item that could have been revealed by a thorough on-site inspection and examination.
- B. By submission of a Bid, it shall be understood that the Bidder assures that he/she has reviewed and is thoroughly familiar with the project requirements, contract conditions and supplementary conditions, the drawings, specifications, addenda, and that the bidder is aware of the conditions existing at the site that may relate to the work of this project. Failure of any Bidder to examine any form, document, or other instrument shall in no way relieve the Bidder from any obligation in respect to his/her Bid.

3.014 PUBLIC RECORDS AND REQUESTS FOR CONFIDENTIAL TREATMENT

- A. The Agency’s release of public records is governed by Iowa Code chapter 22. Contractors are encouraged to familiarize themselves with Chapter 22 before submitting a Proposal. The Agency will copy and produce public records upon request as required to comply with Chapter 22 and will treat all information submitted by a Contractor as non-confidential records unless Contractor requests specific parts of the Proposal be treated as confidential at the time of the submission as set forth herein AND the information is confidential under Iowa or other applicable law.

- B. A Contractor requesting confidential treatment of specific information must: (1) fully complete Form 22 (Available at <https://das.iowa.gov/sites/default/files/procurement/pdf/Form%2022-ConfidentialityRequest-RFB.pdf>), (2) identify the request in the transmittal letter with the Contractor's Proposal, (3) conspicuously mark the outside of its Proposal as containing confidential information, (4) mark each page upon which confidential information appears, and (5) submit a "Public Copy" from which the confidential information has been excised.
- C. Form 22 will not be considered fully complete unless, for each confidentiality request, the Contractor: (1) enumerates the specific grounds in Iowa Code chapter 22 or other applicable law that supports treatment of the material as confidential, (2) justifies why the material should be maintained in confidence, (3) explains why disclosure of the material would not be in the best interest of the public, and (4) sets forth the name, address, telephone, and e-mail for the person authorized by Contractor to respond to inquiries by the Agency concerning the confidential status of such material.
- D. The Public Copy from which confidential information has been excised is in addition to the number of copies requested in Section 3 of this RFP. The confidential material must be excised in such a way as to allow the public to determine the general nature of the material removed and to retain as much of the Proposal as possible.
- E. **Failure to request information be treated as confidential as specified herein shall relieve Agency and State personnel from any responsibility for maintaining the information in confidence. Contractors may not request confidential treatment with respect to pricing information and transmittal letters. A contractor's request for confidentiality that does not comply with this section or a contractor's request for confidentiality on information or material that cannot be held in confidence as set forth herein are grounds for rejecting contractor's Proposal as non-responsive. Requests to maintain an entire Proposal as confidential will be rejected as non-responsive.**
- F. If Agency receives a request for information that Contractor has marked as confidential and if a judicial or administrative proceeding is initiated to compel the release of such material, Contractor shall, at its sole expense, appear in such action and defend its request for confidentiality. If Contractor fails to do so, Agency may release the information or material with or without providing advance notice to Contractor and with or without affording Contractor the opportunity to obtain an order restraining its release from a court possessing competent jurisdiction. Additionally, if Contractor fails to comply with the request process set forth herein, if Contractor's request for confidentiality is unreasonable, or if Contractor rescinds its request for confidential treatment, Agency may release such information or material with or without providing advance notice to Contractor and with or without affording Contractor the opportunity to obtain an order restraining its release from a court possessing competent jurisdiction.

3.015 WITHDRAWAL OF BID

- A. A Bid may be modified or withdrawn only before the time and date for receipt of Bids. Said request for modification or withdrawal of a bid must be completed online through [IMPACS Electronic Procurement System](#). A Bid shall remain valid for consideration by the Owner for the following period(s) of time after the date specified for receipt of Bids, or until such time following that period that the apparent low bidder requests in writing that the Bid be withdrawn, after which the Bid may be withdrawn without forfeiture of any required Bid Security. The Bid shall be valid for not less than thirty (30) calendar days after the date Bids are specified to be due. With the approval of the Department of Administrative Services, a bid may be withdrawn after opening, but only if the bidder provides prompt written notification that adequately documents the commission of an honest error that may cause undue financial loss.

3.016 BID OPENING

- A. All bids received on or before the due date and time specified in the Notice to Bidder or any extension thereof made by Addendum will be opened and the name of the Bidder and the amount of their Bid will be announced.

3.017 BASIS OF BIDS

- A. The Bidder shall include all additional documents or appendices that are requested to be submitted concurrent with the Bid submission; failure to comply may be cause for rejection.
- B. In accordance with Iowa law, Section 8A.311: A bidder, to be considered for an award of a state construction contract, shall disclose to the state agency awarding the contract the names of all subcontractors and suppliers who will work on the project being bid, within forty-eight (48) hours after the published date and time by which bids must be submitted. A bidder shall not replace a subcontractor or supplier disclosed without the approval of the state agency awarding the contract.
 - 1. A bidder, prior to an award or who is awarded a state construction contract, shall disclose all of the following, as applicable:
 - a. If a subcontractor or supplier disclosed (under the preceding) by a bidder is replaced, the reason for replacement and the name of the new subcontractor or supplier;
 - b. If the cost of work to be done by a subcontractor or supplier is changed or if the replacement of a subcontractor or supplier results in a change in the cost, the amount of the change in cost.
 - c. Any reduction in subcontractor or supplier price as a result of the change, if the change is approved by the Owner, shall be deducted from the Trade Contract via a deductive Change Order. Any such changes, if approved by the Owner, which result in an increase in the Trade Contract Price shall be borne by the Trade Contractor.
- C. The Bidder is specifically advised that any person, firm or other party to whom it is proposed to award a subcontract under this contract must:
 - 1. Be registered in the State of Iowa and have an Iowa Contractor's Registration number, and
 - 2. Be acceptable to the Owner.

3.018 INFORMALITIES/ REJECTION OF BIDS

- A. The Iowa Department of Administrative Services reserves the right to waive any irregularities or informalities and to enter into a Contract with a Bidder, or to reject any or all bids as it deems to be in the best interest of the State, without penalty.

3.019 CONSIDERATION OF BIDS

- A. It is the intent of the Department of Administrative Services to award a Contract to the lowest responsible Bidder, provided the Bid has been submitted in accordance with the requirements of the Bidding Documents and is determined to be compliant with all Bidding Requirements, and does not exceed the funds available for construction.
- B. Bidder is to bid on each Alternate Bid requested. Failure to do so may result in disqualification of the bid. The Department of Administrative Services reserves the right to accept any, or no, Alternate Bid. Alternate Bids may be considered in any order or combination, and the low successful Bidder will be determined on the basis of the sum of the Base Bid and the Alternate(s) accepted at the time of the Contract award.
- C. In evaluating Bids, any proposal offered by a Bidder for an alternate design, or for materials other than those shown or specified for the Base Bid or for Alternate Bid construction under the proposed Construction Documents or called for by any issued Addenda to those Construction Documents, will not be considered in determining the low successful Bidder. However, the Department of Administrative Services reserves the right to consider any such Bidder-proposed (Contractor's Alternate) alternate designs or materials with the low successful Bidder, after the low successful Bidder is determined in the manner described above (A and B).

- D. Notice of Intent to Award the Bid(s) will be sent to all Respondents submitting a timely Bid and may be posted at the website shown on the RFB cover sheet. Negotiation and execution of the Contract(s) shall be completed no later than fifteen (15) days from the date of the Notice of Intent to Award or such other time as designated by Agency. If the successful Bidder fails to negotiate and deliver an executed Contract, including all required documents such as payment and performance bonds and insurance certificate, by that date, the Agency, in its sole discretion, may cancel the award and award the Contract to the remaining Bidder the Agency believes will provide the best value to the State.

3.020 PREFERENCE

- A. By virtue of statutory authority, a preference shall be given to Iowa domestic labor, products produced and provisions grown within the state of Iowa, in accordance with the provisions of Chapter 73, Code of Iowa and any amendments thereto.
- B. Enforcement of reciprocal resident bidder preference and resident labor force preference codified at Iowa Code Section 73A.21.
 - 1. NOTICE: Failure on the part of the bidder to carefully read the following paragraphs and to provide the information requested below may make the bidder's bid materially nonresponsive and therefore ineligible for contract award. Violations of Iowa Code Section 73A.21 may, among other things, result in civil penalties assessed by the Commissioner of the Division of Labor of Iowa Workforce Development. The bidder should seek out the advice of an attorney if he or she has questions about Iowa Code Section 73A.21. As a part of the competitive procurement of contracts for Public Improvements that must be awarded to the low bidder (if the bid is responsive and the bidder is deemed responsible), Public Bodies shall allow a preference to Resident Bidders if a Nonresident Bidder places a bid for the contract for the Public Improvement and that Nonresident Bidder's state or foreign country gives resident bidders of that state or foreign country a preference (including a labor force preference or any type of preferential treatment). The preference allowed, or reciprocally applied, shall be equal to the preference given or required by the state or foreign country in which the Nonresident Bidder is a resident bidder.
 - "Public Body" means the State of Iowa (and its agencies) and any of its political subdivisions, including school districts, public utilities, and the state board of regents.
 - "Public Improvement" means a building or other construction work to be paid for in whole or in part by the use of funds of the State of Iowa, its agencies, and any of its political subdivisions and includes road construction, reconstruction, and maintenance projects.
 - "Resident Bidder" means a person or entity authorized to transact business in of the State of Iowa and having a place of business for transacting business within the State of Iowa at which it is conducting and has conducted business for at least three years prior to the date of the first advertisement for the public improvement. Note, however, that if a nonresident bidder's state or foreign country has a more stringent definition of a resident bidder, the more stringent definition is applicable as to bidders from that state or foreign country.
 - "Nonresident Bidder" means a person or entity who does not meet the definition of a resident bidder.
- C. Nonresident bidders shall be required to certify on the Bid submission, where so indicated, the state or foreign country in which the firm is a resident, and if that state or foreign country uses a percentage for in-state bidders and the amount of the preference.
- D. If it is determined that this may cause denial of federal funds which would otherwise be available, or would otherwise be inconsistent with requirements of federal law, this section shall be suspended, but only to the extent necessary to prevent denial of the funds or to eliminate the inconsistency with federal requirements.

3.021 QUALIFICATIONS

- A. In accordance with Iowa Code 26.9(2) and 26.16, no potential bidder shall be required to provide confidential or proprietary information or meet any class requirements as a precondition to submitting a responsive bid. However, as noted in Iowa Code 26.9(2), the lowest responsive bidder may be required to provide additional information to verify responsibility prior to and as a condition of obtaining final award of the contract. Any qualification requirements contained in any bid document indicates only preferred qualifications, not a precondition to bid, and the lowest responsive bidder's qualifications will be evaluated individually based on all information provided.
- B. The Owner may make such investigations as he or she deems necessary to determine the ability of the awarded Bidder to perform the required work, and the awarded Bidder shall furnish to the Owner all such information and data for this purpose. The Owner reserves the right to rescind any awarded Bid if the evidence submitted by, or in investigation of, such Bidder fails to satisfy the Owner that the Bidder is properly qualified to carry-out the obligations of the Contract and to complete the Work contemplated therein.
- C. Bidders shall be registered as a Construction Contractor with the Labor Commissioner, Iowa Workforce Development Department, as required by Chapter 91C of the Code of Iowa. Bidder's Iowa Contractor Registration Number shall be included in the location provided in the Bid Form.
- D. Non-resident corporations submitting bids must be in compliance with Section 490.1501 of the Code of Iowa and legally authorized thereby to carry-on such business in the State of Iowa as is required by the Contract Documents.
- E. An out-of-state Bidder, if awarded a contract, will be required to submit evidence of authorization to do business in the State of Iowa.

3.022 INSURANCE

- A. Insurance Requirements
 - 1. The Contractor shall maintain in effect, with insurance companies of recognized responsibility, at its expense, insurance covering its work of the type and in amounts required by this Contract. The Contractor's insurance shall, among other things, insure against any loss or damage resulting from the Contractor's performance of this Contract. All such insurance policies shall remain in full force and effect for the entire life of this Contract and shall not be canceled or changed except after thirty (30) days written notice to the Owner.
 - 2. **Amounts of Insurance Required – Refer to ConsensusDOCS 802 (see template in Project Manual)**
- B. Certificates of Coverage
 - 1. Certificates of the insurance described above shall be submitted to the Owner before starting any construction activities and shall be subject to approval by the Owner. The Contractor shall provide certificates for the insurance required. The insurer shall state in the certificate that no cancellation of the insurance will be made without at least thirty (30) days prior written notice to the Contractor. Upon receipt of any notice of cancellation or alteration, Contractor shall within ten (10) days procure other policies of insurance, similar in all respects to the policy or policies, about to be canceled or altered, and, if the Contractor fails to provide, procure, and deliver acceptable policies of insurance, or satisfactory evidence thereof, in accordance with the terms hereof then, at the Owner's option, Owner may obtain such insurance at the cost and expense of Contractor, without the need of any notice to Contractor.
- C. No Limitation of Liability
 - 1. Acceptance of the insurance certificates by the Owner shall not act to relieve the Contractor of any obligation under this Contract. All insurance policies and certificates shall be issued only by companies authorized to transact business in the State of Iowa. It shall be the responsibility of the Contractor to keep the respective insurance policies and coverage's current and in force during the life of this agreement.
 - 2. A Sample Certificate of Insurance is attached for reference following this Section.

3.023 FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR

- A. The Agreement for the Work will be written on ConsensusDOCS 802 Form of Agreement between Owner and Contractor (sample of the document with modifications incorporated is bound in this Project Manual).

3.024 EXECUTION OF CONTRACT

- A. Contract documents shall mean and include the following:
 1. Contract: ConsensusDOCS 802
 2. Performance and Payment Bonds
 3. Project Manual
 4. Drawings
 5. Numbered Addenda issued after initial publication of Bid Documents
 6. Numbered Modifications (Change Orders) issued after Contract is signed

3.025 LAWS AND REGULATIONS

- A. The Bidder's attention is directed to the fact that all applicable laws and regulations of Federal and State agencies having jurisdiction over the construction of this project shall apply to any contract resulting from this proposal, and it shall be deemed that those rules and regulations are made a part of such contract the same as if set forth in their entirety therein. By submitting a Bid, the Bidder confirms that he/she is familiar with and understands the Contractor's responsibility under all Federal and State of Iowa laws and regulations with respect to the Work described by the proposed Contract Documents.

3.026 CONTRACT DOCUMENTS AND ORDER OF PRECEDENCE

- A. Where an irreconcilable conflict exists among Applicable Legal Requirements, this Contract, the specifications in the Materials and the Drawings, the earliest item mentioned in this sentence involving a conflict shall control over any later mentioned item or items subject to such conflict unless doing so would result in reducing the Bidder's duty of care or obligations under this Contract, in which case the terms resulting in the highest requirements for Bidder performance shall control.

3.027 CONDITIONS OF THE WORK

- A. Each bidder must fully inform him/herself of the conditions under which the work is to be performed at the site of the work, the obstacles which may be encountered, and all other relevant matters concerning the work to be performed. Failure to do so will not relieve a successful bidder of the obligation to furnish all material and labor necessary to carry out the provisions of the contract. When a site visit is required by provisions located elsewhere in these Instructions to Bidders, as a site tour in conjunction with a mandatory Pre-Bid Meeting, it shall be the Bidder's responsibility to fulfill this obligation as a condition of bidding the Work described in the Bidding Documents.
- B. No allowance will be made for any additional compensation by reason of any matter or condition with which the bidder might have fully informed him/herself, but failed to do so prior to bidding. Insofar as possible, the Contractor and all subcontractors shall employ such methods or means in carrying out the work so as not to cause any interruption of, or interference with, the work of any other subcontractor or trade.

3.028 SUBCONTRACTS

- A. The Prime Contractor shall be responsible for notifying all subcontractors and suppliers and informing them that they are bound in each case by all applicable provisions of the bidding information and those of the proposed Form of Agreements as defined in the Contract Documents.

END OF SECTION

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SECTION 00 2113.01

IMPACS Public Construction Bidders User Guide

Public construction bids must be submitted on-line at [IMPACS Electronic Procurement System](#).

Bidders must be registered in IMPACS to submit a Bid.

To create an account, enter your email address and click on "Next" and click "Create Account". Bidder must enter all fields noted with * including legal company name, contact first and last name, phone number, confirm email address, password, re-enter password, select account recovery question including answer, confirm answer, select box accepting websites use terms and conditions and select security check box "I'm not a robot".

On the [IMPACS Electronic Procurement System](#) Customer Portal Home page, Bidder selects "View Event" in the Sourcing Events section.

Sourcing Events ?

Show Opening or Closing Soon ▾ [Go to Public Opportunities](#)

Event Number	Status	Event Title	Dates	Action
RFB923700-02	Open	Hoover East Side Pavers	Open: 4/27/2022 12:00:00 PM CDT Close: 5/5/2022 12:00:00 PM CDT	View Event ▾

Bidders can view event details including description, prerequisites, buyer attachments, questions and answers.

To submit a Bid, Bidder must select "**Yes, I intend to Bid**". Bidder must complete the following sections.

Prerequisites - Bidder must complete all prerequisites.

- Bidder must upload a file of the Bid Security/Bond for 5% of total Bid Amount and certify that if they are awarded the construction contract they will enter into the contract at the Bid Amount submitted.
- Bidder must upload the completed and signed Bid Form.
NOTE: Bids are to be entered on the Bid Form only; not in the IMPACS. As a result, IMPACS will display a bid amount of \$0.

Questions - Bidder must complete all questions.

Review & Submit - Bidder must select the certification box certifying that the statements and information in response are true and correct to the best of their knowledge and belief.

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SECTION 00 2113.02

SAMPLE



CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)
xx/xx/xxxx

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

PRODUCER Agent's Name Agent's Address	CONTACT NAME: Agent's Information	
	PHONE (A/C, No, Ext): E-MAIL ADDRESS:	FAX (A/C, No):
INSURED Trade Contractor's Name Trade Contractor's Mailing Address	INSURER(S) AFFORDING COVERAGE	
	INSURER A: Company A (AM Best Rated A/VI or Better)	NAIC # Admitted
	INSURER B:	Carriers
	INSURER C:	
	INSURER D:	
	INSURER E:	

COVERAGES

CERTIFICATE NUMBER:

REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL/SUBR INSD W/O	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	Minimum
* A	COMMERCIAL GENERAL LIABILITY CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: POLICY <input checked="" type="checkbox"/> PROJECT <input type="checkbox"/> LOC OTHER:	X X	#TBD-CGL	3/1/17	3/1/18	EACH OCCURRENCE \$ 1,000,000 DAMAGE TO RENTED PREMISES (Ea occurrence) \$ MED EXP (Any one person) \$ PERSONAL & ADV INJURY \$ 1,000,000 GENERAL AGGREGATE \$ 2,000,000 PRODUCTS - COM/OP AGG \$ 1,000,000 \$	
B	AUTOMOBILE LIABILITY <input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> ALL OWNED AUTOS <input type="checkbox"/> HIRED AUTOS <input type="checkbox"/> SCHEDULED AUTOS <input type="checkbox"/> NON-OWNED AUTOS	X X	#TBD-AL	3/1/17	3/1/18	COMBINED SINGLE LIMIT (Ea accident) \$ 1,000,000 BODILY INJURY (Per person) \$ BODILY INJURY (Per accident) \$ PROPERTY DAMAGE (Per accident) \$	amount varies based on paragraph 10.2.2 of the ConsensusDocs 802 contract
C	UMBRELLA LIAB <input checked="" type="checkbox"/> OCCUR EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE DED RETENTION \$	X X	#TBD-UMB	3/1/17	3/1/18	EACH OCCURRENCE \$ 10,000,000 AGGREGATE \$	
D	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y/N N/A X	#TBD-WC	3/1/17	3/1/18	<input checked="" type="checkbox"/> PER STATUTE <input type="checkbox"/> OTH-ER E.L. EACH ACCIDENT \$ 500,000 E.L. DISEASE - EA EMPLOYEE \$ 500,000 E.L. DISEASE - POLICY LIMIT \$ 500,000	
* E	Owners Contractors Protective Liability		#TBD-OCP	3/1/17	3/1/18	*Limits equal to CGL (or) as required by owner (Note- Would be either CGL or OCP, not both)	

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)
 Additional Insured on a Primary & Non-Contributory basis (CGL;AL;UMB/Excess) in favor of : (Owner) Iowa Department of Administrative Services (DAS), Officers, Directors, Members, Consultants, Agents, and Employees.
 Waiver of Subrogation (CGL;AL;WC/EL;UMB/Excess) in favor of: (Owner) Iowa Department of Administrative Services (DAS), Officers, Directors, Members, Consultants, Agents, and Employees.
 Project XXXX.XX (Number varies by project)

CERTIFICATE HOLDER Iowa Department of Administrative Services (DAS) 109 SE 13th Street Des Moines, IA 50319	CANCELLATION SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS. AUTHORIZED REPRESENTATIVE Signature
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ACORD 25 (2014/01)

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CERTIFICATE OF SITE VISIT

This is certification that

(Name of Person)

As authorized representative of:

(Name of Firm)

(Firm's Address)

Visited the job site for verification of the conditions for the:

(Name of Project)

On

(Date of Visit)

(Signature of Owner's Representative or designated site authority)

Attention: This Certification of Site Visit must be completed and submitted with your bid package. If multiple locations are involved, provide a separate form for each location.

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SECTION 00 3113

PRELIMINARY SCHEDULE

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Preliminary Construction Schedule
- B. Schedule Durations

1.02 PRELIMINARY SCHEDULE

- A. A preliminary schedule has been identified by the Owner for the implementation of the Project. Refer to the schedule following this Section for references to anticipated milestones and construction duration.
- B. Each step of the Preliminary Schedule is subject to receipt of acceptable bids, Owner's decision process and date of commencement.
- C. A proposed construction schedule shall be submitted by all Trade Contractors to the Construction Manager no later than 48 hours prior to the pre-construction meeting. A revised Construction Schedule will be submitted by the Construction Manager once all preliminary schedules are reviewed and approved by the Owner.
- D. The final construction schedule will be established post award of bids with the cooperation of all contractors.

1.03 SCHEDULE DURATIONS

- A. Anticipated Notice of Intent to Award – 6/10/2026
- B. Anticipated Date of Commencement – 7/6/2026
- C. Anticipated Date of Phase 1 Completion (West and Central Tunnel Fill 75%) – 10/8/2027
- D. Substantial Completion by – 6/30/2028

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION

9279.50 - WRC Campus Utility Decentralization Ph.5



Primary Column	Start	Finish	Duration	Q3 2026			Q4 2026			Q1 2027			Q2 2027			Q3 2027			Q4 2027			Q1 2028			Q2 2028		
				Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1 Campus Utility Decentralization Ph. 5	07/06/26	06/30/28	520d	[Red bar spanning from July 2026 to June 2028]																							
2 Water Demolition and Isolation	07/06/26	11/27/26	105d	[Blue bar from July 2026 to November 2026]																							
3 Tunnel Demo West	08/31/26	04/30/27	175d	[Orange bar from August 2026 to April 2027]																							
4 Tunnel Demo West / Central and Bulk Head	01/04/27	04/30/27	85d	[Purple bar from January 2027 to April 2027]																							
5 West and Central Tunnel Fill - 75%	04/26/27	10/08/27	120d	[Yellow bar from April 2027 to October 2027]																							
6 Chiller and Tank Demo	10/11/27	12/10/27	45d	[Green bar from October 2027 to December 2027]																							
7 Tunnel Demo East - Remaining 25%	12/13/27	03/13/28	66d	[Red bar from December 2027 to March 2028]																							
8 Infill Tunnel (100%)	03/14/28	06/30/28	79d	[Purple bar from March 2028 to June 2028]																							
9 Campus Utility Decentralization Ph. 5																											

SECTION 00 3126

EXISTING HAZARDOUS MATERIAL INFORMATION

PART 1 - GENERAL

1.01 EXISTING HAZARDOUS MATERIAL INFORMATION

- A. This Document with its referenced attachments is part of the Procurement and Contracting Requirements for Project. They provide Owner's information for Bidders' convenience and are intended to supplement rather than serve in lieu of Bidders' own investigations. They are made available for Bidders' convenience and information, but are not a warranty of existing conditions.
- B. The existing hazardous materials survey reports related to this Project, were prepared by:
 - 1. Atlas Technical Consultants LLC
4503 East 50th Street, Suite 800 Des Moines, IA 50317
- C. Related Requirements:
 - 1. Section 3.12 "Hazardous Materials" in the ConsensusDocs 802 contract for notification requirements if materials suspected of containing hazardous materials are encountered.
 - 2. Atlas Hazardous Building Materials Survey Report for Tunnel dated 12/02/2024, Chiller Building dated 05/05/2026, and Powerhouse dated 05/05/2026.
 - a. Survey Number: 204BS07475

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION

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L I M I T E D H A Z A R D O U S B U I L D I N G
M A T E R I A L S S U R V E Y

PREPARED FOR:

Iowa Department of Administrative Services
109 SE 13th Street
Des Moines, Iowa 50319

PROJECT LOCATION:

Woodward Resource Center – Phase 4 Decentralization Project #9279
Tunnel System
1251 334th Street
Woodward, Iowa

Project Date: October 10 and 11, 2024

Report Date: December 2, 2024

Atlas Project ID: 204BS07475

PREPARED BY:

Atlas Technical Consultants LLC
4503 East 50th Street, Suite 800
Des Moines, IA 50317



December 2, 2024

Ms. Jennifer Kleene
Iowa Department of Administrative Services
109 SE 13th Street
Des Moines, IA 50319

Re: Hazardous Building Materials Survey Report – Tunnel System
Woodward Resource Center – Phase 4 Decentralization Project #9279
1251 334th Street
Woodward, Iowa 50276
Atlas Project Number: 204BS07475

Atlas is pleased to submit the attached Hazardous Building Materials Survey Report for the above-referenced site. This report includes procedures, methodologies and analytical laboratory results.

Atlas appreciates the opportunity to perform these services for the Iowa Department of Administrative Services (IDAS), and we look forward to working with you in the future. If you need any assistance with the implementation of the recommendations contained in this report, please feel free to give us a call at (515) 981-4528 and we will respond promptly to your needs.

Sincerely,

ATLAS TECHNICAL CONSULTANTS LLC

A handwritten signature in blue ink that reads "Eric Brown".

Eric Brown
Iowa Inspector
(515) 981-4528

A handwritten signature in blue ink that reads "Steve Hudson".

Steve Hudson, MS, CIH
Senior Project Manager
(402) 670-3842

T A B L E O F C O N T E N T S

LETTER OF TRANSMITTAL	i
1.0 SCOPE OF SERVICES	4
2.0 GENERAL SITE CONDITIONS.....	4
3.0 ASBESTOS SURVEY	4
3.1 Regulation Review	5
3.2 Homogeneous Areas	5
3.3 Sampling Strategy	5
3.4 Laboratory Analytical Results.....	6
3.5 Suspect Asbestos-Containing Materials.....	6
4.0 LEAD PAINT CHIP TESTING	10
4.1 Inspection	10
4.2 Lead Paint Testing	11
5.0 HAZARDOUS MATERIALS ASSESSMENT.....	11
6.0 CONCLUSIONS	12
6.1 Asbestos.....	12
6.2 Lead	12
6.3 Hazardous Building Materials.....	13
7.0 ASSUMPTIONS AND LIMITATIONS.....	13

APPENDICES

- APPENDIX A: Asbestos Analytical Report and Chain of Custody
- APPENDIX B: Asbestos Photo Log
- APPENDIX C: Inspector Accreditations





HAZARDOUS BUILDING MATERIALS SURVEY REPORT

Woodward Resource Center – Tunnel System
Phase 4 Decentralization Project #9279
1251 334th Street
Woodward, Iowa
Atlas Project Number: 204BS07475

1.0 SCOPE OF SERVICES

The purpose of this project was to perform a survey to identify hazardous building materials at the above-referenced property.

Atlas provided a representative asbestos survey in accordance with the referenced agreement and as outlined below:

1. Review any existing hazardous building material survey reports relating to the site, if available.
2. Identify suspect asbestos-containing materials (ACM), surface coatings potentially containing lead paint, and hazardous building materials throughout the tunnel system.
3. Collect and analyze bulk samples of suspect asbestos containing materials and collect paint chip samples from representative surface coatings potentially containing lead-based or lead-containing paint.
4. Provide laboratory analysis of collected samples.
5. Provide a report of findings with copies and interpretation of analytical results and identifying the locations of asbestos-containing materials, lead paint, and hazardous building materials.

2.0 GENERAL SITE CONDITIONS

The survey was conducted in the tunnel system at the Woodward Resource Center located at 1251 334th Street in Woodward, Iowa.

3.0 ASBESTOS SURVEY

On October 10 and 11, 2024, the Tunnel System was inspected for ACMs by inspector Eric Brown of Atlas. Mr. Brown has completed the requisite training for asbestos accreditation as inspectors at a state approved training provider under TSCA Title II. Mr. Brown's State of Iowa Inspector number is 24-11418.

The Tunnel System was visually inspected for the presence of suspect ACMs. Materials that were hidden, not accessible, or when sampled would damage the integrity of the structure, were not sampled as part of this survey. Materials visibly identified as non-asbestos (fibrous glass, foam rubber, wood, etc.) were not sampled. The asbestos survey consisted of three basic steps: **1)** a



visual inspection of the proposed work areas; **2)** a determination of homogeneous areas with suspect surfacing, thermal system insulation, and miscellaneous materials; and **3)** sampling accessible, friable and non-friable, suspect materials.

3.1 Regulation Review

The United States Environmental Protection Agency (USEPA) qualifies ACM as materials with an asbestos content greater than 1%. The following definitions are taken from Section 61.141 of Subpart M, Part 61 of Title 40: Protection of Environment of the Code of Federal Regulations (CFR).

- “Category I non-friable ACM” is defined as asbestos-containing packings, gaskets, resilient floor covering, and asphalt roofing products containing more than 1% asbestos as determined using the method specified in appendix E, subpart E, 40 CFR part 763, section 1, Polarized Light Microscopy (PLM).
- “Category II non-friable ACM” is defined as any material, excluding Category I non-friable ACM, containing more than 1% asbestos as determined using the methods specified in appendix E, subpart E, 40 CFR part 763, section 1, PLM that, when dry, **cannot** be crumbled, pulverized, or reduced to powder by hand pressure.
- “Friable asbestos material” is defined as any material containing more than 1% asbestos as determined using the methods specified in appendix E, subpart E, 40 CFR part 763, section 1, PLM that when dry, **can** be crumbled, pulverized, or reduced to powder by hand pressure. If the asbestos content is less than 10% as determined by a method other than point counting by PLM, verify the asbestos content by point counting using PLM.

3.2 Homogeneous Areas

Prior to sampling, homogeneous areas were identified in order to facilitate a sampling strategy. A homogeneous sampling area can be described as one or more areas with suspect material similar in appearance and texture that have the same installation date and function. The actual number of samples collected from each homogeneous sampling area may vary, dependent upon material type and the professional judgment of the inspector.

3.3 Sampling Strategy

The sampling strategy incorporated Asbestos Hazard Emergency Response Acts (AHERA) requirements, quantities of suspect material, and the inspector’s judgment to aid in the identification of suspect asbestos-containing materials. If the analytical results indicated that all the samples collected per homogeneous area did not contain asbestos, then the homogeneous area (material) was considered non-asbestos-containing. However, if the analytical results of one or more of the samples collected per homogeneous area indicated that asbestos was present in quantities greater than one percent asbestos (as defined by EPA), all of the homogeneous area (material) was treated as an asbestos-containing material regardless of any other analytical results. Materials which were visually determined to be non-asbestos (i.e. fibrous glass, foam rubber, etc.) by the accredited inspector were not required to be sampled. Actual collection of a bulk asbestos sample involves physically removing approximately one square inch (1 in²) of material and placing it in an airtight



sample container. Sample containers were marked with a unique identification number, which was documented in the field notes.

3.4 Laboratory Analytical Results

A total of **50** samples were collected from building materials suspected of containing asbestos. The samples were submitted under chain of custody to EMSL Analytical, Inc. (EMSL) located at 200 Route 130 North in Cinnaminson, New Jersey, for analysis by polarized light microscopy (PLM) with dispersion staining techniques per the *USEPA Method for the Determination of Asbestos in Bulk Building Materials (600/R-93-116)*. The percentage of asbestos, if applicable, was established by microscopic visual estimation. EMSL is an accredited laboratory by the National Voluntary Laboratory Accreditation Plan (NVLAP) No. 101048-0. Any material that contains greater than one percent (>1%) asbestos is considered an ACM and must be handled according to Occupational Safety and Health Administration (OSHA), USEPA, and all applicable state and local regulations.

Laboratory test results are provided in Appendix A.

3.5 Suspect Asbestos-Containing Materials

The following table contains a list of suspect asbestos containing materials sampled:

TABLE 1: SUSPECT ASBESTOS MATERIALS		
Material	Location	Sample Number
TSI Largest Pipe 16" Diameter Run	Intersection with Birches/Oak/Power Plant	T-1
TSI Largest Pipe 16" Diameter Run	Intersection w/medical	T-2
TSI Largest Pipe 16" Diameter Run	Intersection of Orchard & Cedar	T-3
TSI 6" diameter pipe run	Intersection with Birches/Oak/Power Plant	T-4
TSI 6" diameter pipe run	Intersection w/medical	T-5
TSI 6" diameter pipe run	Intersection of Orchard & Cedar	T-6
TSI-Aircell	Intersection w/medical	T-7
TSI Largest Pipe 16" Diameter Elbow	Intersection of Orchard & Cedar	T-8
TSI Largest Pipe 16" Diameter Elbow	Intersection of Orchard & Cedar	T-9
TSI Largest Pipe 16" Diameter Elbow	Intersection of Orchard & Cedar	T-10
TSI Unmarked pipe located above hot water pipe	Intersection of Orchard & Cedar	T-11
TSI High Pressure Steam Elbow	Tunnel Intersection with Myers	T-12
TSI Hot Water Elbow	200 ft from welder's access hatch	T-13
TSI Hot Water Elbow	200 ft from welder's access hatch	T-14
TSI Hot Water Elbow	200 ft from welder's access hatch	T-15
TSI – Unmarked Pipe Run	200 ft from welder's access hatch	T-16
TSI - Aircell	Intersection with Myers branch tunnel	T-17
TSI High Pressure Steam Elbow	Larches Tunnel End	T-18
TSI Hot Water Elbow	Larches Tunnel End	T-19
TSI – Aircell	Myers Tunnel End	T-20
TSI Hot Water Run	Under street by admin	T-21
TSI – Return Steam Run	Under street by admin	T-22
TSI- 2" Head height mystery pipe run	E-home Branch	T-23



TABLE 1: SUSPECT ASBESTOS MATERIALS		
Material	Location	Sample Number
TSI- 2" Head height mystery Elbow	E-home Branch	T-24
TSI – 4" Pipe Elbow	E-home Branch	T-25
TSI – 4" Pipe Run	E-home Branch	T-26
TSI – 2" top pipe run	Maple Branch	T-27
TSI – 6" top pipe run	Maple Branch	T-28
TSI – 2" middle pipe run near wall	Maple Branch	T-29
TSI – 1" bottom pipe run	Maple Branch	T-30
TSI – 2" bottom pipe run near wall	Maple Branch	T-31
TSI – Aircell Run	Medical Branch	T-32
TSI – 2" pipe run	Medical Branch	T-33
TSI – Larger diameter Aircell Run	Medical Branch	T-34
TSI – Smaller diameter Aircell Run	Medical Branch	T-35
TSI- Steam pipe Elbow	Medical Branch	T-36
TSI- Middle pipe Elbow	Medical Branch	T-37
4" diameter pipe Elbow	Medical Branch	T-38
Unmarked pipe adjacent to Hot water Pipe	75ft from "strange" air stack	T-39
TSI – Sealant	Birches Branch	T-40
TSI – Aircell 2 nd pipe from wall	Birches Branch	T-41
2.5" pipe furthest from wall - TSI	Birches Branch	T-42
Low Pressure Pipe - TSI	Birches Branch	T-43
2.5" High Pressure Pipe - TSI	Birches Branch	T-44
TSI-Hot water pipe	Oak Hall Branch	T-45
TSI-High Pressure Steam	Oak Hall Branch	T-46
TSI – Low Pressure Steam	Oak Hall Branch	T-47
TSI – Low Pressure Steam	Oak Hall Branch	T-48
TSI-High Pressure Steam	Oak Hall Branch	T-49
TSI – Hot water Elbow	Oak Hall Branch	T-50

The following table is a summary of the suspect asbestos-containing materials that have been determined, through laboratory analysis, to contain asbestos:

TABLE 2: ASBESTOS-CONTAINING MATERIALS				
Sample Number	Material	Location	Approx. Quantity	Asbestos Content
T-1	TSI Low Pressure Steam 16" Diameter Run	Intersection with Birches/Oak/Power Plant	4,000 LF	40% - 65% Chrysotile
T-2		Intersection w/medical		
T-3		Intersection of Orchard & Cedar		
T-4	TSI High Pressure Steam 6" diameter pipe run	Intersection with Birches/Oak/Power Plant	4,000 LF	70% Chrysotile



TABLE 2: ASBESTOS-CONTAINING MATERIALS				
Sample Number	Material	Location	Approx. Quantity	Asbestos Content
T-5		Intersection w/medical		22% Amosite 10% Chrysotile
T-6		Intersection of Orchard & Cedar		28% Amosite 7% Chrysotile
T-7	TSI – Aircell	Intersection w/medical	50 LF	65% Chrysotile
T-8	TSI Low Pressure Steam 16" Diameter Elbow	Intersection of Orchard & Cedar	4 MF	60% to 70% Chrysotile
T-9				
T-10				
T-11	TSI Unmarked Pipe located above Hot Water Pipe	Intersection of Orchard & Cedar	1,000 LF	40% Chrysotile
T-12	TSI High Pressure Steam Elbow	Tunnel Intersection with Myers	2 MF	70% Chrysotile
T-13	TSI Hot Water Elbow	200 ft from welder's access hatch	4 MF	60% to 65% Chrysotile
T-14				
T-15				
T-16	TSI – Unmarked Pipe Run	200 ft from welder's access hatch	1,000 LF	35% Chrysotile
T-17	TSI - Aircell	Intersection with Myers branch tunnel	400 LF	70% Chrysotile
T-18	TSI High Pressure Steam Elbow	Larches End	50 MF	65% Chrysotile
T-19	TSI Hot Water Elbow	Larches End	2 MF	60% Chrysotile
T-20	TSI - Aircell	Myers End	400 LF	80% Chrysotile
T-23	TSI- 2" Head Height Unmarked Pipe Run	E-home Branch	250 LF	50% Chrysotile
T-24	TSI- 2" Head Height Unmarked Elbow	E-home Branch	4 MF	7% Amosite 55% Chrysotile
T-25	TSI – 4" Pipe Elbow	E-home Branch	4 MF	60% Chrysotile
T-26	TSI – 4" Pipe Run	E-home Branch	250 LF	22% Amosite 7% Chrysotile
T-27	TSI – 2" Top Pipe Run	Maple Branch	160 LF	10% Amosite 17% Chrysotile
T-28	TSI – 6" Top Pipe Run	Maple Branch	160 LF	15% Amosite 20% Chrysotile
T-29	TSI – 2" Middle Pipe Run near Wall	Maple Branch	160 LF	30% Amosite 20% Chrysotile



TABLE 2: ASBESTOS-CONTAINING MATERIALS				
Sample Number	Material	Location	Approx. Quantity	Asbestos Content
T-30	TSI – 1” Bottom pipe run	Maple Branch	160 LF	33% Amosite 20% Chrysotile
T-31	TSI – 2” Bottom pipe run near wall	Maple Branch	160 LF	33% Amosite 20% Chrysotile
T-32	TSI – Aircell Run	Medical Branch	50 LF	65% Chrysotile
T-33	TSI – 2” pipe run	Medical Branch	50 LF	38% Chrysotile
T-34	TSI – Larger diameter Aircell Run	Medical Branch	50 LF	70% Chrysotile
T-35	TSI – Smaller diameter Aircell Run	Medical Branch	50 LF	60% Chrysotile
T-36	TSI- Steam pipe Elbow	Medical Branch	3 MF	65% Chrysotile
T-37	TSI- Middle pipe Elbow	Medical Branch	3 MF	12% Chrysotile
T-38	4” diameter pipe Elbow	Medical Branch	3 MF	7% Chrysotile
T-39	Unmarked pipe adjacent to Hot water Pipe	75ft from strange air stack	100 LF	55% Chrysotile
T-41	TSI – Aircell 2 nd pipe from wall	Birches Branch	300 LF	65% Chrysotile
T-42	2.5” pipe furthest from wall - TSI	Birches Branch	300 LF	40% Chrysotile
T-43	TSI – Low Pressure Pipe	Birches Branch	300 LF	26% Amosite 10% Chrysotile
T-44	2.5” High Pressure Pipe - TSI	Birches Branch	2 MF	60% Chrysotile
T-46	TSI – High Pressure Steam	Oak Hall Branch	650 LF	30% Amosite 15% Chrysotile
T-47	TSI – Low Pressure Steam	Oak Hall Branch	650 LF	25% Chrysotile
T-48	TSI – Low Pressure Steam	Oak Hall Branch	650 LF	25% Chrysotile 10% Crocidolite
T-49	TSI-High Pressure Steam	Oak Hall Branch	650 LF	60% Chrysotile
T-50	TSI – Hot water Elbow	Oak Hall Branch	2 MF	65% Chrysotile

SF = Square Feet, LF = Linear Feet; MF = Mechanical Fitting



4.0 LEAD PAINT CHIP TESTING

Atlas collected paint chip samples from representative surface coatings that may be impacted by renovation activities.

Surface coatings that were collected were considered to be representative of materials in a homogeneous area if:

1. They exhibited similar physical characteristics (suspect materials alike in appearance, substrate, color, and time of application were tested as homogenous areas)
2. The application of the tested surface could be associated to an application of an unsampled surface.

Atlas did not identify any suspect lead containing surface coatings and therefore paint chip samples were not collected.

The USEPA has defined LBP as “*paint or other surface coatings that contain lead in excess of 0.5 percent by weight (>0.5%)*”. Results less than 0.5% by weight indicate that lead is not present at or above the USEPA regulatory level; however, lead may be present in lower concentrations above the laboratory detection limit in other surfaces tested and these are classified as lead-containing paint (LCP). Negative results do not mean that lead is not present.

4.1 Inspection

The disturbance and disposal of materials with surface coatings that contain lead paint are regulated by the USEPA, OSHA and the State of Iowa. The Resource Conservation and Recovery Act (RCRA) provides the USEPA with the authority to regulate the waste status of demolition or renovation debris, including lead-containing materials. Specific notification and testing requirements must be addressed prior to transporting, treating, storing, or disposing of hazardous wastes.

Construction work covered by 29 CFR 1926.62 includes any repair, renovation or other activities that disturb in-place, lead-containing materials, but does not include routine cleaning and repainting where there is insignificant damage, wear or corrosion of existing lead-containing coatings or substrates. Unless adequately protected, employee exposures to lead must not exceed airborne concentrations >50 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) averaged over an 8-hour period.

Occupational exposure to lead occurring in the course of construction work, including maintenance activities, painting, alteration and repairs is subject to the OSHA Lead standard (29 CFR 1926.62). The lead standard applies to any detectable concentration of lead in paint, as even small concentrations of lead can result in unacceptable employee exposures depending upon the method of removal and other workplace conditions.

The disposal of lead-based paint waste, as well as paint waste containing other heavy metals, is regulated by the USEPA and State of Iowa. Wastes generated by industrial businesses,



commercial businesses, and government institutions are subject to regulation. Commercial business owners and removal contractors are required to determine if paint waste generated from nonresidential structures (such as public and commercial buildings, warehouses, bridges, water towers, and transmission towers) contains heavy metals that would cause the debris to be considered a hazardous waste. Disposal options and applicable management requirements for collected debris will be based upon whether the waste stream is considered a hazardous waste and the amount of debris generated. Removal contractors and building owners need to include these factors when preparing and responding to bid specifications. Specific notification and testing requirements must be addressed prior to transporting, treating, storing, or disposing of hazardous wastes. Lead-containing wastes are considered hazardous waste under RCRA if Toxicity Characteristic Leachate Procedure (TCLP) results exceed 5 milligrams per liter (mg/L). The USEPA has made exceptions for the handling and disposal of lead wastes generated from residential housing.

Specific notification and testing requirements must be addressed prior to transporting, treating, storing, or disposing of hazardous wastes. Lead-containing wastes are considered hazardous waste under RCRA if Toxicity Characteristic Leachate Procedure (TCLP) results exceed 5 milligrams per liter (mg/L). The USEPA has made exceptions for the handling and disposal of lead wastes generated from residential housing.

The above overview is not intended to be inclusive of all potentially pertinent regulatory information. The relevant USEPA, OSHA and State of Iowa regulations should be consulted prior to undertaking activities involving the demolition, renovation or maintenance of surface coatings that contain lead.

4.2 Lead Paint Testing

The following surface coatings were collected as part of the lead paint testing:

TABLE 3: LEAD PAINT SUMMARY				
Sample Number	Sample Location	Representative Material	Paint Color	Lead Concentration (% by weight)
No suspect lead containing surface coatings were identified				

bolded = lead-based paint

This evaluation report can help the Owner develop a plan for renovating the building by having concentrations of lead in the paint identified. It is our understanding that the information in this report will be provided to the contractors so that appropriate precautions can be made to minimize worker exposure to lead. If surface coatings with lead containing paint are handled improperly, exposure could occur to workers and future occupants of the facility.

5.0 HAZARDOUS MATERIALS ASSESSMENT

Atlas completed a visual inspection of areas throughout the tunnel system in an attempt to identify hazardous wastes or universal wastes that may be impacted by planned renovation activities.



The survey included a visual inspection of: light fixtures and other equipment for the presence of Polychlorinated Biphenyls (PCBs); light bulbs, thermostats, switches, and other equipment for the presence of mercury; refrigerants, batteries, and devices with potential radioactive materials.

TABLE 4: HAZARDOUS BUILDING MATERIALS		
Category	Material	Estimated Quantity
Batteries	Lead Acid	NA
	Nickel Cadmium	NA
	Lithium-Ion	NA
Mercury	Thermostats	NA
	Fluorescent Light Tubes	NA
	High Intensity Discharge Bulbs	NA
	Strobes	NA
Poly-Chlorinated Biphenyl (PCBs)	Light Ballasts	NA
	Transformers	NA
Low Level Radioactive Sources (LLR)	Tritium Exit Signs	NA
	Smoke Detectors	NA
Chlorofluorocarbons (CFCs) or Hydro Chlorofluorocarbons (HCFCs)	Refrigerator/Cooler	NA
	Freezer	NA
	Water Fountain	NA

6.0 CONCLUSIONS

6.1 Asbestos

The NESHAP and OSHA regulations govern the removal of ACM. Atlas recommends that a State of Iowa certified abatement contractor be retained to properly abate and dispose of ACM identified in Table 1 above and in accordance with local, state, and federal regulations.

The owner and/or operator are responsible for NESHAP regulatory compliance regarding the proper removal, handling, and disposal of ACM containing >1% asbestos prior to renovation or demolition. Also, per state regulations, please be aware that the owner and/or operator must submit a notification to the Iowa Department of Natural Resources (IDNR) 10-business days prior to asbestos abatement at certain quantity thresholds and prior to renovation/demolition activities.

6.2 Lead

No suspect lead containing surface coatings were identified.



Contractors should use caution during construction-related activities as concealed surface coatings containing lead paints that were not previously tested may be encountered. If materials not sampled during this investigation are later identified to contain regulated quantities of lead concentrations, then they should be removed, controlled and/or disposed in accordance with federal, state and local regulations, prior to disturbance. OSHA considers any detectable level of lead as LCP and disturbance of these surface coatings is subject to the training and work practices in OSHA 29 CFR 1926.62 “Lead in Construction”.

6.3 Hazardous Building Materials

No hazardous buildings materials were identified.

7.0 ASSUMPTIONS AND LIMITATIONS

The results, findings, conclusions, and recommendations expressed in this report are based solely on conditions noted during the October 10 and 11, 2024, hazardous building materials survey of the Woodward Resource Center – Tunnel System in Woodward, Iowa.

Atlas did not perform destructive sampling -- it was not within Atlas’s scope of work to remove surface materials to investigate portions of the structure or materials that may lay beneath the surface -- thus, any materials that could not be visually identified on the surface were not inspected and would not be noted in this report. Atlas’s selection of sample locations and frequency of sampling was based on the inspector’s assumption that like materials in the same area are homogeneous in content.

The report is designed to aid the building owner, architect, construction manager, general contractor, and potential abatement contractor in locating hazardous building materials. Under no circumstances is the report to be utilized as a bidding document or as a project specification document since it does not have all the components required to serve as a Project Design document or an Abatement Work plan.

Our professional services have been performed, our findings obtained, and our conclusions and recommendations prepared in accordance with customary principles and practices in the fields of environmental science and engineering. This statement is in lieu of other statements either expressed or implied. This report does not warrant against future operations or conditions, nor does it warrant against operations or conditions present of a type or at a location not investigated.

This report is intended for the sole use of IDAS. The scope of services performed in execution of this evaluation may not be appropriate to satisfy the needs of other users, and use or re-use of this document or the findings, conclusions, or recommendations is at the risk of said user.

Atlas recommendations are based in part on federal, state, local regulations, and guidelines. Atlas does not undertake responsibility for reporting to any local, state, or federal public agencies of conditions at the site that may present a potential danger to public health or safety. Atlas recommends that the Client comply with regulations and response actions in accordance with federal, state, and local regulations.

APPENDIX A

ASBESTOS ANALYTICAL RESULTS AND CHAIN OF CUSTODY



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Received Date: 10/14/2024 8:50 AM

Analysis Date: 10/15/2024

Collected Date: 10/10/2024

Project: 204BS07475 / Woodward Tunnel Survey

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
T-1 <i>042421269-0001</i>	Tunnel - Intersection w Birches/Oak/Power Plant - TSI - Largest 16" dia. Pipe Run	White Fibrous Homogeneous		60% Non-fibrous (Other)	40% Chrysotile
T-2-TSI <i>042421269-0002</i>	Tunnel - Intersection w Medical - TSI - LP Steam Pipe 16" dia.	White Fibrous Homogeneous		35% Non-fibrous (Other)	65% Chrysotile
T-2-Wrap <i>042421269-0002A</i>	Tunnel - Intersection w Medical - TSI - LP Steam Pipe 16" dia.	Brown Fibrous Homogeneous	90% Cellulose	10% Non-fibrous (Other)	None Detected
T-3 <i>042421269-0003</i>	Tunnel - Intersection of Orchard & Cedar - TSI - LP Steam Pipe Run	White Fibrous Homogeneous		35% Non-fibrous (Other)	65% Chrysotile
T-4 <i>042421269-0004</i>	Tunnel - Intersection w Birches/Oak/Power - TSI - 6" next to Largest Pipe Run	Gray Fibrous Homogeneous		30% Non-fibrous (Other)	70% Chrysotile
T-5-TSI <i>042421269-0005</i>	Tunnel - Intersection w Medical - TSI - 6" next to LP Steam Pipe Run	Gray Fibrous Homogeneous		68% Non-fibrous (Other)	22% Amosite 10% Chrysotile
T-5-Wrap <i>042421269-0005A</i>	Tunnel - Intersection w Medical - TSI - 6" next to LP Steam Pipe Run	Brown Fibrous Homogeneous	90% Cellulose	10% Non-fibrous (Other)	None Detected
T-6 <i>042421269-0006</i>	Tunnel - Intersection of Orchard & Cedar - TSI - 6" next to LP Steam Pipe Run	Gray Fibrous Homogeneous		65% Non-fibrous (Other)	28% Amosite 7% Chrysotile
T-7 <i>042421269-0007</i>	Tunnel - Intersection w Medical - TSI - Airocell	White Fibrous Homogeneous	30% Cellulose	5% Non-fibrous (Other)	65% Chrysotile
T-8 <i>042421269-0008</i>	Tunnel - Intersection of Orchard & Cedar - TSI - Elbow - LP Steam Pipe	Gray Fibrous Homogeneous		30% Non-fibrous (Other)	70% Chrysotile
T-9-TSI Elbow <i>042421269-0009</i>	Tunnel - Intersection of Orchard & Cedar - TSI - Elbow - LP Steam Pipe	Gray Fibrous Homogeneous		40% Non-fibrous (Other)	60% Chrysotile
T-9-Wrap <i>042421269-0009A</i>	Tunnel - Intersection of Orchard & Cedar - TSI - Elbow - LP Steam Pipe	Gray Fibrous Heterogeneous	90% Cellulose	10% Non-fibrous (Other)	<1% Chrysotile
<i>Result includes a small amount of inseparable attached material</i>					
T-10 <i>042421269-0010</i>	Tunnel - Intersection of Orchard & Cedar - TSI - Elbow - LP Steam Pipe	Gray Fibrous Homogeneous		40% Non-fibrous (Other)	60% Chrysotile

Initial report from: 10/15/2024 16:28:29



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Project ID:

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
T-11 042421269-0011	Tunnel - Intersection of Orchard & Cedar - TSI - Unknown Pipe above Hot Water	White Fibrous Homogeneous		60% Non-fibrous (Other)	40% Chrysotile
T-12 042421269-0012	Tunnel - Intersection w Myers - TSI - Elbow HP Steam Pipe	Gray Fibrous Homogeneous		30% Non-fibrous (Other)	70% Chrysotile
T-13 042421269-0013	Tunnel - 200ft from Welders Access Hatch - TSI - Hot Water Elbow	Gray Fibrous Homogeneous		40% Non-fibrous (Other)	60% Chrysotile
T-14 042421269-0014	Tunnel - 200ft from Welders Access Hatch - TSI - Hot Water Elbow	Brown Fibrous Homogeneous		40% Non-fibrous (Other)	60% Chrysotile
T-15-TSI 042421269-0015	Tunnel - 200ft from Welders Access Hatch - TSI - Hot Water Elbow	Gray Fibrous Homogeneous		35% Non-fibrous (Other)	65% Chrysotile
T-15-Wrap 042421269-0015A	Tunnel - 200ft from Welders Access Hatch - TSI - Hot Water Elbow	Tan/White Fibrous Homogeneous	90% Cellulose	10% Non-fibrous (Other)	None Detected
T-16 042421269-0016	Tunnel - 200ft from Welders Access Hatch - TSI - Mystery Pipe Run	Brown/White Fibrous Homogeneous		65% Non-fibrous (Other)	35% Chrysotile
T-17 042421269-0017	Tunnel - Intersection w Branch Myers Tunne; - TSI - Airocell	White Fibrous Homogeneous	25% Cellulose	5% Non-fibrous (Other)	70% Chrysotile
T-18-TSI Elbow 042421269-0018	Tunnel - Larches End - TSI - Elbow HP Steam	Gray Fibrous Homogeneous		35% Non-fibrous (Other)	65% Chrysotile
T-18-Wrap 042421269-0018A	Tunnel - Larches End - TSI - Elbow HP Steam	Tan/White Fibrous Homogeneous	80% Cellulose	20% Non-fibrous (Other)	None Detected
T-19 042421269-0019	Tunnel - Larches End - TSI - Hot Water Elbow	Gray Fibrous Homogeneous		40% Non-fibrous (Other)	60% Chrysotile
T-20 042421269-0020	Tunnel - Myers End - TSI - Airocell	White Fibrous Homogeneous		20% Non-fibrous (Other)	80% Chrysotile
T-21-TSI 042421269-0021	Tunnel - under Street by Admin - TSI - Hot Water Run	Brown/Gray Fibrous Homogeneous	95% Glass	5% Non-fibrous (Other)	None Detected
T-21-TSI 2 042421269-0021A	Tunnel - under Street by Admin - TSI - Hot Water Run	White Fibrous Homogeneous	95% Cellulose	5% Non-fibrous (Other)	None Detected
T-21-Wrap 042421269-0021B	Tunnel - under Street by Admin - TSI - Hot Water Run	Tan/White Fibrous Homogeneous	90% Cellulose	10% Non-fibrous (Other)	None Detected
T-22 042421269-0022	Tunnel - under Street by Admin - TSI - Return Steam Run	Yellow Fibrous Homogeneous	95% Glass	5% Non-fibrous (Other)	None Detected
T-23-TSI 042421269-0023	Tunnel - E-Home Branch - TSI - Mystery Pipe Run - 2" Height	Brown/Black Fibrous Homogeneous		50% Non-fibrous (Other)	50% Chrysotile

Initial report from: 10/15/2024 16:28:29



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Customer ID: ATC55
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Project ID:

**Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E
Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy**

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
T-23-TSI 2 <i>042421269-0023A</i>	Tunnel - E-Home Branch - TSI - Mystery Pipe Run - 2" Height	Brown Fibrous Homogeneous	70% Cellulose 20% Synthetic	10% Non-fibrous (Other)	None Detected
T-24 <i>042421269-0024</i>	Tunnel - E-Home Branch - Mystery Pipe - 2" Elbow	Gray Fibrous Homogeneous	5% Cellulose	33% Non-fibrous (Other)	7% Amosite 55% Chrysotile
T-25-TSI Elbow <i>042421269-0025</i>	Tunnel - E-Home Branch - TSI - Elbow - 4" Pipe	Gray Fibrous Homogeneous		40% Non-fibrous (Other)	60% Chrysotile
T-25-Wrap <i>042421269-0025A</i>	Tunnel - E-Home Branch - TSI - Elbow - 4" Pipe	Tan Fibrous Homogeneous	90% Cellulose	10% Non-fibrous (Other)	None Detected
T-26-TSI <i>042421269-0026</i>	Tunnel - E-Home Branch - TSI - Run - 4" Pipe	White Fibrous Homogeneous		71% Non-fibrous (Other)	22% Amosite 7% Chrysotile
T-26-Wrap <i>042421269-0026A</i>	Tunnel - E-Home Branch - TSI - Run - 4" Pipe	Tan Fibrous Homogeneous	95% Cellulose	5% Non-fibrous (Other)	None Detected
T-27 <i>042421269-0027</i>	Tunnel - Maple Branch - TSI - Run - 2" Top Pipe	White Fibrous Homogeneous		73% Non-fibrous (Other)	10% Amosite 17% Chrysotile
T-28 <i>042421269-0028</i>	Tunnel - Maple Branch - TSI - Run - 6" Top Pipe	White Fibrous Homogeneous		65% Non-fibrous (Other)	15% Amosite 20% Chrysotile
T-29-TSI <i>042421269-0029</i>	Tunnel - Maple Branch - TSI - 2" Middle Shelf Run against Wall	White Fibrous Homogeneous		50% Non-fibrous (Other)	30% Amosite 20% Chrysotile
T-29-Wrap <i>042421269-0029A</i>	Tunnel - Maple Branch - TSI - 2" Middle Shelf Run against Wall	Tan/White Fibrous Heterogeneous	90% Cellulose	10% Non-fibrous (Other)	<1% Amosite <1% Chrysotile
<i>Result includes a small amount of inseparable attached material</i>					
T-30 <i>042421269-0030</i>	Tunnel - Maple Branch - TSI - Run - 1" Bottom Shelf	White Fibrous Homogeneous		47% Non-fibrous (Other)	33% Amosite 20% Chrysotile
T-31 <i>042421269-0031</i>	Tunnel - Maple Branch - TSI - Run - 2" Bottom Shelf against Wall	White Fibrous Homogeneous		47% Non-fibrous (Other)	33% Amosite 20% Chrysotile
T-32-TSI <i>042421269-0032</i>	Tunnel - Medical Branch - TSI - Airocell Run	Gray Fibrous Homogeneous	30% Cellulose	5% Non-fibrous (Other)	65% Chrysotile
T-32-Wrap <i>042421269-0032A</i>	Tunnel - Medical Branch - TSI - Airocell Run	Tan Fibrous Homogeneous	95% Cellulose	5% Non-fibrous (Other)	None Detected
T-33 <i>042421269-0033</i>	Tunnel - Medical Branch - TSI - 2" Pipe Run	White Fibrous Homogeneous	6% Cellulose	56% Non-fibrous (Other)	38% Chrysotile
T-34-TSI <i>042421269-0034</i>	Tunnel - Medical Branch - TSI - Larger Diameter Airocell Run	White Fibrous Homogeneous	25% Cellulose	5% Non-fibrous (Other)	70% Chrysotile
T-34-Wrap <i>042421269-0034A</i>	Tunnel - Medical Branch - TSI - Larger Diameter Airocell Run	Tan Fibrous Homogeneous	95% Cellulose	5% Non-fibrous (Other)	None Detected

Initial report from: 10/15/2024 16:28:29



EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077

Tel/Fax: (800) 220-3675 / (856) 786-5974

<http://www.EMSL.com> / cinnasblab@EMSL.com

EMSL Order: 042421269
Customer ID: ATC55
Customer PO:
Project ID:

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
T-35 <small>042421269-0035</small>	Tunnel - Medical Branch - TSI - Small Diameter Airocell Run	White Fibrous Homogeneous	35% Cellulose	5% Non-fibrous (Other)	60% Chrysotile
T-36 <small>042421269-0036</small>	Tunnel - Medical Branch - Steam Pipe Elbow	White Fibrous Homogeneous		35% Non-fibrous (Other)	65% Chrysotile
T-37 <small>042421269-0037</small>	Tunnel - Medical Branch - Middle Pipe Elbow	Brown/Gray Fibrous Homogeneous	5% Cellulose 40% Min. Wool	43% Non-fibrous (Other)	12% Chrysotile
T-38 <small>042421269-0038</small>	Tunnel - Medical Branch - 4" Pipe Diameter Elbow	Gray Fibrous Homogeneous	40% Min. Wool	53% Non-fibrous (Other)	7% Chrysotile
T-39 <small>042421269-0039</small>	Tunnel - 75 fom Strange Air Stack - Mystery Pipe adj to HW near Wall	Tan/White Fibrous Homogeneous		45% Non-fibrous (Other)	55% Chrysotile
T-40 <small>042421269-0040</small>	Tunnel - Birches Branch - TSI - Sealant	Tan/White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
T-41-TSI Airocell <small>042421269-0041</small>	Tunnel - Birches Branch - TSI - Airocell Run 2nd Pipe from Wall	White Fibrous Homogeneous	30% Cellulose	5% Non-fibrous (Other)	65% Chrysotile
T-41-TSI Airocell 2 <small>042421269-0041A</small>	Tunnel - Birches Branch - TSI - Airocell Run 2nd Pipe from Wall	Brown Fibrous Homogeneous	95% Cellulose	5% Non-fibrous (Other)	None Detected
T-42-TSI Airocell <small>042421269-0042</small>	Tunnel - Birches Branch - TSI - Airocell Run 2.5 Pipe furthest from High Pressure Wall	White Fibrous Homogeneous	55% Cellulose	5% Non-fibrous (Other)	40% Chrysotile
T-42-Wrap <small>042421269-0042A</small>	Tunnel - Birches Branch - TSI - Airocell Run 2.5 Pipe furthest from High Pressure Wall	Tan Fibrous Homogeneous	95% Cellulose	5% Non-fibrous (Other)	None Detected
T-43-TSI <small>042421269-0043</small>	Tunnel - Birches Branch - TSI Run - Lower Pressure Pipe	Tan Fibrous Homogeneous		64% Non-fibrous (Other)	26% Amosite 10% Chrysotile
T-43-Wrap <small>042421269-0043A</small>	Tunnel - Birches Branch - TSI Run - Lower Pressure Pipe	Gray Fibrous Homogeneous	80% Cellulose	20% Non-fibrous (Other)	None Detected
T-44 <small>042421269-0044</small>	Tunnel - Birches Branch - TSI - 2.5 in High Pressure Elbow	White Fibrous Homogeneous		40% Non-fibrous (Other)	60% Chrysotile
T-45-TSI <small>042421269-0045</small>	Tunnel - Oak Hall Branch - Hot Water Pipe TSI Run	Tan/White Fibrous Homogeneous	70% Cellulose	30% Non-fibrous (Other)	None Detected
T-45-TSI 2 <small>042421269-0045A</small>	Tunnel - Oak Hall Branch - Hot Water Pipe TSI Run	Yellow Fibrous Homogeneous	95% Glass	5% Non-fibrous (Other)	None Detected
T-46-TSI <small>042421269-0046</small>	Tunnel - Oak Hall Branch - High Pressure Steam TSI Run	White Fibrous Homogeneous		55% Non-fibrous (Other)	30% Amosite 15% Chrysotile

Initial report from: 10/15/2024 16:28:29



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EMSL Order: 042421269
Customer ID: ATC55
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Project ID:

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
T-46-Wrap 042421269-0046A	Tunnel - Oak Hall Branch - High Pressure Steam TSI Run	Tan/White Fibrous Heterogeneous	80% Cellulose	20% Non-fibrous (Other)	<1% Amosite <1% Chrysotile
<i>Result includes a small amount of inseparable attached material</i>					
T-47 042421269-0047	Tunnel - Oak Hall Branch - Low Pressure Steam TSI Run	White Fibrous Homogeneous	35% Cellulose	40% Non-fibrous (Other)	25% Chrysotile
T-48 042421269-0048	Tunnel - Oak Hall Branch - Low Pressure Steam TSI Run	White Fibrous Homogeneous		65% Non-fibrous (Other)	25% Chrysotile 10% Crocidolite
T-49-TSI 042421269-0049	Tunnel - Oak Hall Branch - High Pressure Steam Run TSI	White Fibrous Homogeneous		40% Non-fibrous (Other)	60% Chrysotile
T-49-Wrap 042421269-0049A	Tunnel - Oak Hall Branch - High Pressure Steam Run TSI	Tan/White Fibrous Heterogeneous	80% Cellulose	20% Non-fibrous (Other)	<1% Chrysotile
<i>Result includes a small amount of inseparable attached material</i>					
T-50 042421269-0050	Tunnel - Oak Hall Branch - Hot Water Elbow TSI	Gray Fibrous Homogeneous		35% Non-fibrous (Other)	65% Chrysotile

Analyst(s)

Brett Polumbo (69)

Samantha Rundstrom, Laboratory Manager
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and method specifications unless otherwise noted. The above analyses were performed in general compliance with Appendix E to Subpart E of 40 CFR (previously EPA 600/M4-82-020 "Interim Method") but augmented with procedures outlined in the 1993 ("final") version of the method. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Estimation of uncertainty is available on request.

Samples analyzed by EMSL Analytical, Inc. Cinnaminson, NJ NVLAP Lab Code 101048-0, AIHA LAP, LLC-IHLAP Lab 100194, PA ID# 68-00367, LA #04127

Initial report from: 10/15/2024 16:28:29



EMSL ANALYTICAL, INC.
LABORATORY PRODUCTS TRAINING

Asbestos Chain of Custody (Air, Bulk, Soil)

EMSL Analytical, Inc.

EMSL Order Number / Lab Use Only

042421269

RECEIVED
EMSL
CINNAMINSON, NJ
Cinnaminson, NJ 08077
PHONE: 1-800-220-3675
EMAIL: c@emsl.com

If Bill-To is the same as Report-To leave this section blank. Third-party billing requires written authorization.

Customer Information	Customer ID:	Billing ID:
	Company Name: Atlas Technical	Company Name: Atlas Technical
	Contact Name:	Billing Contact: Steve Hudson
	Street Address: 11117 Mockingbird Drive	Street Address: 11117 Mockingbird Drive
	City, State, Zip: Omaha NE 68137 Country: US	City, State, Zip: Omaha NE 68137 Country: US
	Phone: 402-697-9747	Phone: 402-697-9747
Email(s) for Report: eric.l.brown@oneatlas.com	Email(s) for Invoice:	

Project Name/No: <i>WOODWARD TUNNEL SURVEY 2048507475</i>		Purchase Order:
EMSL LIMS Project ID: (if applicable, EMSL will provide)	US State where samples collected: IA	State of Connecticut (CT) must select project location: <input type="checkbox"/> Commercial (Taxable) <input type="checkbox"/> Residential (Non-Taxable)
Sampled By Name: <i>ERIC BROWN</i>	Sampled By Signature: <i>Eric Brown</i>	No. of Samples in Shipment: <i>50</i>

Turn-Around-Time (TAT)

3 Hour 4-5 Hour 6 Hour 24 Hour 32 Hour 48 Hour 72 Hour 96 Hour 1 Week 2 Week

TEM Air 3-6 Hour, please call ahead to schedule. 32 Hour TAT available for select tests only; samples must be submitted by 11:30 am.

<p>PCM Air</p> <p><input type="checkbox"/> NIOSH 7400</p> <p><input type="checkbox"/> NIOSH 7400 w/ 8hr. TWA</p> <p>PLM - Bulk (reporting limit)</p> <p><input checked="" type="checkbox"/> PLM EPA 600/R-93/116 (<1%)</p> <p><input type="checkbox"/> PLM EPA NOB (<1%)</p> <p><input type="checkbox"/> POINT COUNT</p> <p><input type="checkbox"/> 400 (<0.25%) <input type="checkbox"/> 1,000 (<0.1%)</p> <p>POINT COUNT w/ GRAVIMETRIC</p> <p><input type="checkbox"/> 400 (<0.25%) <input type="checkbox"/> 1,000 (<0.1%)</p> <p><input type="checkbox"/> NIOSH 9002 (<1%)</p> <p><input type="checkbox"/> NYS 198.1 (Friable - NY)</p> <p><input type="checkbox"/> NYS 198.6 NOB (Non-Friable - NY)</p> <p><input type="checkbox"/> NYS 198.8 (Vermiculite SM-V)</p>	<p>TEM - Air</p> <p><input type="checkbox"/> AHERA 40 CFR, Part 763</p> <p><input type="checkbox"/> NIOSH 7402</p> <p><input type="checkbox"/> EPA Level II</p> <p><input type="checkbox"/> ISO 10312*</p> <p>TEM - Bulk</p> <p><input type="checkbox"/> TEM EPA NOB</p> <p><input type="checkbox"/> NYS NOB 198.4 (Non-Friable-NY)</p> <p><input type="checkbox"/> TEM EPA 600/R-93/116 w Milling Prep (0.1%)</p> <p>Other Test (please specify)</p>	<p>TEM - Settled Dust</p> <p><input type="checkbox"/> Microvac - ASTM D5755</p> <p><input type="checkbox"/> Wipe - ASTM D6480</p> <p><input type="checkbox"/> Qualitative via Filtration Prep</p> <p><input type="checkbox"/> Qualitative via Drop Mount Prep</p> <p>Soil - Rock - Vermiculite (reporting limit)*</p> <p><input type="checkbox"/> PLM EPA 600/R-93/116 with milling prep (<0.25%)</p> <p><input type="checkbox"/> PLM EPA 600/R-93/116 with milling prep (<0.1%)</p> <p><input type="checkbox"/> TEM EPA 600/R-93/116 with milling prep (<0.1%)</p> <p><input type="checkbox"/> TEM Qualitative via Filtration Prep</p> <p><input type="checkbox"/> TEM Qualitative via Drop Mount Prep</p>
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*Please call with your project-specific requirements.

Positive Stop - Clearly Identified Homogeneous Areas (HA) Filter Pore Size (Air Samples) 0.8um 0.45um

Sample Number	Sample Location / Description	Volume, Area or Homogeneous Area	Date / Time Sampled (Air Monitoring Only)
See the other sheets			

Special Instructions and/or Regulatory Requirements (Sample Specifications, Processing Methods, Limits of Detection, etc.)

Method of Shipment:	Sample Condition Upon Receipt:
Relinquished by: <i>Eric Brown</i> Date/Time: <i>10/14/24 17:00</i>	Received by: <i>Chalun EMSL Bx</i> Date/Time: <i>10/14/24 8:50</i>
Relinquished by:	Received by:

Controlled Document - COC-05 Asbestos R15 4/23/2021

AGREE TO ELECTRONIC SIGNATURE (By checking, I consent to signing this Chain of Custody document by electronic signature.)

EMSL Analytical, Inc.'s Laboratory Terms and Conditions are incorporated into this Chain of Custody by reference in their entirety. Submission of samples to EMSL Analytical, Inc. constitutes acceptance and acknowledgment of all terms and conditions by Customer.

ASBESTOS BULK SAMPLE FORM



11117 Mockingbird Drive
Omaha, NE 68137

RECEIVED
EMSL
CHRISTOPHERSON, N.J.
2024 OCT 14 A 9:18

Phone (402) 697-9747
Fax (402) 597-8532

Project Information

Client:	Project Description: TUNNELS	Project Manager: SH Inspector: EB
Date: 10/10/24	Site Location: WOODWARD	ATLAS PROJECT NUMBER: 204 BS 07475

Sample #	Material Description	Floor	Sample Location	Quantity
T-1	TSI - Largest (large ass) 16 in dia PIPE Run	T	Intersection with Birches/Oak/Power plant	
T-2	TSI Large ass PIPE Run 16 in dia	T	Intersection with medical	
T-3	TSI - Large ass PIPE Run	T	Intersection of Orchard + Cedar	
T-4	TSI - 6 in next to largest (large ass) PIPE Run	T	Intersection with Birches/Oak/Power	
T-5	TSI - 6 in next to large ass PIPE Run	T	Intersection with medical	
T-6	TSI - 6 in PIPE Next to Large Run	T	Intersection of orchard + cedar	
T-7	TSI - aerocell	T	Intersection with medical	8 LF
T-8	TSI - Elbow large ass PIPE	T	Intersection of orchard + cedar	
T-9	TSI - Elbow - large ass PIPE	T	Intersection of Orchard + Cedar	
T-10	TSI - Elbow - large ass PIPE	T	Intersection of Orchard + Cedar	
T-11	TSI - Unknown PIPE Hot above water	T	Intersection of orchard + Cedar	
T-12	TSI - Elbow H.P. steam pipe	T	Tunnel Intersection w/myers	
T-13	TSI - Hot water Elbow	T	200 yd from welders access Hatch	

Large ass PIPE = L.P Steam 16 in 4 L.P Elbow
 Shoulder 6 in PIPE = High pressure steam 6 in 2 H.P Elbow
 Head Airst 4 in = H.P. steam No Lenser in use.

AMM 2/26/24

ASBESTOS BULK SAMPLE FORM

RECEIVED EMSL CINNAMINSON, N.J. Page 3 of 4



11117 Mockingbird Drive Omaha, NE 68137 Phone (402) 697-9747 Fax (402) 597-8532

2024 OCT 14 A 9:18

Project Information

Client:	Project Description: Tunnel	Project Manager: SH Inspector: EB
Date: 10/10/24	Site Location: Woodward	ATLAS PROJECT NUMBER: 204B507475

Sample #	Material Description	Floor	Sample Location	Quantity
T-27	2in top pipe Run TSI	T	Maple Branch	
T-28	6in top pipe Run TSI	T	Maple Branch	
T-29	2 TSI in middle shelf Run against wall	T	Maple Branch	
T-30	2 in Bottom shelf TSI Near Run	T	Maple Branch	
T-31	2in Bottom shelf TSI against wall Run	T	Maple Branch	
T-32	TSI - aerocell Run	T	Medicinal Branch	
T-33	TSI - 2in pipe Run	T	Medicinal Branch	
T-34	TSI - larger diameter aerocell Run	T	Medicinal Branch	
T-35	TSI smaller diameter aerocell Run	T	Medicinal Branch	
T-36	Steam pipe elbow	T	Medicinal Branch	
T-37	Middle pipe elbow	T	Medicinal Branch	
T-38	4in diameter pipe elbow	T	Medicinal Branch	
T-39	Mystery pipe adjacent to HW Near wall	T	75 from storage cur stack	

2 elbows top pipe
3 on Head Height pipe
2 on knee height pipe

042421269

ASBESTOS BULK SAMPLE FORM



11117 Mockingbird Drive
Omaha, NE 68137

Page 4 of 4
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EMSI
CINNAMINSON, N.J.
Phone: (402) 697-9747
Fax: (402) 597-8532

Project Information

Client:	Project Description: Tunnels	Project Manager: SH Inspector: EB
Date: 10/11/24	Site Location: Woodard	ATLAS PROJECT NUMBER: 2043507475

2024 OCT 14 A 8:18

Sample #	Material Description	Floor	Sample Location	Quantity
T-40	TSI - Sealant	T	Birches Branch	
T-41	TSI - aerocell 2nd pipe Run Steam wall	T	Birches Branch	
T-42	2 1/2 pipe furtherst Run High pressure steam wall aerocell TSI	T	Birches Branch	
T-43	1 Lower pressure lower pipe - TSI Run	T	Birches Branch	
T-44	2 1/2 in High pressure Elbow - TSI	T	Birches Branch	
T-45	Hot water pipe TSI Run	T	Oak Hall Branch	
T-46	High pressure steam TSI Run	T	Oak Hall Branch	
T-47	Low pressure steam TSI Run	T	Oak Hall Branch	
T-48	Low pressure steam TSI Run	T	Oak Hall Branch	
T-49	High pressure steam Run TSI	T	Oak Hall Branch	
T-50	Hot water Elbow TSI	T	Oak Hall Branch	
T-51		T		
T-52		T		

4 lp
2 HP

2 Hot water
2 HP

APPENDIX B
ASBESTOS PHOTO LOG



View of the Powerhouse Tunnel Entrance.

1



View of the Asbestos Containing Low Pressure Pipe.
(T-1, 2, & 3, 40% - 65% Chrysotile)

2

<p>Photograph Log Tunnels 1251 334th Street Woodward, Iowa</p>	<p>Atlas Technical Consultants, LLC 4503 East 50th Street, Suite 800, Des Moines, IA 50317 (515) 981-4528 Project No. 204BS07475</p>
--	--



View of the Asbestos Containing High Pressure TSI. (T-4, 70% Chrysotile)

3



View of the Asbestos Containing High Pressure Pipe.
(T-5, & 6, 22% - 28% Amosite & 7% - 10% Chrysotile)

4

<p>Photograph Log Tunnels 1251 334th Street Woodward, Iowa</p>	<p>Atlas Technical Consultants, LLC 4503 East 50th Street, Suite 800, Des Moines, IA 50317 (515) 981-4528 Project No. 204BS07475</p>
--	--



View of the Asbestos Containing TSI Airocell.
(T-7, 17, 20, 32, 34, 35, 41, & 42, 40% - 80% Chrysotile)

5



View of the Asbestos Containing High Pressure TSI Elbow.
(T-8, 9, & 10, 60% - 70% Chrysotile)

6

<p>Photograph Log Tunnels 1251 334th Street Woodward, Iowa</p>	<p>Atlas Technical Consultants, LLC 4503 East 50th Street, Suite 800, Des Moines, IA 50317 (515) 981-4528 Project No. 204BS07475</p>
--	--



View of the Asbestos Containing Pipe (above Hot Water at Orchard and Cedar Intersection). (T-11, 40% Chrysotile)

7



View of the Asbestos Containing Hot Water Elbows.
(T-13, 14, 15, & 19, 60% - 65% Chrysotile)

8

Photograph Log
Tunnels
1251 334th Street
Woodward, Iowa

Atlas Technical Consultants, LLC
4503 East 50th Street, Suite 800,
Des Moines, IA 50317
(515) 981-4528
Project No. 204BS07475



View of the Asbestos Containing High Pressure Elbow.
(T-12 & 18, 65% & 70% Chrysotile)



View of the Asbestos Containing 2" Pipe Run. (T-23, 50% Chrysotile)

<p>Photograph Log Tunnels 1251 334th Street Woodward, Iowa</p>	<p>Atlas Technical Consultants, LLC 4503 East 50th Street, Suite 800, Des Moines, IA 50317 (515) 981-4528 Project No. 204BS07475</p>
--	--



View of the Asbestos Containing 2" Elbow. (T-24, 7% Amosite & 55% Chrysotile)

11



View of the Asbestos Containing 4" Elbow. (T-25, 60% Chrysotile)

12

<p>Photograph Log Tunnels 1251 334th Street Woodward, Iowa</p>	<p>Atlas Technical Consultants, LLC 4503 East 50th Street, Suite 800, Des Moines, IA 50317 (515) 981-4528 Project No. 204BS07475</p>
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View of the Asbestos Containing 4" Pipe Run in E Home Branch.
(T-26, 22% Amosite & 7% Chrysotile)

13



View of the Asbestos Containing 2" Pipe Run in Maple Branch.
(T-27, 10% Amosite & 17% Chrysotile)

14

<p>Photograph Log Tunnels 1251 334th Street Woodward, Iowa</p>	<p>Atlas Technical Consultants, LLC 4503 East 50th Street, Suite 800, Des Moines, IA 50317 (515) 981-4528 Project No. 204BS07475</p>
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View of the Asbestos Containing High Pressure Pipe in Maple Branch.
(T-28, 15% Amosite & 20% Chrysotile)

15



View of the Asbestos Containing 2" Pipe on Middle Shelf in Maple Branch.
(T-29, 30% Amosite & 20% Chrysotile)

16

Photograph Log
Tunnels
1251 334th Street
Woodward, Iowa

Atlas Technical Consultants, LLC
4503 East 50th Street, Suite 800,
Des Moines, IA 50317
(515) 981-4528
Project No. 204BS07475



View of the Asbestos Containing 1” Pipe on Bottom Shelf in Maple Branch.
(T-30, 33% Amosite & 20% Chrysotile)

17



View of the Asbestos Containing 2” Pipe on Bottom Shelf in Maple Branch.
(T-31, 33% Amosite & 20% Chrysotile)

18

<p>Photograph Log Tunnels 1251 334th Street Woodward, Iowa</p>	<p>Atlas Technical Consultants, LLC 4503 East 50th Street, Suite 800, Des Moines, IA 50317 (515) 981-4528 Project No. 204BS07475</p>
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View of the Asbestos Containing 2" Pipe Run in Medical Branch.
(T-33, 38% Chrysotile)

19



View of the Asbestos Containing Steam Pipe Elbow in Medical Branch.
(T-36, 65% Chrysotile)

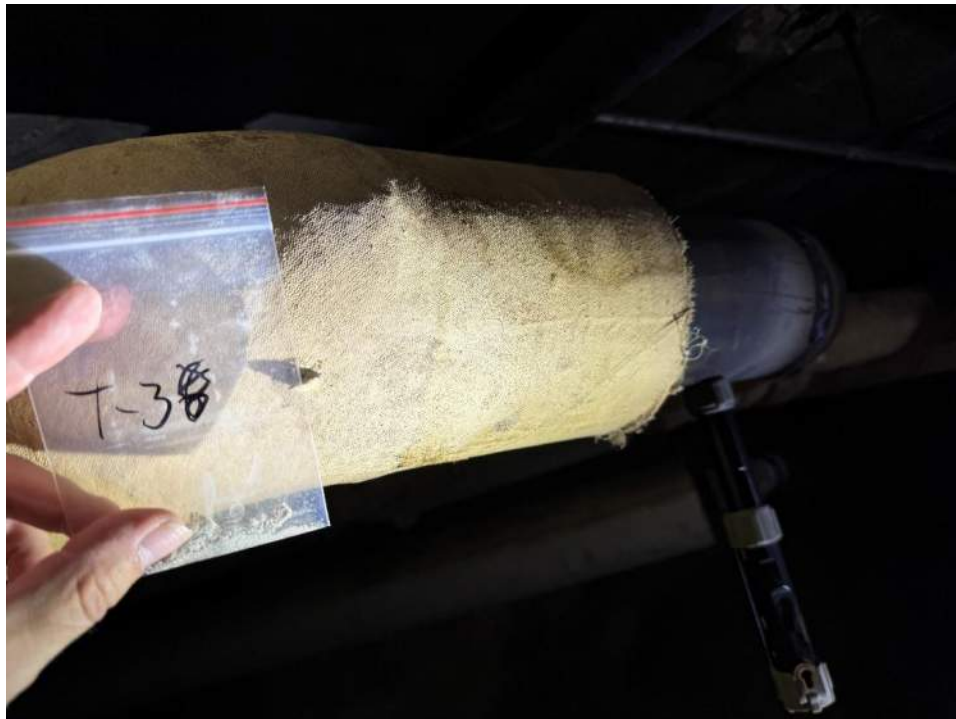
20

<p>Photograph Log Tunnels 1251 334th Street Woodward, Iowa</p>	<p>Atlas Technical Consultants, LLC 4503 East 50th Street, Suite 800, Des Moines, IA 50317 (515) 981-4528 Project No. 204BS07475</p>
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View of the Asbestos Containing Middle Pipe Elbow in Medical Branch.
(T-37, 12% Chrysotile)

21



View of the Asbestos Containing 4" Pipe Elbow in Medical Branch.
(T-38, 7% Chrysotile)

22

<p>Photograph Log Tunnels 1251 334th Street Woodward, Iowa</p>	<p>Atlas Technical Consultants, LLC 4503 East 50th Street, Suite 800, Des Moines, IA 50317 (515) 981-4528 Project No. 204BS07475</p>
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View of the Asbestos Containing Pipe Insulation. (T-39, 55% Chrysotile)



View of the Asbestos Containing Low Pressure Pipe in Birches Branch.
(T-43, 26% Amosite & 10% Chrysotile)

<p>Photograph Log Tunnels 1251 334th Street Woodward, Iowa</p>	<p>Atlas Technical Consultants, LLC 4503 East 50th Street, Suite 800, Des Moines, IA 50317 (515) 981-4528 Project No. 204BS07475</p>
--	--



View of the Asbestos Containing High Pressure Pipe Elbow. (T-44, 60% Chrysotile)

25



View of the Asbestos Containing High Pressure Pipe in Oak Hall Branch.
(T-46 & 49, 30% Amosite & 15% Chrysotile, & 60% Chrysotile)

26

Photograph Log
Tunnels
1251 334th Street
Woodward, Iowa

Atlas Technical Consultants, LLC
4503 East 50th Street, Suite 800,
Des Moines, IA 50317
(515) 981-4528
Project No. 204BS07475



View of the Asbestos Containing Low Pressure Pipe in Oak Hall.
 (T-47 & 48, 25% Chrysotile, & 25% Chrysotile and 10 % Crocidolite)



View of the Asbestos Containing Hot Water Pipe Elbow in Oak Hall Branch.
 (T-50, 65% Chrysotile)

<p>Photograph Log Tunnels 1251 334th Street Woodward, Iowa</p>	<p>Atlas Technical Consultants, LLC 4503 East 50th Street, Suite 800, Des Moines, IA 50317 (515) 981-4528 Project No. 204BS07475</p>
---	--

APPENDIX C
INSPECTOR ACCREDITATIONS

ERIC BROWN


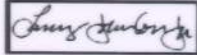
DOB: 05-07-1970

Issued: 02-27-2024



This person is licensed to perform asbestos work in the State of Iowa. ID card is intended for official use only and must be present on jobsite.

License Type	Number	Expires
INSPECTOR	24-11418	02-09-2025

 
Asbestos **Larry Johnson, Jr.**
Labor Commissioner

PHILLIP THOMAS

DOB: 05-26-1976

Issued: 01-17-2024



This person is licensed to perform asbestos work in the State of Iowa. ID card is intended for official use only and must be present on jobsite

License Type	Number	Expires
INSPECTOR	24-11142	01-03-2025
PROJECT DESIGNER	24-11144	01-04-2025
MANAGEMENT PLANNER	24-11143	01-03-2025



Asbestos

A handwritten signature in black ink, enclosed in a rectangular box.

**Larry Johnson, Jr.
Labor Commissioner**



HAZARDOUS BUILDING MATERIALS SURVEY

CHILLER BUILDING

WRC CAMPUS UTILITY DECENTRALIZATION PHASE 5
PROJECT 9279.50

1251 334TH STREET

WOODWARD, IOWA

204BS07475

PREPARED FOR:

Iowa Department of Administrative Services
109 SE 13th Street
Des Moines, IA 50319

PREPARED BY:

Atlas Technical Consultants LLC
11117 Mockingbird Drive
Omaha, NE 68137

May 5, 2026



11117 Mockingbird Drive
Omaha, NE 68137
(402) 697-9747 | oneatlas.com

April 21, 2026

Ms. Jennifer Kleene
Iowa Department of Administrative Services
109 SE 13th Street
Des Moines, IA 50319

Subject: Hazardous Building Materials Survey
Chiller Building
WRC Campus Utility Decentralization Phase 5 Project 9279.50
1251 334th Street
Woodward, Iowa
Atlas No: 204BS07475

Dear Ms. Kleene:

Atlas Technical Consultants LLC (Atlas) is pleased to submit the attached Hazardous Building Materials Survey Report conducted at the above-referenced site. This report includes procedures, methodologies and analytical laboratory results.

Atlas appreciates the opportunity to perform these services for the Iowa Department of Administrative Services (IDAS) and we look forward to working with you in the future. If you need any assistance with the implementation of the recommendations contained in this report, please feel free to contact the us and we will respond promptly to your needs.

Respectfully submitted,

Atlas Technical Consultants LLC

Phillip Thomas, OHST, CHMM
Iowa Asbestos Inspector

Steve Hudson, CIH
Sr. Project Manager

T A B L E O F C O N T E N T S

LETTER OF TRANSMITTAL	i
1.0 SCOPE OF SERVICES	1
2.0 GENERAL SITE CONDITIONS	1
3.0 ASBESTOS SURVEY	1
3.1 Regulation Review.....	1
3.2 Homogeneous Areas.....	2
3.3 Sampling Strategy	2
3.4 Laboratory Analytical Results	3
3.5 Suspect Asbestos-Containing Materials	3
3.5 Asbestos-Containing Materials	4
4.0 LEAD PAINT TESTING.....	4
4.1 Regulation Review.....	5
4.2 Summary of Findings.....	6
5.0 HAZARDOUS BUILDING MATERIALS	6
6.0 CONCLUSIONS	7
6.1 Asbestos.....	7
6.2 Lead.....	7
6.3 Hazardous Materials.....	8
7.0 LIMITATIONS	8

APPENDICES

- APPENDIX A: Laboratory Analytical Report
- APPENDIX B: Lead Analytical Report and Chain of Custody
- APPENDIX C: Drawings with Sample Locations
- APPENDIX D: Asbestos Containing Materials Photo Log
- APPENDIX E: Staff and Company Accreditations



Hazardous Building Materials Survey

Chiller Building
WRC Campus Utility Decentralization Phase 5 Project 9279.50
1251 334th Street
Woodward, Iowa
Atlas No.: 204BS07475

1.0 SCOPE OF SERVICES

The purpose of this project was to perform a Limited Hazardous Building Materials (HBM) Survey of the above-referenced property prior to proposed renovation and demolition activities.

2.0 GENERAL SITE CONDITIONS

The survey was conducted at the Chiller Building as part of the WRC Campus Utility Decentralization Phase 5 Project 9279.50 located at 1251 334th Street in Woodward, Iowa. The survey area was conducted to identify asbestos containing materials (ACM) and lead containing paint as part of proposed renovation/demolition activities.

3.0 ASBESTOS SURVEY

On September 25, 2025 and April 1, 2026, the Chiller Building was inspected for ACM by Mr. Eric Brown and Mr. Steve Hudson of Atlas. Mr. Brown and Mr. Hudson have completed the requisite training for asbestos accreditation as an inspector at a state approved training provider under TSCA Title II. Mr. Brown's and Mr. Hudson's State of Iowa Inspector numbers are 24-11418 and 26-15559.

Atlas conducted an asbestos survey of the identified building as required by United States Environmental Protection Agency (USEPA) regulation 40 Code of Federal Regulations (CFR) Part 61, the asbestos National Emissions Standards for Hazardous Air Pollutants (NESHAP) and applicable state and local regulations. The purpose of the inspection was to identify, sample, quantify and assess suspect ACM in locations that may be disturbed as part of planned renovation and demolition activities.

The survey was conducted to identify ACM that might be disturbed during planned renovation or demolition activities. Materials that were hidden, not accessible, or when sampled would damage the integrity of the structure, were not sampled as part of this survey. Materials visibly identified as non-asbestos (fibrous glass, foam rubber, wood, etc.) were not sampled. The asbestos survey consisted of three basic steps: **1)** a visual inspection of the proposed site; **2)** a determination of homogeneous areas with suspect surfacing, thermal system insulation, and miscellaneous materials; and **3)** sampling accessible, friable and non-friable, suspect materials.

3.1 Regulation Review

In Iowa, asbestos activities are regulated by the Iowa Department of Natural Resources (IDNR) and Iowa Workforce Development (IWD), Division of Labor. IDNR regulates asbestos fiber emissions under Iowa Administrative Code 567 Chapter 23 (IAC 567-23) and asbestos-containing waste disposal under IAC 567-109. IWD regulates occupational exposure to asbestos under IAC 875-10 and asbestos removal and encapsulation activities under IAC 875-155.



IAC 567–23.1(3) adopts the USEPA asbestos NESHAP (40 CFR Part 61, Subpart M) by reference. Subpart M regulates asbestos fiber emissions and asbestos waste disposal practices. It also requires the identification and classification of existing building materials prior to demolition or renovation activity. Under NESHAP, asbestos-containing building materials are classified as friable, Category I nonfriable, or Category II nonfriable ACM. Friable materials are those that, when dry, may be crumbled, pulverized, or reduced to powder by hand pressure. Category I nonfriable ACM includes packings, gaskets, resilient floor coverings, and asphalt roofing products containing more than 1% asbestos. Category II nonfriable ACM are any materials other than Category I materials that contain more than 1% asbestos.

Regulated ACM (RACM) must be removed before renovation or demolition activities that will disturb the materials. RACM includes:

- Friable ACM;
- Category I nonfriable ACM that has become friable or will be subjected to drilling, sanding, grinding, cutting, or abrading; and
- Category II nonfriable ACM that could be crumbled, pulverized, or reduced to powder during renovation or demolition activities.

The owner or operator must provide the IDNR and IWD with written notification of planned removal activities at least 10 working days prior to the commencement of asbestos abatement activities. Removal of RACM must be conducted by an Iowa-permitted asbestos abatement contractor.

IAC 875–155 Asbestos Removal and Encapsulation requires that any asbestos-related activity conducted in a public building be performed by personnel licensed or permitted by the IWD. Inspections for ACM must be conducted by IWD-licensed inspectors. Asbestos abatement must be performed by IWD-permitted asbestos abatement contractors. Management plans developed for the in-place management of asbestos-containing materials must be developed by an IWD-licensed management planner. When an abatement project design is prepared, it must be prepared by an IWD-licensed project designer.

IAC 875–10 adopts the Occupational Safety and Health Administration (OSHA) Asbestos standard for construction (29 CFR 1926.1101) by reference. The OSHA standard requires that employee exposure to airborne asbestos fibers be maintained below the permissible exposure limits (PEL) of 0.1 asbestos fibers per cubic centimeter (0.1 f/cc) of air as an 8-hour time-weighted average and 1.0 f/cc as a 30-minute excursion. The OSHA standard classifies construction and maintenance activities that could disturb ACM and specifies work practices and precautions that employers must follow when engaging in each class of regulated work.

3.2 Homogeneous Areas

Prior to sampling, homogeneous areas were identified in order to facilitate a sampling strategy. A homogeneous sampling area can be described as one or more areas with suspect material similar in appearance and texture that have the same installation date and function. The actual number of samples collected from each homogeneous sampling area may vary, dependent upon material type and the professional judgment of the inspector.

3.3 Sampling Strategy

The sampling strategy incorporated the asbestos hazard emergency response act (AHERA) sampling requirements, estimated quantities of suspect ACM, and the inspector's judgment to aid in the identification of suspect ACM. If the analytical results indicated that all the samples collected per homogeneous area did not contain asbestos, then the homogeneous area (material) was considered non-asbestos-containing. However, if the analytical results of one or more of the samples collected per homogeneous area indicated that asbestos was present in quantities greater than one percent asbestos (as defined by USEPA), all of the homogeneous



area (material) was treated as an ACM regardless of any other analytical results. Materials which were visually determined to be non-asbestos (i.e. fibrous glass, foam rubber, etc.) by the accredited inspector were not required to be sampled. Actual collection of a bulk asbestos sample involves physically removing a small piece of material and placing it in an airtight sample container. Sample containers were marked with a unique identification number, which was documented in the field notes.

3.4 Laboratory Analytical Results

A total of **15** samples were collected from building materials suspected of containing asbestos. The samples were submitted under chain of custody to EMSL Analytical, Inc. (EMSL) located at 200 Route 130 North in Cinnaminson, New Jersey for analysis by polarized light microscopy (PLM) with dispersion staining techniques per the *USEPA Method for the Determination of Asbestos in Bulk Building Materials (600/R-93-116)*. The percentage of asbestos, if applicable, was established by microscopic visual estimation. EMSL is an accredited laboratory by the National Voluntary Laboratory Accreditation Plan (NVLAP) No. 101048-0. Any material that contains greater than one percent (>1%) asbestos is considered an ACM and must be handled according to Occupational Safety and Health Administration (OSHA), USEPA, and all applicable state and local regulations

Details of sample analysis are included in Appendix A, which contains a listing of all analyzed samples, sample locations, and analytical results relating to the site. Asbestos analytical results are reported as percentage and type. Other common non-asbestos components may also be noted in the analytical report.

3.5 Suspect Asbestos-Containing Materials

A summary of the suspect ACM sampled can be found in the Tables below:

September 25, 2025

Table 1: Suspect Asbestos-Containing Materials		
Sample Number	Material	Location
C-1	Vibration Damper	North Side
C-2	Black Tar	Dividing Wall
C-3	CMU Mortar	Dividing Wall
C-4	TSI Sealant White	South Side
C-5	Gray Caulk	North Door
C-6	Brick Grout	Northeast Corner
C-7	Expansion Joint Light Gray	West Side, Exterior
C-8	Caulk Gray	South Chiller



April 1, 2026

Table 1: Suspect Asbestos-Containing Materials		
Sample Number	Material	Location
C-1	Tan Caulk/Sealant	South Side Chiller Pipe
C-2	Tan Caulk/Sealant	North Side Chiller Pipe
C-3	Dark Brown Sealant	South Side Chilled Water
C-4	White Sealant – Base Interior of Tower	North Cooling Tower
C-5	Tan Caulk	North Door
C-6	White Caulk – In 4 Corners	North 2 nd Level Cooling Tower
C-7	Grey Patch at Pipe Penetration	West Cooling Building Wall

3.5 Asbestos-Containing Materials

The following table is a summary of the suspect asbestos-containing materials that have been determined, through laboratory analysis, to contain asbestos in concentrations >1%:

Table 2: Asbestos-Containing Materials				
Sample Number	Material	Location	Approx. Quantity	Asbestos Content
C-2	Black Tar	Dividing Wall	450 SF	8% Chrysotile
C-7	Light Gray Expansion Joint	West Side Exterior	16 LF	8% Chrysotile
C-3	Dark Brown Sealant	South Side Chilled Water Supply and Return	10 SF	5% Chrysotile

SF = Square Feet; LF = Linear Feet; MF = Mechanical Fittings

4.0 LEAD PAINT TESTING

Atlas collected paint chip samples from representative surface coatings that may be impacted by renovation/demolition activities.

Surface coatings that were collected were considered to be representative of materials in a homogeneous area if:

1. They exhibited similar physical characteristics (suspect materials alike in appearance, substrate, color, and time of application were tested as homogenous areas)
2. The application of the tested surface could be associated to an application of an unsampled surface.

Atlas collected and submitted a total of **four** paint chip samples from surface coatings. The samples were submitted to EMSL of Cinnaminson, New Jersey, under proper chain of custody for analysis by Lead in Paint Chips by Flame AAS (SW 846 3050B/7000B). EMSL is accredited under the American Industrial Hygiene Association-Laboratory Accreditation Program (AIHA-LAP, LLC) (AIHA-LAP; lab code 100194).



A copy of the analytical results and chain of custody can be found in Appendix B.

The USEPA has defined LBP as “*paint or other surface coatings that contain lead in excess of 0.5 percent by weight (>0.5%)*”. Results less than 0.5% by weight indicate that lead is not present at or above the USEPA regulatory level; however, lead was present in lower concentrations above the laboratory detection limit in other surfaces tested and these are classified as lead-containing paint (LCP). Negative results do not mean that lead is not present.

4.1 Regulation Review

The disturbance and disposal of materials with surface coatings that contain lead paint are regulated by the USEPA, OSHA and the State of Iowa. The Resource Conservation and Recovery Act (RCRA) provides the USEPA with the authority to regulate the waste status of demolition or renovation debris, including lead-containing materials. Specific notification and testing requirements must be addressed prior to transporting, treating, storing, or disposing of hazardous wastes.

Construction work covered by 29 CFR 1926.62 includes any repair, renovation or other activities that disturb in-place, lead-containing materials, but does not include routine cleaning and repainting where there is insignificant damage, wear or corrosion of existing lead-containing coatings or substrates. Unless adequately protected, employee exposures to lead must not exceed airborne concentrations >50 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) averaged over an 8-hour period.

Occupational exposure to lead occurring in the course of construction work, including maintenance activities, painting, alteration and repairs is subject to the OSHA Lead standard (29 CFR 1926.62). The lead standard applies to any detectable concentration of lead in paint, as even small concentrations of lead can result in unacceptable employee exposures depending upon the method of removal and other workplace conditions.

The disposal of lead-based paint waste, as well as paint waste containing other heavy metals, is regulated by the USEPA and State of Iowa. Wastes generated by industrial businesses, commercial businesses, and government institutions are subject to regulation. Commercial business owners and removal contractors are required to determine if paint waste generated from nonresidential structures (such as public and commercial buildings, warehouses, bridges, water towers, and transmission towers) contains heavy metals that would cause the debris to be considered a hazardous waste. Disposal options and applicable management requirements for collected debris will be based upon whether the waste stream is considered a hazardous waste and the amount of debris generated. Removal contractors and building owners need to include these factors when preparing and responding to bid specifications. Specific notification and testing requirements must be addressed prior to transporting, treating, storing, or disposing of hazardous wastes. Lead-containing wastes are considered hazardous waste under RCRA if Toxicity Characteristic Leachate Procedure (TCLP) results exceed 5 milligrams per liter (mg/L). The USEPA has made exceptions for the handling and disposal of lead wastes generated from residential housing.

Specific notification and testing requirements must be addressed prior to transporting, treating, storing, or disposing of hazardous wastes. Lead-containing wastes are considered hazardous waste under RCRA if Toxicity Characteristic Leachate Procedure (TCLP) results exceed 5 milligrams per liter (mg/L). The USEPA has made exceptions for the handling and disposal of lead wastes generated from residential housing.

The above overview is not intended to be inclusive of all potentially pertinent regulatory information. The relevant USEPA, OSHA and State of Iowa regulations should be consulted prior to undertaking activities involving the demolition, renovation or maintenance of surface coatings that contain lead.



4.2 Summary of Findings

The following suspect surface coatings were collected as part of the survey:

Table 3: Lead Paint Summary				
Sample Number	Sample Location	Representative Material	Paint Color	Lead Concentration (% by weight)
PCC-1	Doors	Metal	Rust/Brown	0.039
PCC-2	Stair Railings	Metal	Red	<0.025
PCC-3	Chillers	Metal	Green	<0.008
PCC-4	South Side	South Chiller	Green	<0.0064
PCC-5	North Side	Metal Pad Under Pumps	Silver	<0.0064
PCC-6	North Side – NE Corner	Large Tank	Red	<0.0064
PCC-7	South Side	Vertical Column Support	Red	0.30
PCC-8	Under Exterior Cooling Towers	Metal Support Base	Red	<0.0064
PCC-9		Painted Piping	Red	0.016

bolded = lead-based paint

If surface coatings are identified to contain concentrations of lead above regulatory levels, they should be removed, controlled and/or disposed of in accordance with federal, state, and local regulations, prior to disturbance.

This evaluation report can help the Owner develop a plan for renovating the building by having concentrations of lead in the paint identified. It is our understanding that the information in this report will be provided to the contractors so that appropriate precautions can be made to minimize worker exposure to lead. If surface coatings with lead containing paint are handled improperly, exposure could occur to workers and future occupants of the facility.

5.0 HAZARDOUS BUILDING MATERIALS

Atlas completed a visual inspection of areas throughout the intended work areas in an attempt to identify hazardous wastes or universal wastes that may be impacted by planned renovation activities. The survey included a visual inspection of: light fixtures and other equipment for the presence of polychlorinated biphenyls (PCB); light bulbs, thermostats, switches, and other equipment for the presence of mercury; chlorofluorocarbons (CFC) and hydrochlorofluorocarbons (HCFC) refrigerants, batteries, and devices with potential radioactive materials.

Table 4: Hazardous Building Materials		
Category	Material	Estimated Quantity
Batteries	Lead Acid	NA
	Nickel Cadmium	NA
	Lithium-Ion	NA
	Emergency Exit Sign	NA
Mercury	Thermostat	NA
	Fluorescent Light Tube	11
	High Intensity Discharge Bulb	NA
	Emergency Strobe	NA
RCRA Metals	LED Light Fixture (single bulb)	NA
	LED Light Fixture (2' x 2' light fixture)	NA
	LED Light Fixture (2' x 4' light fixture)	NA
Poly-Chlorinated Biphenyl (PCB)	Light Ballast	NA
	Transformer	NA
Low Level Radioactive Sources (LLR)	Tritium Exit Sign	NA
	Smoke Detector	2
Chlorofluorocarbons (CFC) or Hydro Chlorofluorocarbons (HCFC)	Air Conditioner (AC)	NA
	Refrigerator/Cooler	NA
	Freezer	NA
	Water Fountain	NA
Other	Fire Extinguisher	NA

6.0 CONCLUSIONS

6.1 Asbestos

The NESHAP and OSHA regulations govern the removal of ACM. Atlas recommends that a State of Iowa certified abatement contractor be retained to properly abate and dispose of ACM identified in Table 2 above and in accordance with local, state, and federal regulations.

6.2 Lead

Lead **was identified** above the laboratory detection limit but not in excess of the USEPA level three of the nine surface coatings tested.



Lead **was not identified** above the USEPA level of 0.5% in six of the surface coatings collected and analyzed.

6.3 Hazardous Materials

If any of the hazardous materials or universal wastes identified in Table 4 above are to be impacted as part of the renovation contractor's scope of work, they shall be collected and disposed of according to the USEPA Toxic Substances Control Act (TSCA) and the State of Iowa regulations.

7.0 LIMITATIONS

The results, findings, conclusions, and recommendations expressed in this report are based solely on conditions noted during the September 25, 2025 and April 1, 2026, Atlas inspections of the Chiller Building as part of the WRC Campus Utility Decentralization Phase 5 Project 9279.50 located at 1251 334th Street in Woodward, Iowa.

Although Atlas performed limited destructive sampling to access suspect ACM, additional suspect but unsampled materials could be located under existing building materials, in isolated areas or in other concealed areas. Therefore, if suspect materials are encountered during renovation/demolition activities that do not appear to have been characterized as non-ACM, samples should be collected and analyzed prior to disturbing these materials or the materials can be assumed to be ACM and abated accordingly. Atlas's selection of sample locations and frequency of sampling was based on the inspector's assumption that like materials in the same area are homogeneous in content.

The report is designed to aid the building owner, architect, construction manager, general contractor, and potential asbestos and lead abatement contractor(s) in locating ACM and lead containing surface coatings. Under no circumstances is the report to be utilized as a bidding document or as a project specification document since it does not have all the components required to serve as a Project Design or an Abatement Work plan.

Our professional services have been performed, our findings obtained, and our conclusions and recommendations prepared in accordance with customary principles and practices in the fields of environmental science and engineering. This statement is in lieu of other statements either expressed or implied. This report does not warrant against future operations or conditions, nor does it warrant against operations or conditions present of a type or at a location not investigated.

This report is intended for the sole use of the IDAS. The scope of services performed in execution of this evaluation may not be appropriate to satisfy the needs of other users and use or re-use of this document or the findings, conclusions, or recommendations is at the risk of said user.

**APPENDIX A
ASBESTOS ANALYTICAL REPORT AND
CHAIN OF CUSTODY**



EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077

Tel/Fax: (800) 220-3675 / (856) 786-5974

<http://www.EMSL.com> / cinnasblab@EMSL.com

EMSL Order: 042420695

Customer ID: ATC55

Customer PO:

Project ID:

Attention: Eric Brown
Atlas Technical
11117 Mockingbird Drive
Omaha, NE 68137

Phone: (402) 697-9747

Fax: (402) 597-8532

Received Date: 10/04/2024 9:20 AM

Analysis Date: 10/06/2024

Collected Date: 09/25/2024

Project: 204BS07475 / Woodward Tunnel Survey / Chiller

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
C-1 <i>042420695-0001</i>	Ground Floor - North Side - Vibration Damper	Brown/Gray Fibrous Homogeneous	95% Cellulose	5% Non-fibrous (Other)	None Detected
C-2 <i>042420695-0002</i>	Ground Floor -Dividing Wall - Black Wall Tar	Black Non-Fibrous Homogeneous		92% Non-fibrous (Other)	8% Chrysotile
C-3 <i>042420695-0003</i>	Ground Floor -Dividing Wall - CMU Mortar	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
C-4 <i>042420695-0004</i>	Ground Floor -South Side - TSI Sealant - White	Tan/White Non-Fibrous Homogeneous	5% Fibrous (Other)	95% Non-fibrous (Other)	None Detected
C-5 <i>042420695-0005</i> <i>Inseparable paint / coating layer included in analysis</i>	Exterior - North Door - Grey Caulk	White/Red Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
C-6 <i>042420695-0006</i>	Exterior - Northeast Corner - Brick Grout	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
C-7 <i>042420695-0007</i>	Exterior - West Side - Expansion Joint - Light Grey	Gray/White Non-Fibrous Homogeneous		92% Non-fibrous (Other)	8% Chrysotile
C-8 <i>042420695-0008</i>	Exterior - South Chiller - Grey Caulk	Gray Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected

Analyst(s)

Hunter Kelly (8)

Samantha Rundstrom, Laboratory Manager
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. The above analyses were performed in general compliance with Appendix E to Subpart E of 40 CFR (previously EPA 600/M4-82-020 "Interim Method") but augmented with procedures outlined in the 1993 ("final") version of the method. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Estimation of uncertainty is available on request.

Samples analyzed by EMSL Analytical, Inc. Cinnaminson, NJ NVLAP Lab Code 101048-0, AIHA LAP, LLC-IHLAP Lab 100194, PA ID# 68-00367, LA #04127

Initial report from: 10/07/2024 07:42:39



EMSL ANALYTICAL, INC.
LABORATORY PRODUCTS TRAINING

Asbestos Chain of Custody (Air, Bulk, Soil)

EMSL Order Number / Lab Use Only

042420695

EMSL Analytical, Inc.

Cinnaminson, NJ 08077
PHONE: 1-800-220-3675
EMAIL: c@emsl.com

If Bill-To is the same as Report-To leave this section blank. Third-party billing requires written authorization.

Customer Information	Customer ID:	Billing ID:
	Company Name: Atlas Technical	Company Name: Atlas Technical
	Contact Name:	Billing Contact: Steve Hudson
	Street Address: 11117 Mockingbird Drive	Street Address: 11117 Mockingbird Drive
	City, State, Zip: Omaha NE 68133 Country: US	City, State, Zip: Omaha NE 68137 Country: US
	Phone: 402-697-9747	Phone: 402-697-9747
Email(s) for Report: eric.l.brown@oneatlas.com	Email(s) for Invoice:	

Project Information		Purchase Order:
Project Name/No: WOODWARD TUNNEL SURVEY 2043507475	US State where samples collected: IA	State of Connecticut (CT) must select project location: <input type="checkbox"/> Commercial (Taxable) <input type="checkbox"/> Residential (Non-Taxable)
EMSL LIMS Project ID: (if applicable, EMSL will provide)	Sampled By Name: ERIC BROWN	Sampled By Signature: <i>Eric Brown</i>
		No. of Samples in Shipment: 8

Turn-Around-Time (TAT)

3 Hour 4-4.5 Hour 6 Hour 24 Hour 32 Hour 48 Hour 72 Hour 96 Hour 1 Week 2 Week

TEM Air 3-6 Hour, please call ahead to schedule. 32 Hour TAT available for select tests only; samples must be submitted by 11:30 am.

<p>PCM Air</p> <p><input type="checkbox"/> NIOSH 7400</p> <p><input type="checkbox"/> NIOSH 7400 w/ 8hr. TWA</p> <p>PLM - Bulk (reporting limit)</p> <p><input checked="" type="checkbox"/> PLM EPA 600/R-93/116 (<1%)</p> <p><input type="checkbox"/> PLM EPA NOB (<1%)</p> <p><input type="checkbox"/> POINT COUNT</p> <p><input type="checkbox"/> 400 (<0.25%) <input type="checkbox"/> 1,000 (<0.1%)</p> <p>POINT COUNT w/ GRAVIMETRIC</p> <p><input type="checkbox"/> 400 (<0.25%) <input type="checkbox"/> 1,000 (<0.1%)</p> <p><input type="checkbox"/> NIOSH 9002 (<1%)</p> <p><input type="checkbox"/> NYS 198.1 (Friable - NY)</p> <p><input type="checkbox"/> NYS 198.6 NOB (Non-Friable - NY)</p> <p><input type="checkbox"/> NYS 198.8 (Vermiculite SM-V)</p>	<p>Test Selection</p> <p>TEM - Air</p> <p><input type="checkbox"/> AHERA 40 CFR, Part 763</p> <p><input type="checkbox"/> NIOSH 7402</p> <p><input type="checkbox"/> EPA Level II</p> <p><input type="checkbox"/> ISO 10312*</p> <p>TEM - Bulk</p> <p><input type="checkbox"/> TEM EPA NOB</p> <p><input type="checkbox"/> NYS NOB 198.4 (Non-Friable-NY)</p> <p><input type="checkbox"/> TEM EPA 600/R-93/116 w Milling Prep (0.1%)</p> <p>Other Test (please specify)</p>	<p>TEM - Settled Dust</p> <p><input type="checkbox"/> Microvac - ASTM D5755</p> <p><input type="checkbox"/> Wipe - ASTM D6480</p> <p><input type="checkbox"/> Qualitative via Filtration Prep</p> <p><input type="checkbox"/> Qualitative via Drop Mount Prep</p> <p>Soil - Rock - Vermiculite (reporting limit)*</p> <p><input type="checkbox"/> PLM EPA 600/R-93/116 with milling prep (<0.25%)</p> <p><input type="checkbox"/> PLM EPA 600/R-93/116 with milling prep (<0.1%)</p> <p><input type="checkbox"/> TEM EPA 600/R-93/116 with milling prep (<0.1%)</p> <p><input type="checkbox"/> TEM Qualitative via Filtration Prep</p> <p><input type="checkbox"/> TEM Qualitative via Drop Mount Prep</p>
---	---	--

*Please call with your project-specific requirements.

Positive Stop - Clearly identified Homogeneous Areas (HA) Filter Pore Size (Air Samples) 0.8um 0.45um

Sample Number	Sample Location / Description	Volume, Area or Homogeneous Area	Date / Time Sampled (Air Monitoring Only)
	See the other sheets		2024 OCT - 11 AM 11:23 RECEIVED EMSL CINNAMINSON, NJ
Special Instructions and/or Regulatory Requirements (Sample Specifications, Processing Methods, Limits of Detection, etc.)			

Method of Shipment:	Sample Condition Upon Receipt:
Relinquished by: <i>Eric Brown</i>	Received by: <i>Angie O'Neil</i>
Date/Time: <i>10/3/24 12:00</i>	Date/Time: <i>10/4/24 9:20</i>
Relinquished by:	Received by:
Date/Time:	Date/Time:

Controlled Document - COC-05 Asbestos R15 4/23/2021 AGREE TO ELECTRONIC SIGNATURE (By checking, I consent to signing this Chain of Custody document by electronic signature.)

EMSL Analytical, Inc.'s Laboratory Terms and Conditions are incorporated into this Chain of Custody by reference in their entirety. Submission of samples to EMSL Analytical, Inc. constitutes acceptance and acknowledgment of all terms and conditions by Customer.

8

042420695

ASBESTOS BULK SAMPLE FORM



11117 Mockingbird Drive
Omaha, NE 68137

Phone (402) 697-9747
Fax (402) 597-8532

Project Information

Client:	Project Description: <i>Chiller</i>	Project Manager: <i>SH</i> Inspector: <i>EB</i>
Date: <i>9/25/24</i>	Site Location: <i>Woodward</i>	ATLAS PROJECT NUMBER: <i>264B507475</i>

Sample #	Material Description	Floor	Sample Location	Quantity
C-1	Vibration dampers	G	North side	2
C-2	Black wall tar	G	Dividing wall	
C-3	CMU Mortar	G	Dividing wall	
C-4	ISI ISI-sealant white	G	South Side	
C-5	Gray Caulk	E	North door	
C-6	Brick Grout	E	Northeast corner	
C-7	Expansion Joint ^{light Gray}	E	West Side	
C-8	Gray Caulk		South Chiller	

RECEIVED
 EMSL
 GINNANNINSONI NJ
 2024 OCT -4 A 11:23



EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077

Tel/Fax: (800) 220-3675 / (856) 786-5974

<http://www.EMSL.com> / cinnasblab@EMSL.com

EMSL Order: 042606375

Customer ID: ATC55

Customer PO:

Project ID:

Attention: Steve Hudson
Atlas Technical
11117 Mockingbird Drive
Omaha, NE 68137

Phone: (402) 697-9747

Fax: (402) 597-8532

Received Date: 04/03/2026 9:30 AM

Analysis Date: 04/06/2026

Collected Date: 04/01/2026

Project: 204BS07475 / IOWA DAS / Tunnel Abandonment Project#9279.50 / Chiller

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
C-1 042606375-0001	Floor G - South Side Chiller Pipe - Tan Caulk/Sealant	Tan Non-Fibrous Homogeneous	5% Cellulose 5% Wollastonite	20% Ca Carbonate 70% Non-fibrous (Other)	None Detected
C-2 042606375-0002	Floor G - North Side Chiller Pipe - Tan Caulk/Sealant	Tan Non-Fibrous Homogeneous	5% Cellulose 2% Wollastonite	20% Ca Carbonate 73% Non-fibrous (Other)	None Detected
C-3 042606375-0003	Floor G - South Side Chilled Water Supply & Return - Dark Brown Sealant	Brown Non-Fibrous Homogeneous	5% Cellulose	90% Non-fibrous (Other)	5% Chrysotile
C-4 042606375-0004	Floor E - North Cooling Tower - Base Interior of Tower - White Sealant	White Non-Fibrous Homogeneous		35% Ca Carbonate 65% Non-fibrous (Other)	None Detected
C-5 042606375-0005	Floor E - North Cooling Tower - Tan Caulk	Tan Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
C-6 042606375-0006	Floor E - North 2nd Level Cooling Tower - In 4 Corners - White Caulk	White Non-Fibrous Homogeneous		25% Ca Carbonate 75% Non-fibrous (Other)	None Detected
C-7 042606375-0007	Floor E - West Cooling Building Wall - Gray Patch at Pipe Penetration	Gray Non-Fibrous Homogeneous	2% Cellulose	35% Ca Carbonate 63% Non-fibrous (Other)	None Detected

Analyst(s)

Brett Teixeira (7)

Samantha Sweeney, Laboratory Manager
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. The above analyses were performed in general compliance with Appendix E to Subpart E of 40 CFR (previously EPA 600/M4-82-020 "Interim Method") but augmented with procedures outlined in the 1993 ("final") version of the method. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Estimation of uncertainty is available on request.

Samples analyzed by EMSL Analytical, Inc. Cinnaminson, NJ NVLAP Lab Code 101048-0, AIHA LAP, LLC-IHLAP Lab 100194, PA ID# 68-00367, LA #04127

Initial report from: 04/06/2026 15:25:46



EMSL ANALYTICAL, INC.
LABORATORY-PRODUCTS-TRAINING

Asbestos Bulk Building Material Chain of Custody

EMSL Order Number (Lab Use Only):

042606375

Cinnaminson, NJ 08077
PHONE: 1-800-220-3675
FAX: (856) 786-5974

Company: Atlas Technical (ATC55)		EMSL-Bill to: <input checked="" type="checkbox"/> Same <input type="checkbox"/> Different If Bill to is Different note instructions in Comments**	
Street: 11117 Mockingbird Drive		Third Party Billing requires written authorization from third party	
City: Omaha	State/Province: NE	Zip/Postal Code: 68137	Country: US
Report To (Name): Steve Hudson		Telephone #: 402-697-9747	
Email Address: steve.hudson@oneatlas.com		Fax #:	Purchase Order:
Project Name/Number: 2048507475		Please Provide Results: <input type="checkbox"/> Fax <input checked="" type="checkbox"/> Email <input type="checkbox"/> Mail	
U.S. State Samples Taken: Iowa		CT Samples: <input type="checkbox"/> Commercial/Taxable <input type="checkbox"/> Residential/Tax Exempt	

Turnaround Time (TAT) Options* - Please Check

3 Hour 6 Hour 24 Hour 48 Hour 72 Hour 96 Hour 1 Week 2 Week

*For TEM Air 3 hr through 6 hr, please call ahead to schedule. There is a premium charge for 3 Hour TEM AHERA or EPA Level II TAT. You will be asked to sign an authorization form for this service. Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide.

<u>PLM - Bulk (reporting limit)</u>		<u>TEM - Bulk</u>	
<input checked="" type="checkbox"/> PLM EPA 600/R-93/116 (<1%)	<input type="checkbox"/> TEM EPA NOB - EPA 600/R-93/116 Section 2.5.5.1		
<input type="checkbox"/> PLM EPA NOB (<1%)	<input type="checkbox"/> NY ELAP Method 198.4 (TEM)		
Point Count <input type="checkbox"/> 400 (<0.25%) <input type="checkbox"/> 1000 (<0.1%)	<input type="checkbox"/> Chatfield Protocol (semi-quantitative)		
Point Count w/Gravimetric <input type="checkbox"/> 400 (<0.25%) <input type="checkbox"/> 1000 (<0.1%)	<input type="checkbox"/> TEM % by Mass - EPA 600/R-93/116 Section 2.5.5.2		
<input type="checkbox"/> NIOSH 9002 (<1%)	<input type="checkbox"/> TEM Qualitative via Filtration Prep Technique		
<input type="checkbox"/> NY ELAP Method 198.1 (friable in NY)	<input type="checkbox"/> TEM Qualitative via Drop Mount Prep Technique		
<input type="checkbox"/> NY ELAP Method 198.6 NOB (non-friable-NY)	<u>Other</u>		
<input type="checkbox"/> OSHA ID-191 Modified	<input type="checkbox"/>		
<input type="checkbox"/> Standard Addition Method			

Check For Positive Stop - Clearly Identify Homogenous Group Date Sampled: 4-1-06

Samplers Name: Steve Hudson Samplers Signature: [Signature]

Sample #	HA #	Sample Location	Material Description
SEE ATTACHED			

Client Sample # (s): 1 - 7	Total # of Samples: 7
Relinquished (Client): [Signature] Date: 4-2-06	Time: 4pm
Received (Lab): [Signature] Date: 4/3/06 9:30am	Time:
Comments/Special Instructions:	

707

0212606375

11117 Mockingbird Drive
 Omaha, NE 68137
 Phone: (402) 697-9747
 Fax: (402) 597-8532



Asbestos Bulk Sampling Log

Client: IOWA DAS	Project Description: Tunnel Abandonment Project #9279.50	Project Manager: Inspector: Steve Hudson
Date: 4/1/26	Site Location: Chiller	Project Number: 204BS07475

Sample #	Material Description	Floor	Sample Location	Quantity
C-1	Tan Caulk/Sealant	G	South Side Chiller Pipe	70 LF
C-2	Tan Caulk/Sealant	G	North Side Chiller Pipe	80 LF
C-3	Dark Brown Sealant	G	South Side Chilled Water Supply + Return	10 SF
C-4	White Sealant – Base Interior of Tower	E	North Cooling Tower	80 LF
C-5	Tan Caulk	E		160 LF
C-6	White Caulk – In 4 Corners	E	North 2 nd Level Cooling Tower	10 LF
C-7	Grey Patch at Pipe Penetration	E	West Cooling Building Wall	10 SF

APPENDIX B
LEAD ANALYTICAL REPORT AND CHAIN OF CUSTODY

**EMSL Analytical, Inc.**

200 Route 130, Cinnaminson, NJ, 08077
 Telephone: 856-858-4800 Fax:856-786-5974
 EMSL-CIN-01

EMSL Order ID: 012438016
LIMS Reference ID: AC38016
EMSL Customer ID: ATC55

Attention: Steve Hudson
 Atlas Technical [ATC55]
 11117 Mockingbird Drive
 Omaha, NE 68137
 (402) 697-9747
 steve.hudson@oneatlas.com

Project Name: Woodward Tunnels // 204BS07475

Customer PO:
EMSL Sales Rep: Anthony DeRosa
Received: 11/22/2024 10:00
Reported: 11/27/2024 10:57

Analytical Results

Analyte	Results	RL	Weight(g)	Prep Date & Tech	Prep Method	Analysis Date & Analyst	Analytical Method	Q	DF
Client Sample ID: PCC - 1/Door Rust - Brown							Date Sampled: 11/20/24		
Matrix: Chips							LIMS Reference ID: AC38016-01		
Lead	0.039 % wt	0.015 % wt	0.1308	11/25/24 KD1	SW-846 3050B	11/26/24 PMX	SW846-7000B		1
Sample Comments:									
Client Sample ID: PCC - 2/Stair Railing - Red							Date Sampled: 11/20/24		
Matrix: Chips							LIMS Reference ID: AC38016-02		
Lead	<0.025 % wt	0.025 % wt	0.0786	11/25/24 KD1	SW-846 3050B	11/26/24 PMX	SW846-7000B		1
Sample Comments:									
Client Sample ID: PCC - 3/Chiller - Green							Date Sampled: 11/20/24		
Matrix: Chips							LIMS Reference ID: AC38016-03		
Lead	<0.008 % wt	0.008 % wt	0.2506	11/25/24 KD1	SW-846 3050B	11/26/24 PMX	SW846-7000B		1
Sample Comments:									

**EMSL Analytical, Inc.**

200 Route 130, Cinnaminson, NJ, 08077
 Telephone: 856-858-4800 Fax:856-786-5974
 EMSL-CIN-01

EMSL Order ID: 012438016
LIMS Reference ID: AC38016
EMSL Customer ID: ATC55

Attention: Steve Hudson
 Atlas Technical [ATC55]
 11117 Mockingbird Drive
 Omaha, NE 68137
 (402) 697-9747
 steve.hudson@oneatlas.com

Project Name: Woodward Tunnels // 204BS07475

Customer PO:
EMSL Sales Rep: Anthony DeRosa
Received: 11/22/2024 10:00
Reported: 11/27/2024 10:57

Certified Analyses included in this Report

Analyte	Certifications
SW846-7000B in Chips	
Lead	AIHA LAP

List of Certifications

Code	Description	Number	Expires
NJDEP	New Jersey Department of Environmental Protection	03036	06/30/2025
AIHA LAP	EMSL Analytical, Inc. Cinnaminson, NJ AIHA-LAP, LLC-ELLAP Accredited	100194	01/01/2025
NYSDOH	New York State Department of Health	10872	04/01/2025
California ELAP	California Water Boards	1877	06/30/2025
A2LA	A2LA Environmental Certificate	2845.01	07/31/2026
PADEP	Pennsylvania Department of Environmental Protection	68-00367	11/30/2025
MADEP	Massachusetts Department of Environmental Protection	M-NJ337	06/30/2025
CTDPH	Connecticut Department of Public Health	PH-0270	06/23/2026

Please see the specific Field of Testing (FOT) on www.emsl.com for a complete listing of parameters for which EMSL is certified.

Notes and Definitions

Item	Definition
(Dig)	For metals analysis, sample was digested.
[2C]	Reported from the second channel in dual column analysis.
DF	Dilution Factor
MDL	Method Detection Limit.
ND	Analyte was NOT DETECTED at or above the detection limit.
NR	Spike/Surrogate showed no recovery.
Q	Qualifier
RL	Reporting Limit For paint chips, the RL is 0.008% by wt. (equiv. to 80 mg/kg, or ppm) based upon a minimum sample weight of 0.25 grams. For soils, the RL is 40 mg/kg (ppm) based upon a minimum sample weight of 0.5 grams. For dust wipes, the RL is 10 µg/wipe; reporting units of µg/sq. ft. are not validated by the lab based upon data provided by non-lab personnel.
Wet	Sample is not dry weight corrected.

Measurement of uncertainty and any applicable definitions of method modifications are available upon request. Per EPA NLLAP policy, sample results are not blank corrected.



EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:856-786-5974
EMSL-CIN-01

EMSL Order ID: 012438016
LIMS Reference ID: AC38016
EMSL Customer ID: ATC55

Attention: Steve Hudson
Atlas Technical [ATC55]
11117 Mockingbird Drive
Omaha, NE 68137
(402) 697-9747
steve.hudson@oneatlas.com

Project Name: Woodward Tunnels // 204BS07475

Customer PO:
EMSL Sales Rep: Anthony DeRosa
Received: 11/22/2024 10:00
Reported: 11/27/2024 10:57

Owen McKenna Laboratory Manager or other approved signatory

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. QC sample results are within quality control criteria and met method specifications unless otherwise noted. All results for soil samples are reported on a dry weight basis, unless otherwise noted.

Analysis following EMSL SOP for the Determination of Environmental Lead by FLAA. The laboratory has a reporting limit of 0.008% by wt., based upon a minimum sample weight of 0.25g submitted to the lab, and is not responsible for any result or reporting limit provided in mg/cm² since it is dependent upon an area value provided by non-lab personnel. A "<" (less than) result signifies that the analyte was not detected at or above the reporting limit. Measurement of uncertainty and definitions of modifications are available upon request. Results in this report are not blank corrected unless specified.



Lead Chain of Custody

EMSL Order Number / Lab Use Only

EMSL Analytical, Inc.
200 Route 130 North
Cinnaminson, NJ 08077

EMSL ANALYTICAL, INC.
TESTING LABS • PRODUCTS • TRAINING

AC38016

RECEIVED
EMSL
CINNAMINSON, N.J.

PHONE: (800) 220-3675

EMAIL: CinnaminsonLeadLab@emsl.com

Customer Information	Customer ID:	Billing ID:
	Company Name: Atlas Technical	Company Name: Atlas Technical
	Contact Name: Steve Hudson	Billing Contact: Steve Hudson
	Street Address: 11117 Mockingbird Drive	Street Address: 11117 Mockingbird Drive
	City, State, Zip: Omaha, NE, 68137 Country: USA	City, State, Zip: Omaha, NE, 68137 Country: USA
	Phone: 402-697-9747	Phone: 402-697-9747
Email(s) for Report: steve.hudson@oneatlas.com	Email(s) for Invoice:	

Project Information	
Project Name/No: <u>WOODWARD TUNNELS</u> <u>204BS07475</u>	Purchase Order:
EMSL LIMS Project ID: (If applicable, EMSL will provide)	US State where samples collected: <u>IA</u> State of Connecticut (CT) must select project location: <input type="checkbox"/> Commercial (Taxable) <input type="checkbox"/> Residential (Non-Taxable)
Sampled By Name: <u>ERIC BROWN</u> Sampled By Signature: <u>Eric Brown</u>	No. of Samples in Shipment: <u>3</u>

Turn-Around-Time (TAT)

3 Hour
 6 Hour
 24 Hour
 32 Hour
 48 Hour
 72 Hour
 96 Hour
 1 Week
 2 Week

Please call ahead for large projects and/or turnaround times 6 Hours or Less. *32 Hour TAT available for select tests only; samples must be submitted by 11:30am

MATRIX	METHOD	INSTRUMENT	REPORTING LIMIT	SELECTION
CHIPS <input checked="" type="checkbox"/> % by wt. <input type="checkbox"/> ppm (mg/kg) <input type="checkbox"/> mg/cm ² <small>*Reporting Limit based on a minimum 0.25g sample weight **Not appropriate for Ceramic Tiles - XRF is recommended</small>	SW 846-7000B	Flame Atomic Absorption	0.008% (80ppm)	<input checked="" type="checkbox"/>
	SW 846-6010D*	ICP-OES	0.0004% (4ppm)	<input type="checkbox"/>
AIR	NIOSH 7082	Flame Atomic Absorption	4µg/filter	<input type="checkbox"/>
	NIOSH 7303M	ICP-OES	1.0µg/filter	<input type="checkbox"/>
	NIOSH 7303M	ICP-MS	0.05µg/filter	<input type="checkbox"/>
WIPE <input type="checkbox"/> ASTM <input type="checkbox"/> NON-ASTM <small>*If no box is checked, non-ASTM Wipe is assumed</small>	SW 846-7000B	Flame Atomic Absorption	10µg/wipe	<input type="checkbox"/>
	SW 846-6010D*	ICP-OES	1.0µg/wipe	<input type="checkbox"/>
TCLP	SW 846-1311 / 7000B / SM 3111B	Flame Atomic Absorption	0.4 mg/L (ppm)	<input type="checkbox"/>
	SW 846-1311 / SW 846-6010D*	ICP-OES	0.1 mg/L (ppm)	<input type="checkbox"/>
SPLP	SW 846-1312 / 7000B / SM 3111B	Flame Atomic Absorption	0.4 mg/L (ppm)	<input type="checkbox"/>
	SW 846-1312 / SW 846-6010D*	ICP-OES	0.1 mg/L (ppm)	<input type="checkbox"/>
TTLIC	22 CCR App. II, 7000B	Flame Atomic Absorption	40mg/kg (ppm)	<input type="checkbox"/>
	22 CCR App. II, SW 846-6010D*	ICP-OES	2mg/kg (ppm)	<input type="checkbox"/>
STLC	22 CCR App. II, 7000B	Flame Atomic Absorption	0.4 mg/L (ppm)	<input type="checkbox"/>
	22 CCR App. II, SW 846-6010D*	ICP-OES	0.1 mg/L (ppm)	<input type="checkbox"/>
Soil	SW 846-7000B	Flame Atomic Absorption	40mg/kg (ppm)	<input type="checkbox"/>
	SW 846-6010D*	ICP-OES	2mg/kg (ppm)	<input type="checkbox"/>
Wastewater	SM 3111B / SW 846-7000B	Flame Atomic Absorption	0.4 mg/L (ppm)	<input type="checkbox"/>
Unpreserved <input type="checkbox"/>	EPA 200.7	ICP-OES	0.020 mg/L (ppm)	<input type="checkbox"/>
Preserved with HNO ₃ <input type="checkbox"/> PH<2	EPA 200.5	ICP-OES	0.003 mg/L (ppm)	<input type="checkbox"/>
Drinking Water	EPA 200.8	ICP-MS	0.001 mg/L (ppm)	<input type="checkbox"/>
Unpreserved <input type="checkbox"/>	40 CFR Part 50	ICP-OES	12 µg/filter	<input type="checkbox"/>
Preserved with HNO ₃ <input type="checkbox"/> PH<2				<input type="checkbox"/>
TSP/SPM Filter				<input type="checkbox"/>
Other:				<input type="checkbox"/>

Sample Number	Sample Location	Volume / Area	Date / Time Sampled
PCC-1	DOOR RUGS/BROWN		11/20/24
PCC-2	STAIR RAILING RED		11/20/24
PCC-3	CHILLER GREEN		11/20/24

Method of Shipment:		Sample Condition Upon Receipt:	
Relinquished by: <u>Eric Brown</u>	Date/Time: <u>11/20/24 17:00</u>	Received by: <u>E Quinn EFX</u>	Date/Time: <u>11/22/24 10am</u>
Relinquished by:	Date/Time:	Received by:	Date/Time:

Controlled Document - COC-25 Lead R18 04/04/2024 *6010C Available Upon Request

AGREE TO ELECTRONIC SIGNATURE (By checking, I consent to signing this Chain of Custody document by electronic signature.)

EMSL Analytical, Inc.'s Laboratory Terms and Conditions are incorporated into this Chain of Custody by reference in their entirety. Submission of samples to EMSL Analytical, Inc. constitutes acceptance and acknowledgment of all terms and conditions by Customer.



Lead Chain of Custody

EMSL Order Number / Lab Use Only

EMSL Analytical, Inc.
200 Route 130 North
Cinnaminson, NJ 08077

PHONE: (800) 220-3675

EMAIL: CinnaminsonLeadLab@emsl.com

EMSL ANALYTICAL, INC.
TESTING LABS • PRODUCTS • TRAINING

AC38016

RECEIVED
EMSL
CINNAMINSON, N.J.

Customer Information	Customer ID:	Billing ID:
	Company Name: Atlas Technical	Company Name: Atlas Technical
	Contact Name: Steve Hudson	Billing Contact: Steve Hudson
	Street Address: 11117 Mockingbird Drive	Street Address: 11117 Mockingbird Drive
	City, State, Zip: Omaha, NE, 68137 Country: USA	City, State, Zip: Omaha, NE, 68137 Country: USA
	Phone: 402-697-9747	Phone: 402-697-9747
Email(s) for Report: steve.hudson@oneatlas.com	Email(s) for Invoice:	

Project Information		
Project Name/No: WOODWARD TUNNELS	204BS07475	Purchase Order:
EMSL LIMS Project ID: (If applicable, EMSL will provide)	US State where samples collected: IA	State of Connecticut (CT) must select project location: <input type="checkbox"/> Commercial (Taxable) <input type="checkbox"/> Residential (Non-Taxable)
Sampled By Name: ERIC BROWN	Sampled By Signature: <i>Eric Brown</i>	No. of Samples in Shipment: 3

Turn-Around-Time (TAT)

3 Hour
 6 Hour
 24 Hour
 32 Hour
 48 Hour
 72 Hour
 96 Hour
 1 Week
 2 Week

Please call ahead for large projects and/or turnaround times 6 Hours or Less. *32 Hour TAT available for select tests only; samples must be submitted by 11:30am.

MATRIX	METHOD	INSTRUMENT	REPORTING LIMIT	SELECTION
CHIPS <input checked="" type="checkbox"/> % by wt. <input type="checkbox"/> ppm (mg/kg) <input type="checkbox"/> mg/cm ² *Reporting Limit based on a minimum 0.25g sample weight. **Not appropriate for Ceramic Tiles - XRF is recommended	SW 846-7000B	Flame Atomic Absorption	0.008% (80ppm)	<input checked="" type="checkbox"/>
	SW 846-6010D*	ICP-OES	0.0004% (4ppm)	<input type="checkbox"/>
AIR	NIOSH 7082	Flame Atomic Absorption	4µg/filter	<input type="checkbox"/>
	NIOSH 7303M	ICP-OES	1.0µg/filter	<input type="checkbox"/>
	NIOSH 7303M	ICP-MS	0.05µg/filter	<input type="checkbox"/>
WIPE <input type="checkbox"/> ASTM <input type="checkbox"/> NON-ASTM *If no box is checked, non-ASTM Wipe is assumed	SW 846-7000B	Flame Atomic Absorption	10µg/wipe	<input type="checkbox"/>
	SW 846-6010D*	ICP-OES	1.0µg/wipe	<input type="checkbox"/>
TCLP	SW 846-1311 / 7000B / SM 3111B	Flame Atomic Absorption	0.4 mg/L (ppm)	<input type="checkbox"/>
	SW 846-1311 / SW 846-6010D*	ICP-OES	0.1 mg/L (ppm)	<input type="checkbox"/>
SPLP	SW 846-1312 / 7000B / SM 3111B	Flame Atomic Absorption	0.4 mg/L (ppm)	<input type="checkbox"/>
	SW 846-1312 / SW 846-6010D*	ICP-OES	0.1 mg/L (ppm)	<input type="checkbox"/>
TTLC	22 CCR App. II, 7000B	Flame Atomic Absorption	40mg/kg (ppm)	<input type="checkbox"/>
	22 CCR App. II, SW 846-6010D*	ICP-OES	2mg/kg (ppm)	<input type="checkbox"/>
STLC	22 CCR App. II, 7000B	Flame Atomic Absorption	0.4 mg/L (ppm)	<input type="checkbox"/>
	22 CCR App. II, SW 846-6010D*	ICP-OES	0.1 mg/L (ppm)	<input type="checkbox"/>
Soil	SW 846-7000B	Flame Atomic Absorption	40mg/kg (ppm)	<input type="checkbox"/>
	SW 846-6010D*	ICP-OES	2mg/kg (ppm)	<input type="checkbox"/>
Wastewater	SM 3111B / SW 846-7000B	Flame Atomic Absorption	0.4 mg/L (ppm)	<input type="checkbox"/>
Unpreserved <input type="checkbox"/>	EPA 200.7	ICP-OES	0.020 mg/L (ppm)	<input type="checkbox"/>
Preserved with HNO3 <input type="checkbox"/> PH<2	EPA 200.5	ICP-OES	0.003 mg/L (ppm)	<input type="checkbox"/>
Drinking Water	EPA 200.8	ICP-MS	0.001 mg/L (ppm)	<input type="checkbox"/>
Unpreserved <input type="checkbox"/>	40 CFR Part 50	ICP-OES	12 µg/filter	<input type="checkbox"/>
Preserved with HNO3 <input type="checkbox"/> PH<2				<input type="checkbox"/>
TSP/SPM Filter				<input type="checkbox"/>
Other:				<input type="checkbox"/>

Sample Number	Sample Location	Volume / Area	Date / Time Sampled
PCC-1	DOOR RUST/BROWN		11/20/24
PCC-2	STAIR RAILING RED		11/20/24
PCC-3	CHILLER GREEN		11/20/24

Method of Shipment:		Sample Condition Upon Receipt:	
Relinquished by: <i>Eric Brown</i>	Date/Time: <i>11/22/24 17:00</i>	Received by: <i>E Quinn EFX</i>	Date/Time: <i>11-22-24 10am</i>
Relinquished by:	Date/Time:	Received by:	Date/Time:

Controlled Document - COC-25 Lead R18 04/04/2024 *6010C Available Upon Request

AGREE TO ELECTRONIC SIGNATURE (By checking, I consent to signing this Chain of Custody document by electronic signature.)

EMSL Analytical, Inc.'s Laboratory Terms and Conditions are incorporated into this Chain of Custody by reference in their entirety. Submission of samples to EMSL Analytical, Inc. constitutes acceptance and acknowledgment of all terms and conditions by Customer.

**EMSL Analytical, Inc.**

200 Route 130, Cinnaminson, NJ, 08077
 Telephone: 856-858-4800 Fax:cs@emsl.com
 www.emsl.com

EMSL Order ID: 012615294
LIMS Reference ID: AE15294
EMSL Customer ID: ATC55

Attention: Steve Hudson, MS, CIH, CIEC
 Atlas Technical [ATC55]
 11117 Mockingbird Drive
 Omaha, NE 68137
 (402) 697-9747
 steve.hudson@oneatlas.com

Project Name: 204BS07475-Chiller Building/ Tunnel
 Abandonment Project #9279.50

Customer PO:
EMSL Sales Rep: Anthony DeRosa
Received: 04/03/2026 09:30
Reported: 04/07/2026 16:52

Analytical Results

Analyte	Results	RL	Weight	Prep Date & Tech	Prep Method	Analysis Date & Analyst	Analytical Method	Q	DF
Client Sample ID: PCC-4/Green/ Metal/ South Chiller / South Side						Date Sampled: 04/01/26			
Matrix: Chips						LIMS Reference ID: AE15294-01			
Lead	<0.0064 % wt	0.0064 % wt	0.2604 g	04/07/26 TMC	SW-846 3050B	04/07/26 PMx	SW846-7000B	1	
Client Sample ID: PCC-5/Silver/ Metal/ Metal Pad Under Pumps / North Side						Date Sampled: 04/01/26			
Matrix: Chips						LIMS Reference ID: AE15294-02			
Lead	<0.0064 % wt	0.0064 % wt	0.2533 g	04/07/26 TMC	SW-846 3050B	04/07/26 PMx	SW846-7000B	1	
Client Sample ID: PCC-6/Red / Metal/ Large Tank / North Side - NE Corner						Date Sampled: 04/01/26			
Matrix: Chips						LIMS Reference ID: AE15294-03			
Lead	<0.0064 % wt	0.0064 % wt	0.2989 g	04/07/26 TMC	SW-846 3050B	04/07/26 PMx	SW846-7000B	1	
Client Sample ID: PCC-7/Red / Metal/ Vertical Column Support / South Side						Date Sampled: 04/01/26			
Matrix: Chips						LIMS Reference ID: AE15294-04			
Lead	0.30 % wt	0.0064 % wt	0.2587 g	04/07/26 TMC	SW-846 3050B	04/07/26 PMx	SW846-7000B	1	
Client Sample ID: PCC-8/Red / Metal/ Metal Support Base/ Under Exterior Cooling Towers						Date Sampled: 04/01/26			
Matrix: Chips						LIMS Reference ID: AE15294-05			
Lead	<0.0064 % wt	0.0064 % wt	0.2739 g	04/07/26 TMC	SW-846 3050B	04/07/26 PMx	SW846-7000B	1	
Client Sample ID: PCC-9/Red / Metal/ Painted Piping/ Under Exterior Cooling Towers						Date Sampled: 04/01/26			
Matrix: Chips						LIMS Reference ID: AE15294-06			
Lead	0.016 % wt	0.011 % wt	0.1495 g	04/07/26 TMC	SW-846 3050B	04/07/26 PMx	SW846-7000B	1	

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Customer PO:
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Certified Analyses included in this Report

Analyte	Certifications
SW846-7000B in Chips	
Lead	AIHA LAP

List of Certifications

Code	Description	Number	Expires
NJDEP	New Jersey Department of Environmental Protection	03036	06/30/2026
AIHA LAP	American Industrial Hygiene Association (AIHA LAP, LLC)	100194	04/01/2027
NYSDOH	New York State Department of Health ELAP	10872	04/01/2026
California ELAP	California Water Boards	1877	06/30/2026
A2LA	A2LA Environmental Certificate	2845.01	07/31/2026
21-A2LA	A2LA Food Chem/Mat Sci	2845.15	07/31/2026
PADEP	Pennsylvania Department of Environmental Protection	68-00367	11/30/2026
MADEP	Massachusetts Department of Environmental Protection	M-NJ337	06/30/2026
CTDPH	Connecticut Department of Public Health	PH-0270	06/30/2026

Please see the specific Field of Testing (FOT) on www.emsl.com <<http://www.emsl.com>> for a complete listing of parameters for which EMSL is certified.

Notes and Definitions

Item	Definition
(Dig)	For metals analysis, sample was digested.
[2C]	Reported from the second channel in dual column analysis.
DA	Direct Analysis
DF	Dilution Factor
MDL	Method Detection Limit.
ND	Analyte was NOT DETECTED at or above the reporting limit, or the mdl if provided.
NR	Spike/Surrogate showed no recovery.
Q	Qualifier
RCS	Respirable Crystalline Silica
RL	Reporting Limit For paint chips, the RL is 0.0064% by wt. (equiv. to 64 mg/kg, or ppm) based upon a minimum sample weight of 0.25 grams. For soils, the RL is 32 mg/kg (ppm) based upon a minimum sample weight of 0.5 grams. For dust wipes, the RL is 8 µg/wipe; reporting units of µg/sq. ft. are not validated by the lab based upon data provided by non-lab personnel.
Wet	Sample is not dry weight corrected.

Measurement of uncertainty and any applicable definitions of method modifications are available upon request. Per EPA NLLAP policy, sample results are not blank corrected.



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Received: 04/03/2026 09:30
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Owen McKenna Laboratory Manager or other approved signatory

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. QC sample results are within quality control criteria and met method specifications unless otherwise noted. All results for soil samples are reported on a dry weight basis, unless otherwise noted.

Analysis following EMSL SOP for the Determination of Environmental Lead by FLAA. The laboratory has a reporting limit of 0.0064% by wt., based upon a minimum sample weight of 0.25g submitted to the lab, and is not responsible for any result or reporting limit provided in mg/cm² since it is dependent upon an area value provided by non-lab personnel. A "<" (less than) result signifies that the analyte was not detected at or above the reporting limit. Measurement of uncertainty and definitions of modifications are available upon request. Results in this report are not blank corrected unless specified.



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TESTING LABS • PRODUCTS • TRAINING

Lead Chain of Custody

EMSL Order Number / Lab Use Only

EMSL Analytical, Inc.
200 Route 130 North
Cinnaminson, NJ 08077

PHONE: (800) 220-3675

EMAIL: CinnaminsonLeadLab@emsl.com

AE15294

If Bill-To is the same as Receipt-To leave this section blank. Third-party billing requires written authorization.

Customer Information	Customer ID:	Billing ID:
	Company Name: Atlas Technical Consultants	Company Name:
	Contact Name: Steve Hudson	Billing Contact:
	Street Address: 11117 Mockingbird Drive	Street Address:
	City, State, Zip: Omaha, NE 68137 Country:	City, State, Zip: Country:
	Phone: 402-670-3842	Phone:
Email(s) for Report: steve.hudson@oneatlas.com	Email(s) for Invoice:	

Project Information	
Project Name/No: 2048507475	Purchase Order:
EMSL LIMS Project ID: (if applicable, EMSt. will provide)	US State where samples collected: Iowa
State of Connecticut (CT) must select project location:	<input type="checkbox"/> Commercial (Taxable) <input type="checkbox"/> Residential (Non-Taxable)
Sampled By Name: Steve Hudson	Sampled By Signature: [Signature]
No. of Samples in Shipment:	

Turn-Around-Time (TAT)

3 Hour 6 Hour 24 Hour 32 Hour 48 Hour 72 Hour 96 Hour 1 Week 2 Week

Please call ahead for large projects and/or turnaround times 6 hours or less. *32 hour TAT available for select tests only, samples must be submitted by 11:00am.

MATRIX	METHOD	INSTRUMENT	REPORTING LIMIT	SELECTION
CHIPS <input checked="" type="checkbox"/> % by wt. <input type="checkbox"/> ppm (mg/kg) <input type="checkbox"/> mg/cm ² <small>*Chips reporting limit based on a minimum 0.25g sample weight. Not appropriate for Ceramic Tiles - XRF is recommended.</small>	SW 846-7000B	Flame Atomic Absorption	*Please select reporting on left - 0.004% - 64 ppm - mg/cm ² - RL is Variable	<input checked="" type="checkbox"/>
	SW 846-6010D	ICP-OES	*Please select reporting on left - 0.004% - 4 ppm - mg/cm ² - RL is Variable	<input type="checkbox"/>
AIR	NIOSH 7082	Flame Atomic Absorption	3.2 µg/liter	<input type="checkbox"/>
	NIOSH 7303M	ICP-OES	1.0 µg/liter	<input type="checkbox"/>
	NIOSH 7303M	ICP-MS	0.05 µg/liter	<input type="checkbox"/>
WIPE <input type="checkbox"/> ASTM <input type="checkbox"/> NON-ASTM <small>*If no box is checked, non-ASTM Wipe is assumed</small>	SW 846-7000B*	Flame Atomic Absorption	8 µg/wipe	<input type="checkbox"/>
	SW 846-6010D*	ICP-OES	1.0 µg/wipe	<input type="checkbox"/>
TCLP	SW 846-1311 / 7000B / SM 3111B	Flame Atomic Absorption	0.32 mg/L (ppm)	<input type="checkbox"/>
	SW 846-1311 / SW 846-6010D*	ICP-OES	0.1 mg/L (ppm)	<input type="checkbox"/>
SPLP	SW 846-1312 / 7000B / SM 3111B	Flame Atomic Absorption	0.32 mg/L (ppm)	<input type="checkbox"/>
	SW 846-1312 / SW 846-6010D*	ICP-OES	0.1 mg/L (ppm)	<input type="checkbox"/>
TTLC	22 CCR App. II, 7000B	Flame Atomic Absorption	32 mg/kg (ppm)	<input type="checkbox"/>
	22 CCR App. II, SW 846-6010D*	ICP-OES	2 mg/kg (ppm)	<input type="checkbox"/>
STLC	22 CCR App. II, 7000B	Flame Atomic Absorption	0.32 mg/L (ppm)	<input type="checkbox"/>
	22 CCR App. II, SW 846-6010D*	ICP-OES	0.1 mg/L (ppm)	<input type="checkbox"/>
Soil	SW 846-7000B	Flame Atomic Absorption	32 mg/kg (ppm)	<input type="checkbox"/>
	SW 846-6010D*	ICP-OES	2 mg/kg (ppm)	<input type="checkbox"/>
Wastewater	SM 3111B / SW 846-7000B	Flame Atomic Absorption	0.32 mg/L (ppm)	<input type="checkbox"/>
Unpreserved <input type="checkbox"/>	EPA 200.7 / 6010D	ICP-OES	0.020 mg/L (ppm)	<input type="checkbox"/>
Preserved with HNO ₃ <input type="checkbox"/> PH<2	EPA 200.5	ICP-OES	0.003 mg/L (ppm)	<input type="checkbox"/>
Drinking Water	EPA 200.8	ICP-MS	0.001 mg/L (ppm)	<input type="checkbox"/>
Unpreserved <input type="checkbox"/>				<input type="checkbox"/>
Preserved with HNO ₃ <input type="checkbox"/> PH<2				<input type="checkbox"/>
TSP/SPM Filter	40 CFR Part 50	ICP-OES ICP-MS	12 µg/filter 0.6 µg/filter	<input type="checkbox"/>
Other:				<input type="checkbox"/>

Sample Number	Sample Location	Volume / Area	Date / Time Sampled
	SEE ATTACHED		

Method of Shipment: FedEx	Sample Condition Upon Receipt:
Relinquished by: [Signature]	Date/Time: 4/2/06 4:01 PM
Received by: [Signature] EFX	Date/Time: 4/3/06 9:30 AM
Relinquished by:	Date/Time:
Received by:	Date/Time:

Controlled Document C0C-25 Lead R22 03/29/2025

*6010C Available Upon Request

I AGREE TO ELECTRONIC SIGNATURE (By checking, I consent to signing this Chain of Custody document by electronic signature.)

EMSL Analytical, Inc.'s Laboratory Terms and Conditions are incorporated into this Chain of Custody by reference in their entirety. Submission of samples to EMSL Analytical, Inc. constitutes acceptance and acknowledgment of all terms and conditions by Customer.

AE15294



11117 Mockingbird Drive
Omaha, NE 68137
Phone (402) 697-9747

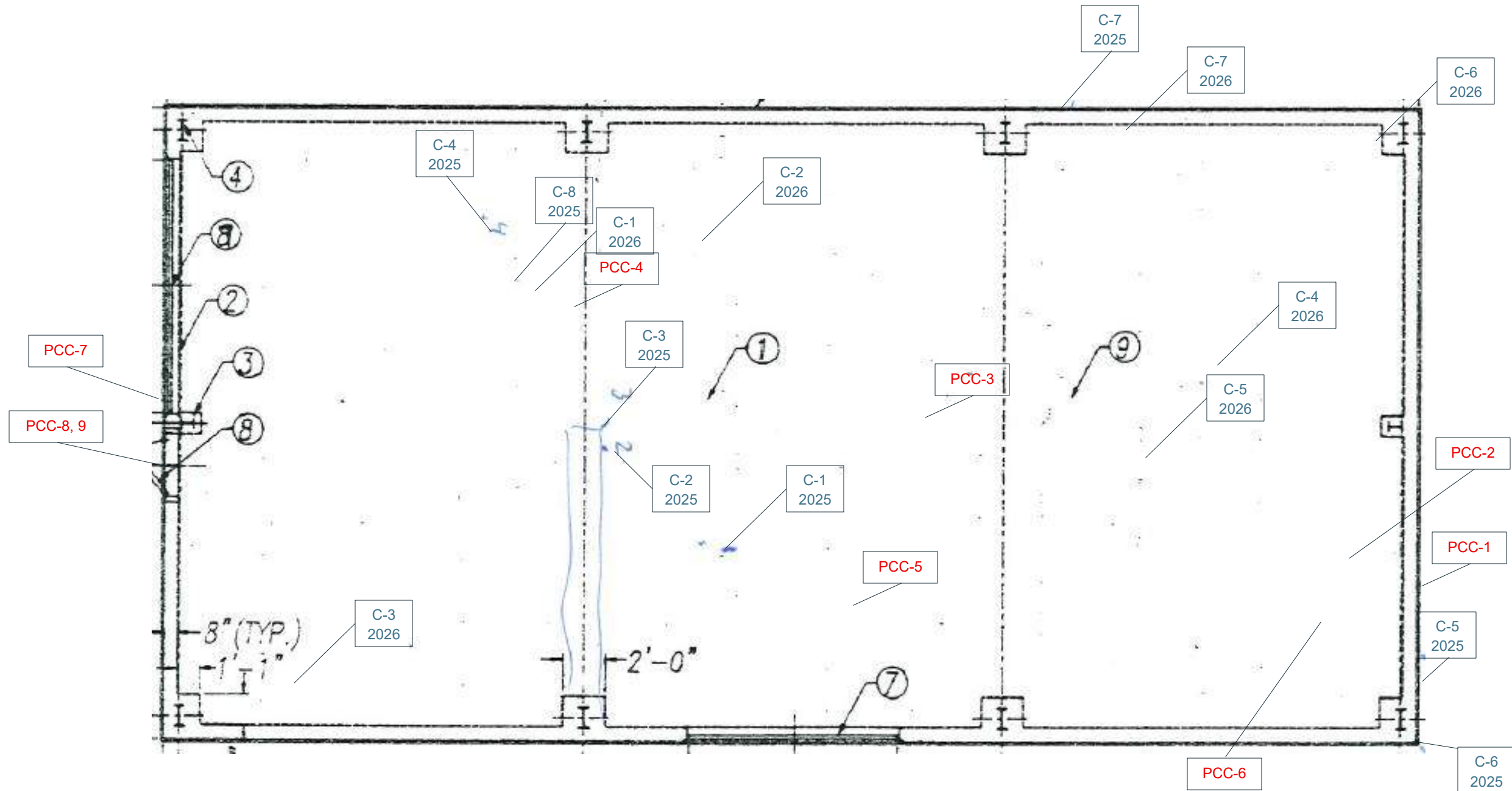
PAINT CHIP SAMPLE LOG SHEET

Client: IOWA DAS	Project Description: Tunnel Abandonment Project #9279.50	Project Manager: Inspector: Steve Hudson
Date: 4/1/26	Site Location: Chiller Building	Atlas Project Number: 204BS07475

Sample #	Paint Color	Substrate	Material Description	Sample Location (Floor/Room/Location in Room)	Quantity
PCC-4	Green	Metal	South Chiller	South Side	
PCC-5	Silver	Metal	Metal Pad Under Pumps	North Side	
PCC-6	Red	Metal	Large Tank	North Side – NE Corner	
PCC-7	Red	Metal	Vertical Column Support	South Side	
PCC-8	Red	Metal	Metal Support Base	Under Exterior Cooling Towers	
PCC-9	Red	Metal	Painted Piping		

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 2026 APR - 3 P 12: 35

APPENDIX C
DRAWINGS WITH SAMPLE LOCATIONS



X-XX = Asbestos Sample Location
 X-XX = Lead Paint Sample Location

Project No. 204BS07475	Date: April 21, 2026
Project Manager: Phillip Thomas	
Name: WRC Campus Utility Decentralization Phase 5 Project 9279.50	



Asbestos and Lead Paint Sample Locations
Chiller Building Woodward Resource Building 1251 334 th Street Woodward, Iowa

APPENDIX D
ASBESTOS CONTAINING MATERIALS PHOTO LOG

Asbestos Containing Photo Log

Chiller Building-WRC Decentralization Phase 5 Project #9279.50 ♦ Woodward, IA
Date Taken: Sept. 25, 2025 / Jan. 1, 2026 ♦ Atlas Project No. 204BS07475



Photo #1 View of the Chiller.



Photo #2 Sampe C-2. Asbestos containing black tar on diving wall.



Photo #3 Sample C-7. Asbestos containing light grey expansion joint on exterior west side..



Photo #4 Sample C-3. Asbestos containing dark brown sealant on south side chilled water supply and return.



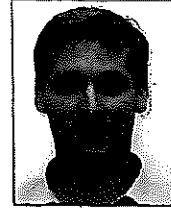
Photo #5 Sample C-3. Asbestos containing dark brown sealant on south side chilled water supply and return.

APPENDIX E
STAFF AND COMPANY ACCREDITATIONS

STEVE HUDSON

DOB: 05-26-1970

Issued: 03-02-2026



This person is licensed to perform asbestos work in the State of Iowa. ID card is intended for official use only and must be present on jobsite.

License Type	Number	Expires
INSPECTOR	26-15559	11-04-2026

IOWA

Asbestos

Aaron Baack
Interim Director

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HAZARDOUS BUILDING MATERIALS SURVEY

POWERHOUSE

**WRC CAMPUS UTILITY DECENTRALIZATION PHASE 5
PROJECT 9279.50**

1251 334TH STREET

WOODWARD, IOWA

204BS07475

PREPARED FOR:

Iowa Department of Administrative Services
109 SE 13th Street
Des Moines, IA 50319

PREPARED BY:

Atlas Technical Consultants LLC
11117 Mockingbird Drive
Omaha, NE 68137

May 5, 2026



11117 Mockingbird Drive
Omaha, NE 68137
(402) 697-9747 | oneatlas.com

April 22, 2026

Ms. Jennifer Kleene
Iowa Department of Administrative Services
109 SE 13th Street
Des Moines, IA 50319

Subject: Hazardous Building Materials Survey
Powerhouse
WRC Campus Utility Decentralization Phase 5 Project 9279.50
1251 334th Street
Woodward, Iowa
Atlas No: 204BS07475

Dear Ms. Kleene:

Atlas Technical Consultants LLC (Atlas) is pleased to submit the attached Hazardous Building Materials Survey Report conducted at the above-referenced site. This report includes procedures, methodologies and analytical laboratory results.

Atlas appreciates the opportunity to perform these services for the Iowa Department of Administrative Services (IDAS) and we look forward to working with you in the future. If you need any assistance with the implementation of the recommendations contained in this report, please feel free to contact the us and we will respond promptly to your needs.

Respectfully submitted,

Atlas Technical Consultants LLC

Phillip Thomas, OHST, CHMM
Iowa Asbestos Inspector

Steve Hudson, CIH
Sr. Project Manager

T A B L E O F C O N T E N T S

LETTER OF TRANSMITTAL	i
1.0 SCOPE OF SERVICES	1
2.0 GENERAL SITE CONDITIONS	1
3.0 ASBESTOS SURVEY	1
3.1 Regulation Review	2
3.2 Homogeneous Areas	2
3.3 Sampling Strategy	3
3.4 Laboratory Analytical Results	3
3.5 Suspect Asbestos-Containing Materials	3
3.6 Asbestos-Containing Materials	4
4.0 LEAD PAINT TESTING	5
4.1 Regulation Review	6
4.2 Summary of Findings	6
5.0 HAZARDOUS BUILDING MATERIALS	8
6.0 CONCLUSIONS	9
6.1 Asbestos	9
6.2 Lead	9
6.3 Hazardous Materials	9
7.0 LIMITATIONS	9

APPENDICES

- APPENDIX A: Asbestos Laboratory Analytical Report and Chain of Custody
- APPENDIX B: Lead Analytical Report and Chain of Custody
- APPENDIX C: Drawings with Sample Locations
- APPENDIX D: Asbestos and Lead Containing Materials Photo Log
- APPENDIX E: Staff and Company Accreditations



Hazardous Building Materials Survey

Powerhouse
WRC Campus Utility Decentralization Phase 5 Project 9279.50
1251 334th Street
Woodward, Iowa
Atlas No.: 204BS07475

1.0 SCOPE OF SERVICES

The purpose of this project was to perform a Hazardous Building Materials (HBM) Survey of the above-referenced property prior to the proposed renovation and demolition activities.

Atlas conducted the survey on September 25, 2025 and April 1, 2026. The following areas of the Powerhouse were not included as part of the inspection and testing activities on either date:

- Exterior roofing materials and coal conveyor systems (was extremely windy on the April 1, 2026 inspection and it was not specified in the scope of work),
- Boiler #3 had been shut down previous to the April 1, 2026 inspection and was inspected and tested. Boilers #1, #2 and #4 were still operational during both inspection dates and only the exterior of each boiler was inspected as part of the surveys.

2.0 GENERAL SITE CONDITIONS

The survey was conducted at the Powerhouse as part of the WRC Campus Utility Decentralization Phase 5 Project 9279.50 located at 1251 334th Street in Woodward, Iowa. The survey area was conducted to identify asbestos containing materials (ACM) and lead containing paint as part of proposed renovation/demolition activities associated with the project.

3.0 ASBESTOS SURVEY

On September 25, 2025 and April 1, 2026, the Powerhouse was inspected for ACM by Mr. Eric Brown and Mr. Steve Hudson of Atlas. Mr. Brown and Mr. Hudson have completed the requisite training for asbestos accreditation as an inspector at a state approved training provider under TSCA Title II. Mr. Brown's and Mr. Hudson's State of Iowa Inspector numbers are 24-11418 and 26-15559.

Atlas conducted an asbestos survey of the identified building as required by United States Environmental Protection Agency (USEPA) regulation 40 Code of Federal Regulations (CFR) Part 61, the asbestos National Emissions Standards for Hazardous Air Pollutants (NESHAP) and applicable state and local regulations. The purpose of the inspection was to identify, sample, quantify and assess suspect ACM in locations that may be disturbed as part of planned renovation and demolition activities.

The survey was conducted to identify ACM that might be disturbed during planned renovation or demolition activities. Materials that were hidden, not accessible, or when sampled would damage the integrity of the structure, were not sampled as part of this survey. Materials visibly identified as non-asbestos (fibrous glass, foam rubber, wood, etc.) were not sampled. The asbestos survey consisted of three basic steps: **1**) a visual inspection of the proposed site; **2**) a determination of homogeneous areas with suspect surfacing, thermal system insulation, and miscellaneous materials; and **3**) sampling accessible, friable and non-friable, suspect materials.



3.1 Regulation Review

In Iowa, asbestos activities are regulated by the Iowa Department of Natural Resources (IDNR) and Iowa Workforce Development (IWD), Division of Labor. IDNR regulates asbestos fiber emissions under Iowa Administrative Code 567 Chapter 23 (IAC 567–23) and asbestos-containing waste disposal under IAC 567–109. IWD regulates occupational exposure to asbestos under IAC 875–10 and asbestos removal and encapsulation activities under IAC 875–155.

IAC 567–23.1(3) adopts the USEPA asbestos NESHAP (40 CFR Part 61, Subpart M) by reference. Subpart M regulates asbestos fiber emissions and asbestos waste disposal practices. It also requires the identification and classification of existing building materials prior to demolition or renovation activity. Under NESHAP, asbestos-containing building materials are classified as friable, Category I nonfriable, or Category II nonfriable ACM. Friable materials are those that, when dry, may be crumbled, pulverized, or reduced to powder by hand pressure. Category I nonfriable ACM includes packings, gaskets, resilient floor coverings, and asphalt roofing products containing more than 1% asbestos. Category II nonfriable ACM are any materials other than Category I materials that contain more than 1% asbestos.

Regulated ACM (RACM) must be removed before renovation or demolition activities that will disturb the materials. RACM includes:

- Friable ACM;
- Category I nonfriable ACM that has become friable or will be subjected to drilling, sanding, grinding, cutting, or abrading; and
- Category II nonfriable ACM that could be crumbled, pulverized, or reduced to powder during renovation or demolition activities.

The owner or operator must provide the IDNR and IWD with written notification of planned removal activities at least 10 working days prior to the commencement of asbestos abatement activities. Removal of RACM must be conducted by an Iowa-permitted asbestos abatement contractor.

IAC 875–155 Asbestos Removal and Encapsulation requires that any asbestos-related activity conducted in a public building be performed by personnel licensed or permitted by the IWD. Inspections for ACM must be conducted by IWD-licensed inspectors. Asbestos abatement must be performed by IWD-permitted asbestos abatement contractors. Management plans developed for the in-place management of asbestos-containing materials must be developed by an IWD-licensed management planner. When an abatement project design is prepared, it must be prepared by an IWD-licensed project designer.

IAC 875–10 adopts the Occupational Safety and Health Administration (OSHA) Asbestos standard for construction (29 CFR 1926.1101) by reference. The OSHA standard requires that employee exposure to airborne asbestos fibers be maintained below the permissible exposure limits (PEL) of 0.1 asbestos fibers per cubic centimeter (0.1 f/cc) of air as an 8-hour time-weighted average and 1.0 f/cc as a 30-minute excursion. The OSHA standard classifies construction and maintenance activities that could disturb ACM and specifies work practices and precautions that employers must follow when engaging in each class of regulated work.

3.2 Homogeneous Areas

Prior to sampling, homogeneous areas were identified in order to facilitate a sampling strategy. A homogeneous sampling area can be described as one or more areas with suspect material similar in appearance and texture that have the same installation date and function. The actual number of samples collected from each homogeneous sampling area may vary, dependent upon material type and the professional judgment of the inspector.

3.3 Sampling Strategy

The sampling strategy incorporated the asbestos hazard emergency response act (AHERA) sampling requirements, estimated quantities of suspect ACM, and the inspector’s judgment to aid in the identification of suspect ACM. If the analytical results indicated that all the samples collected per homogeneous area did not contain asbestos, then the homogeneous area (material) was considered non-asbestos-containing. However, if the analytical results of one or more of the samples collected per homogeneous area indicated that asbestos was present in quantities greater than one percent asbestos (as defined by USEPA), all of the homogeneous area (material) was treated as an ACM regardless of any other analytical results. Materials which were visually determined to be non-asbestos (i.e. fibrous glass, foam rubber, etc.) by the accredited inspector were not required to be sampled. Actual collection of a bulk asbestos sample involves physically removing a small piece of material and placing it in an airtight sample container. Sample containers were marked with a unique identification number, which was documented in the field notes.

3.4 Laboratory Analytical Results

A total of **26** samples were collected from building materials suspected of containing asbestos. The samples were submitted under chain of custody to EMSL Analytical, Inc. (EMSL) located at 200 Route 130 North in Cinnaminson, New Jersey for analysis by polarized light microscopy (PLM) with dispersion staining techniques per the *USEPA Method for the Determination of Asbestos in Bulk Building Materials (600/R-93-116)*. The percentage of asbestos, if applicable, was established by microscopic visual estimation. EMSL is an accredited laboratory by the National Voluntary Laboratory Accreditation Plan (NVLAP) No. 101048-0. Any material that contains greater than one percent (>1%) asbestos is considered an ACM and must be handled according to Occupational Safety and Health Administration (OSHA), USEPA, and all applicable state and local regulations

Details of sample analysis are included in Appendix A, which contains a listing of all analyzed samples, sample locations, and analytical results relating to the site. Asbestos analytical results are reported as percentage and type. Other common non-asbestos components may also be noted in the analytical report.

3.5 Suspect Asbestos-Containing Materials

A summary of the suspect ACM sampled can be found in the Tables below:

September 25, 2025

Table 1: Suspect Asbestos-Containing Materials		
Sample Number	Material	Location
P-1	Caulk – Brittle (red paint over gray caulk)	Exterior – North Door
P-2	White Caulk	Basement, North Storage Room – South Wall
P-3	Black Tar	Exterior, West Wing – West Wall
P-4	Window Glazing (white)	1 st Floor, North Room – West Window
P-5	Window Caulk	North Room – West Window
P-6	Brick Mortar	North Room – South Wall
P-7	White Caulk	1 st Floor – Restroom
P-8	Window Glazing	2 nd Floor, North Wing – East Window
P-9	White TSI Sealant	1 st Floor, North Wing, West Side – Large Pipe

April 1, 2026

Table 1: Suspect Asbestos-Containing Materials		
Sample Number	Material	Location
PH-1	Sealant on Pipe End (White)	Condensate Tank 1
PH-2	Condensate tank Support Pad	Condensate Tank
PH-3	Condensate Tank Gasket	South Side Chilled Water
PH-4	Abandoned Tank Gasket	Future Turbine Room - NW Corner
PH-5	Boiler Gasket – Silver Door Hatch	Boiler #4
PH-6	Boiler Gasket – Silver Door Hatch	Boiler #3
PH-7	Boiler Gasket – North End	Boilers #3 and #4
PH-8	Boiler Sealant – South End	Boilers #3 and #4
PH-9	Boiler Grout on Brick	Boilers #3 and #4
PH-10	Pipe Valve Insulation	Boiler Room #3 and #4 Large Valve West Wall
PH-11	Pipe End Sealant (CPII)	Boiler Room #3 and #4 – Feed Water Pipe
PH-12	Coal Feeder Sealant	Boiler Room #3 and #4 – Coal Feeders
PH-13	Rope Gaskets	Boilers #3 and #4
PH-14	Tank Insulation Wrap	Mezzanine Level – Steam Tank
PH-15	Caulking on Insulation (White)	
PH-16	White Caulk	Fuel Oil Storage Tank Lines
PH-17	Rope Gasket	Fuel Oil Storage Tank #3 (also on #1, 2, 4, 5, 6)

3.6 Asbestos-Containing Materials

The following table is a summary of the suspect asbestos-containing materials that have been determined, through laboratory analysis, to contain asbestos in concentrations >1%:

Table 2: Asbestos-Containing Materials				
Sample Number	Material	Location	Approx. Quantity	Asbestos Content
P-1	Caulk – Brittle (red paint over gray caulk)	Exterior – North Door	60 LF	5% Chrysotile
P-4, P-8	Window Glazing (white)	1 st and 2 nd Floors - Windows	29 windows	4-5% Chrysotile

Table 2: Asbestos-Containing Materials				
Sample Number	Material	Location	Approx. Quantity	Asbestos Content
PH-6	Boiler Gasket – Silver Door Hatch	Boiler #3	2 each	65% Chrysotile
PH-7	Boiler Gasket – North End	Boiler #3 and #4	20 LF	65% Chrysotile
PH-8	Boiler Sealant – South End	Boiler #3 and #4	20 LF	45% Chrysotile
PH-13	Rope Gaskets	2 nd Floor – where Old Boilers and Coal Chutes on #3 and #4 Connect	30 LF	65% Chrysotile
PH-15	Caulking on Insulation (White)	Mezzanine Level – Steam Tank	15 LF	2% Amosite <1% Chrysotile
PH-17	Rope Gasket	Fuel Tank Farm – Fuel Oil Storage Tanks #1 - #6	6 each	65% Chrysotile

SF = Square Feet; LF = Linear Feet; MF = Mechanical Fittings

4.0 LEAD PAINT TESTING

Atlas collected paint chip samples from representative surface coatings that may be impacted by renovation/demolition activities.

Surface coatings that were collected were considered to be representative of materials in a homogeneous area if:

1. They exhibited similar physical characteristics (suspect materials alike in appearance, substrate, color, and time of application were tested as homogenous areas)
2. The application of the tested surface could be associated to an application of an unsampled surface.

Atlas collected and submitted a total of **21** paint chip samples from surface coatings. The samples were submitted to EMSL of Cinnaminson, New Jersey, under proper chain of custody for analysis by Lead in Paint Chips by Flame AAS (SW 846 3050B/7000B). EMSL is accredited under the American Industrial Hygiene Association-Laboratory Accreditation Program (AIHA-LAP, LLC) (AIHA-LAP; lab code 100194).

A copy of the analytical results and chain of custody can be found in Appendix B.

The USEPA has defined LBP as “*paint or other surface coatings that contain lead in excess of 0.5 percent by weight (>0.5%)*”. Results less than 0.5% by weight indicate that lead is not present at or above the USEPA regulatory level; however, lead was present in lower concentrations above the laboratory detection limit in other surfaces tested and these are classified as lead-containing paint (LCP). Negative results do not mean that lead is not present.

4.1 Regulation Review

The disturbance and disposal of materials with surface coatings that contain lead paint are regulated by the USEPA, OSHA and the State of Iowa. The Resource Conservation and Recovery Act (RCRA) provides the USEPA with the authority to regulate the waste status of demolition or renovation debris, including lead-containing materials. Specific notification and testing requirements must be addressed prior to transporting, treating, storing, or disposing of hazardous wastes.

Construction work covered by 29 CFR 1926.62 includes any repair, renovation or other activities that disturb in-place, lead-containing materials, but does not include routine cleaning and repainting where there is insignificant damage, wear or corrosion of existing lead-containing coatings or substrates. Unless adequately protected, employee exposures to lead must not exceed airborne concentrations >50 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) averaged over an 8-hour period.

Occupational exposure to lead occurring in the course of construction work, including maintenance activities, painting, alteration and repairs is subject to the OSHA Lead standard (29 CFR 1926.62). The lead standard applies to any detectable concentration of lead in paint, as even small concentrations of lead can result in unacceptable employee exposures depending upon the method of removal and other workplace conditions.

The disposal of lead-based paint waste, as well as paint waste containing other heavy metals, is regulated by the USEPA and State of Iowa. Wastes generated by industrial businesses, commercial businesses, and government institutions are subject to regulation. Commercial business owners and removal contractors are required to determine if paint waste generated from nonresidential structures (such as public and commercial buildings, warehouses, bridges, water towers, and transmission towers) contains heavy metals that would cause the debris to be considered a hazardous waste. Disposal options and applicable management requirements for collected debris will be based upon whether the waste stream is considered a hazardous waste and the amount of debris generated. Removal contractors and building owners need to include these factors when preparing and responding to bid specifications. Specific notification and testing requirements must be addressed prior to transporting, treating, storing, or disposing of hazardous wastes. Lead-containing wastes are considered hazardous waste under RCRA if Toxicity Characteristic Leachate Procedure (TCLP) results exceed 5 milligrams per liter (mg/L). The USEPA has made exceptions for the handling and disposal of lead wastes generated from residential housing.

Specific notification and testing requirements must be addressed prior to transporting, treating, storing, or disposing of hazardous wastes. Lead-containing wastes are considered hazardous waste under RCRA if Toxicity Characteristic Leachate Procedure (TCLP) results exceed 5 milligrams per liter (mg/L). The USEPA has made exceptions for the handling and disposal of lead wastes generated from residential housing.

The above overview is not intended to be inclusive of all potentially pertinent regulatory information. The relevant USEPA, OSHA and State of Iowa regulations should be consulted prior to undertaking activities involving the demolition, renovation or maintenance of surface coatings that contain lead.

4.2 Summary of Findings

The following suspect surface coatings were collected as part of the survey:

Table 3: Lead Paint Summary

Sample Number	Sample Location	Representative Material	Paint Color	Lead Concentration (% by weight)
PPC-1	1st Floor North Handrail	Metal	Yellow	20
PPC-2	South Coal Burner West Side	Metal	Off-White	0.32
PPC-3	North Room Floor	Concrete	Red	1.0
PPC-4	North Room, South Coal Burner	Metal	Green	3.2
PPC-5	2 nd Floor, Top of North Stairs	Metal	Gray	0.034
PC-1	Ground Floor Condensate Tank Room	Condensate Piping	White	0.17
PC-2	Ground Floor Condensate Tank Room	Condensate Tank	Gold	0.21
PC-3	Ground Floor Shop and Storage Room	Piping for Fuel Tank #4	Yellow	0.77
PC-4		Fuel Oil Tank	Brown	0.029
PC-5		Water Softener Tank	White	<0.0064
PC-6	Ground Floor Future Turbine Room	Large Steam Piping	Pink	9.1
PC-7	1st Floor – Boilers #1 and #2	Boiler #2 Shell	Gray	0.12
PC-8		Boiler #1 – Burn Chamber Shell	Green	3.1
PC-9		Boiler #2 – Tube End	Silver	0.54
PC-10		Boiler #2 – Handrail	Yellow	26
PC-11		Catwalk over Boiler #2	Gray	7.2
PC-12	1st Floor – Boilers #3 and #4	Boiler #4 Shell	Gray	<0.035
PC-13		Boiler #4 Burn Chamber Shell	Green	19
PC-14	2 nd Floor Mezzanine Area – Over Boilers #3 and #4	Large Steam Tank	Silver	<0.012
PC-15		Catwalk	Gray	0.044
PC-16	Exterior, Fuel Tank Storage Area	Fuel Tank #6	Yellow	0.15

bolded = lead-based paint

If surface coatings are identified to contain concentrations of lead above regulatory levels, they should be removed, controlled and/or disposed of in accordance with federal, state, and local regulations, prior to disturbance.

This evaluation report can help the Owner develop a plan for renovating the building by having concentrations of lead in the paint identified. It is our understanding that the information in this report will



be provided to the contractors so that appropriate precautions can be made to minimize worker exposure to lead. If surface coatings with lead containing paint are handled improperly, exposure could occur to workers and future occupants of the facility.

5.0 HAZARDOUS BUILDING MATERIALS

Atlas completed a visual inspection of areas throughout the intended work areas in an attempt to identify hazardous wastes or universal wastes that may be impacted by planned renovation activities. The survey included a visual inspection of: light fixtures and other equipment for the presence of polychlorinated biphenyls (PCB); light bulbs, thermostats, switches, and other equipment for the presence of mercury; chlorofluorocarbons (CFC) and hydrochlorofluorocarbons (HCFC) refrigerants, batteries, and devices with potential radioactive materials.

Table 4: Hazardous Building Materials		
Category	Material	Estimated Quantity
Batteries	Lead Acid	NA
	Nickel Cadmium	97
	Lithium-Ion	NA
	Emergency Exit Sign	NA
Mercury	Thermostat	NA
	Fluorescent Light Tube	11
	High Intensity Discharge Bulb	NA
	Emergency Strobe	NA
RCRA Metals	LED Light Fixture (single bulb)	NA
	LED Light Fixture (2' x 2' light fixture)	NA
	LED Light Fixture (2' x 4' light fixture)	NA
Poly-Chlorinated Biphenyl (PCB)	Light Ballast	5 in Shop/Garage
	Transformer	NA
Low Level Radioactive Sources (LLR)	Tritium Exit Sign	NA
	Smoke Detector	26
Chlorofluorocarbons (CFC) or Hydro Chlorofluorocarbons (HCFC)	Air Conditioner (AC)	NA
	Refrigerator/Cooler	NA
	Freezer	NA
	Water Fountain	NA
Other	Fire Extinguisher	NA



6.0 CONCLUSIONS

6.1 Asbestos

The NESHAP and OSHA regulations govern the removal of ACM. Atlas recommends that a State of Iowa certified abatement contractor be retained to properly abate and dispose of ACM identified in Table 2 above and in accordance with local, state, and federal regulations.

6.2 Lead

Lead **was identified** above the laboratory detection limit but not in excess of the USEPA level in eight of the 21 surface coatings tested.

Lead **was identified** above the USEPA level of 0.5% in 10 of the 21 surface coatings tested.

6.3 Hazardous Materials

If any of the hazardous materials or universal wastes identified in Table 4 above are to be impacted as part of the renovation contractor's scope of work, they shall be collected and disposed of according to the USEPA Toxic Substances Control Act (TSCA) and the State of Iowa regulations.

7.0 LIMITATIONS

The results, findings, conclusions, and recommendations expressed in this report are based solely on conditions noted during the September 25, 2025 and April 1, 2026, Atlas inspections of the Powerhouse as part of the WRC Campus Utility Decentralization Phase 5 Project 9279.50 located at 1251 334th Street in Woodward, Iowa.

Although Atlas performed limited destructive sampling to access suspect ACM, additional suspect but unsampled materials could be located under existing building materials, in isolated areas or in other concealed areas. Therefore, if suspect materials are encountered during renovation/demolition activities that do not appear to have been characterized as non-ACM, samples should be collected and analyzed prior to disturbing these materials or the materials can be assumed to be ACM and abated accordingly. Atlas's selection of sample locations and frequency of sampling was based on the inspector's assumption that like materials in the same area are homogeneous in content.

The report is designed to aid the building owner, architect, construction manager, general contractor, and potential asbestos and lead abatement contractor(s) in locating ACM and lead containing surface coatings. Under no circumstances is the report to be utilized as a bidding document or as a project specification document since it does not have all the components required to serve as a Project Design or an Abatement Work plan.

Our professional services have been performed, our findings obtained, and our conclusions and recommendations prepared in accordance with customary principles and practices in the fields of environmental science and engineering. This statement is in lieu of other statements either expressed or implied. This report does not warrant against future operations or conditions, nor does it warrant against operations or conditions present of a type or at a location not investigated.

This report is intended for the sole use of the IDAS. The scope of services performed in execution of this evaluation may not be appropriate to satisfy the needs of other users and use or re-use of this document or the findings, conclusions, or recommendations is at the risk of said user.

**APPENDIX A
ASBESTOS ANALYTICAL REPORT AND
CHAIN OF CUSTODY**



EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077

Tel/Fax: (800) 220-3675 / (856) 786-5974

<http://www.EMSL.com> / cinnasblab@EMSL.com

EMSL Order: 042606426

Customer ID: ATC55

Customer PO:

Project ID:

Attention: Steve Hudson
Atlas Technical
11117 Mockingbird Drive
Omaha, NE 68137

Phone: (402) 697-9747

Fax: (402) 597-8532

Received Date: 04/03/2026 9:30 AM

Analysis Date: 04/07/2026

Collected Date: 04/01/2026

Project: 204BS07475 / IOWA DAS / Tunnel Abandonment Project / Powerhouse

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
PH-1-Sealant 042606426-0001	Floor G - Condensate Tank 1 - Sealant on Pipe End (White)	White Non-Fibrous Homogeneous		15% Ca Carbonate 85% Non-fibrous (Other)	None Detected
PH-1-Insulation 042606426-0001A	Floor G - Condensate Tank 1 - Sealant on Pipe End (White)	Yellow Fibrous Homogeneous	90% Glass	10% Non-fibrous (Other)	None Detected
PH-2 042606426-0002	Floor G - Condensate Tank - Condensate Tank Support Pad	Tan Non-Fibrous Homogeneous		60% Quartz 40% Non-fibrous (Other)	None Detected
PH-3 042606426-0003	Floor G - Future Turbine Room - NW Corner - Condensate Tank Gasket	Red Non-Fibrous Homogeneous		60% Quartz 40% Non-fibrous (Other)	None Detected
PH-4 042606426-0004	1st Floor - Boiler Room 3 & 4 - Boiler - 4 - Abandoned Tank Gasket	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
PH-5 042606426-0005	1st Floor - Boiler Room 3 & 4 - Boiler - 3/4 - Boiler Gasket - Silver Hatch	Gray Non-Fibrous Homogeneous	95% Glass	5% Non-fibrous (Other)	None Detected
PH-6 042606426-0006	1st Floor - Boiler Room 3 & 4 - Boiler - 3/4 - Boiler Gasket - Silver Hatch	White Fibrous Homogeneous	20% Cellulose	15% Non-fibrous (Other)	65% Chrysotile
PH-7 042606426-0007	1st Floor - Boiler Room 3 & 4 - Boiler - 3/4 - Boiler Gasket - NW Edge	White Non-Fibrous Homogeneous	20% Cellulose	15% Non-fibrous (Other)	65% Chrysotile
PH-8 042606426-0008	1st Floor - Boiler Room 3 & 4 - Boiler - 3/4 - Boiler Sealant	Brown/Gray Fibrous Homogeneous		55% Non-fibrous (Other)	45% Chrysotile
PH-9 042606426-0009	1st Floor - Boiler Room 3 & 4 - Boiler - 3/4 - Boiler Grout on Brick	Gray Non-Fibrous Homogeneous		60% Quartz 40% Non-fibrous (Other)	None Detected
PH-10 042606426-0010	1st Floor - Boiler Room 3 & 4 - Large Valve West Wall - Pipe Valve Insulation	White Fibrous Homogeneous	20% Cellulose	70% Ca Carbonate 10% Non-fibrous (Other)	None Detected
PH-11-Sealant 042606426-0011	1st Floor - Boiler Room 3 & 4 - Feed Water Pipe - Pipe End Sealant (CP11)	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
PH-11-Insulation 042606426-0011A	1st Floor - Boiler Room 3 & 4 - Feed Water Pipe - Pipe End Sealant (CP11)	Yellow Fibrous Homogeneous	90% Glass	10% Non-fibrous (Other)	None Detected

Initial report from: 04/07/2026 20:20:21



EMSL Analytical, Inc.

200 Route 130 North Cinnaminson, NJ 08077

Tel/Fax: (800) 220-3675 / (856) 786-5974

<http://www.EMSL.com> / cinnasblab@EMSL.com

EMSL Order: 042606426
Customer ID: ATC55
Customer PO:
Project ID:

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

Sample	Description	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
PH-12-Sealant <i>042606426-0012</i>	2nd Floor - Boiler Room 3 & 4 - Coal Feeders - Coal Feeder Sealant	Red Non-Fibrous Homogeneous		35% Ca Carbonate 65% Non-fibrous (Other)	None Detected
PH-12-Insulation <i>042606426-0012A</i>	2nd Floor - Boiler Room 3 & 4 - Coal Feeders - Coal Feeder Sealant	Brown Fibrous Homogeneous	95% Cellulose	5% Non-fibrous (Other)	None Detected
PH-13 <i>042606426-0013</i>	2nd Floor - Boiler Room 3 & 4 - Boiler - 3/4 - Rope Gaskets	White Fibrous Homogeneous		35% Non-fibrous (Other)	65% Chrysotile
PH-14 <i>042606426-0014</i>	2nd Floor - Mezzanine Level - Steam Tank - Tank Insulation Wrap	Brown/White Fibrous Homogeneous	45% Cellulose 20% Glass	30% Ca Carbonate 5% Non-fibrous (Other)	None Detected
PH-15 <i>042606426-0015</i>	2nd Floor - Mezzanine Level - Steam Tank - Caulking on Insulation (White)	Gray/White Fibrous Heterogeneous		98% Non-fibrous (Other)	2% Amosite <1% Chrysotile
<i>Result includes a small amount of inseparable attached material</i>					
PH-16 <i>042606426-0016</i>	Floor E - Fuel Oil Storage Tank Lines - White Caulk	White Non-Fibrous Homogeneous		100% Non-fibrous (Other)	None Detected
PH-17 <i>042606426-0017</i>	Floor E - Fuel Oil Storage Tank 3 - Rope Gasket	White Non-Fibrous Homogeneous		35% Non-fibrous (Other)	65% Chrysotile

Analyst(s)

Andrea Doughty (20)

Samantha Sweeney, Laboratory Manager
or Other Approved Signatory

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above, and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted. The above analyses were performed in general compliance with Appendix E to Subpart E of 40 CFR (previously EPA 600/M4-82-020 "Interim Method") but augmented with procedures outlined in the 1993 ("final") version of the method. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the federal government. Non-friable organically bound materials present a problem matrix and therefore EMSL recommends gravimetric reduction prior to analysis. Unless requested by the client, building materials manufactured with multiple layers (i.e. linoleum, wallboard, etc.) are reported as a single sample. Estimation of uncertainty is available on request.

Samples analyzed by EMSL Analytical, Inc. Cinnaminson, NJ NVLAP Lab Code 101048-0, AIHA LAP, LLC-IHLAP Lab 100194, PA ID# 68-00367, LA #04127

Initial report from: 04/07/2026 20:20:21



EMSL ANALYTICAL, INC.
LABORATORY PRODUCTS TRAINING

Asbestos Bulk Building Material Chain of Custody

EMSL Order Number (Lab Use Only):

042606426

Cinnaminson, NJ 08077
PHONE: 1-800-220-3675
FAX: (856) 786-5974

Company: Atlas Technical (ATC55)		EMSL-Bill to: <input checked="" type="checkbox"/> Same <input type="checkbox"/> Different <small>If Bill to is Different note instructions in Comments**</small>	
Street: 11117 Mockingbird Drive		<i>Third Party Billing requires written authorization from third party</i>	
City: Omaha	State/Province: NE	Zip/Postal Code: 68137	Country: US
Report To (Name): Steve Hudson		Telephone #: 402-697-9747	
Email Address: steve.hudson@oneatlas.com		Fax #:	Purchase Order:
Project Name/Number: <u>2048507475</u>		Please Provide Results: <input type="checkbox"/> Fax <input checked="" type="checkbox"/> Email <input type="checkbox"/> Mail	
U.S. State Samples Taken: <u>IOWA</u>		CT Samples: <input type="checkbox"/> Commercial/Taxable <input type="checkbox"/> Residential/Tax Exempt	

Turnaround Time (TAT) Options* - Please Check

3 Hour
 6 Hour
 24 Hour
 48 Hour
 72 Hour
 96 Hour
 1 Week
 2 Week

*For TEM Air 3 hr through 6 hr, please call ahead to schedule. There is a premium charge for 3 Hour TEM AHERA or EPA Level II TAT. You will be asked to sign an authorization form for this service. Analysis completed in accordance with EMSL's Terms and Conditions located in the Analytical Price Guide.

PLM - Bulk (reporting limit)	TEM - Bulk
<input checked="" type="checkbox"/> PLM EPA 600/R-93/116 (<1%)	<input type="checkbox"/> TEM EPA NOB - EPA 600/R-93/116 Section 2.5.5.1
<input type="checkbox"/> PLM EPA NOB (<1%)	<input type="checkbox"/> NY ELAP Method 198.4 (TEM)
Point Count <input type="checkbox"/> 400 (<0.25%) <input type="checkbox"/> 1000 (<0.1%)	<input type="checkbox"/> Chatfield Protocol (semi-quantitative)
Point Count w/Gravimetric <input type="checkbox"/> 400 (<0.25%) <input type="checkbox"/> 1000 (<0.1%)	<input type="checkbox"/> TEM % by Mass - EPA 600/R-93/116 Section 2.5.5.2
<input type="checkbox"/> NIOSH 9002 (<1%)	<input type="checkbox"/> TEM Qualitative via Filtration Prep Technique
<input type="checkbox"/> NY ELAP Method 198.1 (friable in NY)	<input type="checkbox"/> TEM Qualitative via Drop Mount Prep Technique
<input type="checkbox"/> NY ELAP Method 198.6 NOB (non-friable-NY)	Other
<input type="checkbox"/> OSHA ID-191 Modified	<input type="checkbox"/>
<input type="checkbox"/> Standard Addition Method	

Check For Positive Stop - Clearly Identify Homogenous Group

Date Sampled: 4-1-26

Samplers Name: Steve Hudson Samplers Signature: [Signature]

Sample #	HA #	Sample Location	Material Description
		SEE ATTACHED	

Client Sample # (s): 17 Total # of Samples: 17

Relinquished (Client): [Signature] Date: 4-2-26 Time: 5pm

Received (Lab): CPEFX Date: 4/3/26 9:30am Time:

Comments/Special Instructions:

RECEIVED
 EMSL
 CINNAMINSON, NJ
 2026 APR - 3 PM 2:34

17 DT



11117 Mockingbird Drive
 Omaha, NE 68137
 Phone: (402) 697-9747
 Fax: (402) 597-8532

Asbestos Bulk Sampling Log

Client: IOWA DAS	Project Description: Tunnel Abandonment Project	Project Manager: Inspector: Steve Hudson
Date: 4/1/26	Site Location: Powerhouse	Project Number: 204BS07475

Sample #	Material Description	Floor	Sample Location	Quantity
PH-1	Sealant on Pipe End (White)	G	Condensate Tank 1	5 SF
PH-2	Condensate tank Support Pad	G	Condensate Tank	30 LF
PH-3	Condensate Tank Gasket	G		1
PH-4	Abandoned Tank Gasket	G		Future Turbine Room NW Corner
PH-5	Boiler Gasket – Silver Hatch	1 st	Boiler Room 3+4 Boiler – 4	
PH-6	Boiler Gasket – Silver Hatch	1 st	Boiler Room 3+4 Boiler – 3/4	2
PH-7	Boiler Gasket – NW Edge	1 st		20 LF
PH-8	Boiler Sealant	1 st		20 LF
PH-9	Boiler Grout on Brick	1 st		10 SF
PH-10	Pipe Valve Insulation	1 st		Boiler Room 3+4 Large Valve West Wall
PH-11	Pipe End Sealant (CPII)	1 st	Boiler Room 3+4 Feed Water Pipe	30 SF
PH-12	Coal Feeder Sealant	2 nd	Boiler Room 3+4 Coal Feeders	10 SF
PH-13	Rope Gaskets	2 nd	Boiler Room 3+4 Boiler – 3/4	30 LF
PH-14	Tank Insulation Wrap	2 nd	Mezzanine Level Steam Tank	120 LF

RECEIVED
 EMSL
 CINCINNATI, OH, NJ
 2026 APR 3 P 2:34

APPENDIX B
LEAD ANALYTICAL REPORT AND CHAIN OF CUSTODY

**EMSL Analytical, Inc.**

200 Route 130, Cinnaminson, NJ, 08077
 Telephone: 856-858-4800 Fax:cs@emsl.com
 www.emsl.com

EMSL Order ID: 012615265
LIMS Reference ID: AE15265
EMSL Customer ID: ATC55

Attention: Steve Hudson, MS, CIH, CIEC
 Atlas Technical [ATC55]
 11117 Mockingbird Drive
 Omaha, NE 68137
 (402) 697-9747
 steve.hudson@oneatlas.com

Project Name: 204BS07475-Powerhouse Building/ Tunnel
 Abandonment Project #9279.50
Customer PO:
EMSL Sales Rep: Anthony DeRosa
Received: 04/03/2026 09:30
Reported: 04/07/2026 13:03

Analytical Results

Analyte	Results	RL	Weight	Prep Date & Tech	Prep Method	Analysis Date & Analyst	Analytical Method	Q	DF
Client Sample ID: PC-1/White/ Metal/ Condensate Piping/ Ground Floor Condensate Tank Room						Date Sampled: 04/01/26			
Matrix: Chips						LIMS Reference ID: AE15265-01			
Lead	0.17 % wt	0.0064 % wt	0.2538 g	04/06/26 D.W.	SW-846 3050B	04/06/26 LP	SW846-7000B		1
Client Sample ID: PC-2/Gold/ Metal/ Condensate Piping/ Ground Floor Condensate Tank Room						Date Sampled: 04/01/26			
Matrix: Chips						LIMS Reference ID: AE15265-02			
Lead	0.21 % wt	0.0088 % wt	0.1819 g	04/06/26 D.W.	SW-846 3050B	04/06/26 LP	SW846-7000B		1
Client Sample ID: PC-3/Yellow/ Metal Piping for Fuel Tank #4/ Ground Floor Shop & Storage Room						Date Sampled: 04/01/26			
Matrix: Chips						LIMS Reference ID: AE15265-03			
Lead	0.77 % wt	0.036 % wt	0.0449 g	04/06/26 D.W.	SW-846 3050B	04/06/26 LP	SW846-7000B		1
Client Sample ID: PC-4/Brown/ Metal / Fuel Oil Tank/ Ground Floor Shop & Storage Room						Date Sampled: 04/01/26			
Matrix: Chips						LIMS Reference ID: AE15265-04			
Lead	0.029 % wt	0.0064 % wt	0.2623 g	04/06/26 D.W.	SW-846 3050B	04/06/26 LP	SW846-7000B		1
Client Sample ID: PC-5/White/ Metal / Water Softener Tank / Ground Floor Shop & Storage Room						Date Sampled: 04/01/26			
Matrix: Chips						LIMS Reference ID: AE15265-05			
Lead	<0.0064 % wt	0.0064 % wt	0.2588 g	04/06/26 D.W.	SW-846 3050B	04/06/26 LP	SW846-7000B		1
Client Sample ID: PC-6/Pink/ Metal / Large Steam Piping / Ground Floor Future Turbine Room						Date Sampled: 04/01/26			
Matrix: Chips						LIMS Reference ID: AE15265-06			
Lead	9.1 % wt	0.70 % wt	0.2295 g	04/06/26 D.W.	SW-846 3050B	04/06/26 LP	SW846-7000B	D	100
Client Sample ID: PC-7/Gray/ Metal/ Boiler #2 Shell /1st Floor - Boilers 1&2 Area						Date Sampled: 04/01/26			
Matrix: Chips						LIMS Reference ID: AE15265-07			
Lead	0.12 % wt	0.0064 % wt	0.2514 g	04/06/26 D.W.	SW-846 3050B	04/06/26 LP	SW846-7000B		1
Client Sample ID: PC-8/Green/ Metal/ Boiler #1 - Burn Chamber Shell /1st Floor - Boilers 1&2 Area						Date Sampled: 04/01/26			
Matrix: Chips						LIMS Reference ID: AE15265-08			
Lead	3.1 % wt	0.11 % wt	0.1406 g	04/06/26 D.W.	SW-846 3050B	04/06/26 LP	SW846-7000B	D	10
Client Sample ID: PC-9/Silver Metal/ Boiler #2 Tube End /1st Floor - Boilers 1&2 Area						Date Sampled: 04/01/26			
Matrix: Chips						LIMS Reference ID: AE15265-09			
Lead	0.54 % wt	0.022 % wt	0.0716 g	04/06/26 D.W.	SW-846 3050B	04/06/26 LP	SW846-7000B		1
Client Sample ID: PC-10/Yellow/ Metal/ Boiler #2 Handrail /1st Floor - Boilers 1&2 Area						Date Sampled: 04/01/26			
Matrix: Chips						LIMS Reference ID: AE15265-10			
Lead	26 % wt	0.64 % wt	0.1253 g	04/06/26 D.W.	SW-846 3050B	04/06/26 LP	SW846-7000B	D	50
Client Sample ID: PC-11/Gray/ Metal/ Catwalk over Boiler #2 /1st Floor - Boilers 1&2 Area						Date Sampled: 04/01/26			
Matrix: Chips						LIMS Reference ID: AE15265-11			
Lead	7.2 % wt	0.26 % wt	0.0617 g	04/06/26 D.W.	SW-846 3050B	04/06/26 LP	SW846-7000B	D	10
Client Sample ID: PC-12/Gray/ Metal/ Boiler #4 Shell/ 1st Floor Boilers 3 & 4 Areas						Date Sampled: 04/01/26			
Matrix: Chips						LIMS Reference ID: AE15265-12			
Lead	<0.035 % wt	0.035 % wt	0.0457 g	04/06/26 D.W.	SW-846 3050B	04/06/26 LP	SW846-7000B		1

**EMSL Analytical, Inc.**

200 Route 130, Cinnaminson, NJ, 08077
 Telephone: 856-858-4800 Fax:cs@emsl.com
 www.emsl.com

EMSL Order ID: 012615265
LIMS Reference ID: AE15265
EMSL Customer ID: ATC55

Attention: Steve Hudson, MS, CIH, CIEC
 Atlas Technical [ATC55]
 11117 Mockingbird Drive
 Omaha, NE 68137
 (402) 697-9747
 steve.hudson@oneatlas.com

Project Name: 204BS07475-Powerhouse Building/ Tunnel
 Abandonment Project #9279.50

Customer PO:
EMSL Sales Rep: Anthony DeRosa
Received: 04/03/2026 09:30
Reported: 04/07/2026 13:03

Analytical Results (Continued)

Analyte	Results	RL	Weight	Prep Date & Tech	Prep Method	Analysis Date & Analyst	Analytical Method	Q	DF
Client Sample ID: PC-13/Green/ Metal/ Boiler #4 Burn Chamber Shell/ 1st Floor Boilers 3 & 4 Areas						Date Sampled: 04/01/26			
Matrix: Chips						LIMS Reference ID: AE15265-13			
Lead	19 % wt	0.48 % wt	0.1664 g	04/06/26 D.W.	SW-846 3050B	04/06/26 LP	SW846-7000B	D	50
Client Sample ID: PC-14/Silver / Metal/ Large Steam Tank/ 2nd Floor Mezzanine Area - Over Boiler 3 & 4						Date Sampled: 04/01/26			
Matrix: Chips						LIMS Reference ID: AE15265-14			
Lead	<0.012 % wt	0.012 % wt	0.1335 g	04/06/26 D.W.	SW-846 3050B	04/06/26 LP	SW846-7000B		1
Client Sample ID: PC-15/Gray/ Metal/ Catwalk/ 2nd Floor Mezzanine Area - Over Boiler 3 & 4						Date Sampled: 04/01/26			
Matrix: Chips						LIMS Reference ID: AE15265-15			
Lead	0.044 % wt	0.0080 % wt	0.1999 g	04/06/26 D.W.	SW-846 3050B	04/06/26 LP	SW846-7000B		1
Client Sample ID: PC-16/Yellow/ Metal/ Fuel Tank #6/ Exterior Fuel Tank Area						Date Sampled: 04/01/26			
Matrix: Chips						LIMS Reference ID: AE15265-16			
Lead	0.15 % wt	0.0083 % wt	0.19274 g	04/06/26 D.W.	SW-846 3050B	04/06/26 LP	SW846-7000B		1

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EMSL Order ID: 012615265
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Attention: Steve Hudson, MS, CIH, CIEC
 Atlas Technical [ATC55]
 11117 Mockingbird Drive
 Omaha, NE 68137
 (402) 697-9747
 steve.hudson@oneatlas.com

Project Name: 204BS07475-Powerhouse Building/ Tunnel
 Abandonment Project #9279.50

Customer PO:
EMSL Sales Rep: Anthony DeRosa
Received: 04/03/2026 09:30
Reported: 04/07/2026 13:03

Certified Analyses included in this Report

Analyte	Certifications
SW846-7000B in Chips	
Lead	AIHA LAP

List of Certifications

Code	Description	Number	Expires
NJDEP	New Jersey Department of Environmental Protection	03036	06/30/2026
AIHA LAP	American Industrial Hygiene Association (AIHA LAP, LLC)	100194	04/01/2027
NYSDOH	New York State Department of Health ELAP	10872	04/01/2026
California ELAP	California Water Boards	1877	06/30/2026
A2LA	A2LA Environmental Certificate	2845.01	07/31/2026
21-A2LA	A2LA Food Chem/Mat Sci	2845.15	07/31/2026
PADEP	Pennsylvania Department of Environmental Protection	68-00367	11/30/2026
MADEP	Massachusetts Department of Environmental Protection	M-NJ337	06/30/2026
CTDPH	Connecticut Department of Public Health	PH-0270	06/30/2026

Please see the specific Field of Testing (FOT) on www.emsl.com for a complete listing of parameters for which EMSL is certified.

Notes and Definitions

Item	Definition
C	Result > 4x Spike
D	Analyte was reported from a dilution run.
(Dig)	For metals analysis, sample was digested.
[2C]	Reported from the second channel in dual column analysis.
DA	Direct Analysis
DF	Dilution Factor
MDL	Method Detection Limit.
ND	Analyte was NOT DETECTED at or above the reporting limit, or the mdl if provided.
NR	Spike/Surrogate showed no recovery.
Q	Qualifier
RCS	Respirable Crystalline Silica
RL	Reporting Limit For paint chips, the RL is 0.0064% by wt. (equiv. to 64 mg/kg, or ppm) based upon a minimum sample weight of 0.25 grams. For soils, the RL is 32 mg/kg (ppm) based upon a minimum sample weight of 0.5 grams. For dust wipes, the RL is 8 µg/wipe; reporting units of µg/sq. ft. are not validated by the lab based upon data provided by non-lab personnel.
Wet	Sample is not dry weight corrected.



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LIMS Reference ID: AE15265
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Attention: Steve Hudson, MS, CIH, CIEC
Atlas Technical [ATC55]
11117 Mockingbird Drive
Omaha, NE 68137
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Abandonment Project #9279.50

Customer PO:
EMSL Sales Rep: Anthony DeRosa
Received: 04/03/2026 09:30
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Measurement of uncertainty and any applicable definitions of method modifications are available upon request. Per EPA NLLAP policy, sample results are not blank corrected.

Owen McKenna Laboratory Manager or other approved signatory

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. QC sample results are within quality control criteria and met method specifications unless otherwise noted. All results for soil samples are reported on a dry weight basis, unless otherwise noted.

Analysis following EMSL SOP for the Determination of Environmental Lead by FLAA. The laboratory has a reporting limit of 0.0064% by wt., based upon a minimum sample weight of 0.25g submitted to the lab, and is not responsible for any result or reporting limit provided in mg/cm² since it is dependent upon an area value provided by non-lab personnel. A "<" (less than) result signifies that the analyte was not detected at or above the reporting limit. Measurement of uncertainty and definitions of modifications are available upon request. Results in this report are not blank corrected unless specified.



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Lead Chain of Custody

EMSL Order Number / Lab Use Only

EMSL Analytical, Inc.
200 Route 130 North
Cinnaminson, NJ 08077

PHONE: (800) 220-3675

EMAIL: CinnaminsonLeadLab@emsl.com

AE15265

If BQ-To is the same as Report To leave this section blank. Third-party billing requires written authorization.

Customer Information Customer ID: Company Name: Atlas Technical Consultants Contact Name: Steve Hudson Street Address: 11117 Mockingbird Drive City, State, Zip: Omaha, NE 68137 Country: Phone: 402-670-3842 Email(s) for Report: steve.hudson@oneatlas.com	Billing Information Billing ID: Company Name: Billing Contact: Street Address: City, State, Zip: Country: Phone: Email(s) for Invoice:
---	---

Project Information	
Project Name/No: 2048807475 - Powerhouse	Purchase Order:
EMSL LIMS Project ID: (if applicable, EMSt will provide)	US State where samples collected: IA
State of Connecticut (CT) must select project location: <input type="checkbox"/> Commercial (Taxable) <input type="checkbox"/> Residential (Non-Taxable)	No. of Samples in Shipment:
Sampled By Name: Steve Hudson	Sampled By Signature: <i>[Signature]</i>

Turn-Around-Time (TAT)

3 Hour
 6 Hour
 24 Hour
 32 Hour
 48 Hour
 72 Hour
 86 Hour
 1 Week
 2 Week

Please call ahead for large projects and/or turnaround times 6 hours or less. *32 hour TAT available for select tests only; samples must be submitted by 11:30am.

MATRIX	METHOD	INSTRUMENT	REPORTING LIMIT	SELECTION
<input checked="" type="checkbox"/> % by wt. <input type="checkbox"/> ppm (mg/kg) <input type="checkbox"/> mg/cm ² <small>*Chips reporting limit based on a minimum 0.25g sample weight. Not appropriate for Ceramic Tiles - XRF is recommended.</small> <small>*Sample Area Required below for mg/cm²</small>	SW 846-7000B	Flame Atomic Absorption	<small>*Please select reporting on left</small> - 0.0064% - 64 pptm - mg/cm ² - RL is Variable	<input checked="" type="checkbox"/>
	SW 846-6010D	ICP-OES	<small>*Please select reporting on left</small> - 0.0004% - 4 pptm - mg/cm ² - RL is Variable	<input type="checkbox"/>
AIR	NIOSH 7082	Flame Atomic Absorption	3.2 µg/filter	<input type="checkbox"/>
	NIOSH 7303M	ICP-OES	1.0 µg/filter	<input type="checkbox"/>
	NIOSH 7303M	ICP-MS	0.05 µg/filter	<input type="checkbox"/>
<input type="checkbox"/> ASTM <input type="checkbox"/> NON-ASTM <small>*If no box is checked, non-ASTM Wipe is assumed</small>	SW 846-7000B*	Flame Atomic Absorption	8 µg/wipe	<input type="checkbox"/>
	SW 846-6010D*	ICP-OES	1.0 µg/wipe	<input type="checkbox"/>
TCLP	SW 846-1311 / 7000B / SM 3111B	Flame Atomic Absorption	0.32 mg/L (ppm)	<input type="checkbox"/>
	SW 846-1311 / SW 846-6010D*	ICP-OES	0.1 mg/L (ppm)	<input type="checkbox"/>
SPLP	SW 846-1312 / 7000B / SM 3111B	Flame Atomic Absorption	0.32 mg/L (ppm)	<input type="checkbox"/>
	SW 846-1312 / SW 846-6010D*	ICP-OES	0.1 mg/L (ppm)	<input type="checkbox"/>
TTLIC	22 CCR App. II, 7000B	Flame Atomic Absorption	32 mg/kg (ppm)	<input type="checkbox"/>
	22 CCR App. II, SW 846-6010D*	ICP-OES	2 mg/kg (ppm)	<input type="checkbox"/>
STLC	22 CCR App. II, 7000B	Flame Atomic Absorption	0.32 mg/L (ppm)	<input type="checkbox"/>
	22 CCR App. II, SW 846-6010D*	ICP-OES	0.1 mg/L (ppm)	<input type="checkbox"/>
Soil	SW 846-7000B	Flame Atomic Absorption	32 mg/kg (ppm)	<input type="checkbox"/>
	SW 846-6010D*	ICP-OES	2 mg/kg (ppm)	<input type="checkbox"/>
Wastewater	SM 3111B / SW 846-7000B	Flame Atomic Absorption	0.32 mg/L (ppm)	<input type="checkbox"/>
	EPA 200.7 / 6010D	ICP-OES	0.020 mg/L (ppm)	<input type="checkbox"/>
<input type="checkbox"/> Unpreserved <input type="checkbox"/> Preserved with HNO ₃ <input type="checkbox"/> PH<2	EPA 200.5	ICP-OES	0.003 mg/L (ppm)	<input type="checkbox"/>
Drinking Water	EPA 200.8	ICP-MS	0.001 mg/L (ppm)	<input type="checkbox"/>
	<input type="checkbox"/> Unpreserved <input type="checkbox"/> Preserved with HNO ₃ <input type="checkbox"/> PH<2	ICP-OES	12 µg/filter	<input type="checkbox"/>
TSP/SPM Filter	40 CFR Part 50	ICP-MS	0.6 µg/filter	<input type="checkbox"/>
Other:				<input type="checkbox"/>

Sample Number	Sample Location	Volume / Area	Date / Time Sampled
SEE ATTACHED			

Method of Shipment: FedEx	Sample Condition Upon Receipt:
Relinquished by: <i>[Signature]</i>	Date/Time: 4/2/06 4pm
Relinquished by: <i>[Signature]</i>	Date/Time: 4/13/06 9:30a

Controlled Document CQC-25 Lead R22 03/29/026 *6010C Available Upon Request

I AGREE TO ELECTRONIC SIGNATURE (By checking, I consent to signing this Chain of Custody document by electronic signature.)

EMSL Analytical, Inc.'s Laboratory Terms and Conditions are incorporated into this Chain of Custody by reference in their entirety. Submission of samples to EMSL Analytical, Inc. constitutes acceptance and acknowledgment of all terms and conditions by Customer.

AE15265



11117 Mockingbird Drive
 Omaha, NE 68137
 Phone (402) 697-9747

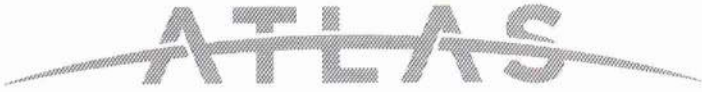
PAINT CHIP SAMPLE LOG SHEET

Client: IOWA DAS	Project Description: Tunnel Abandonment Project #9279.50	Project Manager: Inspector: Steve Hudson
Date: 4/1/26	Site Location: Powerhouse Building	Atlas Project Number: 204BS07475

Sample #	Paint Color	Substrate	Material Description	Sample Location (Floor/Room/Location in Room)	Quantity
PC-1	White	Metal	Condensate Piping	Ground Floor Condensate Tank Room	
PC-2	Gold	Metal	Condensate Tank	Ground Floor Condensate Tank Room	
PC-3	Yellow	Metal	Piping for Fuel Tank #4	Ground Floor Shop & Storage Room	
PC-4	Brown	METAL	Fuel Oil Tank		
PC-5	White	Metal	Water Softener Tank		
PC-6	Pink	Metal	Large Steam Piping	Ground Floor Future Turbine Room	
PC-7	Gray	Metal	Boiler #2 Shell	1st Floor – Boilers 1&2 Area	
PC-8	Green	Metal	Boiler #1 – Burn Chamber Shell		
PC-9	Silver	Metal	Boiler #2 – Tube End		
PC-10	Yellow	Metal	Boiler #2 – Handrail		
PC-11	Gray	Metal	Catwalk over Boiler #2		
PC-12	Gray	Metal	Boiler #4 Shell	1st Floor Boilers 3&4 Area	
PC-13	Green	Metal	Boiler #4 Burn Chamber Shell		

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 2025 APR - 3 P 12:46

AE1526 5



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Omaha, NE 68137
Phone (402) 697-9747

PAINT CHIP SAMPLE LOG SHEET

Sample #	Paint Color	Substrate	Material Description	Sample Location (Floor/Room/Location in Room)	Quantity
PC-14	Silver	Metal	Large Steam Tank	2 nd Floor Mezzanine Area – Over Boiler 3&4	
PC-15	Gray	Metal	Catwalk		
PC-16	Yellow	Metal	Fuel Tank #6	Exterior Fuel Tank Area	

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2016 APR - 3 P 12: 36



Lead Chain of Custody

EMSL Order Number / Lab Use Only

EMSL Analytical, Inc.
200 Route 130 North
Cinnaminson, NJ 08077

PHONE: (800) 220-3675

EMAIL: Cinnaminson.LeadLab@emsl.com

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AE15265

If Bill-To is the same as Report-To leave this section blank. Third-party billing requires written authorization.

Customer Information	Customer ID:	Billing ID:
Company Name: Atlas Technical Consultants	Company Name:	Company Name:
Contact Name: Steve Hudson	Billing Contact:	Billing Contact:
Street Address: 11117 Mockingbird Drive	Street Address:	Street Address:
City, State, Zip: Omaha, NE 68137	City, State, Zip:	City, State, Zip:
Country:	Country:	Country:
Phone: 402-670-3842	Phone:	Phone:
Email(s) for Report: steve.hudson@oneatlas.com	Email(s) for Invoice:	Email(s) for Invoice:

Project Information

Project Name/No: 2048807475 - Powerhouse

EMSL LIMS Project ID: (If applicable, EMSL will provide)

US State where samples collected: IA

State of Connecticut (CT) must select project location:
 Commercial (Taxable) Residential (Non-Taxable)

Sampled By Name: Steve Hudson

Sampled By Signature: *[Signature]*

No. of Samples in Shipment:

Turn-Around-Time (TAT)

3 Hour 6 Hour 24 Hour 32 Hour 48 Hour 72 Hour 96 Hour 1 Week 2 Week

Please call ahead for large projects and/or turnaround times 6 hours or less. *32 hour TAT available for select tests only; samples must be submitted by 11:30am.

MATRIX	METHOD	INSTRUMENT	REPORTING LIMIT	SELECTION
CHIPS <input checked="" type="checkbox"/> % by wt <input type="checkbox"/> ppm (mg/kg) <input type="checkbox"/> mg/cm ² <small>*Chips reporting limit based on a minimum 0.25g sample weight. Not appropriate for Ceramic Tiles - XRF is recommended.</small>	SW 846-7000B	Flame Atomic Absorption	- 0.004% - 84 ppm - mg/cm ² - RL is Variable	<input checked="" type="checkbox"/>
	SW 846-6010D	ICP-OES	- 0.004% - 4 ppm - mg/cm ² - RL is Variable	<input type="checkbox"/>
AIR	NIOSH 7082	Flame Atomic Absorption	3.2 µg/filter	<input type="checkbox"/>
	NIOSH 7303M	ICP-OES	1.0 µg/filter	<input type="checkbox"/>
	NIOSH 7303M	ICP-MS	0.05 µg/filter	<input type="checkbox"/>
WIPE <input type="checkbox"/> ASTM <input type="checkbox"/> NON-ASTM <small>*If no box is checked, non-ASTM Wipe is assumed</small>	SW 846-7000B*	Flame Atomic Absorption	8 µg/wipe	<input type="checkbox"/>
	SW 846-6010D*	ICP-OES	1.0 µg/wipe	<input type="checkbox"/>
TCLP	SW 846-1311 / 7000B / SM 3111B	Flame Atomic Absorption	0.32 mg/L (ppm)	<input type="checkbox"/>
	SW 846-1311 / SW 846-6010D*	ICP-OES	0.1 mg/L (ppm)	<input type="checkbox"/>
	SW 846-1312 / 7000B / SM 3111B	Flame Atomic Absorption	0.32 mg/L (ppm)	<input type="checkbox"/>
	SW 846-1312 / SW 846-6010D*	ICP-OES	0.1 mg/L (ppm)	<input type="checkbox"/>
YTLC	22 CCR App. II, 7000B	Flame Atomic Absorption	32 mg/kg (ppm)	<input type="checkbox"/>
	22 CCR App. II, SW 846-6010D*	ICP-OES	2 mg/kg (ppm)	<input type="checkbox"/>
STLC	22 CCR App. II, 7000B	Flame Atomic Absorption	0.32 mg/L (ppm)	<input type="checkbox"/>
	22 CCR App. II, SW 846-6010D*	ICP-OES	0.1 mg/L (ppm)	<input type="checkbox"/>
Soil	SW 846-7000B	Flame Atomic Absorption	32 mg/kg (ppm)	<input type="checkbox"/>
	SW 846-6010D*	ICP-OES	2 mg/kg (ppm)	<input type="checkbox"/>
Wastewater	SM 3111B / SW 846-7000B	Flame Atomic Absorption	0.32 mg/L (ppm)	<input type="checkbox"/>
Unpreserved <input type="checkbox"/>	EPA 200.7 / 6010D	ICP-OES	0.020 mg/L (ppm)	<input type="checkbox"/>
Preserved with HNO ₃ <input type="checkbox"/> PH<2	EPA 200.5	ICP-OES	0.003 mg/L (ppm)	<input type="checkbox"/>
Drinking Water	EPA 200.8	ICP-MS	0.001 mg/L (ppm)	<input type="checkbox"/>
Unpreserved <input type="checkbox"/>		ICP-OES	12 µg/filter	<input type="checkbox"/>
Preserved with HNO ₃ <input type="checkbox"/> PH<2		ICP-MS	0.6 µg/filter	<input type="checkbox"/>
TSP/SPM Filter	40 CFR Part 50			<input type="checkbox"/>

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CINNAMINSON, NJ
7/13/06 3:12:36

Sample Number	Sample Location	Volume / Area	Date / Time Sampled
SEE ATTACHED			

Method of Shipment: *Fedex*

Sample Condition Upon Receipt:

Relinquished by: *[Signature]* Date/Time: 4/2/06 4pm

Received by: *[Signature]* EFX Date/Time: 4/13/06 9:30a

Relinquished by: Date/Time:

Received by: Date/Time:

Controlled Document CQC-25 Lead R27 03/29/2025

*6010C Available Upon Request

AGREE TO ELECTRONIC SIGNATURE (By checking, I consent to signing this Chain of Custody document by electronic signature.)

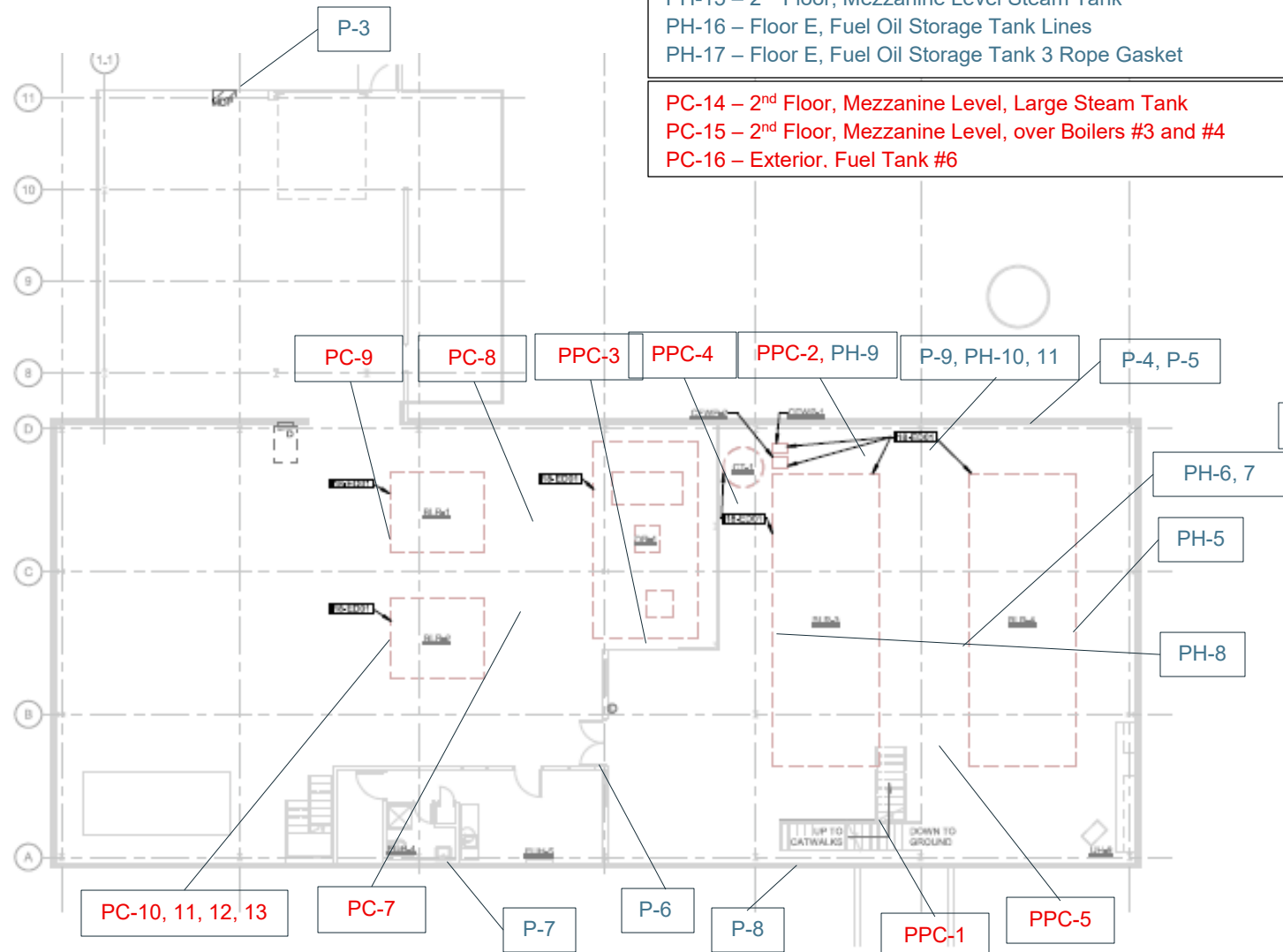
EMSL Analytical, Inc.'s Laboratory Terms and Conditions are incorporated into this Chain of Custody by reference in their entirety. Submission of samples to EMSL Analytical, Inc. constitutes acceptance and acknowledgment of all terms and conditions by Customer.

16 DT

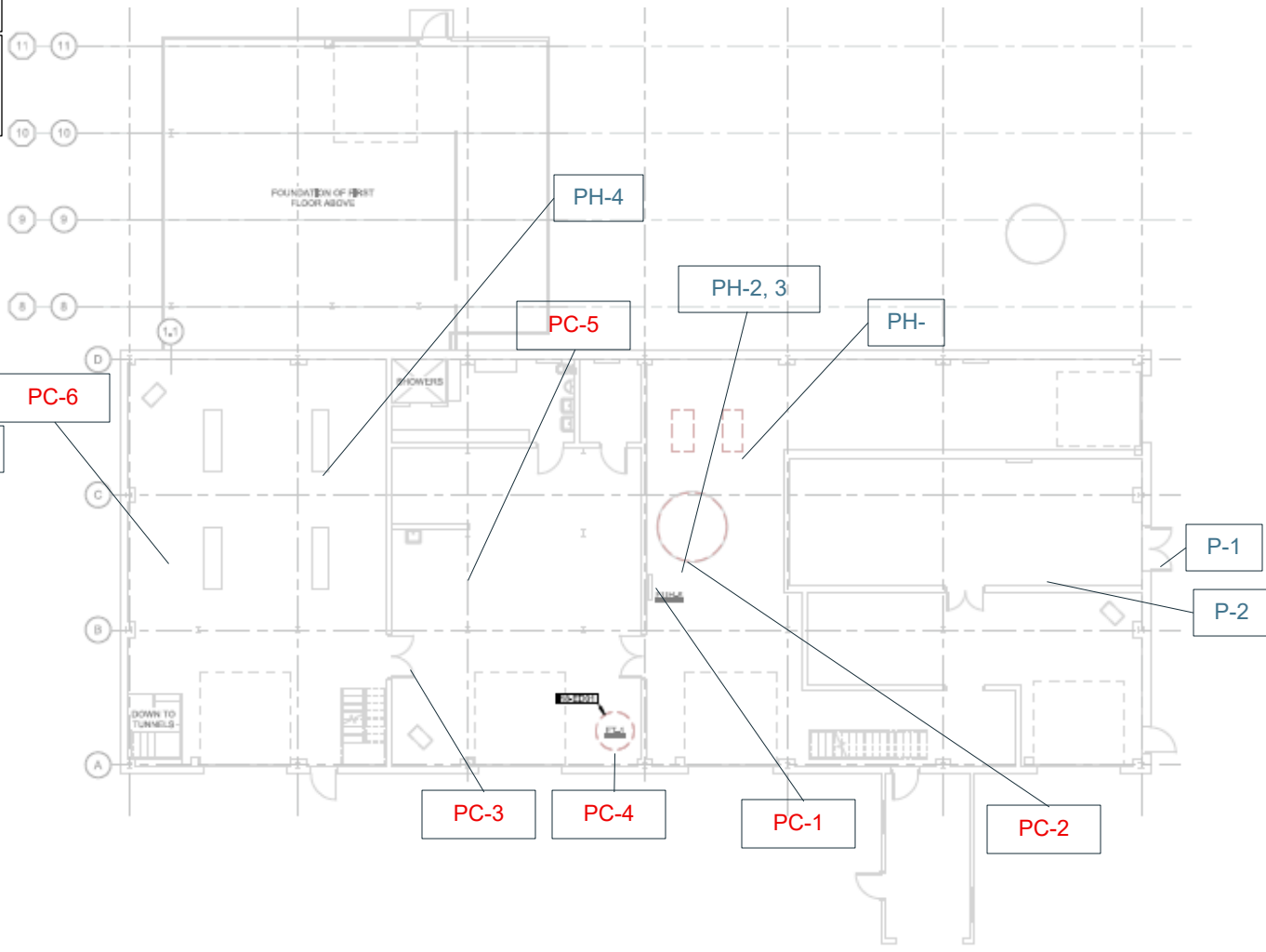
APPENDIX C
DRAWINGS WITH SAMPLE LOCATIONS

PH-12 – 2nd Floor Coal Feeders in Boiler Room #3 and #4
 PH-13 – 2nd Floor Boilers #3 and #4
 PH-14 – 2nd Floor, Mezzanine Level Steam Tank
 PH-15 – 2nd Floor, Mezzanine Level Steam Tank
 PH-16 – Floor E, Fuel Oil Storage Tank Lines
 PH-17 – Floor E, Fuel Oil Storage Tank 3 Rope Gasket

PC-14 – 2nd Floor, Mezzanine Level, Large Steam Tank
 PC-15 – 2nd Floor, Mezzanine Level, over Boilers #3 and #4
 PC-16 – Exterior. Fuel Tank #6



FIRST FLOOR ELECTRICAL DEMOLITION PLAN



BASEMENT ELECTRICAL DEMOLITION PLAN

X-XX = Asbestos Sample Location
 X-XX = Lead Paint Sample Location

Project No. 204BS07475	Date: April 22, 2026
Project Manager: Phillip Thomas	
Name: WRC Campus Utility Decentralization Phase 5 Project 9279.50	



Asbestos and Lead Paint Sample Locations
Powerhouse Woodward Resource Building 1251 334 th Street Woodward, Iowa

APPENDIX D
ASBESTOS AND LEAD CONTAINING MATERIALS PHOTO LOG

Asbestos and Lead-based Paint Containing Photo Log

Powerhouse-WRC Decentralization Phase 5 Project #9279.50 ♦ Woodward, IA

Date Taken: Sept. 25, 2025 / Jan. 1, 2026 ♦ Atlas Project No. 204BS07475



Photo #1 View of the Powerhouse.



Photo #2 Sample P-1. Asbestos containing caulk around exterior doors.



Photo #3 Sample P-4. Asbestos containing window glazing.



Photo #4 Sample P-8. Asbestos containing window glazing.



Photo #5 Sample PH-6. Asbestos containing boiler door gasket on boilers #3 and #4



Photo #6 Sample PH-7. Asbestos containing boiler gasket on boilers #3 and #4.

Asbestos and Lead-based Paint Containing Photo Log

Powerhouse-WRC Decentralization Phase 5 Project #9279.50 ♦ Woodward, IA

Date Taken: Sept. 25, 2025 / Jan. 1, 2026 ♦ Atlas Project No. 204BS07475



Photo #7 Sample PH-8. Asbestos containing grey boiler sealant on boilers #3 and #4.



Photo #8 Sample PH-13. Asbestos containing red sealant on coal feeders in boiler rooms #3 and #4.



Photo #9 Sample PH-15. Asbestos containing white caulking on insulation located on the 2nd floor mezzanine steam tank.



Photo #10 Sample PH-17. Asbestos containing rope gasket on fuel oil storage tank #3.

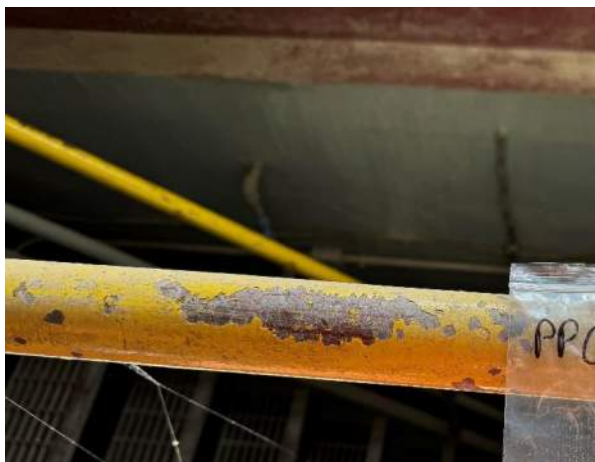


Photo #11 Sample PCC-1. Yellow lead-based paint on metal handrail.

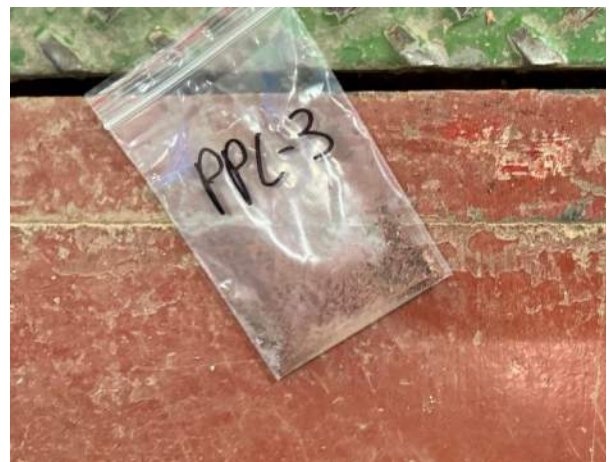


Photo #12 Sample PPC3. Red lead-based paint on concrete in north room.

Asbestos and Lead-based Paint Containing Photo Log

Powerhouse-WRC Decentralization Phase 5 Project #9279.50 ♦ Woodward, IA
Date Taken: Sept. 25, 2025 / Jan. 1, 2026 ♦ Atlas Project No. 204BS07475



Photo #13 Sample PPC-4. Green lead-based paint on south coal burner in north room.



Photo #14 Sample PC-3. Yellow lead-based paint on metal fuel tank #4 piping.



Photo #15 Sample PC-6. Pink lead-based paint on steam piping on future turbine room on ground floor.



Photo #16 Sample PC-8. Green lead-based paint on metal burn chamber of boiler #1.



Photo #17 Sample PC-9. Silver paint on metal tube end of boiler #2



Photo #18 Sample PC-10. Yellow lead-based paint on handrail associated with boiler #2.

Asbestos and Lead-based Paint Containing Photo Log

Powerhouse-WRC Decentralization Phase 5 Project #9279.50 ♦ Woodward, IA
Date Taken: Sept. 25, 2025 / Jan. 1, 2026 ♦ Atlas Project No. 204BS07475



Corrupted Photo

Corrupted Photo

Photo #19 Sample PC-11. Grey lead-based paint on metal catwalk over boiler #2.

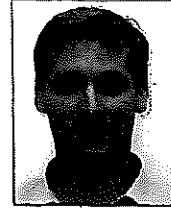
Photo #20 Sample PC-13. Green lead-based paint on metal burn chamber of boiler #4.

APPENDIX E
STAFF AND COMPANY ACCREDITATIONS

STEVE HUDSON

DOB: 05-26-1970

Issued: 03-02-2026



This person is licensed to perform asbestos work in the State of Iowa. ID card is intended for official use only and must be present on jobsite.

License Type	Number	Expires
INSPECTOR	26-15559	11-04-2026

IOWA

Asbestos

Aaron Baack
Interim Director

SECTION 00 3143

PERMIT APPLICATION

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Permit Application Information
- B. Licenses, Permits, and Related Inspections

1.02 PERMIT APPLICATION INFORMATION

- A. State Building Code Plan Review: The plan review and inspections for this project have been applied for by the Architect. Please contact your inspector prior to construction and occupancy.
- B. State Building Code Energy Review: The energy code review and inspections for this project have been applied for by the Architect. Please contact your inspector prior to construction and occupancy.
- C. Boiler Permit and Inspections: Trade Contractor is responsible for permits and inspections if required.
- D. Fuel Tank Permit and Inspections: Trade Contractor is responsible for permits and inspections.
- E. Other Applicable inspections: Trade Contractor is responsible for any other applicable project specific permits and inspections.

1.03 LICENSES, PERMITS, AND RELATED INSPECTIONS

- A. The Bidder shall comply with all codes, laws, ordinances, rules and regulations of any public authority having jurisdiction that bears on the performance of its work. All construction, materials and methods shall comply with the State Building Codes, except where plans and specifications establish a higher standard.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION

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SECTION 00 4116

BID FORM

The Bid Form must be submitted online through the State's [IMPACS Electronic Procurement System](#).

RFB #927950-01

BID FORM for CONSTRUCTION CONTRACT
for
Woodward Resource Center
1251 334th Street, Woodward, Iowa 50276
Project 9279.50

Iowa Department of Administrative Services
Hoover State Office Building, Level 3
1305 East Walnut Street
Des Moines, Iowa 50319-0105

The following information is to be completed and submitted with your bid..

1. Bid Form - Completed and Signed (to be uploaded with bid submission)
2. Non Discrimination Clause Information
3. Contractor Targeted Small Business Enterprise Pre-Bid Contract Information
4. Bid Security – 5% of total Bid amount (to be uploaded with bid submission)
5. Certificate of Site Visit (to be uploaded with bid submission for Mandatory Pre-bids only)

Authorized Representative:

The undersigned Bidder, in response to your Request for Bid for construction of the above project, having examined the Drawings, Specifications, and other Bidding Documents dated April 24, 2026, and Addenda issued and acknowledged below as received and being familiar with all the conditions surrounding the construction of the proposed project including the availability of materials and labor, hereby proposes to furnish all labor, materials, equipment and supplies to perform all work to construct the project in strict accordance with the proposed Contract Documents, within the time and at the prices stated below. Prices are to cover all expenses incurred in performing the work required under the proposed Contract Documents, of which this bid is a part.

Bidder acknowledges receipt of the following Addenda which are a part of the Bidding Documents and for which any effect on cost of the Work is included in the bid amounts indicated:

Number _____ _____ _____ _____ _____
Dated _____ _____ _____ _____ _____

Note that the State of Iowa is exempt from State and Local sales and use taxes (including local option and school option) for this project. Taxes on construction materials shall NOT be included in the bid amounts.

Amounts shall be indicated in both words and figures. In case of discrepancy, the amount indicated in words shall govern.

BID PACKAGES:

BP 01-1

Description: Abatement

Bidder proposes and agrees to perform all work as described in the Construction Documents for the sum of:

_____ Dollars
(\$_____).

BP 03-1

Description: Tunnel Infill

Bidder proposes and agrees to perform all work as described in the Construction Documents for the sum of:

_____ Dollars
(\$_____).

BP 22-1

Description: Plumbing

Bidder proposes and agrees to perform all work as described in the Construction Documents for the sum of:

_____ Dollars
(\$_____).

BP 26-1

Description: Electrical

Bidder proposes and agrees to perform all work as described in the Construction Documents for the sum of:

_____ Dollars
(\$_____).

ALTERNATES:

BP 01-1 ALT 01

Description: Demo Powerhouse Equipment

Bidder proposes and agrees to perform all work as described in the Construction Documents for the sum of:

_____ Dollars
(\$_____).

BP 01-1 ALT 02

Description: Demo Chiller Plant Equipment

Bidder proposes and agrees to perform all work as described in the Construction Documents for the sum of:

_____ Dollars
(\$_____).

BP 03-1 ALT 02

Description: Demo Chiller Plant Equipment

Bidder proposes and agrees to perform all work as described in the Construction Documents for the sum of:

_____ Dollars
(\$_____).

BP 22-1 ALT 01

Description: Demo Powerhouse Equipment

Bidder proposes and agrees to perform all work as described in the Construction Documents for the sum of:

_____ Dollars
(\$_____).

BP 22-1 ALT 02

Description: Demo Chiller Plant Equipment

Bidder proposes and agrees to perform all work as described in the Construction Documents for the sum of:

_____ Dollars
(\$ _____).

UNIT PRICES:

BP 03-1 UNIT 01

Description: Demo and Replace Tunnel Lid

_____ Dollars
(\$ _____).

Bidder hereby certifies that:

1. This bid is genuine and is not made in the interest of or on behalf of any undisclosed person, firm or corporation;
2. Bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid; Bidder has not solicited or induced any person, firm or corporation to refrain from bidding; and Bidder has not sought by collusion to obtain any advantage over any other bidder or over the Owner.
3. Bidder hereby certifies that the Bidder is registered with the Iowa Labor Commissioner as a Contractor as required by Chapter 91C, Code of Iowa.
4. Bidder agrees to comply with all Federal and State Affirmative Action/Equal Employment Opportunity requirements concerning fair employment and will not discriminate between or among them by reason of race, color, religion, sex, national origin or physical handicap.
5. All construction under this Contract shall conform to the requirements of the *Iowa State Building Code*.
6. Bidder agrees that this bid shall remain valid and shall not be withdrawn for a period of thirty (30) calendar days after the date for receipt of bids.
7. Bidder agrees that if written notice of acceptance of this bid is mailed, emailed, or delivered to the undersigned within thirty (30) days after the date in which bids are due, or at any time thereafter before it is withdrawn, the undersigned will sign and return the Contract Agreement, prepared in accord with the Bidding Documents and this bid as accepted; and will also provide proof of insurance coverage and required surety bonds.
8. Bidder understands that the Owner reserves the right to reject any and all bids, and to waive irregularities or informalities and enter into a contract for the work, as the Owner deems to be in the best interest of the State.
9. Bidder understands that the Owner reserves the right to accept any, or no, Alternate Bid, if requested, and that the Alternate Bids may be considered in any order or combination, and the low Bidder shall be determined on the basis of the sum of the base bid and any Alternate(s) accepted.

Subcontractors:

The Trade Contractor must identify all Subcontractors and Suppliers within 48 hours of the published date and time for which bids must be submitted, in accordance with Iowa Code Section 8A311, as amended by House File 646 in 2011. Subcontractors and suppliers may not be changed without the approval of the Owner. Requests for changing a Subcontractor or supplier must identify the reason for the proposed change, the name of the new Subcontractor or supplier, and the change in the subcontractor or supplier price as a result of the change. Any reduction in subcontractor or supplier price as a result of the change, if the change is approved by the Owner, shall be deducted from the Trade Contract Price via a deductive Change Order. Any such changes, if approved by the Owner, which result in an increase in the Trade Contract Price shall be borne by the Trade Contractor.

Enforcement of Reciprocal Resident Bidder Preference, per Iowa Code 73A.21.

All bidders shall either check the box next to "Resident Bidder" or check the box next to "Nonresident Bidder" and by doing so and signing thereafter certifies and attests to the same. All information requested must be provided. Seek out the advice of an attorney if you have questions.

"Resident Bidder" means a person or entity authorized to transact business in of the State of Iowa and having a place of business for transacting business within the State of Iowa at which it is conducting and has conducted business for at least three years prior to the date of the first advertisement for the public improvement. Note, however, that if a nonresident bidder's state or foreign country has a more stringent definition of a resident bidder, the more stringent definition is applicable as to bidders from that state or foreign country.

Resident Bidder

Name of Resident Bidder: _____

By: _____
Authorized Agent and Signatory of Resident Bidder

OR:

Nonresident Bidder

Name of Nonresident Bidder: _____

Name of State or Foreign Country of Nonresident Bidder: _____

Particularly identify and describe any preference, labor preference, or any other type of preferential treatment, in effect in the nonresident bidder's state or foreign country at the time of this bid:

NOTICE: Nonresident Bidders domiciled in a state or country with a resident labor force preference shall make and keep, for a period of not less than three years, accurate records of all workers employed on the public improvement. The records shall include each worker's name, address, telephone number when available, social security number, trade classification, and the starting ending time of employment.

By: _____
Authorized Agent and Signatory of Nonresident Bidder

REQUIRED: Bid Form shall be signed by an officer of the company with authority to bind in a contract. Notice of acceptance of this bid, or request for additional information by the Department of Administrative Services, may be addressed to the undersigned at the address set forth below:

Legal Name of Firm: _____

Date: _____

Signature of Bidder: _____

Title: _____

Typed Name of Signatory: _____

Email: _____

Business Address:

Telephone Number: _____ Fax Number: _____

Federal Tax Identification Number: _____

Iowa Contractor Registration Number: _____

Bidder Safety Manager Name: _____

For an out-of-state Bidder, Bidder certifies that the Resident Preference given by the State or Foreign Country of Bidder's residence, _____, is _____ %.

END OF SECTION

SECTION 00 4116.01

NON-DISCRIMINATION CLAUSE

This Section is for informational purposes only. All information will be submitted online through the State's [IMPACS Electronic Procurement System](#).

PART 1 - GENERAL

All contractors, subcontractors, vendors and suppliers of goods and services doing business with the State of Iowa and value of said business equals or exceeds \$10,000 annually, agree as stated below.

1.01 NONDISCRIMINATION CLAUSE

- A. The contractor, subcontractor, vendor and supplier of goods and services will not discriminate against an employee or applicant for employment because of race, creed, color, sex, national origin, ancestry, religion, economic status, age, disability, political opinion, or affiliations of an applicant or employee based upon the nature of the job occupation. The contractor, subcontractor, vendor and supplier will develop an Affirmative Action Program to insure that applicants are employed and that employees are treated during employment without regard to their race, creed, color, sex, national origin, ancestry, religion, economic status, age, disability, political opinions or affiliations. Such action shall include, but not be limited to the following:
 1. Employment.
 2. Upgrading.
 3. Demotion or transfer.
 4. Recruitment and advertising.
 5. Layoff or termination.
 6. Rates of pay or other forms of compensation.
 7. Selection for training, including apprenticeship.
- B. The contractor, subcontractor, vendor and supplier of goods and services will, in all solicitations or advertisements for employees, state that all qualified applicants will receive consideration for employment without regard to race, creed, color, sex, national origin, ancestry, religion, economic status, age, disability, political opinion or affiliations.
- C. The contractor, subcontractor, vendor and supplier or their collective bargaining representative will send to each labor union or representative or workers with which they have a collective bargaining agreement or other contract or understanding, a notice advising the said labor union or workers' representative of the contractor's commitments under this section.
- D. The contractor, subcontractor, vendor and supplier of goods and services will comply with all published rules, regulations, directives and orders of the State of Iowa Affirmative Action Program Contract Compliance Provisions.
- E. The contractor, subcontractor, vendor and supplier of goods and services will furnish and file compliance reports within such time and upon such forms as provided by the Equal Employment Opportunity Officer, said forms may elicit information as to the policies, procedures, patterns, and practices of each subcontractor as state as the contractor themselves and said contractor, subcontractor, vendor and supplier will permit access to their employment books, records and accounts to the State's Equal Employment Opportunity Officer, for the purpose of investigation to ascertain compliance with this Contract and with rules regulations of the State's Affirmative Action Program.
- F. In the event of the contractor's noncompliance with the nondiscrimination clauses of this Contract or with any of such rules, regulations and orders; this Contract may be canceled, terminated or suspended in whole or in part and the Contractor may be declared ineligible for further contracts in accordance with procedures authorized by the State of Iowa.

- G. The contractor, subcontractor, vendor and supplier of goods and services will include, or incorporate by reference, the provisions of the nondiscrimination clause in every contract, subcontract or purchase order unless exempted by the rules, regulations or orders of the State's Affirmative Action Program, and will provide in every subcontract or purchase order that said provisions will be binding upon each contractor, subcontractor or seller.
- H. The parties agree to comply with "Compliance with the Law; Nondiscrimination in Employment" of the current Terms and Conditions at the award of this contract. Current Terms and Conditions may be found on the following web site and are, by this reference, made a part of this Agreement. <https://das.iowa.gov/procurement/terms-and-conditions>
- I. We certify and recognize that we are morally and legally committed to nondiscrimination in employment. Any person who applies for employment with our company will not be discriminated against because of race, creed, color, sex, national origin, ancestry, religion, economic status, age or disabilities, unless disabilities are based upon the nature of the job occupation.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION

SECTION 00 4116

BID FORM

The Bid Form must be submitted online through the State's [IMPACS Electronic Procurement System](#).

RFB #927950-01

BID FORM for CONSTRUCTION CONTRACT
for
Woodward Resource Center
1251 334th Street, Woodward, Iowa 50276
Project 9279.50

Iowa Department of Administrative Services
Hoover State Office Building, Level 3
1305 East Walnut Street
Des Moines, Iowa 50319-0105

The following information is to be completed and submitted with your bid..

1. Bid Form - Completed and Signed (to be uploaded with bid submission)
2. Non Discrimination Clause Information
3. Contractor Targeted Small Business Enterprise Pre-Bid Contract Information
4. Bid Security – 5% of total Bid amount (to be uploaded with bid submission)
5. Certificate of Site Visit (to be uploaded with bid submission for Mandatory Pre-bids only)

Authorized Representative:

The undersigned Bidder, in response to your Request for Bid for construction of the above project, having examined the Drawings, Specifications, and other Bidding Documents dated April 24, 2026, and Addenda issued and acknowledged below as received and being familiar with all the conditions surrounding the construction of the proposed project including the availability of materials and labor, hereby proposes to furnish all labor, materials, equipment and supplies to perform all work to construct the project in strict accordance with the proposed Contract Documents, within the time and at the prices stated below. Prices are to cover all expenses incurred in performing the work required under the proposed Contract Documents, of which this bid is a part.

Bidder acknowledges receipt of the following Addenda which are a part of the Bidding Documents and for which any effect on cost of the Work is included in the bid amounts indicated:

Number _____ _____ _____ _____ _____

Dated _____ _____ _____ _____ _____

Note that the State of Iowa is exempt from State and Local sales and use taxes (including local option and school option) for this project. Taxes on construction materials shall NOT be included in the bid amounts.

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SECTION 00 4116.02

TARGETED SMALL BUSINESS INFORMATION

This Section is for informational purposes only. All information will be submitted online through the State's [IMPACS Electronic Procurement System](#).

PART 1 - GENERAL

1.01 TARGETED SMALL BUSINESS INFORMATION

- A. Subcontractor Targeted Small Business Enterprise Pre-Bid Contact Information, including subcontractor and dollar amount to be subcontracted, is to accompany the Bid submission. Bidders shall comply with all affirmative action/equal opportunity provisions of State and Federal laws. The Owner seeks to provide opportunities for Targeted Small Businesses in accordance with the provisions of Chapter 73 of the Code of Iowa.

- B. [Search the Targeted Small Business Directory](#) for certified State of Iowa Targeted Small Businesses.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION

IOWA DEPARTMENT OF ADMINISTRATIVE SERVICES
 SUBCONTRACTOR
 TARGETED SMALL BUSINESS ENTERPRISE
 PRE-BID CONTRACT INFORMATION

CONTRACTOR	BID NO.
(to be completed by bidder)	
PAGE #	

You are requested to provide the information on this form showing your targeted Small Business enterprises contracts made prior to your bid submission. This information is subject to verification and confirmation. NOTE: The Department of General Services will not regard your acceptance or use of a low quote or bid from a non-targeted Small Business Enterprise on any subcontract item as evidence itself of any lack of good faith effort to solicit targeted Small Business Enterprise subcontractors on this project. However, every effort shall be made to solicit quotes or bids on as many subcontractable items as necessary to evidence affirmative action in contracting.

TABLE OF INFORMATION SHOWING BIDDER'S PRE-BID TARGETED SMALL BUSINESS ENTERPRISE CONTACTS

SUBCONTRACTOR	TSB	DATES CONTACTED	QUOTES RECEIVED		QUOTATION USED IN BID	
			YES/NO	DATES	YES/NO	DOLLAR AMOUNT PROPOSED TO BE SUBCONTRACTED

Total dollar amount proposed to be subcontracted to TSB on this project \$ _____
 List items to be subcontracted. (If more space is needed, use reverse side.)

SECTION 00 4313

BID SECURITY FORMS

PART 1 - GENERAL

1.01 BID SECURITY FORMS

- A. A Bid Bond form will be required on this project. An amended ConsensusDocs 262 is attached for reference following this page. ConsensusDocs bid bond form is not required (other standard forms are acceptable to the State of Iowa).

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION



**CONSENSUSDOCS 262
 BID BOND
 (AMENDED BY STATE OF IOWA)**

This document was developed through a collaborative effort of organizations representing a wide cross-section of the design and construction industry. The organizations endorsing this document believe it represents a fair allocation of risk and responsibilities for all project participants.

Endorsing organizations recognize that this document must be reviewed and adapted to meet specific needs and applicable laws. This document has important legal and insurance consequences. You are encouraged to consult legal, insurance and surety advisors before completing or modifying this document. The software includes a notes section indicating where information is to be inserted to complete this document. Further information and endorsing organizations' perspectives are available at www.consensusdocs.org/guidebook.

For Use with ConsensusDOCS 200, Standard Form of Agreement and General Conditions Between Owner and Constructor (Where the Contract Price is a Lump Sum) and ConsensusDOCS 500, Standard Agreement and General Conditions Between Owner and Construction Manager.

The Trade Contractor, _____ (the "Trade Contractor") has submitted a Bid to the Owner, _____ (the "Owner") for the _____ (the "Project") in accordance with the Bidding Documents, including Drawings and Specifications prepared by _____ (the "Design Professional").

IMPORTANT: A vertical line in the margin indicates a change has been made to the original text. Prior to signing, recipients may wish to request from the party producing the document a "redlined" version indicating changes to the original text. Consultation with legal and insurance counsel and careful review of the entire document are strongly encouraged.
 ConsensusDOCS 262 • BID BOND Copyright © 2007, Revised 2009 and 2011, ConsensusDOCS LLC. AN INDIVIDUAL PURCHASE OF THIS DOCUMENT PERMITS THE USER TO PRINT ONE CONTRACT FOR ONE PROJECT ONLY. YOU MAY ONLY MAKE COPIES OF A COMPLETED DOCUMENT FOR DISTRIBUTION TO PARTIES IN DIRECT CONNECTION WITH THE SPECIFIC CONSTRUCTION PROJECT. ANY OTHER USES, INCLUDING COPYING THE DOCUMENT, ARE STRICTLY PROHIBITED.

By virtue of this Bid Bond (the "Bond"), the Constructor as Principal and _____ as Surety ("Surety"), are bound to the Owner as Oblige in the maximum amount _____, Dollars (\$_____) (the "Bond Sum"). The Constructor and Surety hereby bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, as provided herein.

1. If the Oblige shall accept the bid of the Constructor, the Constructor shall enter into an Agreement with the Oblige in accordance with the terms of such Bid.
2. Constructor shall procure such bond or bonds as are specified in the Contract Documents for the faithful performance of the Work and for the prompt payment of labor and materials furnished in the performance of the Work.
3. If the Constructor fails to enter such Agreement and give such bonds, the Constructor shall pay to the Oblige the difference between the amount of Constructor's bid and the amount of such agreement the Oblige in good faith executes with another Party to perform the Work covered by Constructor's Bid, not to exceed the Bond Sum stated above.
4. If the Constructor shall fulfill its obligation under Articles 1 through 3, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

This Bond is entered into as of _____ (date)

SURETY: _____ (seal)

BY:

Print Name: _____

Print Title: _____ (Attach Power of Attorney)

Witness:

(Additional signatures, if any, appear on attached page)

Constructor: _____ (seal)

BY:

Print Name: _____

Print Title: _____

Witness:

(Additional signatures, if any, appear on attached page)

IMPORTANT: A vertical line in the margin indicates a change has been made to the original text. Prior to signing, recipients may wish to request from the party producing the document a "redlined" version indicating changes to the original text. Consultation with legal and insurance counsel and careful review of the entire document are strongly encouraged.

ConsensusDOCS 262 • BID BOND Copyright © 2007, Revised 2009 and 2011, ConsensusDOCS LLC, AN INDIVIDUAL PURCHASE OF THIS DOCUMENT PERMITS THE USER TO PRINT ONE CONTRACT FOR ONE PROJECT ONLY, YOU MAY ONLY MAKE COPIES OF A COMPLETED DOCUMENT FOR DISTRIBUTION TO PARTIES IN DIRECT CONNECTION WITH THE SPECIFIC CONSTRUCTION PROJECT, ANY OTHER USES, INCLUDING COPYING THE DOCUMENT, ARE STRICTLY PROHIBITED.

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SECTION 00 5200

AGREEMENT FORM

PART 1 - GENERAL

1.01 AGREEMENT FORM

- A. The Form of Agreement to be used on this project is a modified ConsensusDocs 802. A sample is attached following this page.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION

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ConsensusDocs 802

STANDARD FORM OF AGREEMENT BETWEEN OWNER AND TRADE CONTRACTOR

(Where the Construction Manager Is the Owner's Agent)



TABLE OF ARTICLES

1. AGREEMENT
2. GENERAL PROVISIONS
3. TRADE CONTRACTOR'S OBLIGATIONS
4. OWNER'S RESPONSIBILITIES
5. SUBCONTRACTS
6. TRADE CONTRACT TIME
7. TRADE CONTRACT PRICE
8. CHANGES
9. PAYMENT
10. INDEMNITY, INSURANCE, WAIVERS AND BONDS
11. SUSPENSION, NOTICE TO CURE AND TERMINATION OF AGREEMENT
12. DISPUTE MITIGATION AND RESOLUTION
13. MISCELLANEOUS PROVISIONS
14. TRADE CONTRACT DOCUMENTS

This Agreement has important legal and insurance consequences. Consultations with an attorney and with insurance and surety consultants are encouraged with respect to its completion or modification. Notes indicate where information is to be inserted to complete this Agreement.



ARTICLE 1 AGREEMENT

This Trade Contractor Agreement is made effective as of the XX day of Month, Year , by and between the

OWNER

State of Iowa - DAS, Department of Administrative Services ("DAS"). DAS's principal office is located: 109 SE 13th Street, Des Moines, IA 50319-0120.

and the

TRADE CONTRACTOR

Contractor Name

Address

City, State, Zip

for work in connection with the following

PROJECT

XXXX.XX - Project Name

The CONSTRUCTION MANAGER is

Construction Manager Name

Address

City, State, Zip

The DESIGN PROFESSIONAL for the Project is

Designer Name

Address

City, State, Zip

Notice to the Parties shall be given at the above addresses.

ARTICLE 2 GENERAL PROVISIONS

2.1 RELATIONSHIP OF PARTIES The Owner and the Trade Contractor agree to proceed with this Agreement on the basis of mutual trust, good faith and fair dealing and shall cooperate with each other and with the Construction Manager and Design Professional in furthering the Owner's interests. The Trade Contractor shall use its diligent efforts to perform the work in an expeditious manner consistent with the Trade Contract Documents. The Owner and the Trade Contractor will endeavor to promote harmony and cooperation among all Project participants.

2.1.1 The Owner and the Trade Contractor shall perform their obligations with integrity, ensuring at a minimum that

2.1.1.1 conflicts of interest shall be avoided or disclosed promptly to the other Party; and

2.1.1.2 the Trade Contractor and the Owner warrant that they have not and shall not pay nor receive any contingent fees or gratuities to or from the other Party, including its agents, officers and employees, Subcontractors or others for whom they may be liable, to secure preferential



treatment.

2.2 PROJECT ORGANIZATION This Agreement is for the performance of work described herein in connection with the construction of the Project. The Owner also may enter into separate agreements with other trade contractors for other portions of the Project. The Owner has entered or will enter into a Construction Management Agreement with the Construction Manager, and a design agreement with the Design Professional.

2.3 INDEPENDENT CONTRACTOR The Trade Contractor represents that it is an independent contractor and that its performance of the Trade Contract Work it shall act as an independent contractor. Neither Trade Contractor nor any of its agents or employees shall act on behalf of the Owner except as provided in this Agreement or unless authorized in writing by the Owner.

2.4 CONSTRUCTION MANAGER IS OWNER'S AGENT The Construction Manager will represent the Owner as its agent in the administration and management of this Agreement. Any instructions, reviews, approvals, orders or directions given to the Trade Contractor by the Construction Manager will be given on behalf of and as agent for the Owner. The Trade Contractor shall be obligated to respond or perform as if the same were given directly by the Owner. The Trade Contractor shall communicate and provide all requests and concerns regarding the Trade Contract Work to the Construction Manager. The Trade Contractor shall provide copies to the Construction Manager of all notices to the Owner required by and regarding this Agreement.

2.5 CONSTRUCTION MANAGER NOT IN PRIVITY WITH TRADE CONTRACTOR This Agreement shall not give the Trade Contractor any claim or right of action against the Construction Manager. The Trade Contractor and its subcontractors shall not be beneficiaries of any obligations of the Construction Manager. This Agreement shall not create a contractual relationship between any parties except the Owner and the Trade Contractor.

2.5A NO THIRD-PARTY BENEFICIARY There are no third-party beneficiaries of this Agreement.

2.6 DESIGN PROFESSIONAL The Owner, through its Design Professional, shall provide all architectural and engineering design services necessary for the completion of the Work, except the following:

No exceptions

The Trade Contractor shall not be required to provide professional services which constitute the practice of architecture or engineering except as otherwise provided in section 3.15.

2.6.1 The Owner shall obtain from the Design Professional either a license for Trade Contractor and Subcontractors to use the design documents prepared by the Design Professional or ownership of the copyrights for such design documents, and shall defend, indemnify and hold harmless the Trade Contractor against any suits or claims of infringement of any copyrights or licenses arising out of the use of the design documents. To the extent portions of this paragraph are in conflict with SF 396 (codified at Iowa Code Section 537A.5) said portions are void and unenforceable.

2.7 EXTENT OF AGREEMENT This Agreement is solely for the benefit of the Parties, represents the entire integrated agreement between the Parties, and supersedes all prior negotiations, representations and agreements, either written or oral. This Agreement and each and every provision is for the exclusive benefit of the Owner and the Trade Contractor and not for the benefit of any third party except to the extent expressly provided in this Agreement. In the event of conflict between this Agreement and any of the Exhibits or any other documents incorporated into this Agreement, the terms and provisions of this Agreement shall control.

2.8 DEFINITIONS



2.8.1 Agreement means this ConsensusDocs 802 Standard Form of Agreement Between Owner and Trade Contractor (Where the Construction Manager is the Owner's Agent), as modified by the Parties, and Exhibits and Attachments made part of this Agreement upon its execution.

2.8.2 Design Professional means the Architect, Design Professional or Engineer identified in ARTICLE 1 and its consultants, retained by Owner to perform design services for the Project, and licensed in the State in which the Project is located. The use of the term Design Professional in this Agreement is for convenience and is not intended to imply or infer that the individual or entity named in ARTICLE 1 will provide design professional services in a discipline in which it is not licensed.

2.8.3 Construction Manager means the Construction Manager identified in ARTICLE 1 and its authorized representative.

2.8.4 The Construction Schedule is the document initially prepared by and updated by the Construction Manager and approved by the Owner that indicates proposed activity sequences, durations, or milestone dates for such activities as receipt and approval of pertinent information, issuance of the Construction Documents, the preparation and processing of shop drawings and samples, delivery of materials or equipment requiring long-lead-time procurement, Owner's occupancy requirements and estimated dates of Substantial Completion and Final Completion of the Project.

2.8.5 The term Day shall mean calendar day unless otherwise specifically defined.

2.8.6 Final Completion occurs on the date when the Trade Contractor's obligations under this Agreement are complete and accepted by the Owner and final payment becomes due and payable, as established in ARTICLE 6. This date shall be confirmed by a Certificate of Final Completion signed by the Owner and the Trade Contractor.

2.8.7 A Hazardous Material is any substance or material identified now or in the future as toxic or hazardous under any federal, state or local law or regulation, or any other substance or material which may be considered hazardous or otherwise subject to statutory or regulatory requirements governing handling, disposal or clean-up.

2.8.8 A Material Supplier is a person or entity retained by the Trade Contractor to provide material or equipment for the Trade Contract Work. This definition is not intended to, and shall not be interpreted to, expand or modify the definition(s) of materials or material suppliers contained in Iowa Code Chapter 573.

2.8.9 Others means other contractors, material suppliers, and persons at the Worksite who are not employed by the Trade Contractor or Subcontractors.

2.8.10 The term Overhead shall mean a) payroll costs and other compensation of Trade Contractor employees in the Trade Contractor's principal and branch offices; b) general and administrative expenses of the Trade Contractor's principal and branch offices including deductibles paid on any insurance policy and c) the Trade Contractor's capital expenses, including interest on capital used for the Work.

2.8.11 Owner is the person or entity identified in ARTICLE 1 as Owner, and includes the Owner's representative.

2.8.12 The Project, as identified in ARTICLE 1, is the building, facility or other improvements for which the Trade Contractor is to perform the Trade Contract Work.

2.8.13 A Subcontractor is a person or entity retained by the Trade Contractor as an independent contractor to provide the labor, materials, equipment or services necessary to complete a specific



portion of the Work. This definition is not intended to, and shall not be interpreted to, expand or modify the definition(s) of materials or material suppliers contained in Iowa Code Chapter 573.

2.8.14 Per Iowa Code Section 26.13, "substantially completed" means the first date on which any of the following occurs: (1) Completion of the Project (or Trade Contract Work, in the case of the multiple Trade Contractors) or when the Project (or Trade Contract Work in the case of multiple Trade Contractors) has been substantially completed in general accordance with the terms and provisions of the contract. (2) The work on the Project (or Trade Contract Work in the case of multiple Trade Contractors) or on the designated portion is substantially completed in general accordance with the terms of the contract so that the State Iowa can occupy or utilize the Project or designated portion of the Project for its intended purpose. (3) The Project (or Trade Contract Work in the case of multiple Trade Contractors) is certified as having been substantially completed by either of the following: (a) the architect or engineer authorized to make such certification (which is defined in this Agreement as the Design Professional). (b) The authorized contract representative (which is defined in this Agreement as the Owner's Representative). (4) The State of Iowa is occupying or utilizing the Project (or Trade Contract Work in the case of multiple Trade Contractors) for its intended purpose. This subparagraph shall not apply to highway, bridge, or culvert projects.

2.8.15 Terrorism means a violent act, or an act that is dangerous to human life, property or infrastructure, that is committed by an individual or individuals and that appears to be part of an effort to coerce a civilian population or to influence the policy or affect the conduct of any government by coercion. Terrorism includes, but is not limited to, any act certified by the United States government as an act of terrorism pursuant to the Terrorism Risk Insurance Act, as amended.

2.8.16 A Trade Contract Change Order is a written order signed by the Owner and the Trade Contractor after execution of this Agreement, indicating changes in the scope of the Trade Contract Work, the Trade Contract Price or Trade Contract Time, including substitutions proposed by the Trade Contractor and accepted by the Owner. Trade Contract Change Orders shall be executed using the ConsensusDOCS 813 Trade Contract Change Order (CM as Owner's Agent) form document with exhibits attached as necessary.

2.8.17 The Trade Contract Documents consist of this Agreement (as modified), the drawings, specifications, addenda issued prior to execution of this Agreement, approved submittals, information furnished by the Owner under subsection 4.1.3, the bid documents, other documents listed in this Agreement and any modifications issued after execution.

2.8.18 The Trade Contract Price is the amount indicated in section 7.1 of this Agreement.

2.8.19 The Trade Contract Time is the period between the Date of Commencement and Final Completion.

2.8.20 Trade Contract Work means the construction and services provided by the Trade Contractor.

2.8.20.1 Changed Work means work that is different from the original scope of Trade Contract Work; or work that changes the Trade Contract Price or Trade Contract Time.

2.8.20.2 Defective Work is any portion of the Trade Contract Work that is not in conformance with the Trade Contract Documents.

2.8.21 The Trade Contractor is the person or entity identified in ARTICLE 1 and includes the Trade Contractor's Representative.

2.8.22 The term Work means the construction and services necessary or incidental to fulfill the Trade



Contractors' obligations for the Project. The Work may refer to the whole Project or only a part of the Project.

2.8.23 Worksite means the geographical area at the location of the Project as identified in ARTICLE 1 where the Trade Contract Work is to be performed.

ARTICLE 3 TRADE CONTRACTOR'S OBLIGATIONS

3.1 GENERAL RESPONSIBILITIES

3.1.1 RESPONSIBILITIES The Trade Contractor shall provide all of the labor, materials, equipment and services necessary to complete the Trade Contract Work, all of which shall be provided in full accord with or as reasonably inferable from the Trade Contract Documents as being necessary to produce the indicated results.

3.1.2 The Trade Contractor shall be responsible for the supervision and coordination of the Trade Contract Work, including the construction means, methods, techniques, sequences and procedures utilized, unless the Trade Contract Documents give other specific instructions. In such case, the Trade Contractor shall not be liable to the Owner for damages resulting from compliance with such instructions unless the Trade Contractor recognized and failed to timely report to the Owner any error, inconsistency, omission or unsafe practice that it discovered in the specified construction means, methods, techniques, safety, sequences or procedures.

3.1.3 The Trade Contractor shall perform Trade Contract Work only within locations allowed by the Trade Contract Documents, applicable permits and applicable local law.

3.2 COOPERATION WITH WORK OF OWNER AND OTHERS

3.2.1 The Owner may perform work at the Worksite directly or by Others. Any agreements with Others to perform construction or operations related to the Project shall include provisions pertaining to insurance, indemnification, waiver of subrogation, coordination, interference, clean up and safety which are substantively the same as the corresponding provisions of this Agreement.

3.2.2 In the event that the Owner elects to perform work at the Worksite directly or by Others, the Trade Contractor and the Owner shall, with the assistance of the Construction Manager, coordinate the activities of all forces at the Worksite and agree upon fair and reasonable schedules and operational procedures for Worksite activities. The Owner shall require each separate contractor to cooperate with the Trade Contractor and assist with the coordination of activities and the review of construction schedules and operations. The Trade Contract Price and Trade Contract Time shall be equitably adjusted, as mutually agreed by the Parties, for subsequent changes made necessary by the coordination of construction activities, and the Trade Contractor's construction schedule and the Construction Schedule shall be revised accordingly. The Trade Contractor, Owner and Others shall adhere to the revised Construction Schedule until it may subsequently be revised.

3.2.3 With regard to the work of the Owner and Others, the Trade Contractor shall (a) proceed with the Trade Contract Work in a manner which does not hinder, delay or interfere with the work of the Owner or Others or cause the work of the Owner or Others to become defective, (b) afford the Owner or Others reasonable access for introduction and storage of their materials and equipment and performance of their activities, and (c) coordinate the Trade Contractor's construction and operations with theirs as required by this section.

3.2.4 Before proceeding with any portion of the Trade Contract Work affected by the construction or operations of the Owner or Others, the Trade Contractor shall give the Owner and Construction



Manager prompt written notification of any defects the Trade Contractor discovers in their work which will prevent the proper execution of the Trade Contract Work. The Trade Contractor's obligations in this section do not create a responsibility for the work of the Owner or Others, but are for the purpose of facilitating the Trade Contract Work. If the Trade Contractor does not notify the Owner and Construction Manager of patent defects interfering with the performance of the Trade Contract Work, the Trade Contractor acknowledges that the work of the Owner or Others is not defective and is acceptable for the proper execution of the Trade Contract Work. Following receipt of written notice from the Trade Contractor of defects, the Owner, through the Construction Manager, shall promptly inform the Trade Contractor what action, if any, the Trade Contractor shall take with regard to the defects.

3.3 RESPONSIBILITY FOR PERFORMANCE

3.3.1 In order to facilitate its responsibilities for completion of the Work in accordance with and as reasonably inferable from the Trade Contract Documents, prior to commencing the Work the Trade Contractor shall examine and compare the drawings and specifications with information furnished by the Owner pursuant to subsection 4.1.3, relevant field measurements made by the Trade Contractor and any visible conditions at the Worksite affecting the Trade Contract Work.

3.3.2 If in the course of the performance of the obligations in subsection 3.3.1 the Trade Contractor discovers any errors, omissions or inconsistencies in the Contract Documents, the Trade Contractor shall promptly report them to the Owner and Construction Manager. It is recognized, however, that the Trade Contractor is not acting in the capacity of a licensed design professional, and that the Trade Contractor's examination is to facilitate construction and does not create an affirmative responsibility to detect errors, omissions or inconsistencies or to ascertain compliance with applicable laws, building codes or regulations. Following receipt of written notice from the Trade Contractor of defects, the Owner shall promptly inform the Trade Contractor what action, if any, the Trade Contractor shall take with regard to the defects.

3.3.3 The Trade Contractor shall have no liability for errors, omissions or inconsistencies discovered under subsections 3.3.1 and 3.3.2 unless the Trade Contractor fails to report a recognized problem to the Owner and Construction Manager.

3.3.4 The Trade Contractor may be entitled to additional costs or time if there are changes in the scope of the Trade Contract Work that increase the cost of the Work or increase the number of days required to perform the Work, respectively, because of clarifications or instructions arising out of the Trade Contractor's reports described in the three preceding Subsections.

3.4 CONSTRUCTION PERSONNEL AND SUPERVISION

3.4.1 The Trade Contractor shall provide competent supervision for the performance of the Trade Contract Work. Before commencing the Trade Contract Work, Trade Contractor shall notify Owner and Construction Manager in writing of the name and qualifications of its proposed superintendent(s) and project manager so Owner and Construction Manager may review the individual's qualifications. If, for reasonable cause, the Owner or Construction Manager refuses to approve the individual, or withdraws its approval after once giving it, Trade Contractor shall name a different superintendent or project manager for Owner's and Construction Manager's review. Any disapproved superintendent shall not perform in that capacity thereafter at the Worksite.

3.4.2 The Trade Contractor shall be responsible to the Owner for acts or omissions of parties or entities performing portions of the Trade Contract Work for or on behalf of the Trade Contractor or any of its Subcontractors.

3.4.3 The Trade Contractor shall permit only qualified persons to perform the Trade Contract Work. The



Trade Contractor shall enforce safety procedures, strict discipline and good order among persons performing the Trade Contract Work. If the Owner or Construction Manager determines that a particular person does not follow safety procedures, or is unfit or unskilled for the assigned work, the Trade Contractor shall immediately reassign the person on receipt of the Owner's or Construction Manager's written notice to do so.

3.4.4 TRADE CONTRACTOR'S REPRESENTATIVE The Trade Contractor's authorized representative is . The Trade Contractor's representative shall possess full authority to receive instructions from the Owner and to act on those instructions. The Trade Contractor shall notify the Owner and the Construction Manager in writing of a change in the designation of the Trade Contractor's representative. The Trade Contractor's representative is also authorized to bind the Trade Contractor in all matters relating to this Agreement including, without limitation, all matters requiring the Trade Contractor's approval, authorization, or written notice. The Trade Contractor's representative is also authorized to resolve disputes in accordance with Section 12.2 of this Agreement.

3.5 MATERIALS FURNISHED BY THE OWNER OR OTHERS

3.5.1 In the event the Trade Contract Work includes installation of materials or equipment furnished by the Owner or Others, it shall be the responsibility of the Trade Contractor to examine the items so provided and thereupon handle, store and install the items, unless otherwise provided in the Trade Contract Documents, with such skill and care as to provide a satisfactory and proper installation. Loss or damage due to acts or omissions of the Trade Contractor shall be the responsibility of the Trade Contractor and may be deducted from any amounts due or to become due the Trade Contractor. Any defects discovered in such materials or equipment shall be reported at once to the Owner and Construction Manager. Following receipt of written notice from the Trade Contractor of defects, the Owner shall promptly inform the Trade Contractor what action, if any, the Trade Contractor shall take with regard to the defects.

3.6 TESTS AND INSPECTIONS

3.6.1 The Trade Contractor shall schedule all required tests, approvals and inspections of the Trade Contract Work or portions thereof at appropriate times so as not to delay the progress of the Trade Contract Work or other work related to the Project. The Trade Contractor shall give proper notice to the Construction Manager and to all required parties of such tests, approvals and inspections. If feasible, the Owner and Others may timely observe the tests at the normal place of testing. Except as provided in subsection 3.6.3, the Owner shall bear all expenses associated with tests, inspections and approvals required by the Trade Contract Documents, which, unless otherwise agreed to, shall be conducted by an independent testing laboratory or entity retained by the Owner. Unless otherwise required by the Trade Contract Documents, required certificates of testing, approval or inspection shall be secured by the Trade Contractor and promptly delivered to the Owner and Construction Manager.

3.6.2 If the Owner, Construction Manager or appropriate authorities determine that tests, inspections or approvals in addition to those required by the Trade Contract Documents will be necessary, the Trade Contractor shall arrange for the procedures and give timely notice to the Owner, Construction Manager and Others who may observe the procedures. Costs of the additional tests, inspections or approvals are at the Owner's expense except as provided in subsection 3.6.3.

3.6.3 If the procedures described in subsections 3.6.1 and 3.6.2 indicate that portions of the Trade Contract Work fail to comply with the Trade Contract Documents, the Trade Contractor shall be responsible for costs of correction and retesting.

3.7 WARRANTY



3.7.1 The Trade Contract Work shall be executed in accordance with the Trade Contract Documents in a workmanlike manner. The Trade Contractor warrants that all materials and equipment shall be furnished in sufficient quantities to facilitate the proper and expeditious execution of the Trade Contract Work and shall be new unless otherwise specified, of good quality, in conformance with the Trade Contract Documents, and free from defective workmanship and materials. At the Owner's or Construction Manager's request, the Trade Contractor shall furnish satisfactory evidence of the quality and type of materials and equipment furnished. The Trade Contractor further warrants that the Trade Contract Work shall be free from material defects not intrinsic in the design or materials required in the Trade Contract Documents. The Trade Contractor's warranty does not include remedies for defects or damages caused by normal wear and tear during normal usage, use for a purpose for which the Project was not intended, improper or insufficient maintenance, modifications performed by the Owner or Others, or abuse. The Trade Contractor's warranty pursuant to this section shall commence on the Date of Substantial Completion.

3.7.2 The Trade Contractor shall obtain from its Subcontractors and material suppliers any special or extended warranties required by the Trade Contract Documents. All such warranties shall be listed in an attached Exhibit to this Agreement.

3.8 CORRECTION OF TRADE CONTRACT WORK WITHIN ONE YEAR

3.8.1 If, prior to Substantial Completion and within one year after the date of Substantial Completion of the Trade Contract Work, any Defective Work is found, the Owner shall promptly notify the Trade Contractor in writing. Unless the Owner provides written acceptance of the condition, the Trade Contractor shall promptly correct the Defective Work at its own cost and time and bear the expense of additional services required for correction of any Defective Work for which it is responsible. If within the one-year correction period the Owner discovers and does not promptly notify the Trade Contractor or give the Trade Contractor an opportunity to test or correct Defective Work as reasonably requested by the Trade Contractor, the Owner waives the Trade Contractor's obligation to correct that Defective Work as well as the Owner's right to claim a breach of the warranty with respect to that Defective Work.

3.8.2 With respect to any portion of Trade Contract Work first performed after Substantial Completion, the one-year correction period shall be extended by the period of time between Substantial Completion and the actual performance of the later Trade Contract Work. Correction periods shall not be extended by corrective work performed by the Trade Contractor.

3.8.3 If the Trade Contractor fails to correct Defective Work within a reasonable time after receipt of written notice from the Owner prior to final payment, the Owner may correct it in accordance with the Owner's right to carry out the Trade Contract Work in section 11.2. In such case, an appropriate Trade Contract Change Order shall be issued deducting the cost of correcting such deficiencies from payments then or thereafter due the Trade Contractor. If payments then or thereafter due Trade Contractor are not sufficient to cover such amounts, the Trade Contractor shall pay the difference to the Owner.

3.8.4 If after the one-year correction period but before the applicable limitation period the Owner discovers any Defective Work, the Owner shall, unless the Defective Work requires emergency correction, promptly notify the Trade Contractor. If the Trade Contractor elects to correct the Defective Work, it shall provide written notice of such intent within fourteen (14) Days of its receipt of notice from the Owner. The Trade Contractor shall complete the correction of Defective Work within a time frame mutually agreed upon by the Trade Contractor and the Owner. If the Trade Contractor does not elect to correct the Defective Work, the Owner may have the Defective Work corrected by itself or Others and charge the Trade Contractor for the reasonable cost of the correction and other directly related



expenses. Owner shall provide Trade Contractor with an accounting of correction costs it incurs.

3.8.5 If the Trade Contractor's correction or removal of Defective Work causes damage to or destroys other completed or partially completed Work or existing buildings, the Trade Contractor shall be responsible for the cost of correcting the destroyed or damaged property.

3.8.6 The one-year period for correction of Defective Work does not constitute a limitation period with respect to the enforcement of the Trade Contractor's other obligations under the Trade Contract Documents.

3.8.7 Prior to final payment, at the Owner's option and with the Trade Contractor's agreement, the Owner may elect to accept Defective Work rather than require its removal and correction. In such case the Contract Price shall be equitably adjusted for any diminution in the value of the Project caused by such Defective Work. Before the Owner accepts any such change it must be documented in writing with a Change Order signed by both the Trade Contractor and Owner.

3.9 CORRECTION OF COVERED TRADE CONTRACT WORK

3.9.1 On request of the Owner or Construction Manager, Trade Contract Work that has been covered without a requirement that it be inspected prior to being covered may be uncovered for the Owner's or Construction Manager's inspection. The Owner shall pay for the costs of uncovering and replacement if the Work proves to be in conformance with the Trade Contract Documents, or if the defective condition was caused by the Owner or Others. If the uncovered Trade Contract Work proves to be defective, the Trade Contractor shall pay the costs of uncovering and replacement.

3.9.2 If contrary to specific requirements in the Trade Contract Documents or contrary to a specific request from the Owner or Construction Manager, a portion of the Trade Contract Work is covered, the Owner or Construction Manager, by written request, may require the Trade Contractor to uncover the Trade Contract Work for the Owner's or Construction Manager's observation. In this circumstance the Trade Contract Work shall be uncovered and recovered at the Trade Contractor's expense and with no adjustment to the Trade Contract Time. Costs incurred by the Owner as a direct result of the above shall be deducted from the Trade Contract Price.

3.10 SAFETY OF PERSONS AND PROPERTY

3.10.1 SAFETY PRECAUTIONS AND PROGRAMS The Trade Contractor shall have overall responsibility for safety precautions and programs in the performance of the Trade Contract Work. While this section establishes the responsibility for safety between the Owner and Trade Contractor, it does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with the provisions of applicable laws and regulations.

3.10.2 The Trade Contractor shall seek to avoid injury, loss or damage to persons or property by taking reasonable steps to protect:

3.10.2.1 its employees and other persons at the Worksite;

3.10.2.2 materials and equipment stored at on-site or off-site locations for use in the Trade Contract Work; and

3.10.2.3 property located at the site and adjacent to Trade Contract Work areas, whether or not the property is part of the Trade Contract Work.

3.10.3 TRADE CONTRACTOR'S SAFETY REPRESENTATIVE The Trade Contractor's Worksite Safety Representative is who shall act as the Trade Contractor's authorized safety representative with a duty



to prevent accidents in accordance with subsection 3.10.2 If no individual is identified in this section, the authorized safety representative shall be the Trade Contractor's Representative. The Trade Contractor shall report immediately in writing to the Owner and Construction Manager all recordable accidents and injuries occurring at the Worksite. When the Trade Contractor is required to file an accident report with a public authority, the Trade Contractor shall furnish a copy of the report to the Owner and Construction Manager.

3.10.4 The Trade Contractor shall provide the Owner and Construction Manager with copies of all notices required of the Trade Contractor by law or regulation. The Trade Contractor's safety program shall comply with the requirements of governmental and quasi-governmental authorities having jurisdiction.

3.10.5 Damage or loss not insured under property insurance which may arise from the Trade Contract Work, to the extent caused by the negligent acts or omissions of the Trade Contractor, or anyone for whose acts the Trade Contractor may be liable, shall be promptly remedied by the Trade Contractor.

3.10.6 If the Owner or Construction Manager deems any part of the Trade Contract Work or Worksite unsafe, the Owner or Construction Manager, without assuming responsibility for the Trade Contractor's safety program, may require the Trade Contractor to stop performance of the Trade Contract Work or take corrective measures satisfactory to the Owner, or both. If the Trade Contractor does not adopt corrective measures, the Owner may perform them and deduct their cost from the Trade Contract Price. The Trade Contractor agrees to make no claim for damages, for an increase in the Trade Contract Price or for a change in the Trade Contract Time based on the Trade Contractor's compliance with the Owner's or Construction Manager's reasonable request.

3.11 EMERGENCIES

3.11.1 In an emergency, the Trade Contractor shall act in a reasonable manner to prevent personal injury or property damage. Any change in the Trade Contract Price or Trade Contract Time resulting from the actions of the Trade Contractor in an emergency situation shall be determined as provided in ARTICLE 8.

3.12 HAZARDOUS MATERIALS

3.12.1 The Trade Contractor shall not be obligated to commence or continue Trade Contract Work until any Hazardous Material discovered at the Worksite has been removed, rendered or determined to be harmless by the Owner as certified by an independent testing laboratory and approved by the appropriate government agency.

3.12.2 If after the commencement of the Trade Contract Work a Hazardous Material is discovered at the Worksite, the Trade Contractor shall be entitled to immediately stop Trade Contract Work in the affected area. The Trade Contractor shall report the condition to the Owner, the Construction Manager, and, if required, the government agency with jurisdiction.

3.12.3 The Trade Contractor shall not be required to perform any Trade Contract Work relating to or in the area of Hazardous Material without written mutual agreement.

3.12.4 The Owner shall be responsible for retaining an independent testing laboratory to determine the nature of the Hazardous Material encountered and whether the material requires corrective measures or remedial action. Such measures shall be the sole responsibility of the Owner, and shall be performed in a manner minimizing any adverse effects upon the Trade Contract Work. The Trade Contractor shall resume Trade Contract Work in the area affected by any Hazardous Material only upon written agreement between the Parties after the Hazardous Material has been removed or rendered harmless



and only after approval, if necessary, of the governmental agency with jurisdiction.

3.12.5 If the Trade Contractor incurs additional costs or is delayed due to the presence or remediation of Hazardous Material, the Trade Contractor shall be entitled to an equitable adjustment in the Trade Contract Price or the Trade Contract Time.

3.12.6 To the extent not caused by the negligent acts or omissions of the Trade Contractor, its Subcontractors and Sub-subcontractors, and the agents, officers, directors and employees of each of them, the Owner shall defend, indemnify and hold harmless the Trade Contractor, its Subcontractors and Sub-subcontractors, and the agents, officers, directors and employees of each of them, from and against any and all direct claims, damages, losses, costs and expenses, including but not limited to attorney's fees, costs and expenses incurred in connection with any dispute resolution process, to the extent permitted pursuant to section 6.6, arising out of or relating to the performance of the Trade Contract Work in any area affected by Hazardous Material. To the extent portions of this paragraph are in conflict with SF 396 (codified at Iowa Code Section 537A.5) said portions are void and unenforceable.

3.12.7 MATERIALS BROUGHT TO THE WORKSITE

3.12.7.1 Material Safety Data (MSD) sheets as required by law and pertaining to materials or substances used or consumed in the performance of the Trade Contract Work, whether obtained by the Trade Contractor, Subcontractors, the Owner or Others, shall be maintained at the Worksite by the Trade Contractor and made available to the Owner, Construction Manager, Subcontractors and Others.

3.12.7.2 The Trade Contractor shall be responsible for the proper delivery, handling, application, storage, removal and disposal of all materials and substances brought to the Worksite by the Trade Contractor in accordance with the Trade Contract Documents and used or consumed in the performance of the Trade Contract Work.

3.12.7.3 The Trade Contractor shall indemnify and hold harmless the Owner, Construction Manager, their agents, officers, directors and employees, from and against any and all claims, damages, losses, costs and expenses, including but not limited to attorney's fees, costs and expenses incurred in connection with any dispute resolution procedure, arising out of or relating to the delivery, handling, application, storage, removal and disposal of all materials and substances brought to the Worksite by the Trade Contractor in accordance or not in accordance with the Trade Contract Documents. To the extent portions of this paragraph are in conflict with SF 396 (codified at Iowa Code Section 537A.5) said portions are void and unenforceable.

3.12.8 The terms of this section shall survive the completion of the Trade Work or any termination of this Agreement.

3.13 SUBMITTALS

3.13.1 The Trade Contractor shall submit to the Construction Manager, and the Design Professional, for review and approval all shop drawings, samples, product data and similar submittals required by the Trade Contract Documents. Submittals may be submitted in electronic form if required in accordance with ConsensusDocs 200.2 and subsection 4.4.1. The Trade Contractor shall be responsible to the Owner for the accuracy and conformity of its submittals to the Trade Contract Documents. The Trade Contractor shall prepare and deliver its submittals in a manner consistent with the Construction Schedule and in such time and sequence so as not to delay the performance of the Trade Contract Work or the work of the Owner and Others. When the Trade Contractor delivers its submittals the Trade Contractor shall identify in writing for each submittal all changes, deviations or substitutions from the requirements of the Trade Contract Documents. The review and approval of any Trade Contractor



submittal shall not be deemed to authorize changes, deviations or substitutions from the requirements of the Trade Contract Documents unless express written approval is obtained from the Owner specifically authorizing such deviation, substitution or change. To the extent a change, deviation or substitution causes an impact to the Contract Price or Contract Time, such approval shall be promptly memorialized in a Change Order. Further, the Construction Manager and Design Professional shall not make any change, deviation or substitution through the submittal process without specifically identifying and authorizing such deviation to the Trade Contractor. In the event that the Trade Contract Documents do not contain submittal requirements pertaining to the Trade Contract Work, the Trade Contractor agrees upon request to submit in a timely fashion to the Construction Manager and the Design Professional for review and approval any shop drawings, samples, product data, manufacturers' literature or similar submittals as may reasonably be required by the Owner, Construction Manager, or Design Professional.

3.13.2 The Owner shall be responsible for review and approval of submittals with reasonable promptness to avoid causing delay.

3.13.3 The Trade Contractor shall perform all Trade Contract Work strictly in accordance with approved submittals. Approval of shop drawings is not authorization to Trade Contractor to perform Changed Work, unless the procedures of ARTICLE 8 are followed. Approval does not relieve the Trade Contractor from responsibility for Defective Work resulting from errors or omissions of any kind on the approved Shop Drawings.

3.13.4 Record copies of the following, incorporating field changes and selections made during construction, shall be maintained by the Trade Contractor at the Project site and available to the Owner upon request: drawings, specifications, addenda, Trade Contract Change Order and other modifications, and required submittals including product data, samples and shop drawings.

3.13.5 No substitutions shall be made in the Trade Contract Work unless permitted in the Trade Contract Documents and then only after the Trade Contractor obtains approvals required under the Trade Contract Documents for substitutions. All such substitutions shall be promptly memorialized in a Change Order no later than seven (7) Days following approval by the Owner and, if applicable, provide for an adjustment in the Contract Price or Contract Time.

3.13.6 The Trade Contractor shall prepare and submit to the Construction Manager for submission to the Owner

(Check one only)

- final marked up as-built drawings
- updated electronic data, in accordance with ConsensusDocs 200.2 and section 4.4.1
- such documentation as defined by the Parties by attachment to this Agreement,

in general documenting how the various elements of the Trade Contract Work were actually constructed or installed.

3.14 PROFESSIONAL SERVICES

3.14.1 The Trade Contractor may be required to procure professional services in order to carry out its responsibilities for construction means, methods, techniques, sequences and procedures for such services specifically called for by the Contract Documents. The Trade Contractor shall obtain these professional services and any design certifications required from State of Iowa licensed design professionals. All drawings, specifications, calculations, certifications and submittals prepared by such



design professionals shall bear the signature and seal of such design professionals and the Owner and the Design Professional shall be entitled to rely upon the adequacy, accuracy and completeness of such design services. If professional services are specifically required by the Contract Documents, the Owner shall indicate all required performance and design criteria. The Trade Contractor shall not be responsible for the adequacy of such performance and design criteria. The Trade Contractor shall not be required to provide such services in violation of existing laws, rules and regulations in the jurisdiction where the Project is located.

3.15 WORKSITE CONDITIONS

3.15.1 WORKSITE VISIT The Trade Contractor acknowledges that it has visited, or has had the opportunity to visit, the Worksite to visually inspect the general and local conditions which could affect the Trade Contract Work.

3.15.2 CONCEALED OR UNKNOWN SITE CONDITIONS If the conditions at the Worksite are (a) subsurface or other concealed physical conditions which are materially different from those indicated in the Trade Contract Documents, or (b) unusual and unknown physical conditions which are materially different from conditions ordinarily encountered and generally recognized as inherent in Trade Contract Work provided for in the Trade Contract Documents, the Trade Contractor shall stop Trade Contract Work and give immediate written notice of the condition to the Owner, Construction Manager and the Design Professional. The Trade Contractor shall not be required to perform any work relating to the unknown condition without the written mutual agreement of the Parties. Any change in the Contract Price or the Contract Time as a result of the unknown condition shall be determined as provided in this article. The Trade Contractor shall provide the Owner and the Construction Manager with written notice of any claim as a result of unknown conditions within the time period set forth in section 8.4.

3.16 PERMITS AND TAXES

3.16.1 Trade Contractor shall give public authorities all notices required by law and, except for permits and fees which are the responsibility of the Owner pursuant to section 4.2, shall obtain and pay for all necessary permits, licenses and renewals pertaining to the Trade Contract Work. Trade Contractor shall provide to Owner copies of all notices, permits, licenses and renewals required under this Agreement.

3.16.2 Trade Contractor shall pay all applicable taxes legally enacted when bids are received or negotiations concluded for the Trade Contract Work provided by the Trade Contractor.

3.16.3 The Contract Price or Contract Time shall be equitably adjusted by Trade Contract Change Order for additional costs resulting from any changes in laws, ordinances, rules and regulations enacted after the date of this Agreement, including increased taxes.

3.16.3 (Deleted)

3.17 CUTTING, FITTING AND PATCHING

3.17.1 The Trade Contractor shall perform cutting, fitting and patching necessary to coordinate the various parts of the Trade Contract Work and to prepare its Trade Contract Work for the work of the Owner or Others.

3.17.2 Cutting, patching or altering the work of the Owner or Others shall be done with the prior written approval of the Owner. Such approval shall not be unreasonably withheld.

3.18 CLEANING UP

3.18.1 The Trade Contractor shall regularly remove debris and waste materials at the Worksite resulting



from the Trade Contract Work. Prior to discontinuing Trade Contract Work in an area, the Trade Contractor shall clean the area and remove all rubbish and its construction equipment, tools, machinery, waste and surplus materials. The Trade Contractor shall minimize and confine dust and debris resulting from construction activities. At the completion of the Trade Contract Work, the Trade Contractor shall remove from the Worksite all construction equipment, tools, surplus materials, waste materials and debris.

3.18.2 If the Trade Contractor fails to commence compliance with cleanup duties within two (2) business Days after written notification from the Owner or the Construction Manager of noncompliance, the Owner may implement appropriate cleanup measures without further notice and the cost shall be deducted from any amounts due or to become due the Trade Contractor in the next payment period.

3.19 ACCESS TO TRADE CONTRACT WORK The Trade Contractor shall facilitate the access of the Owner, Construction Manager, Design Professional and Others to Trade Contract Work in progress.

3.20 COST MONITORING The Trade Contractor shall provide the Construction Manager with cost monitoring information appropriate for the manner of Trade Contractor's compensation, to enable the Construction Manager to develop and track construction and project budgets, including amounts for work in progress, uncompleted work and proposed changes.

3.21 ROYALTIES, PATENTS AND COPYRIGHTS The Trade Contractor shall pay all royalties and license fees which may be due on the inclusion of any patented or copyrighted materials, methods or systems selected by the Trade Contractor and incorporated in the Trade Contract Work. The Trade Contractor shall defend, indemnify and hold the Owner harmless from all suits or claims for infringement of any patent rights or copyrights arising out of such selection. The Owner agrees to indemnify and hold the Trade Contractor harmless from any suits or claims of infringement of any patent rights or copyrights arising out of any patented or copyrighted materials, methods or systems specified by the Owner, Construction Manager and Design Professional. To the extent portions of this paragraph are in conflict with SF 396 (codified at Iowa Code Section 537A.5) said portions are void and unenforceable.

3.22 CONFIDENTIALITY The Owner shall treat as confidential information all of the Trade Contractor's estimating systems and historical and parameter cost data that may be disclosed to the Owner in connection with the performance of this Agreement if they are specified and marked as confidential and shall mark them. If a document is not marked as "Confidential" it will not be treated as such. Nothing contained herein, however, shall be interpreted in a manner that modifies or is in conflict with the purpose and application of the open records laws contained in the Code of Iowa.

ARTICLE 4 OWNER'S RESPONSIBILITIES

4.1 INFORMATION SERVICES

4.1.1 FULL INFORMATION Any information or services to be provided by the Owner shall be provided in a timely manner so as not to delay the Trade Contract Work.

4.1.2 FINANCIAL INFORMATION Upon the written request of the Trade Contractor, the Owner shall provide the Trade Contractor with evidence of Project financing. If requested in writing, evidence of such financing shall be a condition precedent to the Trade Contractor's commencing or continuing the Trade Contract Work. The Trade Contractor shall be notified by the Owner prior to any material change in Project financing.

4.1.3 WORKSITE INFORMATION Except to the extent that the Trade Contractor knows of any inaccuracy, the Trade Contractor is entitled to rely on Worksite information furnished by the Owner pursuant to this subsection. To the extent the Owner has obtained, or is required elsewhere in the



Trade Contract Documents to obtain, the following Worksite information, the Owner shall provide at the Owner's expense and with reasonable promptness:

4.1.3.1 information describing the physical characteristics of the site, including surveys, site evaluations, legal descriptions, data or drawings depicting existing conditions, subsurface conditions and environmental studies, reports and investigations;

4.1.3.2 tests, inspections and other reports dealing with environmental matters, Hazardous Material and other existing conditions, including structural, mechanical and chemical tests, required by the Trade Contract Documents or by law; and

4.1.3.3 any other information or services requested in writing by the Trade Contractor which are relevant to the Trade Contractor's performance of the Trade Contract Work and under the Owner's control. The information required by subsection 4.1.3 shall be provided in reasonable detail. Legal descriptions shall include easements, title restrictions, boundaries, and zoning restrictions. Worksite descriptions shall include existing buildings and other construction and all other pertinent site conditions. Adjacent property descriptions shall include structures, streets, sidewalks, alleys, and other features relevant to the Trade Contract Work. Utility details shall include available services, lines at the Worksite and adjacent and connection points. The information shall include public and private information, subsurface information, grades, contours, and elevations, drainage data, exact locations and dimensions, and benchmarks that can be used by the Trade Contractor in laying out the Trade Contract Work. The Trade Contractor shall in writing request from the Owner any information identified in Paragraph 4.1.3 that the Trade Contractor believes the Owner has obtained but has not provided to the Trade Contractor.

4.1.3.4 OWNER'S REPRESENTATIVE The Owner's representative is test. The Owner's representative shall have authority to bind the Owner in all matters relating to this Agreement including, without limitation, all matters requiring the Owner's approval, authorization or written notice. If the Owner changes its representative as listed above, the Owner shall notify the Trade Contractor in advance in writing. The Owner's Representative is also authorized to resolve disputes in accordance with Section 12.2 of this Agreement. The Construction Manager, while unauthorized to modify the Agreement or settle a dispute without the Owner's approval, however, does have the requisite authority to act as the Owner's agent throughout the construction of the Project in accordance with the contract between the Owner and the Construction Manager (ConsensusDOCS 801 as modified by the State of Iowa).

4.2 BUILDING PERMIT, FEES AND APPROVALS Except for those permits and fees related to the Trade Contract Work which are the responsibility of the Trade Contractor pursuant to subsection 3.16.1, the Owner shall secure and pay for all other permits, approvals, easements, assessments and fees required for the development, construction, use or occupancy of permanent structures or for permanent changes in existing facilities, including the building permit.

4.3 Deleted

4.4 TRADE CONTRACT DOCUMENTS Unless otherwise specified, Owner shall provide One (1) copies of the Trade Contract Documents to the Trade Contractor without cost. Additional copies will be provided to the Trade Contractor at cost. This paragraph is not intended to be in conflict with Iowa Code Section 26.3 requirement that a sufficient number of copies of the contract documents be made available to bidders without charge (but a deposit not to exceed \$250 per set may be required). If the Trade Contractor was required to make a deposit for a set of Trade Contract Documents for purposes of bidding then the Trade Contractor may elect to have the deposit returned instead of being provided with an additional copy.



4.4.1 DIGITIZED DOCUMENTS If the Owner requires that the Owner, Design Professional, Construction Manager and Trade Contractor exchange documents and data in electronic or digital form, prior to any such exchange, the Owner, Design Professional, Construction Manager and Trade Contractor shall agree on a written protocol governing all exchanges in ConsensusDocs 200.2 or a separate Agreement, which, at a minimum, shall specify: (a) the definition of documents and data to be accepted in electronic or digital form or to be transmitted electronically or digitally; (b) management and coordination responsibilities; (c) necessary equipment, software and services; (d) acceptable formats, transmission methods and verification procedures; (e) methods for maintaining version control; (f) privacy and security requirements; and (g) storage and retrieval requirements. Except as otherwise agreed to by the Parties in writing, the Parties shall each bear their own costs as identified in the protocol. In the absence of a written protocol, use of documents and data in electronic or digital form shall be at the sole risk of the recipient.

4.5 OWNER'S CUTTING AND PATCHING Cutting, patching or altering the Trade Contract Work by the Owner or Others shall be done with the prior written approval of the Trade Contractor, which approval shall not be unreasonably withheld.

4.6 OWNER'S RIGHT TO CLEAN UP In case of a dispute between the Trade Contractor and Others with regard to respective responsibilities for cleaning up at the Worksite, the Owner may implement appropriate cleanup measures after two (2) business Days' notice and allocate the cost among those responsible during the following pay period.

4.7 COST OF CORRECTING DAMAGED OR DESTROYED WORK With regard to damage or loss attributable to the acts or omissions of the Owner or Others and not to the Trade Contractor, the Owner may either (a) promptly remedy the damage or loss or (b) accept the damage or loss. If the Trade Contractor incurs additional costs or is delayed due to such loss or damage, the Trade Contractor shall be entitled to an equitable adjustment in the Trade Contract Price or Trade Contract Time.

ARTICLE 5 SUBCONTRACTS

5.1 SUBCONTRACTORS The Trade Contract Work not performed by the Trade Contractor with its own forces shall be performed by Subcontractors.

5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE TRADE CONTRACT WORK

5.2.0 The Trade Contractor must identify all Subcontractors and suppliers within 48 hours of the published date and time for which bids must be submitted, in accordance with Iowa Code Section 8A.311, as amended by House File 646 in 2011. Subcontractors and suppliers may not be changed without the approval of the Owner. Requests for changing a Subcontractor or supplier must identify the reason for the proposed change, the name of the new Subcontractor or supplier, and the change in the subcontractor or supplier price as a result of the change. Any reduction in subcontractor or supplier price as a result of the change, if the change is approved by the Owner, shall be deducted from the Trade Contract Price via a deductive Change Order. Any such changes, if approved by the Owner, which result in an increase in the Trade Contract Price shall be borne by the Trade Contractor.

5.2.1 If the Owner has a reasonable objection to any proposed subcontractor or material supplier, the Owner shall notify the Trade Contractor in writing.

5.2.2 If the Owner has reasonably and promptly objected as provided in subsection 5.2.1, the Trade Contractor shall not contract with the proposed subcontractor or material supplier, and the Trade Contractor shall propose another Subcontractor acceptable to the Owner. To the extent the substitution results in an increase or decrease in the Trade Contract Price or Trade Contract Time, an appropriate



Trade Contract Change Order shall be issued as provided in ARTICLE 8.

5.3 BINDING OF SUBCONTRACTORS The Trade Contractor agrees to bind every Subcontractor (and require every Subcontractor to so bind its subcontractors) to all the provisions of this Agreement and the Trade Contract Documents as they apply to the Subcontractor's portion of the Trade Contract Work.

5.4 Deleted

5.5 CONTINGENT ASSIGNMENT OF SUBCONTRACTS

5.5.1 If this Agreement is terminated, each subcontract agreement shall be assigned by the Trade Contractor to the Owner, subject to the prior rights of any surety, provided that:

5.5.1.1 this Agreement is terminated by the Owner pursuant to sections 11.3 or 11.4; and

5.5.1.2 the Owner accepts such assignment after termination by notifying the Subcontractor and Trade Contractor in writing, and assumes all rights and obligations of the Contractor pursuant to each subcontract agreement.

5.5.2 If the Owner accepts such an assignment, and the Work has been suspended for more than thirty (30) consecutive Days, following termination, if appropriate, the Subcontractor's compensation shall be equitably adjusted as a result of the suspension.

ARTICLE 6 TRADE CONTRACT TIME

6.1 PERFORMANCE OF THE TRADE CONTRACT WORK

6.1.1 DATE OF COMMENCEMENT The Date of Commencement is the date of Owner's written notice to proceed unless otherwise set forth below:

6.1.2 TIME Substantial Completion of the Trade Contract Work shall be achieved in xxx (xx) Days from the Date of Commencement. Unless otherwise specified in the Certificate of Substantial Completion, the Trade Contractor shall achieve Final Completion within 30 Days after the date of Substantial Completion, subject to adjustments as provided for in the Trade Contract Documents.

6.1.3 Time limits stated above are of the essence of this Agreement.

6.1.4 Unless instructed by the Owner in writing, the Trade Contractor shall not knowingly commence the Trade Contract Work before the effective date of insurance to be provided by the Trade Contractor and Owner as required by the Trade Contract Documents.

6.2 CONSTRUCTION SCHEDULE Prior to the commencement of the construction of the Trade Contract Work, the Trade Contractor shall submit a copy of its critical path method (CPM) construction schedule showing the completion of the Trade Contract Work within the allowable number of days identified above. The Trade Contractor shall regularly update its CPM construction schedule for the Trade Contract Work and promptly furnish the Construction Manager on an ongoing basis scheduling information requested by the Construction Manager for the Trade Contract Work. In consultation with the Trade Contractor, the Construction Manager shall incorporate the Trade Contract Work and work of other trade contractors into an overall Construction Schedule for the entire Project. The Trade Contractor shall be bound by the Construction. Nothing in this Trade Contractor Agreement shall relieve the Trade Contractor of any liability for any unexcused failure to comply with its original schedule, the Construction Schedule, or any completion dates. The Construction Manager shall have the right to coordinate the Trade Contractors, including the right, if necessary, to change the time, order and priority in which the various portions of the Trade Contract Work and the other work associated with the Project shall be performed.



6.3 DELAYS AND EXTENSIONS OF TIME

6.3.1 If the Trade Contractor is delayed at any time in the commencement or progress of the Work by any cause beyond the control of the Trade Contractor, the Trade Contractor shall be entitled to an equitable extension of the Trade Contract Time if the Trade Contractor is able to show that the critical path of the Trade Contract Work was delayed by causes beyond the control of the Trade Contractor. Examples of causes beyond the control of the Trade Contractor include, but are not limited to, the following: acts or omissions of the Owner, the Design Professional, Construction Manager or Others; changes in the Work or the sequencing of the Work ordered by the Owner, or arising from decisions of the Owner that impact the time of performance of the Work; transportation delays not reasonably foreseeable; labor disputes not involving the Trade Contractor; general labor disputes impacting the Project but not specifically related to the Worksite; fire; terrorism, epidemics, adverse governmental actions, unavoidable accidents or circumstances; adverse weather conditions not reasonably anticipated; encountering Hazardous Materials; concealed or unknown conditions; delay authorized by the Owner pending dispute resolution; and suspension by the Owner under section 11.1. The Trade Contractor shall submit any requests for equitable extensions of Contract Time in accordance with the provisions of ARTICLE 8.

6.3.2 In addition, if the Trade Contractor is able to show that it incurred additional costs because the critical path of the Trade Contract Work was delayed by acts or omissions of the Owner, the Design Professional, Construction Manager or Others, changes in the Work or the sequencing of the Work ordered by the Owner, or arising from decisions of the Owner that impact the time of performance of the Work, encountering Hazardous Materials, or concealed or unknown conditions, delay authorized by the Owner pending dispute resolution or suspension by the Owner under section 11.1, then the Trade Contractor shall be entitled to an equitable adjustment in the Trade Contract Price subject to section 6.6.

6.3.3 NOTICE OF DELAYS In the event delays to the Trade Contract Work are encountered for any reason, the Trade Contractor shall provide prompt written notice to the Owner and the Construction Manager of the cause of such delays after Trade Contractor first recognizes the delay. The Owner and Trade Contractor agree to undertake reasonable steps to mitigate the effect of such delays.

6.4 NOTICE OF DELAY CLAIMS If the Trade Contractor believes it is due an equitable extension of Trade Contract Time or an equitable adjustment in Trade Contract Price as a result of a delay described in subsection 6.3.1, the Trade Contractor shall give the Owner and the Construction Manager written notice of the claim in accordance with section 8.4. If the Trade Contractor causes delay in the completion of the Trade Contract Work, the Owner shall be entitled to recover its additional costs subject to subsection 6.6. The Owner shall process any such claim against the Trade Contractor in accordance with ARTICLE 8.

6.5 LIQUIDATED DAMAGES

6.5.1 SUBSTANTIAL COMPLETION The Owner and the Trade Contractor agree that this Agreement shall / shall not (indicate one) provide for the imposition of liquidated damages based on the Date of Substantial Completion.

6.5.1.1 The Trade Contractor understands that if the Date of Substantial Completion established by this Agreement, as may be amended by subsequent Trade Change Order, is not attained, the Owner will suffer damages which are difficult to determine and accurately specify. The Trade Contractor agrees that if the Date of Substantial Completion is not attained the Trade Contractor shall pay the Owner Zero Dollars and No Cents (\$0.00) as liquidated damages and not as a penalty for each day that Substantial Completion extends beyond the Date of Substantial Completion. The liquidated damages provided herein shall be in lieu of all liability for any and all



extra costs, losses, expenses, claims, penalties and any other damages of whatsoever nature incurred by the Owner which are occasioned by any delay in achieving the Date of Substantial Completion.

6.5.2 FINAL COMPLETION The Owner and the Trade Contractor agree that this Agreement shall / shall not (indicate one) provide for the imposition of liquidated damages based on the Date of Final Completion.

6.5.2.1 The Trade Contractor understands that if the Date of Final Completion established by this Agreement, as may be amended by subsequent Trade Change Order is not attained, the Owner will suffer damages which are difficult to determine and accurately specify. The Trade Contractor agrees that if the Date of Final Completion is not attained the Trade Contractor shall pay the Owner Zero Dollars and No Cents (\$0.00) as liquidated damages and not as a penalty for each day that Final Completion extends beyond the Date of Final Completion. The liquidated damages provided herein shall be in lieu of all liability for any and all extra costs, losses, expenses, claims, penalties and any other damages of whatsoever nature incurred by the Owner which are occasioned by any delay in achieving the Date of Final Completion.

6.5.3 OTHER LIQUIDATED DAMAGES The Owner and the Trade Contractor may agree upon the imposition of liquidated damages based on other project milestones or performance requirements. Such agreement shall be included as an exhibit to this Agreement.

6.6 LIMITED MUTUAL WAIVER OF CONSEQUENTIAL DAMAGES Except for damages mutually agreed upon by the Parties as liquidated damages in Section 6.5 and excluding losses covered by insurance required by the Trade Contract Documents, the Owner and the Trade Contractor agree to waive all claims against each other for any consequential damages that may arise out of or relate to this Agreement, except for those specific items of damages excluded from this waiver as mutually agreed upon by the Parties and identified below. The Owner agrees to waive damages including but not limited to the Owner's loss of use of the Project, any rental expenses incurred, loss of income, profit or financing related to the Project, as well as the loss of business, loss of financing, principal office overhead and expenses, loss of profits not related to this Project, loss of reputation, or insolvency. The Trade Contractor agrees to waive damages including but not limited to loss of business, loss of financing, principal office overhead and expenses, loss of profits not related to this Project, loss of bonding capacity, loss of reputation, or insolvency. The provisions of this section shall also apply to the termination of this Agreement and shall survive such termination.

6.6.1 The following items of damages are excluded from this mutual waiver: The provisions of this section shall also apply to the termination of this Agreement and shall survive such termination. The Owner and the Trade Contractor shall require similar waivers in contracts with Subcontractors and Others retained for the Project.

ARTICLE 7 TRADE CONTRACT PRICE

7.1 LUMP SUM As full compensation for performance by the Trade Contractor of the Work in conformance with the Contract Documents, the Owner shall pay the Trade Contractor the lump sum price of: XX dollars and XX cents (\$XX.XX). The lump sum price is hereinafter referred to as the Trade Contract Price, which shall be subject to increase or decrease as provided in article 8.

Lump Sum Price includes Base Bid of \$X.XX and Alternate #XX for {alternate description} for \$X.XX for a total Lump Sum Price of \$X.XX.

7.2 ALLOWANCES

7.2.1 All allowances stated in the Trade Contract Documents shall be included in the Trade Contract Price. The Owner shall select allowance items in a timely manner so as not to delay the Trade Contract



Work.

7.2.2 Allowances shall include the costs of materials, supplies and equipment delivered to the Worksite, less applicable trade discounts and including requisite taxes, unloading and handling at the Worksite, and labor and installation, unless specifically stated otherwise. The Trade Contractor's Overhead and profit for the allowances shall be included in the Trade Contract Price, but not in the allowances. The Trade Contract Price shall be adjusted by Trade Contract Change Order to reflect the actual costs when they are greater than or less than the allowances.

ARTICLE 8 CHANGES

Changes in the Trade Contract Work that are within the general scope of this Agreement shall be accomplished, without invalidating this Agreement, by Trade Contract Change Order, and Trade Contract Interim Directed Change.

8.1 TRADE CHANGE ORDER

8.1.1 The Owner may order or the Trade Contractor may request changes in the Trade Contract Work or the timing or sequencing of the Trade Contract Work that impacts the Trade Contract Price or the Trade Contract Time. All such changes in the Trade Contract Work that affect Trade Contract Time or Trade Contract Price shall in the form of a Trade Contract Change Order. Any such requests for a change in the Trade Contract Price or the Trade Contract Time shall be processed in accordance with this article 8. Trade Contract Change Orders shall be executed on the ConsensusDOCS 813 - Trade Contract Change Order (CM as Owner's Agent) with attachments as necessary.

8.1.2 The Owner, with the assistance of the Construction Manager, and the Trade Contractor shall negotiate in good faith an appropriate adjustment to the Trade Contract Price or the Trade Contract Time and shall conclude these negotiations as expeditiously as possible. Acceptance of the Trade Contract Change Order and any adjustment in the Trade Contract Price or Trade Contract Time shall not be unreasonably withheld.

8.2 TRADE CONTRACT INTERIM DIRECTED CHANGE

8.2.1 The Construction Manager may issue a written Trade Contract Interim Directed Change signed by the Owner directing a change in the Trade Contract Work prior to reaching agreement with the Trade Contractor on the adjustment, if any, in the Trade Contract Price or the Trade Contract Time.

8.2.2 The Owner, with the assistance of the Construction Manager, and the Trade Contractor shall negotiate expeditiously and in good faith for appropriate adjustments, as applicable, to the Trade Contract Price or the Trade Contract Time arising out of a Trade Contract Interim Directed Change. As the Trade Contract Changed Work is performed, the Trade Contractor shall submit its costs for such work with its application for payment beginning with the next application for payment within thirty (30) Days of the issuance of the Trade Contract Interim Directed Change. If there is a dispute as to the cost to the Owner, the Trade Contractor shall continue to perform the Trade Contract Changed Work set forth in the Trade Contract Interim Directed Change and the Owner shall pay the requirements Trade Contractor the Cost of the Work, defined in 8.3.1.3 below upon receipt of an application for payment and the Owner's (and the Architect's and construction manger's) determination that the work has been completed. The Parties reserve their rights as to the disputed amount, subject to the requirements ARTICLE 12.

8.2.3 When the Owner and the Trade Contractor agree upon the adjustment in the Trade Contract Price or the Trade Contract Time, for a change in the Trade Contract Work directed by a Trade Contract Interim Directed Change, such agreement shall be the subject of a Trade Contract Change Order. The



Trade Contract Change Order shall include all outstanding Trade Contract Interim Directed Changes on which the Owner and Trade Contractor have reached agreement on Contract Price or Contract Time issued since the last Trade Contract Change Order.

8.3 DETERMINATION OF COST

8.3.1 An increase or decrease in the Trade Contract Price or the Trade Contract Time resulting from a change in the Trade Contract Work shall be determined by one or more of the following methods:

8.3.1.1 unit prices set forth in this Agreement or as subsequently agreed;

8.3.1.2 a mutually accepted, itemized lump sum;

8.3.1.3 **COST OF THE WORK** Cost of the Work as defined by this subsection plus 10.0 % for Overhead and 5.0 % for profit. "Cost of the Work" shall include the following costs reasonably incurred to perform a change in the Work

8.3.1.3.1 wages paid for labor in the direct employ of the Constructor in the performance of the Work;

8.3.1.3.2 salaries of the Trade Contractor's employees when stationed at the field office to the extent necessary to complete the applicable Work, employees engaged on the road expediting the production or transportation of material and equipment, and supervisory employees from the principal or branch office performing the functions listed below;

8.3.1.3.3 cost of applicable employee benefits and taxes, including but not limited to, workers' compensation, unemployment compensation, social security, health, welfare, retirement and other fringe benefits as required by law, labor agreements, or paid under the Trade Contractor's standard personnel policy, insofar as such costs are paid to employees of the Trade Contractor who are included in the Cost of the Work in subsections .1 and .2 immediately above;

8.3.1.3.4 reasonable transportation, travel, and hotel expenses of the Trade Contractor's personnel incurred in connection with the Work;

8.3.1.3.5 cost of all materials, supplies, and equipment incorporated in the Work, including costs of inspection and testing if not provided by the Owner, transportation, storage, and handling;

8.3.1.3.6 payments made by the Trade Contractor to Subcontractors for Work performed under this Agreement;

8.3.1.3.7 cost, including transportation and maintenance of all materials, supplies, equipment, temporary facilities, and hand tools not owned by the workers that are used or consumed in the performance of the Work, less salvage value or residual value; and cost less salvage value of such items used, but not consumed that remain the property of the Trade Contractor;

8.3.1.3.8 rental charges of all necessary machinery and equipment, exclusive of hand tools owned by workers, used at the Worksite, whether rented from the Trade Contractor or Others, including installation, repair and replacement, dismantling, removal, maintenance, transportation, and delivery costs. Rental from unrelated third parties shall be reimbursed at actual cost. Rentals from the Trade Contractor or its affiliates, subsidiaries, or related parties shall be reimbursed at the prevailing rates in the locality of the Worksite up to eighty-five percent (85%) of the value of the piece of equipment;

8.3.1.3.9 cost of the premiums for all insurance and surety bonds which the Trade Contractor is



required to procure or deems necessary, and approved by the Owner including any additional premium incurred as a result of any increase in the cost of the Work;

8.3.1.3.10 sales, use, gross receipts or other taxes, tariffs, or duties related to the Work for which the Trade Contractor is liable;

8.3.1.3.11 permits, fees, licenses, tests, and royalties;

8.3.1.3.12 reproduction costs, photographs, facsimile transmissions, long-distance telephone calls, data processing costs and services, postage, express delivery charges, data transmission, telephone service, and computer-related costs at the Worksite to the extent such items are used and consumed in the performance of the Work or are not capable of use after completion of the Work;

8.3.1.3.13 all water, power, and fuel costs necessary for the Work;

8.3.1.3.14 cost of removal of all nonhazardous substances, debris, and waste materials;

8.3.1.3.15 all costs directly incurred to perform a change in the Work which are reasonably inferable from the Contract Documents for the Changed Work;

8.3.1.3.16 DISCOUNTS All discounts for prompt payment shall accrue to the Owner to the extent such payments are made directly by the Owner. To the extent payments are made with funds of the Constructor, all cash discounts shall accrue to the Constructor. All trade discounts, rebates and refunds, and all returns from sale of surplus materials and equipment, shall be credited to the Cost of the Work;

8.3.1.3.17 COST REPORTING The Trade Contractor shall maintain in conformance with generally accepted accounting principles a complete and current set of records that are prepared or used by the Trade Contractor to calculate the Cost of Work. The Owner and Construction Manager shall be afforded access to the Trade Contractor's records, books, correspondence, instructions, drawings, receipts, vouchers, memoranda and similar data relating to requested payment for Cost of the Work. The Trade Contractor shall preserve all such records for a period of three years after the final payment or longer where required by law;

8.3.1.3.18 COST AND SCHEDULE ESTIMATES The Trade Contractor shall use reasonable skill and judgment in the preparation of a cost estimate or schedule for a change to the Work, but does not warrant or guarantee their accuracy

8.3.1.4 If an increase or decrease cannot be agreed to as set forth in Clauses .1 through .3 above, and the Owner or the Construction Manager issues a Trade Contract Interim Directed Change, the cost of the change in the Trade Contract Work shall be determined by the reasonable actual expense and savings of the performance of the Work resulting from the change. If there is a net increase in the Trade Contract Price, the Trade Contractor's Fee shall be adjusted accordingly. In case of a net decrease in the Trade Contract Price, the Trade Contractor's Fee shall not be adjusted unless ten percent (10%) or more of the Project is deleted. The Trade Contractor shall maintain a documented, itemized accounting evidencing the expenses and savings.

8.3.2 If unit prices are set forth in the Trade Contract Documents or are subsequently agreed to by the Parties, but the character or quantity of such unit items as originally contemplated is so different in a proposed Trade Change Order that the original unit prices will cause substantial inequity to the Owner or the Trade Contractor, such unit prices shall be equitably adjusted.

8.4 CLAIMS FOR ADDITIONAL COST OR TIME Except as provided in subsection 6.3.2 and section 6.4 for



any claim for an increase in the Trade Contract Price or the Trade Contract Time, the Trade Contractor shall give the Owner and the Construction Manager written notice of the claim within fourteen (14) Days after the occurrence giving rise to the claim or within fourteen (14) Days after the Trade Contractor first recognizes (or should have recognized) the condition giving rise to the claim, whichever is later. Except in an emergency, notice shall be given before proceeding with the Trade Contract Work. Thereafter, the Trade Contractor shall submit written documentation of its claim, including appropriate supporting documentation, within twenty-one (21) Days after giving notice, unless the Parties mutually agree upon a period of time. The Owner or Construction Manager shall respond in writing denying or approving the Trade Contractor's claim no later than fourteen (14) Days after receipt of the Trade Contractor's claim. Any change in the Trade Contract Price or the Trade Contract Time resulting from such claim shall be authorized by Trade Contract Change Order.

ARTICLE 9 PAYMENT

9.1 GENERAL PROVISIONS Within fourteen (14) calendar Days from the date of execution of this Agreement, the Trade Contractor shall prepare and submit to the Construction Manager for approval a Schedule of Values apportioned to the various divisions or phases of the Trade Contract Work. Each line item contained in the Schedule of Values shall be assigned a monetary price such that the total of all such items shall equal the Trade Contract Price. The Schedule of Values shall be prepared in such detail and be supported by such documents and proof as may be required by the Construction Manager.

9.2 PROGRESS PAYMENTS

9.2.1 APPLICATIONS The Trade Contractor shall submit to the Construction Manager monthly notarized applications for payment. Trade Contractor's applications for payment shall be itemized and supported by the Trade Contractor's Schedule of Values and any other substantiating data as required by this Trade Contractor Agreement or requested by the Construction Manager or Design Professional. Payment applications may include payment requests on account of properly authorized Trade Contract Change Orders and Interim Directed Changes. The progress payment application shall include Trade Contract Work performed through the preceding calendar month. The Construction Manager will review the application and recommend to the Design professional and the Owner amounts payable by the Owner to the Trade Contractor. The Owner, in accordance with the determination of the Design Professional, shall pay the amount otherwise due on any payment application, less any amounts as set forth below, no later than thirty (30) calendar Days after the payment application, or portion thereof, is approved the Design Professional. The Owner may deduct, from any progress payment, such amounts as may be retained pursuant to subsection 9.2.4 below.

9.2.2 STORED MATERIALS AND EQUIPMENT Unless otherwise provided in the contract documents, applications for payment may include materials and equipment not yet incorporated into the Work but delivered to and suitably stored onsite or offsite including applicable insurance, storage and costs incurred transporting the materials to an offsite storage facility. Approval of payment applications for stored materials and equipment stored offsite shall be conditioned on submission by the Trade Contractor of bills of sale and proof of required insurance, or such other procedures satisfactory to the Owner to establish the proper valuation of the stored materials and equipment, the Owner's title to such materials and equipment, and to otherwise protect the Owner's interests therein, including transportation to the site.

9.2.3 CLAIM WAIVERS

9.2.3.1 PARTIAL CLAIMWAIVERS AND AFFIDAVITS As a prerequisite for payment, the Trade Contractor shall provide, in a form satisfactory to the Owner and the Construction Manager, partial claim waivers in the amount of the application for payment and affidavits from the Trade Contractor, and its Subcontractors, Material Suppliers for the completed Trade Contract Work.



Such waivers shall be effective upon payment. In no event shall the Trade Contractor be required to sign an unconditional waiver of claim, either partial or final, prior to receiving payment or in an amount in excess of what it has been paid.

9.2.4 **RETAINAGE** From each progress payment made to the Trade Contractor has the Owner shall retain FIVE (5) percent of the amount otherwise due after deduction of any amounts as provided in section 9.3 and in no event shall such percentage exceed any applicable statutory requirements of this Agreement. Retainage shall be withheld and administered in accordance with Iowa Code Chapter 572:

9.3 **ADJUSTMENT OF TRADE CONTRACTOR'S PAYMENT APPLICATION** The Owner or the Construction Manager, upon notification of the Design Professional, may reject or adjust a Trade Contractor payment application or nullify a previously approved Trade Contractor payment application, in whole or in part, as may reasonably be necessary to protect the Owner from loss or damage based upon the following, to the extent that the Trade Contractor is responsible therefor under this Trade Contractor Agreement:

9.3.1 the Trade Contractor's repeated failure to perform the Trade Contract Work as required by the Trade Contractor Agreement;

9.3.2 loss or damage arising out of or relating to the Trade Contractor Agreement and caused by the Trade Contractor to the Owner, or to the Construction Manager or others to whom the Owner may be liable;

9.3.3 the Trade Contractor's failure to properly pay for labor, materials, equipment or supplies furnished in connection with the Trade Contract Work;

9.3.4 nonconforming or defective Trade Contract Work which has not been corrected in a timely fashion;

9.3.5 reasonable evidence of delay in performance of the Trade Contract Work such that the work will not be completed within the Trade Contract Time, and that the unpaid balance of the Trade Contract Price is not sufficient to offset any liquidated damages or actual damages that may be sustained by the Owner as a result of the anticipated delay caused by the Trade Contractor;

9.3.6 reasonable evidence demonstrating that the unpaid balance of the Trade Contract Price is insufficient to cover the cost to complete the Trade Contract Work; and

9.3.7 third-party claims involving the Trade Contractor or reasonable evidence demonstrating that third-party claims are likely to be filed unless and until the Trade Contractor furnishes the Owner with adequate security in the form of a surety bond, letter of credit or other collateral or commitment which are sufficient to discharge such claims if established. No later than thirty (30) Days after receipt of an application for payment, the Owner or Construction Manager shall give written notice to the Trade Contractor, disapproving or nullifying it or a portion thereof, specifying the reasons for the disapproval or nullification. When the above reasons for disapproving or nullifying an application for payment are removed, payment will be made for amounts previously withheld.

9.4 **PAYMENT NOT ACCEPTANCE** Payment to the Trade Contractor does not constitute or imply acceptance of any portion of the Trade Contract Work.

9.5 **PAYMENT DELAY** If for any reason not the fault of the Trade Contractor, the Trade Contractor does not receive a progress payment from the Owner sixty (60) calendar Days after the time such payment is due, as defined in Subparagraph 9.2.1, then the Trade Contractor, upon giving within seven (7) calendar Days after written notice to the Owner, and without prejudice to and in addition to any other legal remedies, may stop its Trade Contract Work until payment of the full amount owing to the Trade Contractor has been received. The



Trade Contract Price and Trade Contract Time shall be equitably adjusted by a Trade Contract Change Order to reflect reasonable cost and delay resulting from shutdown, delay and start-up.

9.6 SUBSTANTIAL COMPLETION

9.6.1 The Trade Contractor shall notify the Owner, the Construction Manager and the Design Professional when it considers Substantial Completion of the Trade Contract Work or a designated portion to have been achieved. The Construction Manager and the Design Professional shall promptly conduct an inspection to determine whether the Trade Contract Work or designated portion can be occupied or utilized for its intended use by the Owner without excessive interference in completing any remaining unfinished Trade Contract Work by the Trade Contractor. If the Construction Manager and the Design Professional determine that the Trade Contract Work or designated portion has not reached Substantial Completion, the Design Professional, and the Construction Manager, shall promptly compile a list of items to be completed or corrected so the Owner may occupy or utilize the Trade Contract Work or designated portion for its intended use. The Trade Contractor shall promptly complete all items on the list.

9.6.2 When Substantial Completion of the Trade Contract Work or a designated portion is achieved, the Construction Manager and the Design Professional shall prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion, and the respective responsibilities of the Owner and Trade Contractor for interim items such as security, maintenance, utilities, insurance and damage to the Trade Contract Work. The Owner shall assume all responsibilities for items such as security, maintenance, utilities, and insurance, and damage to the Work. The certificate shall also list the items to be completed or corrected, and establish the time for their completion or correction. The Certificate of Substantial Completion shall be submitted to the Trade Contractor for written acceptance of responsibilities assigned in the Certificate.

9.6.3 Unless otherwise provided in the Certificate of Substantial Completion, warranties required by the Trade Contract Documents shall commence on the date of Substantial Completion of the Trade Contract Work or a designated portion.

9.6.4 Uncompleted items shall be completed by the Trade Contractor by the Final Completion date set forth in the Agreement and/or Construction Schedule. The Trade Contractor may request early release of retainage in accordance with Iowa Code Section 26.13. Payment for completed work and retainage shall be made in accordance with Iowa Code Chapters 26 and 573.

9.7 PARTIAL OCCUPANCY OR USE The Owner may occupy or use completed or partially completed portions of the Trade Contract Work when (a) the portion of the Trade Contract Work is designated in a Certificate of Substantial Completion, (b) appropriate insurer(s) consent to the occupancy or use, and (c) appropriate public authorities authorize the occupancy or use. Such partial occupancy or use shall constitute Substantial Completion of that portion of the Trade Contract Work.

9.8 FINAL PAYMENT

9.8.1 APPLICATION Upon acceptance of the Trade Contract Work by the Construction Manager, and approval by the Design Professional, and upon the Trade Contractor furnishing evidence of fulfillment of the Trade Contractor's obligations in accordance with the Trade Contract Documents, the Trade Contractor shall submit its application for final payment. The Construction Manager will review the Trade Contractor's final payment application and recommend to the Design Professional and the Owner an amount payable by the Owner to the Trade Contractor. The Design Professional shall then recommend an amount to be paid by the Owner. Final payment shall be made in accordance with Iowa Code Chapters 26 and 573.



9.8.2 REQUIREMENTS Along with its application for final payment, the Trade Contractor shall furnish to the Construction Manager:

9.8.2.1 an affidavit that all payrolls, bills for materials and equipment, and other indebtedness connected with the Trade Contract Work for which the Owner or its property or the Construction Manager or the Owner's surety might in any way be liable, have been paid or otherwise satisfied;

9.8.2.2 consent of the Trade Contractor's surety to final payment;

9.8.2.3 satisfaction of closeout procedures as may be required by the Trade Contractor Agreement;

9.8.2.4 certification (or other writing indicating) that insurance required by the Trade Contractor Agreement is and will remain effect beyond final payment pursuant to this Trade Contractor Agreement and

9.8.2.5 other data if required by the Owner or Construction Manager, such as receipts, releases, and waivers of liens effective upon payment to the extent and in such form as may be designated by the Owner or Construction Manager. Acceptance of final payment by the Trade Contractor shall constitute a waiver of all claims by the Trade Contractor except those previously made in writing and identified by the Trade Contractor as unsettled at the time of final application for payment.

9.8.3 TIME OF PAYMENT Final payment of the balance of the Trade Contract Price, less any amount retained pursuant to subsection 9.2.4 of this Agreement, and as required by Iowa Code Chapters 26 and 573, which among other things requires that twice the amount of an Iowa Code Chapter 573 subcontractor claim be withheld from final payment, shall be made to the Trade contractor within sixty (60) Days after the Trade Contractor has submitted a complete and accurate application for final payment.

9.8.4 LATE PAYMENT INTEREST Progress payments or final payment due and unpaid under this Trade Contractor Agreement shall bear interest from the date payment is due at the statutory rate prevailing at the place of the Project.

9.9 PAYMENT USE AND VERIFICATION The Trade Contractor is required to pay for all labor, materials and equipment used in the performance of the Trade Contract Work through the most current period applicable to progress payments received. Reasonable evidence, satisfactory to the Construction Manager, may be required to show that all obligations relating to the Trade Contract Work are current before releasing any payment due on the Trade Contract Work. If required by the Construction Manager, before final payment is made for the Trade Contract Work, the Trade Contractor shall submit evidence satisfactory to the Construction Manager that all payrolls, bills for materials and equipment, and all known indebtedness connected with the Trade Contract Work, have been paid or otherwise satisfied as set forth in subsection 9.8.2.

ARTICLE 10 INDEMNITY, INSURANCE, WAIVERS AND BONDS

10.1 INDEMNITY

10.1A To the extent portions of this Article are in conflict with SF 396 (codified at Iowa Code Section 573A.5) said portions are void and unenforceable.

10.1.1 TRADE CONTRACTOR'S INDEMNITY To the fullest extent permitted by law, the Trade Contractor shall indemnify and hold harmless the Owner, the Owner's officers, directors, members,



consultants, agents and employees, from all claims for bodily injury and property damage, other than to the Work itself and other property insured under subsection 10.3.1, including reasonable attorneys' fees, costs and expenses, that may arise from the performance of the Work, but only to the extent caused by the negligent acts or omissions of the Trade Contractor, Subcontractors or anyone employed directly or indirectly by any of them or by anyone for whose acts any of them may be liable. The Trade Contractor shall be entitled to reimbursement of any defense costs paid above the Trade Contractor's percentage of liability for the underlying claim to the extent provided for under subsection 10.1.2.

10.1.2 OWNER'S INDEMNITY To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Trade Contractor, its officers, directors, members, consultants, agents, and employees, from all claims for bodily injury and property damage, other than property insured under subsection 10.3.1, including reasonable attorneys' fees, costs and expenses, that may arise from the performance of work by Owner, Design Professional or Others, but only to the extent caused by the negligent acts or omissions of the Owner, Design Professional or Others. The Owner shall be entitled to reimbursement of any defense costs paid above Owner's percentage of liability for the underlying claim to the extent provided for under subsection 10.1.1.

10.1.3 CONSTRUCTION MANAGER AND DESIGN PROFESSIONAL INDEMNITY The Owner shall cause the Construction Manager and the Design Professional to agree to indemnify and hold harmless the Owner from all claims for bodily injury and property damage, other than to the Work itself and other property insured under section 10.3, that may arise from the Construction Manager's or the Design Professional's services, but only to the extent that such claims result from the negligent acts or omissions of the Construction Manager or the Design Professional, respectively, or anyone for whose acts or omissions the Construction Manager or Design Professional, respectively, is liable. Such provisions shall be in a form no less protective of the Parties than the Construction Manager's Indemnity provided in ConsensusDocs 801 (2011) or the Design Professional's indemnity provided in ConsensusDocs 803 (2011) respectively, and shall be reasonably satisfactory to the Owner and the Trade Contractor.

10.1.4 ADJACENT PROPERTY INDEMNIFICATION To the extent of the limits of Trade Contractor's Commercial General Liability Insurance specified in subsection 10.2.1 or Zero Dollars and No Cents (\$0.00) whichever is more, the Trade Contractor shall indemnify and hold harmless the Owner against any and all liability, claims, demands, damages, losses and expenses, including attorney's fees, in connection with or arising out of any damage or alleged damage to any of Owner's existing adjacent property that may arise from the performance of the Trade Contract Work, but only to the extent of the negligent acts or omissions of the Trade Contractor, Subcontractor or anyone employed directly or indirectly by any of them or by anyone for whose acts any of them may be liable.

10.1.5 NO LIMITATION ON LIABILITY In any and all claims against the Indemnitees by any employee of the Trade Contractor, anyone directly or indirectly employed by the Trade Contractor or anyone for whose acts the Trade Contractor may be liable, the indemnification obligation shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Trade Contractor under Workers' Compensation acts, disability benefit acts or other employment benefit acts.

10.2 TRADE CONTRACTOR'S INSURANCE

10.2.1 Prior to the start of the Work, the Trade Contractor shall procure and maintain in force Workers Compensation/Employers' Liability Insurance, Business Automobile Liability Insurance, and Commercial General Liability Insurance (CGL). The CGL policy shall include coverage for liability arising from premises, operations, independent contractors, products-completed operations, personal injury and



advertising injury, contractual liability, and broad form property damage. The Trade Contractor's liability policies, as required in this Subparagraph 10.2.1, shall be written on an occurrence basis with at least the following limits of liability:

10.2.1.1 Workers' Compensation- amount required by the laws of Iowa

10.2.1.2 Employers' Liability Insurance - \$500,000 or an amount required by Iowa law, whichever is greater.

10.2.1.3 Business Automobile Liability Insurance

a. \$1,000,000 Each Accident

10.2.1.4 Commercial General Liability Insurance

a. \$1,000,000 Each Occurrence b. \$2,000,000 General Aggregate c. \$1,000,000 Products/Completed Operations Aggregate d. \$1,000,000 Personal and Advertising Injury Limit

10.2.2 The Trade Contractor Must also carry and maintain Excess or Umbrella Liability coverage for the policies in subsection 10.2.1 in the amounts as listed below:

Trade Contractor Contract Amount: <\$1,000,000 - \$2 Million Umbrella or more \$1,000,000 - \$5,000,000 - \$5 Million Umbrella or more >\$5,000,000 - \$10 Million Umbrella or more

10.2.3 The Trade Contractor shall maintain in effect all insurance coverage required under subsection 10.2.1 with insurance companies lawfully authorized to do business in Iowa. Such insurance companies shall have a minimum A.M. Best Rating of A-VI (Consult instructions and insurance advisor). If the Trade Contractor fails to obtain or maintain any insurance coverage required under this Agreement, the Owner may purchase such coverage and charge the expense to the Trade Contractor, or terminate this Agreement.

10.2.4 To the extent commercially available, the policies of insurance required under Subparagraph 10.2.1 shall contain a provision that the insurance company or its designee must give the Owner written notice transmitted in paper or electronic format: (a) 30 days before coverage is nonrenewed by the insurance company and (b) with 10 business days after cancelation of coverage by the insurance company. The Trade Contractor shall maintain completed operations liability insurance for one year after acceptance of the Contract Documents, whichever is longer. Prior to commencement of services, the Trade Contract shall furnish the Owner with certificates evidencing the required coverages. In addition, if any insurance policy required under subsection 10.2.1 is not to be immediately replaced without a lapse in coverage when it expires, exhausts its limits, or is to be, cancelled, the Trade Contractor shall give Owner prompt written notice upon actual or constructive knowledge of such condition.

10.2.5 ADDITIONAL LIABILITY COVERAGE

10.2.5.1 The Owner shall / shall not (indicate one) require the Trade Contractor to purchase and maintain liability coverage, primary to the Owner's coverage under subsection 10.3.1.

10.2.5.2 If required by subsection 10.2.5.1, the additional liability coverage required of the Trade Contractor shall be:

1. Additional Insured Owner shall be named as an additional insured on Trade Contractor's Commercial General Liability Insurance specified for operations and completed operations,



but only with respect to liability for bodily injury, property damage or personal and advertising injury to the extent caused by the negligent acts or omissions of Trade Contractor, or those acting on Trade Contractor's behalf, in the performance of Trade Contractor's Work for.

2. OCP Trade Contractor shall provide an Owners' and Contractors' Protective Liability Insurance ("OCP") policy with limits equal to the limits on Commercial General Liability Insurance specified or limits as otherwise required by Owner.

Any documented additional cost in the form of a surcharge associated with procuring the additional liability coverage in accordance with this subsection shall be paid by the Owner directly or the costs may be reimbursed by the Owner to the Trade Contractor by increasing the Trade Contract Price to correspond to the actual cost required to purchase and maintain the additional liability coverage. Prior to commencement of the Work, the Trade Contractor shall obtain and furnish to the Owner a certificate evidencing that the additional liability coverages have been procured.

10.2.6 PROFESSIONAL LIABILITY INSURANCE To the extent the Trade Contractor is required to procure design services under this Agreement, in accordance with section 3.14, the Trade Contractor shall require the designers to obtain professional liability insurance for claims arising from the negligent performance of professional services under this Agreement, with a company reasonably satisfactory to the Owner, including coverage for all professional liability caused by any of the Designer's(s') consultants, written for not less than \$1,000,000 per claim and in the aggregate with the deductible not to exceed \$2,000,000. The deductible shall be paid by the Designer.

10.3 OWNER'S INSURANCE

10.3.1 Deleted.

10.3.2 Deleted.

10.4 PROPERTY INSURANCE

10.4.1 Before the start of Trade Contract Work, the Owner shall obtain and maintain Builder's Risk Policy insurance with minimum coverage limits equal to the full cost of replacement of the Project at the time of loss. This insurance shall also name the Trade Contractor, Subcontractors, Material Suppliers, Construction Manager and Design Professional as insureds. This insurance shall be written as a Builder's Risk Policy or equivalent form to cover all risks of physical loss except those specifically excluded by the policy, and shall insure at least against the perils of fire, lightning, explosion, windstorm, hail, smoke, aircraft and vehicles, riot and civil commotion, theft, vandalism, malicious mischief, debris removal, flood (subject to sublimits), earthquake (subject to sublimits), earth movement, water damage, wind damage, testing if applicable, collapse however caused, and shall include coverage for, material, or equipment stored offsite, onsite or in transit. This policy shall provide for a waiver of subrogation in favor of the Trade Contractor, Subcontractors, Material Suppliers, Construction Manager and Design Professional. This insurance shall remain in effect until the Substantial Completion of the Work, final payment has been made or until no person or entity other than the Owner has an insurable interest in the property to be covered by this insurance, whichever is sooner. Partial occupancy or use of the Work shall not commence until the Owner has secured the consent of the insurance company or companies providing the coverage required in this Subparagraph 10.4.1.

10.4.2 If the Owner does not intend to purchase the property insurance required by this Agreement, including all of the coverages and deductibles described herein, the Owner shall give written notice to the Trade Contractor, the Design Professional and the Construction Manager before the Trade Contract



Work is commenced. The Trade Contractor may then provide insurance to protect its interests and the interests of the Subcontractors, including the coverage of deductibles. The cost of this insurance shall be charged to the Owner in a Change Order. The Owner shall be responsible for all of Trade Contractor's costs reasonably attributed to the Owner's failure or neglect in purchasing or maintaining the coverage described above.

10.4.2.1 The Owner will not obtain insurance to cover the risk of physical loss resulting from Terrorism. The Construction Manager is not required to purchase this type of insurance but may purchase this type of insurance if it chooses. If purchased, the cost of this insurance shall be borne by the Construction manager.

10.4.3 POLICIES The Owner shall provide the Trade Contractor with a copy of all policies including all endorsements upon request.

10.5 PROPERTY INSURANCE LOSS ADJUSTMENT

10.5.1 LOSS ADJUSTMENT Any insured loss shall be adjusted with the Owner and the Trade Contractor and made payable to the Owner as trustee for the insureds, as their interests may appear.

10.5.2 DISTRIBUTION OF PROCEEDS Following the occurrence of an insured loss, monies received will be deposited in a separate account and the trustee shall make distribution in accordance with the agreement of the Parties in interest.

10.6 WAIVERS

10.6.1 PROPERTY DAMAGE The Owner and Trade Contractor waive all claims and other rights they may have against each other for loss of or damage to (a) the Project, (b) all materials, machinery, equipment and other items used in accomplishing the Trade Contract Work or services or to be incorporated into the Project, while the same are in transit, at the Project Site, during erection and otherwise, and (c) all property owned by or in the custody of Owner and its affiliates, however such loss or damage shall occur, to the extent such damage is covered by property insurance. The proceeds of such insurance shall be held by the Owner as trustee.

10.6.2 WAIVER OF SUBROGATION The Owner shall have its insurers waive all rights of subrogation they may have against the Construction Manager, Design Professional, Trade Contractors, and their Subcontractors and Material Suppliers on all policies carried by the Owner on the Project and adjacent properties, including, after final payment, those policies to be provided on the completed Project not intended to insure the Project during construction.

10.6.3 ENDORSEMENT If the policies of insurance referred to in this section require an endorsement to provide for continued coverage where there is a waiver of subrogation, the Owner will cause them to be so endorsed.

10.7 RISK OF LOSS Except to the extent a loss is covered by property insurance, carried by the owner, risk of loss or damage to the Work shall be upon the Trade Contractor until the Date of Final Completion, unless otherwise agreed to by the Parties.

10.8 BONDS Performance and Payment Bonds

are

are not

required of the Trade Contractor that meet the requirements of Iowa Code Chapter 573. A deposit in lieu of a



bond may be acceptable if it meets the requirements of Iowa Code Section 573.4. Such bonds shall be issued by a surety admitted in the State in which the Project is located and must be acceptable to the Owner. The Owner's acceptance shall not be withheld without reasonable cause. The penal sum of the Payment Bond and of the Performance Bond shall each be one hundred percent (100%) of the original Contract Price. Any increase in the Contract Price that exceeds ten percent (10%) in the aggregate shall require a rider to the Bonds increasing penal sums accordingly. Up to such ten percent (10%) amount, the penal sum of the Bond shall remain equal to one hundred percent (100%) of the Contract Price. The Trade Contractor shall endeavor to keep its surety advised of changes potentially impacting the Contract Time and Contract Price, though the Trade Contractor shall require that its surety waives any requirement to be notified of any alteration or extension of time. The Trade Contractor's Payment Bond for the Project, if any, shall be made available by the Owner for review and copying by the Subcontractor. Iowa Code Chapter 573 shall control and take precedence over any conflicting term or condition in this Agreement

ARTICLE 11 SUSPENSION, NOTICE TO CURE AND TERMINATION OF AGREEMENT

11.1 SUSPENSION BY OWNER FOR CONVENIENCE

11.1.1 OWNER SUSPENSION Should the Owner order the Trade Contractor in writing to suspend, delay, or interrupt the performance of the Trade Contract Work for such period of time as may be determined to be appropriate for the convenience of the Owner and not due to any act or omission of the Trade Contractor or any person or entity for whose acts or omissions the Trade Contractor may be liable, then the Trade Contractor shall immediately suspend, delay or interrupt that portion of the Trade Contract Work as ordered by the Owner. The Trade Contract Price and the Trade Contract Time shall be equitably adjusted by Trade Contract Change Order for the cost and delay resulting from any such suspension.

11.1.2 Any action taken by the Owner that is permitted by any other provision of the Trade Contract Documents and that results in a suspension of part or all of the Trade Contract Work does not constitute a suspension of Trade Contract Work under this section.

11.2 NOTICE TO CURE A DEFAULT If the Trade Contractor persistently refuses or fails to supply enough properly skilled workers, proper materials, or equipment to maintain the approved Construction Schedule in accordance with ARTICLE 6, or fails to make prompt payment to its workers, Subcontractors or Material Suppliers; disregards laws, ordinances, rules, regulations or orders of any public authority having jurisdiction; or is otherwise guilty of a material breach of a provision of this Agreement, the Trade Contractor may be deemed in default. If the Trade Contractor fails within seven (7) business Days after receipt of written notification to commence and continue satisfactory correction of such default with diligence and promptness, then the Owner shall give the Trade Contractor a second notice to correct the default within a three (3) Day period. If the Trade Contractor fails to promptly commence and continue satisfactory correction of the default following receipt of such second notice, the Owner without prejudice to any other rights or remedies may:

11.2.1 supply workers and materials, equipment and other facilities as the Owner or Construction Manager deems necessary for the satisfactory correction of the default, and charge the cost to the Trade Contractor, who shall be liable for the payment of same including reasonable Overhead, profit and attorneys' fees;

11.2.2 contract with Others to perform such part of the Trade Contract Work as the Owner or Construction Manager determines shall provide the most expeditious correction of the default, and charge the cost to the Trade Contractor;

11.2.3 withhold payment due the Trade Contractor in accordance with section 9.3; and

11.2.4 in the event of an emergency affecting the safety of persons or property, immediately commence



and continue satisfactory correction of such default as provided in subsections 11.2.1 and 11.2.2 without first giving written notice to the Trade Contractor, but shall give prompt written notice of such action to the Trade Contractor following commencement of the action.

11.3 OWNER'S RIGHT TO TERMINATE FOR DEFAULT

11.3.1 TERMINATION BY OWNER FOR DEFAULT If, within seven (7) Days of receipt of a notice to cure pursuant to section 11.2, the Trade Contractor fails to commence and satisfactorily continue correction of the default set forth in the notice to cure, the Owner may notify the Trade Contractor that it intends to terminate this Agreement for default absent appropriate corrective action within fourteen additional Days. After the expiration of the additional fourteen (14) Day period, the Owner may terminate this Agreement by written notice absent appropriate corrective action. Termination for default is in addition to any other remedies available to Owner under section 11.2. If the Owner's cost arising out of the Trade Contractor's failure to cure, including the cost of completing the Trade Contract Work and reasonable attorneys' fees, exceeds the unpaid Trade Contract Price, the Trade Contractor shall be liable to the Owner for such excess costs. If the Owner's costs are less than the unpaid Trade Contract Price, the Owner shall pay the difference to the Trade Contractor. In the event the Owner exercises its rights under this section, upon the request of the Trade Contractor the Owner shall furnish to the Trade Contractor a detailed accounting of the cost incurred by the Owner.

11.3.2 USE OF TRADE CONTRACTOR'S MATERIALS, SUPPLIES AND EQUIPMENT If the Owner or Others perform work under this section, the Owner shall have the right to take and use any materials, supplies and equipment belonging to the Trade Contractor and located at the Worksite for the purpose of completing any remaining Trade Contract Work. Immediately upon completion of the Work, any remaining materials, supplies or equipment not consumed or incorporated in the Trade Contract Work shall be returned to the Trade Contractor in substantially the same condition as when they were taken, reasonable wear and tear excepted.

11.3.3 If the Trade Contractor files a petition under the Bankruptcy Code, this Agreement may be terminated for cause at the may be terminated for cause at the Owner.

11.3.3 If the Trade Contractor files a petition under the Bankruptcy Code, this Agreement may be terminated for cause at the may be terminated for cause at the Owner.

11.3.4 The Owner shall make reasonable efforts to mitigate damages arising from Trade Contractor default, and shall promptly invoice the Trade Contractor for all amounts due pursuant to sections 11.2 and 11.3.

11.4 TERMINATION BY OWNER FOR CONVENIENCE

11.4.1 Upon written notice to the Trade Contractor, the Owner may, without cause, terminate this Agreement. The Trade Contractor shall immediately stop the Work, follow the Owner's or Construction Manager's instructions regarding shutdown and termination procedures, and strive to minimize any further costs.

11.4.2 If the Owner terminates this Agreement pursuant to this section, the Trade Contractor shall be paid:

11.4.2.1 for the Work performed to date including Overhead and profit; and

11.4.2.2 for all demobilization costs and costs incurred as a result of the termination but not including Overhead or profit on work not performed;

11.4.2A Upon written notice to the Trade Contractor the Owner has the right to terminate this



Agreement without penalty as a result of the following: 1) the legislature or governor fail to appropriate funds sufficient to allow the Owner to operate as required and fulfill its obligations under this Agreement, 2) funds are de-appropriated or not allocated, 3) the Owner's authorization to operate is withdrawn or there is a material alteration in the programs administered by the owner, or 4) the Owner's duties are substantially modified. If such a termination results then the Trade Contractor shall be paid in the manner set forth in subparagraph 11.4.2. If, however, an appropriation to cover the cost of this Agreement becomes available within sixty (60) days subsequent to termination under this paragraph then the Owner agrees to re-enter into a modified version of this Agreement that accounts for the termination and reinstatement.

11.4.3 If the Owner terminates this Agreement pursuant to sections 11.3 or 11.4, the Trade Contractor shall:

11.4.3 If the Owner terminates this Agreement pursuant to sections 11.3 or 11.4, the Trade Contractor shall:

11.4.3.1 execute and deliver to the Owner all papers and take all action required to assign, transfer and vest in the Owner the rights of the Trade Contractor to all materials, supplies and equipment for which payment has or will be made in accordance with the Trade Contract Documents and all subcontracts, orders and commitments which have been made in accordance with the Trade Contract Documents;

11.4.3.2 exert reasonable effort to reduce to a minimum the Owner's liability for subcontracts, orders and commitments that have not been fulfilled at the time of the termination;

11.4.3.3 cancel any subcontracts, orders and commitments as the Owner or Construction Manager directs; and

11.4.3.4 sell at prices approved by the Owner or Construction Manager any materials, supplies and equipment as the Owner or Construction Manager directs, with all proceeds paid or credited to the Owner.

11.5 TRADE CONTRACTOR'S RIGHT TO TERMINATE

11.5.1 Upon seven (7) Days' written notice to the Owner and Construction Manager, the Trade Contractor may terminate this Agreement if the Trade Contract Work has been stopped for a thirty (30) Day period through no fault of the Trade Contractor for any of the following reasons:

11.5.1.1 under court order or order of other governmental authorities having jurisdiction;

11.5.1.2 as a result of the declaration of a national emergency or other governmental act during which, through no act or fault of the Trade Contractor, materials are not available; or

11.5.1.3 suspension by the Owner for convenience pursuant to section 11.1

11.5.2 In addition, upon seven (7) Days' written notice to the Owner and Construction Manager, the Trade Contractor may terminate the Agreement if the Owner:

11.5.2.1 fails to furnish reasonable evidence pursuant to section 4.1.2 that sufficient funds are available and committed for Project financing, or

11.5.2.2 assigns this Agreement over the Trade Contractor's reasonable objection, or

11.5.2.3 fails to pay the Trade Contractor in accordance with this Agreement and the Trade Contractor has complied with the notice provisions of section 9.5, or



11.5.2.4 otherwise materially breaches this Agreement.

11.5.3 Upon termination by the Trade Contractor in accordance with this section, the Trade Contractor shall be entitled to recover from the Owner payment for all Trade Contract Work executed and for any proven loss, cost or expense in connection with the Trade Contract Work, including all demobilization costs plus reasonable Overhead and profit on work not performed.

11.6 OBLIGATIONS ARISING BEFORE TERMINATION Even after termination pursuant to ARTICLE 11, the provisions of this Agreement still apply to any Trade Contract Work performed, payments made, events occurring, costs charged or incurred or obligations arising before the termination date.

ARTICLE 12 DISPUTE MITIGATION AND RESOLUTION

12.1 WORK CONTINUANCE AND PAYMENT Unless otherwise agreed in writing, the Trade Contractor shall continue the Trade Contract Work and maintain the Construction Schedule during any dispute mitigation or resolution proceedings. If the Trade Contractor continues to perform, the Owner shall continue to make payments in accordance with this Agreement.

12.2 DIRECT DISCUSSIONS If the Parties cannot reach resolution on a matter relating to or arising out of the Agreement, the Parties shall endeavor to reach resolution through good faith direct discussions between the Parties' representatives, who shall possess the necessary authority to resolve such matter and who shall record the date of first discussions. The authorized representative for the Trade Contractor is identified in Paragraph 3.4 of the Agreement. The authorized representative for the Owner is identified in Paragraph 4.2 of the Agreement. The parties' authorized representative are, among other things, authorized to resolve matters of disagreement and disputes between the Parties. If the dispute remains unresolved after fifteen (15) Days from the date of first discussion, the Parties shall submit such matter to the dispute mitigation and dispute resolution procedures selected herein.

12.3 MITIGATION The Parties agree that dispute mitigation procedures provided in this Project. Disputes remaining unresolved after direct discussions shall be directed to the selected mitigation procedure immediately below. The dispute mitigation procedure shall result in nonbinding finding on the matter. This may be introduced as evidence at a subsequent binding adjudication of the matter, as designee on Paragraph 12.5. The Parties agree that the dispute mitigation procedure shall be

(Designate only one.)

Project Neutral

Dispute Review Board

12.3.1 MITIGATION PROCEDURES The Project Neutral/Dispute Review Board shall be mutually selected and appointed by the Parties and shall execute a retainer agreement with the Parties establishing the scope of the Project Neutral/Dispute Review Board's responsibilities. The costs and expenses of the Project Neutral/Dispute Review Board shall be shared equally by the Parties. The Project Neutral/Dispute Review Board shall be available to either Party, upon request, throughout the course of the Project, and shall make regular visits to the Project so as to maintain an up-to-date understanding of the Project progress and issues and to enable the Project Neutral/Dispute Review Board to address matters in dispute between the Parties promptly and knowledgeably. The Project Neutral/Dispute Review Board shall issue nonbinding findings within five (5) business Days of referral of the matter to the Project Neutral, unless good cause is shown.

12.3.2 If the matter remains unresolved following the issuance of the nonbinding finding by the mitigation procedure or if the Project Neutral/Dispute Review Board fails to issue nonbinding findings



within five (5) Days of the referral, the Parties shall submit the matter to the binding dispute resolution procedure designated in section 12.5.

12.4 MEDIATION If direct discussions pursuant to section 12.2 do not result in resolution of the matter and no dispute mitigation procedure is selected under section 12.3, the Parties shall endeavor to resolve the matter by mediation through the current Construction Industry Mediation Rules of the American Arbitration Association, or the Parties may mutually agree to select another set of mediation rules. The administration of the mediation shall be as mutually agreed by the Parties. The mediation shall be convened within thirty (30) business Days of the matter first being discussed and shall conclude within forty-five (45) business Days of the matter first being discussed. Either Party may terminate the mediation at any time after the first session, but the decision to terminate shall be delivered in person by the terminating Party to the non-terminating Party and to the mediator. The costs of the mediation shall be shared equally by the Parties.

12.5 BINDING DISPUTE RESOLUTION If the matter is unresolved after submission of the matter to a mitigation procedure or to mediation, the Parties shall submit the matter to the binding dispute resolution procedure designated herein.

(Designate only one.)

Arbitration using the current Construction Industry Arbitration Rules of the American Arbitration Association

Litigation in either the state or federal court having jurisdiction of the matter in the location of the Project.

12.5.1 The costs of any binding dispute resolution procedures shall be borne by the non-prevailing Party, as determined by the adjudicator of the dispute. However, the costs of binding dispute resolution does not include attorney fees. The Parties are each responsible for paying for their own attorney fees.

12.5.2 VENUE The venue of any binding dispute resolution procedure shall be Des Moines, Iowa.

12.6 MULTIPARTY PROCEEDING All parties necessary to resolve a claim shall be parties to the same dispute resolution proceeding. Appropriate provisions shall be included in all other contracts relating to the Work to provide for the joinder or consolidation of such dispute resolution procedures.

12.7 LIEN RIGHTS The Trade Contractor acknowledges that it has no mechanic's lien rights on this Project because it is a public improvement project.

ARTICLE 13 MISCELLANEOUS PROVISIONS

13.1 ASSIGNMENT Neither the Owner nor the Trade Contractor shall assign their interest in this Agreement without the written consent of the other except as to the assignment of proceeds. The terms and conditions of this Agreement shall be binding upon both Parties, their partners, successors, assigns and legal representatives. Neither Party to this Agreement shall assign the Agreement as a whole without written consent of the other. If either Party attempts to make such an assignment, that Party shall nevertheless remain legally responsible for all obligations under this Agreement, unless otherwise agreed by the other Party.

13.2 GOVERNING LAW This Agreement and all disputes arising there from shall be governed by the Iowa law.

13.3 SEVERABILITY The partial or complete invalidity of any one or more provisions of this Agreement shall not affect the validity or continuing force and effect of any other provision.



13.4 NO WAIVER OF PERFORMANCE The failure of either Party to insist, in any one or more instances, on the performance of any of the terms, covenants or conditions of this Agreement, or to exercise any of its rights, shall not be construed as a waiver or relinquishment of such term, covenant, condition or right with respect to further performance or any other term, covenant, condition or right.

13.5 TITLES AND GROUPINGS The titles given to the articles of this Agreement are for ease of reference only and shall not be relied upon or cited for any other purpose. The grouping of the articles in this Agreement and of the Owner's specifications under the various headings is solely for the purpose of convenient organization and in no event shall the grouping of provisions, the use of sections or the use of headings be construed to limit or alter the meaning of any provisions.

13.6 ASSISTANCE OF COUNSEL AND INTERPRETATION The Parties agree that they had the opportunity to obtain the assistance of counsel in reviewing the Agreement terms prior to execution. This Agreement shall be construed neither against nor in favor of either Party, but shall be construed in a neutral manner.

13.7 RIGHTS AND REMEDIES The Parties' rights, liabilities, responsibilities and remedies with respect to this Agreement, whether in contract, tort, negligence or otherwise, shall be exclusively those expressly set forth in this Agreement.

13.8 ADDITIONAL PROVISIONS (Insert here other provisions, if any, that pertain to this Agreement See Below.)

13.9 COMPLIANCE WITH LAW AND REGULATIONS The Trade Contractor shall comply with all applicable federal, state, and local laws, rules, ordinances, regulations and orders when performing services and/or performing work under this Agreement, including without limitation, all laws applicable to the prevention of discrimination in employment and the use of targeted small businesses as subcontractors or suppliers. The Trade Contractor declares that it has complied with all federal, state and local laws regarding business permits and licenses that may be required to provide the services and work required by this Agreement. The Trade Contractor further acknowledges that if this Project is a recipient of Federal financial assistance that it may be subject to requirements of Federal Acts and Executive Orders as mandated by Federal agencies having authority and jurisdiction to enforce and ensure compliance with such laws and regulations including, but not necessarily limited to, the Davis Bacon Act and other Federal Acts and Executive Orders.

13.10 EMPLOYMENT PRACTICES: It is the intent of the Iowa Department of Administrative Services to assure equal employment opportunity in all contract work as required by law. Vendors, are required to take affirmative action to ensure that applicants employed or seeking employment with them are treated equally as required by law. Vendors shall not illegally discriminate against any employee. During the course of the Project, the Vendor may be required to show compliance with the EEO and Affirmative Action requirements. Noncompliance with the provisions set forth at the time of contract award may result in termination or suspension of the Agreement in whole or in part. All vendors and service providers working under the terms of this Agreement are prohibited from engaging in discriminatory employment practices forbidden by Iowa law. Vendors shall complete and submit the Nondiscrimination Clause form for the Owner's approval.

13.11 RECIPROCAL BIDDER PREFERENCE In accordance with Iowa Code Section 73A.21, as amended in 2011 by HF 648, if the Trade Contractor is not a resident bidder of Iowa, as defined by law, then the Trade Contractor must specifically identify in writing with its bid any and all preferences or preferential treatment (including preferences related to labor) enforced by the state or foreign country in which the Trade Contractor is a resident. If the low bid Trade Contractor is not a resident bidder of Iowa and the Trade Contractor's foreign State of residence enforces such a preference then the Owner shall reciprocally enforce the preference in favor of a resident bidder of Iowa. Failure on the part of the Trade Contractor to completely and accurately abide by this legal requirement may, among other things, result in civil penalties and void this Agreement. The Trade Contractor should contact its attorney regarding this legal requirement if the Trade



Contractor has questions regarding its meaning or application.

13.12 LABOR RELATIONS The Trade Contractor shall comply with all Iowa and Federal labor laws. In accordance with Executive Order Number 69, issued by the Governor of Iowa on or about January 14, 2011, no project labor agreement (also known as a PLA), or similar, will be used on this Project. Iowa is a right to work state. No consultant, contractor, or employee shall be obligated to contract with or join any labor organization as a condition of performing work on this Project.

ARTICLE 14 TRADE CONTRACT DOCUMENTS

14.1 The Trade Contract Documents in existence at the time of execution of this Agreement are as follows:

RFBXXXXXXXXX Bid Package X

14.2 INTERPRETATION OF TRADE CONTRACT DOCUMENTS

14.2.1 The drawings and specifications are complementary. If Trade Contract Work is shown only on one but not on the other, the Trade Contractor shall perform the Trade Contract Work as though fully described on both consistent with the Trade Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

14.2.2 In case of conflicts between the drawings and specifications, the specifications shall govern. In any case of omissions or errors in figures, drawings or specifications, the Trade Contractor shall immediately submit the matter to the Owner for clarification. The Owner's clarifications are final and binding on all Parties, subject to an equitable adjustment in Trade Contract Time or Price pursuant to ARTICLE 6 and ARTICLE 7 or dispute resolution in accordance with ARTICLE 12.

14.2.3 Where figures are given, they shall be preferred to scaled dimensions.

14.2.4 Any terms that have well-known technical or trade meanings, unless otherwise specifically defined in this Agreement, shall be interpreted in accordance with their well-known meanings. This Agreement entered into as of the date entered in ARTICLE 1.

14.2.5 PRECEDENCE In case of any inconsistency, conflict or ambiguity among the Trade Contract Documents, the documents shall govern in the following order: (a) Trade Contract Change Orders and written amendments to this Agreement; (b) this Agreement; (c) subject to subsection 14.2.2 the drawings, specifications and addenda issued prior to the execution of this Agreement; (d) approved submittals; (e) information furnished by the Owner pursuant to subsection 4.1.3; (f) other documents listed in this Agreement. Among all the Trade Contract Documents, the term or provision that is most specific or includes the latest date shall control. Information identified in one Trade Contract Document and not identified in another shall not be considered to be a conflict or inconsistency.

This Agreement entered into as of the date entered in ARTICLE 1.

OWNER State of Iowa, Department of Administrative Services



Trade Contractor: *Contractor Name*

By: _____

(Authorized Representative)

Name:

Title:

Date:

Owner: State of Iowa - DAS

By: _____

(Authorized Representative)

Name:

Title:

Date:

END OF DOCUMENT.

DRAFT



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SECTION 00 6000

PERFORMANCE AND PAYMENT BOND

PART 1 - GENERAL

1.01 PERFORMANCE AND PAYMENT BOND

- A. Performance and payment bonds to be used on this project, ConsensusDocs 260 and 261 are attached for reference following this page. ConsensusDocs performance and payment bonds are not required (other standard forms are acceptable to the State of Iowa).

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION



CONSENSUSDOCS 260 PERFORMANCE BOND

This document was developed through a collaborative effort of organizations representing a wide cross-section of the design and construction industry. The organizations endorsing this document believe it represents a fair allocation of risk and responsibilities for all project participants.

Endorsing organizations recognize that this document must be reviewed and adapted to meet specific needs and applicable laws. This document has important legal and insurance consequences. You are encouraged to consult legal, insurance and surety advisors before completing or modifying this document. The software includes a notes section indicating where information is to be inserted to complete this document. Further information and endorsing organizations' perspectives are available at www.consensusdocs.org/guidebook.

For Use with ConsensusDOCS 200, Standard Form of Agreement and General Conditions Between Owner and Constructor (Where the Contract Price is a Lump Sum) and ConsensusDOCS 500, Standard Agreement and General Conditions Between Owner and Construction Manager.

The Owner, _____, (the "Owner") and the Constructor, _____, (the "Constructor") have entered into a Contract (the "Contract") dated _____ for _____ (the "Project"). The Contract is incorporated by reference into this Performance Bond (the "Bond").

By virtue of this Bond, the Constructor as Principal and _____ as Surety ("Surety"), are bound to the Owner as Obligee in the maximum amount of _____ Dollars (\$ _____) (the "Bond Sum"). The Constructor and Surety hereby bind themselves, their heirs, executors,

IMPORTANT: A vertical line in the margin indicates a change has been made to the original text. Prior to signing, recipients may wish to request from the party producing the document a "redlined" version indicating changes to the original text. Consultation with legal and insurance counsel and careful review of the entire document are strongly encouraged.

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administrators, successors and assigns, jointly and severally, as provided herein.

1. GENERAL CONDITIONS It is the condition of this Bond that if the Constructor performs its Contract obligations (the "Work"), the Surety's obligations under this Bond are null and void, Otherwise the Surety's obligations shall remain in full force and effect. The Surety waives any requirement to be notified of alterations or extensions of time made by the Owner in the Contract. The Owner may not invoke the provisions of this Bond unless the Owner has performed its obligations pursuant to the Contract. Upon making demand on this Bond, the Owner shall make the Contract Balance (the total amount payable by the Owner to the Constructor pursuant to the Contract less amounts properly paid by the Owner to the Constructor) available to the Surety for completion of the Work.

2. SURETY OBLIGATIONS If the Constructor is in default pursuant to the Contract and the Owner has declared the Constructor in default, the Surety promptly may remedy the default or shall

- a. Complete the Work, with the consent of the Owner, through the Constructor or otherwise,
- b. Arrange for the completion of the Work by a Constructor acceptable to the Owner and secured by performance and payment bonds equivalent to those for the Contract issued by a qualified surety. The Surety shall make available as the Work progresses sufficient funds to pay the cost of completion of the Work less the Contract Balance up to the Bond Sum, or
- c. Waive its right to complete the Work and reimburse the Owner the amount of its reasonable costs, not to exceed the Bond Sum, to complete the Work less the Contract Balance.

3. DISPUTE RESOLUTION All disputes pursuant to this Bond shall be instituted in any court of competent jurisdiction in the location in which the Project is located and shall be commenced within two years after default of the Constructor or Substantial Completion of the Work, whichever occurs first. If this provision is prohibited by law, the minimum period of limitation available to sureties in the jurisdiction shall be applicable.

This Bond is entered into as of _____.

SURETY _____ (seal)

By:

Print Name: _____

Print Title: _____

(Attach Power of Attorney)

Witness:

CONSTRUCTOR _____ (seal)

By:

Print Name: _____

Print Title: _____

Witness:

(Additional signatures, if any, appear on attached page)

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**CONSENSUSDOCS 261
PAYMENT BOND**

This document was developed through a collaborative effort of organizations representing a wide cross-section of the design and construction industry. The organizations endorsing this document believe it represents a fair allocation of risk and responsibilities for all project participants.

Endorsing organizations recognize that this document must be reviewed and adapted to meet specific needs and applicable laws. This document has important legal and insurance consequences. You are encouraged to consult legal, insurance and surety advisors before completing or modifying this document. The software includes a notes section indicating where information is to be inserted to complete this document. Further information and endorsing organizations' perspectives are available at www.consensusdocs.org/guidebook.

For Use with ConsensusDOCS 200, Standard Form of Agreement and General Conditions Between Owner and Constructor (Where the Contract Price is a Lump Sum) and ConsensusDOCS 500, Standard Agreement and General Conditions Between Owner and Construction Manager.

The Owner, _____, (the "Owner")
and the Constructor, _____,
(the "Constructor") have entered into a Contract (the "Contract") dated _____ for
_____ (the "Project"). The Contract is
incorporated by reference into this Payment Bond (the "Bond").

By virtue of this Bond, the Constructor as Principal and _____ as
Surety ("Surety"), are bound to the Owner as Obligee in the maximum amount of
_____ Dollars (\$ _____) (the
"Bond Sum"). The Constructor and Surety hereby bind themselves, their heirs, executors,

IMPORTANT: A vertical line in the margin indicates a change has been made to the original text. Prior to signing, recipients may wish to request from the party producing the document a "redlined" version indicating changes to the original text. Consultation with legal and insurance counsel and careful review of the entire document are strongly encouraged.
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administrators, successors and assigns, jointly and severally, as provided herein.

1. GENERAL CONDITIONS It is the condition of this Bond that if the Constructor promptly makes payment of all sums for all labor, materials, and equipment furnished for use in the performance of the work required by the Contract, the Surety's obligations pursuant to this Bond are null and void. Otherwise the Surety's obligations shall remain in full force and effect. The Surety waives any requirement to be notified of alterations or extensions of time made by the Owner in the Contract.

2. SURETY OBLIGATION Every Claimant who has not been paid in full before the expiration of a period of ninety (90) Days after such Claimant provided or performed the last of the work or labor, or furnished the last of the materials for which said claim is made, may have a right of action on this Bond. The Surety's obligation to the Claimant(s) shall not exceed the Bond Sum.

3. LIMITATION OF ACTION No suit or action shall be commenced on this Bond by any Claimant
a. Unless Claimant, other than one having a direct Contract with the Constructor, shall have given written notice to the Constructor, the Owner and the Surety within ninety (90) Days after the Claimant provided or performed the last of the work or labor, or furnished the last of the materials for which the claim is made, stating with substantial accuracy the amount claimed and the name of the Party to whom the materials were furnished, or for whom the work or labor was provided or performed. Such notice shall be served by any means which provides written third party verification of delivery to the Constructor at any place it maintains an office or conducts business, or served in any manner in which legal process may be served in the state in which the Project is located.
b. After the expiration of one (1) year from the date on which the Claimant last performed labor or furnished materials or equipment on the Project. If this provision is prohibited by law, the minimum period of limitation available to sureties in the jurisdiction shall be applicable.
c. Other than in any court of competent jurisdiction in the location in which the Project is located.

4. CLAIMANT A Claimant is defined as an individual or entity having a direct contract with the Constructor or having a contract with a subcontractor having a direct contract with the Constructor to furnish labor, materials or equipment for use in the performance of the Contract.

This Bond is entered into as of _____.

SURETY _____ (seal)

By:

Print Name: _____

Print Title: _____

(Attach Power of Attorney)

Witness:

CONSTRUCTOR _____ (seal)

By:

Print Name: _____

IMPORTANT: A vertical line in the margin indicates a change has been made to the original text. Prior to signing, recipients may wish to request from the party producing the document a "redlined" version indicating changes to the original text. Consultation with legal and insurance counsel and careful review of the entire document are strongly encouraged.
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Print Title: _____

Witness:

(Additional signatures, if any, appear on attached page)

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SECTION 01 1200

CONTRACT SUMMARY

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Project Information
- B. Project Summary
- C. Bid Scope Summary
- D. Work Hour Restrictions
- E. Access to Site
- F. Coordination with Occupants
- G. Rules for Construction Workers
- H. Bid Package Instructions

1.02 PROJECT INFORMATION

- A. Facility Name/Location: Woodward Resource Center 1251 334th Street, Woodward, IA 50276
- B. DAS Project #: 9279.50
- C. Owner: State of Iowa, Department of Administrative Services, Hoover State Office Building, Level 3, 1305 East Walnut Street, Des Moines, IA 50319
- D. Owner's Representative: Jennifer Kleene, Iowa Department of Administrative Services, 109 SE 13th Street, Des Moines, IA 50319
- E. Construction Manager: Darren Milliken, Story Construction, 2810 Wakefield Circle, Ames, Iowa 50010

1.03 PROJECT SUMMARY

- A. The project includes Demo utilities in tunnels, re-route water lines, and fill tunnels with grout.
- B. Target date to provide substantial completion is June 30, 2028.

1.04 BID SCOPE SUMMARY

- A. Scope Applicable to All Bid Packages:
 - 1. The Contractor's Work includes all labor, supervision, materials, equipment, services, supplies, tools, facilities, transportation, hoisting, storage, receiving, licenses, inspections, certifications, overhead, profit, or other items required or reasonably inferable to properly and timely perform and complete all work and services to be performed by the Contractor pursuant to this Agreement. Unless specifically stated otherwise, incidental work required to accomplish the work of this Bid Package shall be included the bid. This would include, but not be limited to, temporary facilities, protection of the work, security of equipment, materials, and work in progress, etc. Contractor's Work shall be performed in accordance with the Drawings, Specification Divisions 00 and 01, and Specification sections applicable to each Contractor's scope.
 - 2. Contractor is responsible for all labor and equipment to unload, account for all material delivered, stock, and delivery for this scope of work. Storage and delivery of materials and equipment at the Site shall be permitted only to the extent approved in advance by the Construction Manager, and if anything so stored obstructs the progress of any portion of the work, it shall be promptly removed or relocated by the Contractor without reimbursement.
 - 3. On site supervision by Prime Contractor at all times work by that contractor or their subcontractors/suppliers is taking place.

4. Provide all temporary facilities required for this scope of work including trailer, trailer power, telephone, secured storage, temporary power for work, temporary and task lighting for work, etc. as determined necessary by Contractor. Coordinate location of trailers, material storage and utility lines with Construction Manager. Limited space is available, and permission to bring any such facility or excess materials on to the site shall be approved by the Construction Manager.
5. Contractor shall provide all equipment and tools for Contractor's own cleanup. Clean up shall be done at end of every shift or more frequently if required for the Contractor to perform their work, for other Contractors to perform their work, as required by the Owner's operations, and at the discretion of the Construction Manager.
6. All turf, landscaping, and subgrade disturbances caused by equipment traffic or other activities related to the Contractor's scope shall be repaired or restored to proper conditions by the Contractor.
7. Protect adjacent existing building elements from damage from Scope of work. Repair existing building elements damaged during Contractor's Scope of work.
8. Contractors will need to plan on providing their own internet access if needed.
9. Each person working onsite (excluding delivery drivers) shall attend a 30-minute Woodward Resource Center and Story Construction Co. safety orientation prior to site entry. Upon successful completion of the orientation, each person will receive a hard-hat sticker to identify successful completion. Each person must successfully complete the orientation prior to being allowed onsite to perform work. A 24-hour notice to the Construction Manager of the need for an orientation is required.
10. Each Contractor shall designate a representative to attend one 60-minute pre-construction meeting.
11. Each Contractor and their Subcontractors shall designate an onsite representative to attend a daily 15-minute "End of Shift Meeting" on days which work is performed by them.
12. Each Contractor and their Subcontractors shall designate an onsite representative to attend a weekly 30-minute production and planning meeting the weeks which work is performed by them, plus the two (2) weeks ahead of each Contractor/Subcontractor starting work on site.
13. Prior to the weekly production and planning meeting, each Contractor and their Subcontractors shall populate the project planning and communication board with daily activities. This shall include activity description, quantity of work planned for completion daily, crew size for each activity, and location of each activity. The Construction Manager will assist with the population of the board.
14. Each Contractor shall have their Project Manager and onsite representative attend a Story Construction Co. Planning and Production system orientation. Plan for this meeting to last 2-hours

1.05 WORK HOUR RESTRICTIONS

- A. Work hours are from 07:00 AM to 05:00 PM, Monday through Friday unless arrangements are made in advance.

1.06 CONTRACTOR USE OF SITE AND PREMISES

- A. Construction Operations: Limited to areas noted on Drawings.
- B. Provide access to and from site as required by law and Owner:
 1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
 2. Do not obstruct roadways, sidewalks, or other public ways without permission of Owner and permit if required.

- C. Facility will be occupied at all times during duration of work. Contractor personnel shall conduct themselves in an agreeable manner at all times. Failure to do so may result in removal from the work site.

1.07 OWNER OCCUPANCY

- A. Owner intends to occupy the Project upon Substantial Completion.
- B. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.
- C. Schedule the Work to accommodate Owner occupancy.

1.08 RULES FOR CONSTRUCTION WORKERS

- A. The staff of the State of Iowa has a responsibility to protect the public by providing a secure environment. All work site rules must be followed to the letter, at all times.
- B. All construction workers must have a background check completed prior to entering the campus to perform work.
- C. Hot Work Permit Processes and Fire Watch, when necessary, will be adhered to for this project.
- D. All State properties are tobacco free. No smoking will be permitted or tolerated on campus unless in designated areas.
- E. You are permitted access only to the work site and no other area of the institution.
- F. No drugs, alcohol, or firearms are allowed on the work site.
- G. Do not leave money, drugs, alcohol, or firearms in your personal vehicle.
- H. Company and personal vehicles are to be parked and locked in designated or authorized area of the work.
- I. Maintain control of all tools, supplies, and debris at all times during the work.
- J. Never leave keys in any vehicle. If a security officer finds keys in a vehicle, they are under orders to turn them in to a security supervisor.
- K. Do not give anything to residents or take anything from residents; if they offer, inform your supervisor.
- L. Secure all tools at the end of each day. Never leave tools unattended. All tools shall be checked in at the beginning of the day and checked out at the end of the day. If security officers find loose tools, they are under orders to turn them in to their supervisor.
- M. All delivery vehicles must go directly to the job site. Extra time should be anticipated for all deliveries. Provide 24-hour notice to the facility of deliveries.
- N. During an emergency, follow the instructions of the security staff.
- O. Fuel cans are always to be secured.

1.09 BID PACKAGE INSTRUCTIONS

- A. **Bid Package #01-1 – Abatement:** Trade Contractor shall include all of the following, but not limited to, as part of the contract:
 - 1. Specifications:
 - a. Division 00 – Procurement and Contracting Requirements
 - b. Division 01 – General Requirements
 - 1) Section 01 9000 Atlas Abatement Specifications dated 5/12/2026
 - a) Complete
 - c. Division 02 – Existing Conditions
 - 1) Complete
 - 2. Drawings: See responsibility matrix with exceptions explained below.
 - a. Sheets 00-S110, 00-S111, 00-S112, 00-S113, and 00-S114
 - 1) Only abate pipes shown to be removed.
 - b. Sheets S300 and S301, the "by others" responsibility is covered by BP #01-1. Pictures are shown for additional information to contractor.
 - c. Sheet 18-MD001
 - 1) Abatement for fuel oil tanks and associated piping to be included in base bid.

3. Clarification: Contractor shall be lead-certified, and all work done on areas with lead-containing or lead-based paint must be done by a lead-certified crew member.
 4. Clarification: Project will require two phases for tunnel demolition and fill, so two mobilizations should be included.
 5. Clarification: Responsible for any dewatering in the tunnels during abatement.
 6. Clarification: Install provided tunnel lights as required for work.
 7. Clarification: Contractor will need equipment readily available to move steel plates as needed.
 8. **Alternate #01 – Demo Powerhouse Equipment:** Trade Contractor shall include all of the following, but not limited to, as part of the contract:
 - a. Only alternate #01 hazardous materials abatement work for the Powerhouse as described in 01 9000 Atlas Abatement Specifications.
 - b. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
 - c. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
 - d. Execute accepted alternates under the same conditions as other work of the Contract.
 - e. This alternate work cannot be done until second phase of tunnel work.
 9. **Alternate #02 – Demo Chiller Plant Equipment:** Trade Contractor shall include all of the following, but not limited to, as part of the contract:
 - a. Only alternate #02 hazardous materials abatement work for the Chiller Plant as described in 01 9000 Atlas Abatement Specifications.
 - b. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
 - c. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
 - d. Execute accepted alternates under the same conditions as other work of the Contract.
 - e. This alternate work cannot be done until second phase of tunnel work.
- B. **Bid Package #03-1 – Tunnel Infill:** Trade Contractor shall include all of the following, but not limited to, as part of the contract:
1. Specifications:
 - a. Division 00 – Procurement and Contracting Requirements
 - b. Division 01 – General Requirements
 - 1) Exclude Section 01 9000 Atlas Abatement Specifications dated 5/12/2026
 - a) Complete
 - c. Division 02 – Existing Conditions
 - 1) Specification 02 4100 Demolition. Complete all demo work associated with work corresponding to BP #03-1.
 - d. Division 03 – Concrete
 - 1) Specification 03 3000 Cast-In-Place Concrete – for adjacent work completed by #03-1.
 - e. Division 07 – Thermal and Moisture Protection
 - 1) Complete
 2. Drawings: See responsibility matrix with exceptions explained below.
 - a. 00-C101, 00-C102, 00-C103, 00-C104, 00-C105, 00-C106, and 00-C107
 - 1) Exclude work with capping water line.
 - 2) Include work to sawcut tunnel, remove concrete, install bulkheads, and fill area with dirt and sidewalk after BP #22-1 caps water line.
 - 3) Exclude chiller building civil work on 00-C104 as that work will be included in alternate #02.

- b. 00-S113 and 00-S114
 - 1) Exclude note 8
 - c. 00-S300 and 00-S301
 - 1) For Reference Only. Piping demo shown to be done by BP #01-1.
 - d. Owner reserves the right to reject Contractor's measurements of work in place that involves use of established unit prices and to have this work measured, at the Owner's expense, by an independent surveyor acceptable to the Contractor.
 - 3. Clarification: Contractor shall be lead-certified, and all work done on areas with lead-containing or lead-based paint must be done by a lead-certified crew member.
 - 4. Clarification: Project will require two phases for tunnel demolition and fill, so two mobilizations should be included. Include two additional mobilizations for tunnel cap demolition only.
 - 5. Clarification: Contractor will need equipment readily available to move steel plates as needed.
 - 6. Clarification: Contractor will need to supply dirt to help mitigate blowouts and to fill in between bulkheads where tunnel was removed for water main work.
 - 7. Clarification: Contractor will need to include concrete washouts as needed.
 - 8. Clarification: Responsible for any dewatering in the tunnels during the infill.
 - 9. **Alternate #02 – Demo Chiller Plant Equipment:** Trade Contractor shall include all of the following, but not limited to, as part of the contract:
 - a. Per sheet 00-C104 demo existing fence and chiller foundations for the chiller building. Remove granular materials and haul to location provided by owner and install 6" thick topsoil provided by owner.
 - b. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
 - c. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
 - d. Execute accepted alternates under the same conditions as other work of the Contract.
 - e. This alternate work cannot be done until second phase of tunnel work.
 - 10. **Unit Price #01 – Demo and Replace Tunnel Lid:** Trade Contractor shall include all of the following, but not limited to, as part of the contract:
 - a. Demo and replace tunnel cap. Figure a 6'-0" x 8'-0" opening for each instance.
 - b. Unit prices include all necessary material, plus cost for delivery, installation, insurance, overhead, and profit.
- C. **Bid Package #22-1 – Plumbing:** Trade Contractor shall include all of the following, but not limited to, as part of the contract:
- 1. Specifications:
 - a. Division 00 – Procurement and Contracting Requirements
 - b. Division 01 – General Requirements
 - 1) Exclude Section 01 9000 Atlas Abatement Specifications dated 5/12/2026
 - a) Complete
 - c. Division 02 – Existing Conditions
 - 1) Specification 02 4100 Demolition. Complete all demo work associated with work corresponding to BP #22-1.
 - d. Division 03 – Concrete
 - 1) Specification 03 3000 Cast-In-Place Concrete – for adjacent work completed by #22-1.
 - e. Division 22 – Plumbing
 - 1) Complete
 - f. Division 23 – Heating, Ventilating, and Air-Conditioning (HVAC)
 - 1) Complete
 - 2. Drawings: See responsibility matrix with exceptions explained below.
 - a. 00-C101, 00-C102, 00-C103, 00-C104, 00-C105, 00-C106, and 00-C107

- 1) Exclude tunnel demolition and concrete work.
 - 2) Exclude civil work for chiller building on 00-C104.
 - 3) Include capping water main.
 - b. 00-S113 and 00-S114
 - 1) Only include note 8
 - c. 18-MD001
 - 1) Base bid work is only detail A3.
 3. Clarification: Contractor shall be lead-certified, and all work done on areas with lead-containing or lead-based paint must be done by a lead-certified crew member.
 4. Clarification: Project will require two phases for tunnel demolition and fill, so two mobilizations should be included.
 5. **Alternate #01** – Demo Powerhouse Equipment: Trade Contractor shall include all of the following, but not limited to, as part of the contract:
 - a. All demolition work associated with sheet 18-MD001, excluding detail A3, and sheet 18-MD002. Fuel oil tank work should be included with base bid. Work cannot start until abatement work has been completed.
 - b. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
 - c. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
 - d. Execute accepted alternates under the same conditions as other work of the Contract.
 - e. This alternate work cannot be done until second phase of tunnel work.
 6. **Alternate #02** – Demo Chiller Plant Equipment: Trade Contractor shall include all of the following, but not limited to, as part of the contract:
 - a. All demolition work associated with sheet 29-M001. Work cannot start until abatement work has been completed.
 - b. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
 - c. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
 - d. Execute accepted alternates under the same conditions as other work of the Contract.
 - e. This alternate work cannot be done until second phase of tunnel work.
- D. **Bid Package #26-1** – Electrical: Trade Contractor shall include all of the following, but not limited to, as part of the contract:
1. Specifications:
 - a. Division 00 – Procurement and Contracting Requirements
 - b. Division 01 – General Requirements
 - 1) Exclude Section 01 9000 Atlas Abatement Specifications dated 5/12/2026
 - a) Complete
 - c. Division 02 – Existing Conditions
 - 1) Specification 02 4100 Demolition. Complete all demo work associated with work corresponding to BP #26-1.
 - d. Division 26 - Electrical
 - 1) Complete
 2. Drawings: See responsibility matrix with exceptions explained below.
 - a. 00-ESD01
 - 1) Only include work for circuits.
 3. Clarification: Contractor shall be lead-certified, and all work done on areas with lead-containing or lead-based paint must be done by a lead-certified crew member.
 4. Clarification: Project will require two phases for tunnel demolition and fill, so two mobilizations should be included.

- E. **Work Performed by Owner:** WRC Staff or Construction Manager will perform the following work items:
1. Relocate all moveable furniture, fixtures and equipment (FF&E), including window treatments; and personal materials from each sequenced work area prior to demolition and construction activities and after new construction is completed.
 2. Perform fire watch when necessary.
 3. Temporary granular surface for parking and laydown area.
 4. Temporary fencing for laydown area.
 5. Electrical disconnects at the administration building and powerhouse as described in 00-ESD01.
 6. Assistance with isolating water mains.
- F. **Owner Furnished Products:** DAS or Construction Manager will provide the following materials for installation by the contractor:
1. Temporary lights for the tunnel. Estimated 1,000 linear feet.
 2. Ten (10) 8'-0" x 12'-0" steel plates to provide temporary cover over the tunnel. Contractor is responsible for moving plates.
 3. Fencing as needed around open excavations.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION

Responsibility Matrix				
X - Contractor has full sheet		E - Contractor has portions of sheet (see contract summary for clarification)		
Bid Package Drawing Sheet	#01-1 Abatement	#03-1 Tunnel In-Fill	#22-1 Plumbing	#26-1 Electrical
00-C000	X	X	X	X
00-C001	X	X	X	X
00-C101		E	E	
00-C102		E	E	
00-C103		E	E	
00-C104		E	E	
00-C105		E	E	
00-C106		E	E	
00-C107		E	E	
00-C201			X	
00-C202			X	
00-S000	X	X	X	X
00-S110	E	E		
00-S111	E	E		
00-S112	E	E		
00-S113	E	E	E	
00-S114	E	E	E	
00-S300	X	E		
00-S301	X	E		
00-S500		X		
01-S120		X		
02-S121		X		
03-S122		X		
04-S123		X		
05-S124		X		
06-S125		X		
07-S126		X		
08-S127		X		
10-S128		X		
12-S129		X		
13-S130		X		
14-S131		X		
15-S132		X		
16-S133		X		
17-S134		X		
18-S135		X		
19-S136		X		
20-S137		X		
27-S138		X		
29-S139		X		
00-M000			X	
14-P101			X	
15-P101			X	
16-P001			X	
18-M001			X	
18-M002			X	
18-MD001	E		E	
18-MD002	E		E	
18-P001			X	
25-P100			X	
29-M001	E		E	
00-E001				X
00-ESD01				E
18-ED001				X
18-ED002				X
29-ED01				X

SECTION 01 2500

SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Substitution Procedures
- B. Request for Substitution form

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION

3.01 SUBSTITUTION PROCEDURES

- A. Where the Bidding Documents stipulate a specific product be provided by naming one or more manufacturer and model, a substitute product will be considered when written request is received by the date and time identified in Section 00 1113 NOTICE TO BIDDERS. Substitution requests will be considered for all products, even if the specification does not include a statement such as “or equal,” “equal to,” “equivalent to,” or “basis of design,” unless noted otherwise.
- B. References in the Bidding Documents to brand or trade names are intended to illustrate the general characteristics of the item and not to limit competition unless noted otherwise.
- C. The written request shall be on the “Request for Substitution” form included in the Project Manual. If no such form is included, the request shall be provided on the letterhead of the company making the request.
- D. Substitution requests received after the specified date will be viewed in the context of a Change Order to the Contract, and consideration will only be given in the event a product becomes unavailable or not practical due to no fault of the Contractor, or the substitution is substantially to the Owner’s advantage (equal product for less cost or higher quality product at no change in Contract Sum).
- E. Document each substitution request with complete data substantiating compliance of the proposed substitution with the Bidding Documents. Each request shall identify the specified product for which the substitution is requested, and shall clearly describe the product for which approval is requested. The burden shall be on the requester to demonstrate the proposed substitute product’s suitability for use in the Work and its equivalency or superiority in function, appearance, quality, and performance with the product named in the Bidding Documents.
- F. A description of any changes to the Bidding Documents that the proposed substitution will require shall be included with the request. The requester shall affirm that dimensions shown on the Drawings will not be affected by the substitute product, and that it will have no adverse effect on other trades, the construction schedule, or specified warranty requirements. The request for use of a substitute product shall be signed by an authorized representative of the firm submitting the request, who shall state that the firm will pay for any changes to the building design, including Design Professional’s design, detailing, and construction cost caused by the requested substitution if the substitution is approved for use in the Work.
- G. All such substitute products approved for use in the Work during the established period of time before receipt of Bids will be identified in a subsequent Addendum to the Bidding Documents.

3.02 REQUEST FOR SUBSTITUTION FORM

- A. A Request for Substitution Form is attached following this page.
- B. Substitution requests shall be emailed to the Issuing Officer at the email address provided in Instructions to Bidders Section 1.04.

END OF SECTION

SUBSTITUTION REQUEST FORM

Project: _____ Substitution Request Number: _____

From: _____
To: _____ Date: _____

A/E Project Number: _____
Re: _____

Specification Title: _____ Description: _____
Section: _____ Page: _____ Article/Paragraph: _____

Proposed Substitution: _____
Manufacturer: _____ Address: _____ Phone: _____
Trade Name: _____ Model No.: _____

History: New product 2-5 years old 5-10 yrs old More than 10 years old

Differences between proposed substitution and specified product: _____

Point-by-point comparative data prepared by contractor and attached - REQUIRED BY A/E

Reason for not providing specified item: _____

Similar Installation:
Project: _____ Architect: _____
Address: _____ Owner: _____
_____ Date Installed: _____

Proposed substitution affects other parts of Work: No Yes; explain _____

Supporting Data Attached: Drawings Product Data Samples Tests Reports _____

SUBSTITUTION REQUEST FORM

(Continued)

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Cost data as stated above is complete. Claims for additional costs related to accepted substitution which may subsequently become apparent are to be waived.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.
- Coordination, installation, and changes in the Work as necessary for accepted substitution will be complete in all respects.

Submitted by: _____

Signed by: _____

Firm: _____

Address: _____

Telephone: _____

Attachments: _____

A/E's REVIEW AND ACTION

- Substitution approved - Make submittals in accordance with Specification Section 01 3300.
- Substitution approved as noted - Make submittals in accordance with Specification Section 01 3300.
- Substitution rejected - Use specified materials.
- Substitution Request received too late - Use specified materials.

Signed by:

Date:

Additional Comments: Contractor Subcontractor Supplier Manufacturer A/E _____

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SECTION 01 2600

CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Change procedures

1.02 CHANGE PROCEDURES

- A. The Design Professional will advise of minor changes in the work not involving an adjustment to Contract Sum/Price or contract time as authorized.
- B. The Construction Manager may issue a Proposal Request that includes a detailed description of a proposed change with supplementary or revised drawings and specifications and a change in contract time for executing the change as provided by the Design Professional. The Trade Contractor will prepare and submit an estimate within 7 calendar days. Estimates shall be provided for the project at no cost, regardless of acceptance or rejection of proposal.
- C. The Trade Contractor may propose changes by submitting a Request for Information to the Construction Manager, describing the proposed change and its full effect on the work. Include a statement describing the reason for the change, and the effect on the Contract Sum/Price and contract time with full documentation and a statement describing the effect on work by separate or other contractors. Document any requested substitutions in accordance with the specifications. Construction Manager will forward the Request for Information on to the Design Professional for their official response.
- D. Stipulated Sum/Price Change Order: Based on executed Change Order and contractor's fixed price quotation.
- E. Unit Price Change Order: The change order will be executed on a fixed unit price basis for pre-determined unit prices and quantities. Changes in contract price or contract time will be computed as specified for time and material change orders.
- F. Time and Material Change Order: The change order will be executed on a not to exceed basis. Design professional and Construction Manager will determine the not to exceed estimated cost based on contractor's proposal for hourly rates and material costs. Maintain detailed records of work done on time and material basis. Time and Material tickets must be submitted daily to the Construction Manager for verification. Provide full information required for evaluation of proposed changes, and to substantiate costs for changes in the work. Submit itemized account and supporting data after completion of change. A final deductive change order will be issued to reconcile final cost to the initial change order.
- G. Change Order Forms: CONSENSUSDOC Forms provided by Owner.
- H. Execution of Change Orders: The Construction Manager will issue change orders for signature of parties as provided in the Conditions of the Contract.
- I. With respect to pricing change orders, the percentage mark-up for overhead and profit is subject to the following limits:
 - 1. Fifteen (15) percent maximum for work directly performed by employees of the Constructor, Subcontractor or Sub-subcontractor.
 - 2. Five (5) percent maximum for work performed or passed through by a Subcontractor and passed through to the Owner by the Constructor.
 - 3. Five (5) percent maximum Subcontractor's mark-up for Work performed by a Sub-Subcontractor and passed through to the Owner by the Subcontractor and Constructor.
 - 4. The maximum allowable mark-up shall be twenty-five (25) percent passed through to the Owner by the Constructor under any circumstances. Overhead and profit shall be shown separately for the Constructor and each Subcontractor of any tier performing the Change Order Work.
- J. Contractor and subcontractor agree to provide and require all suppliers to provide, a detailed breakdown of labor, labor burden, materials, installation, rental, and fuel costs.

K. Please refer to Article 8 of CONSENSUSDOCS 802- STANDARD FORM OR AGREEMENT BETWEEN OWNER AND TRADE CONTRACTOR for additional Change Procedures.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION

SECTION 01 2900

PAYMENT PROCEDURES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Schedule of values
- B. Application for payment

1.02 SCHEDULE OF VALUES

- A. Coordination: Trade Contractor will coordinate preparation of the Schedule of Values with preparation of the Construction Manager's Construction Schedule.
 - 1. Correlate line items in the Schedule of Values with other required administrative forms and schedules, including Application for Payment forms with Continuation Sheets, Submittals Schedule, and Construction Manager's Construction Schedule.
 - 2. Submit original Schedule of Values in Procore within 14 days after date of Owner-Trade Contractor Agreement. Schedule of Values must be approved by Owner prior to submission for first application for payment.
- B. Format: Utilize the Table of Contents of this project manual. Identify each line item with number and title of the major specification section. Each major specification section should be further itemized by materials cost, labor cost and subcontractor cost for each building separately for the base bid and all accepted alternates. Identify site mobilization, bonds and insurance and include a line item for closeout paperwork for a value of no less than 1% of the total contract value or \$1,000, whichever is greater.
 - 1. Identification: Include the following Project identification on the Schedule of Values:
 - a. Project name and location.
 - b. Name and address of Owner, Trade Contractor, Construction Manager and Design Team.
 - c. DAS Project Number.
 - d. Date of Submittal.
 - 2. Revise the Schedule of Values to list approved Change Orders with each Application for Payment.

1.03 APPLICATIONS FOR PAYMENT

- A. Each Application for Payment shall be consistent with previous applications for payments as certified by the Design Professional and paid for by Owner.
 - 1. Application for Payment at time of Substantial Completion and final Application for Payment involve additional requirements.
- B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement. Progress payments shall be submitted to the Construction Manager. Any request for payment for work completed prior to June 30th of any year needs to be submitted by July 15th of the same calendar year.
- C. Payment Application Forms: Use AIA form G702 and G703 as the form for the Application for Payment or an equivalent approved by the owner.
- D. Include lien waiver forms required by the owner when applicable.
- E. Application Preparation: Complete every entry on form. Construction Manager will return incomplete applications without action.
 - 1. Include amounts of Change Orders issued before last day of construction period covered by application.

- F. Waivers of Mechanic's Lien: If requested by Owner with each Application for Payment, submit waivers of mechanic's lien from every entity who is lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by the payment when applicable.
 - 1. Owner reserves the right to designate which entities involved in the Work must submit waivers.
 - 2. Submit waivers of lien on forms, executed in a manner acceptable to Owner.
- G. Initial Application for Payment: Administrative actions and submittals that must precede submittal of first Application for Payment include the following:
 - 1. Schedule of Values
 - 2. Certificates of insurance and insurance policies.
 - 3. Lists of vendors and any subcontractors.
- H. Application for Payment at Substantial Completion: After the Certificate of Substantial Completion has been fully executed, submit an Application for Payment showing 100 percent completion for the portion of the Work claimed as substantially complete, not including the closeout paperwork line item.
 - 1. Include documentation supporting the claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
 - 2. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
- I. Final Payment Application: Submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:
 - 1. Evidence of completion of Project closeout requirements.
 - 2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
 - 3. Updated final statement, accounting for final changes to the Contract Sum.
 - 4. AIA Document G706, "Contractor's Affidavit of Payment of Debts and Claims."
 - 5. AIA Document G706A, "Contractor's Affidavit of Release of Liens."
 - 6. AIA Document G707, "Consent of Surety to Final Payment."
 - 7. Letter of Notification to all sub-contractors and suppliers of application for release of retainage.
 - 8. Evidence that claims have been settled.
- J. Payments will be made to the extent of the value of the work performed in the previous month less a retainage amount of 3% of the value of the work performed. Upon substantial completion for the entire work, a sum sufficient to decrease the total retained to 3% of the contract sum, plus the full amount of the line item for closeout paperwork, plus such other retainage as the engineer shall determine for all incomplete work and unsettled claims will be authorized. The closeout paperwork line item may only be billed once the certificate of final completion has been fully executed.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION

SECTION 01 3100

PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Coordination
- B. Pre-construction meeting
- C. Progress meetings
- D. Coordination Meetings
- E. Requests for Interpretation (RFIs)
- F. Background Checks

1.02 COORDINATION

- A. Coordinate scheduling, submittals, and work of the various sections of the project manual to ensure efficient and orderly sequence of installation of interdependent construction elements.
 - 1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 - 2. Coordinate installation of different components with other contractors to ensure maximum accessibility for required maintenance, service, and repair.
 - 3. Make adequate provisions to accommodate items scheduled for later installation.
- B. Administrative procedures: The Trade Contractor will coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
 - 1. Preparation of Trade Contractor's Construction Schedule.
 - 2. Provide updated information for Construction Manager's Construction Schedule.
 - 3. Preparation of Schedule of Values.
 - 4. Delivery and processing of submittals.
 - 5. Progress meetings.
 - 6. Pre-installation conferences.
 - 7. Project closeout activities
- C. Verify utility requirements and characteristics of operating equipment are compatible with building utilities. Coordinate work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
- D. Coordinate space requirements, supports, and installation of mechanical and electrical work, which are indicated diagrammatically on drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with lines of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.
- E. In finished areas except as otherwise indicated conceal pipes and wiring within the construction. Coordinate locations of piping with finish elements.
- F. Coordinate completion and cleanup of work of separate sections in preparation for Substantial Completion.
- G. After owner occupancy of premises, coordinate access to site for correction of defective work and work not in accordance with Contract Documents, to minimize disruption of owner's activities.
- H. During construction coordinate use of site and facilities through Construction Manager.
- I. Comply with Construction Manager and Owner's procedures for intra-project communications; submittals, reports and records, schedules, coordination drawings, and recommendations; and resolution of ambiguities and conflicts.
- J. Make the following types of submittal to Architect through the Construction Manager via Procure:

1. Request for Information/Interpretation.
2. Request for substitution.
3. Shop drawings, product data, and samples.
4. Test and inspection reports.
5. Design data.
6. Manufacturer's instructions and field reports.
7. Applications for payment and change order requests.
8. Progress schedules.
9. Coordination drawings.
10. Correction punch list and final correction punch list for substantial completion
11. Closeout submittals

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION

3.01 PRE-CONSTRUCTION MEETING

- A. The Construction Manager and Owner will schedule a meeting after Notice of Award.
- B. Required: Design Professional, Owner, Construction Manager, Trade Contractor and any Sub Contractors.
- C. Agenda:
 1. Execution of Owner-Contractor Agreement.
 2. Submission of executed bonds and insurance certificates.
 3. Distribution of Contract Documents.
 4. Submission of list of subcontractors, list of products, schedule of values, and progress schedule.
 5. Designation of personnel representing the parties in Contract.
 6. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, change orders, RFIs and contract closeout procedures
 7. Tentative construction schedule.
 8. Critical work sequencing and long-lead items.
 9. Procedures for testing and inspecting.
 10. Preparation of Record Documents.
 11. Safety Procedures.
 12. Owner's requirements.
 13. Security and housekeeping procedures.
 14. Background Checks.
 15. Responsibility for temporary facilities and controls.
 16. Construction waste management.
 17. Logistics (use of premise, parking, work restrictions, maintain egress, etc.)
- D. The Construction Manager is to record minutes and distribute copies within two days after meeting to participants, with one copy to owner, participants, and those affected by decisions made.

3.02 PROGRESS MEETINGS

- A. The Construction Manager shall schedule and administer meetings throughout progress of the work at weekly intervals.
- B. The Construction Manager is to make arrangements for meetings, prepare agenda with copies for participants, and preside at meetings, record minutes and distribute copies within two days to those affected by decisions made.
- C. Attendees may include: Project superintendent, major subcontractors and suppliers, Owner, Construction Manager, Architect/Engineer, as appropriate to agenda topics for each meeting. All participants at the conference call shall be familiar with the Project and authorized to conclude matters relating to the Work.

- D. Agenda:
1. Review minutes of previous meetings.
 2. Review the Construction Manager's Construction Schedule.
 3. Field observations, problems, and decisions.
 4. Identification of problems that impede planned progress.
 5. Review of submittals schedule and status of submittals.
 6. Review of RFI's.
 7. Review of off-site fabrication and delivery schedules.
 8. Corrective measures to regain projected schedules.
 9. Planned progress during succeeding work period.
 10. Coordination of projected progress.
 11. Maintenance of quality and work standards.
 12. Effect of proposed changes on progress schedule and coordination.
 13. Other business relating to work.
 14. Access, temporary facilities and controls, housekeeping and progress cleaning.
 15. Safety.
 16. Status of proposal requests, pending changes, official Change Orders.
- E. Minutes:
1. Following the meeting, the meeting minutes will be published in Procore by the Construction Manager for all parties.

3.03 COORDINATION MEETINGS

- A. Coordination meetings will be held at the discretion of the construction manager.

3.04 REQUESTS FOR INTERPRETATION (RFIs)

- A. Procedure: Immediately on discovery of the need for interpretation of the Contract Documents, prepare and submit an RFI in Procore.
1. RFIs shall originate with Trade Contractor. RFIs submitted by entities other than Contractor will be returned with no response.
 2. Coordinate and submit RFIs in a prompt manner so as to avoid delays in the Work.
- B. Content of the RFI: Include a detailed, legible description of item needing interpretation and the following:
1. Specification Section number and title and related paragraphs, as appropriate.
 2. Drawing number and detail references, as appropriate.
 3. Field dimensions and conditions, as appropriate.
 4. Trade Contractor's suggested solution(s). If Trade Contractor's solution(s) impact the Contract Time or the Contract Sum, Trade Contractor shall state impact in the RFI.
 5. Attachments: Include drawings, descriptions, measurements, photos, Product Data, Shop Drawings, and other information necessary to fully describe items needing interpretation.
- C. Design Professional's Action: Design Professional will review each RFI, determine action required, and return it. Allow seven (7) working days for Design Professional's response for each RFI. RFIs received after 1:00 p.m. will be considered as received the following working day. The following RFIs will be returned without action:
1. Requests for approval of submittals.
 2. Requests for approval of substitutions.
 3. Requests for coordination information already indicated in the Contract Documents.
 4. Requests for adjustments in the Contract Time or the Contract Sum.
 5. Requests for interpretation of Design Professional's actions on submittals.
 6. Incomplete RFIs or RFIs with numerous errors.
 7. Design Professional's action may include a request for additional information, in which case Design Professional's time for response will start again.
- D. Design Professional's action on RFIs that may result in a change to the Contract Time or the Contract Sum/Price.

1. If Trade Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Construction Manager in writing within ten (10) days of receipt of the RFI response.
- E. On receipt of Design Professional's response in Procore, review the response and notify Design Professional within seven (7) days if Trade Contractor disagrees with response.

3.05 BACKGROUND CHECKS

- A. Background checks must be performed on all on site employees, including sub-contractors.
- B. The Contractor hereby explicitly authorized the Iowa DAS to conduct criminal history and/or other background investigation(s) of the Contractor, its officers, supervisory personnel, employees, and other staff retained by the Contractor or their sub-contractors for the performance of the contract.
- C. A state of Iowa record check request form will be provided at the pre-construction meeting. Information required may include:
 1. Last Name
 2. First Name
 3. Middle Name
 4. Date of Birth
 5. State Driver's License or State ID #
 6. Social Security #

END OF SECTION

SECTION 01 3100.01

WEB BASED CONSTRUCTION MANAGEMENT

PART 1 - GENERAL

1.01 DESCRIPTION

- A. The Owner and Contractor shall utilize **Procore Technologies, Inc. Procore** system for electronic submittal of all data and documents (unless specified otherwise by the owner's representative) throughout the duration of the Contract. **Procore** is a web-based electronic media site that is hosted by **Procore Technologies, Inc.**, utilizing their **Procore** web solution. **Procore** will be made available to all contractors' project personnel, subcontractor personnel, suppliers, consultants and the Designer of Record. The joint use of this system is to facilitate; electronic exchange of information, automation of key processes, and overall management of the contract. **Procore** shall be the primary means of project information submission and management. When required by the Owners representative, paper documents will also be provided. In the event of discrepancy between the electronic version and paper documents, the paper documents will govern. **Procore** is a registered trademark of **Procore Technologies, Inc.**

1.02 USER ACCESS LIMITATIONS

- A. The Owner's Representative/Construction Manager will control the Contractor's access to **Procore** by allowing access and assigning user profiles to accepted Contractor personnel. User profiles will define levels of access into the system, determine assigned function-based authorizations (determines what can be seen) and user privileges (determines what they can do). Sub-contractors and suppliers will be given access to **Procore** through the Contractor. Entry of information exchanged and transferred between the Contractor and its sub-contractors and suppliers on **Procore** shall be the responsibility of the Contractor.
1. Joint Ownership of Data: Data entered in a collaborative mode (entered with the intent to share as determined by permissions and workflows within the **Procore** system) by the Owner's Representative and the Contractor will be jointly owned.

1.03 AUTOMATED SYSTEM NOTIFICATION AND AUDIT LOG TRACKING

- A. Review comments made (or lack thereof) by the Owner on Contractor submitted documentation shall not relieve the Contractor from compliance with requirements of the Contract Documents. The Contractor is responsible for managing, tracking, and documenting the Work to comply with the requirements of the Contract Documents. Owner's acceptance via automated system notifications or audit logs extends only to the face value of the submitted documentation and does not constitute validation of the Contractor's submitted information.

1.04 SUBMITTALS

- A. See Section 01 3300 SUBMITTAL PROCEDURES:
B. Preconstruction Submittals
1. List of Contractor's key **Procore** personnel. Include descriptions of key personnel's roles and responsibilities for this project. Contractor should also identify their organization's administrator on the list.

1.05 COMPUTER REQUIREMENTS

- A. The Contractor shall use computer hardware and software that meets the requirements of the **Procore** system as recommended by **Procore Technologies, Inc.** to access and utilize **Procore**. As recommendations are modified by **Procore**, the Contractor will upgrade their system(s) to meet the recommendations or better. Upgrading of the Contractor's computer systems will not be justification for a cost or time modification to the Contract. The contractor will ensure that connectivity to the **Procore** system (whether at the home office or job site) is accomplished through DSL, cable, T-1 or wireless communications systems. The minimum bandwidth requirement for using the system is 128kb/s. It is recommended a faster connection be used when uploading pictures and files into the system. **Procore** supports the current and prior two major versions of Chrome, Firefox, Internet Explorer, and Safari.
- B. The Contractor shall be responsible for the validity of their information placed in **Procore** and for the abilities of their personnel. Accepted users shall be knowledgeable in the use of computers, including Internet Browsers, email programs, cad drawing applications, and Adobe Portable Document Format (PDF) document distribution program. The Contractor shall utilize the existing forms in **Procore** to the maximum extent possible. If a form does not exist in **Procore** the Contractor must include a form of their own or provided by the Owner representative as an attachment to a submittal. Adobe PDF documents will be created through electronic conversion rather than optically scanned whenever possible. The Contractor is responsible for the training of their personnel in the use of **Procore** (outside what is provided by the owner) and the other programs indicated above as needed.
- C. User Access Administration: Provide a list of Contractor's key **Procore** personnel for the Owner's Representative acceptance. Contractor is responsible for adding and removing users from the system. The Owners Representative reserves the right to perform a security check on all potential users. The Contractor will be allowed to add additional personnel and sub-contractors to **Procore**.

1.06 CONNECTIVITY PROBLEMS

- A. **Procore** is a web-based environment and therefore subject to the inherent speed and connectivity problems of the Internet. The Contractor is responsible for its own connectivity to the Internet. **Procore** response time is dependent on the Contractor's equipment, including processor speed, Internet access speed, etc. and current traffic on the Internet. The Owner will not be liable for any delays associated from the usage of **Procore** including, but not limited to: slow response time, down time periods, connectivity problems, or loss of information. The contractor will ensure that connectivity to the **Procore** system (whether at the home office or job site) is accomplished through DSL, cable, T-1 or wireless communications systems. The minimum bandwidth requirement for using the system is 128kb/s. It is recommended a faster connection be used when uploading pictures and files into the system. Under no circumstances shall the usage of the **Procore** be grounds for a time extension or cost adjustment to the contract.

1.07 TRAINING

- A. The Construction Manager shall provide the necessary training to the Prime Contractor.

PART 2 - PRODUCTS

2.01 DESCRIPTION

- A. **Procore** project management application (no equal) Provided by Procore Technologies, Inc. www.Procore.com

PART 3 - EXECUTION

3.01 PROCORE UTILIZATION

- A. **Procore** shall be utilized in connection with submittal preparation and information management required by Sections:
1. PROJECT MANAGEMENT AND COORDINATION
 2. CONSTRUCTION PROGRESS DOCUMENTATION
 3. SUBMITTAL PROCEDURES
 4. QUALITY REQUIREMENTS
 5. Other Division One sections.
 6. Requirements of this section are in addition to requirements of all other sections of the specifications.
- B. Design Document Submittals
1. All design drawings and specifications shall be submitted as cad .dwg files or PDF attachments to the **Procore** submittal work flow process and form.
- C. Shop Drawings
1. Shop drawing and design data documents shall be submitted as cad .dwg files or PDF attachments to the **Procore** submittal work flow process and form. Examples of shop drawings include, but are not limited to:
 2. Standard manufacturer installation drawings.
 3. Drawings prepared to illustrate portions of the work designed or developed by the Contractor.
 4. Steel fabrication, piece, and erection drawings.
- D. Product Data
1. Product catalog data and manufacturer's instructions shall be submitted as
 2. PDF attachments to the **Procore** submittal work flow process and form. Examples of product data include, but are not limited to:
 3. Manufacturer's printed literature.
 4. Preprinted product specification data and installation instructions.
- E. Samples
1. Sample submittals shall be physically submitted as specified in Section 01 3300 SUBMITTAL PROCEDURES. Contractor shall enter submittal data information into **Procore** with a copy of the submittal form(s) attached to the sample. Examples of samples include, but are not limited to:
 2. Product finishes and color selection samples.
 3. Product finishes and color verification samples.
 4. Finish/color boards.
 5. Physical samples of materials.
- F. Administrative Submittals
1. All correspondence and pre-construction submittals shall be submitted using **Procore**. Examples of administrative submittals include, but are not limited to:
 2. Digging permits and notices for excavation.
 3. List of product substitutions
 4. List of contact personnel.
 5. Notices for roadway interruption, work outside regular hours, and utility cut overs.
 6. Requests for Information (RFI).

7. Construction progress Schedules and associated reports and updates.
 - a. Each schedule submittal specified in CONSTRUCTION PROGRESS DOCUMENTATION shall be submitted as a native backed-up file (.PRX or .STX) of the scheduling program being used. The schedule will also be posted as a PDF file in the format.
 8. Plans for safety, demolition, environmental protection, and similar activities.
 9. Quality Control Plan(s), Testing Plan and Log, Quality Control Reports, Production Reports, Quality Control Specialist Reports, Preparatory Phase Checklist, Initial Phase Checklist, Field Test reports, Summary reports, Rework Items List, etc.
 10. Meeting minutes for quality control meetings, progress meetings, pre-installation meetings, etc.
 11. Any general correspondence submitted.
- G. Compliance Submittals
1. Test reports, certificates, and manufacture field report submittals shall be submitted on **Procore** as PDF attachments. Examples of compliance submittals include, but are not limited to:
 - a. Field test reports.
 - b. Quality Control certifications.
 - c. Manufacturer's documentation and certifications for quality of products and materials provided.
- H. Record and Closeout Submittals
1. Operation and maintenance data and closeout submittals shall be submitted on **Procore** as PDF documents during the approval and review stage as specified, with actual set of documents submitted for final. Examples of record submittals include, but are not limited to:
 - a. Operation and Maintenance Manuals: Final documents shall be submitted as specified.
 - b. As-built Drawings: Final documents shall be submitted as specified.
 - c. Extra Materials, Spare Stock, etc.: Submittal forms shall indicate when actual materials are submitted.
- I. Financial Submittals
1. Schedule of Value, Pay Applications and Change Request Proposals shall be submitted on **Procore**. Supporting material for Pay Applications and Change Requests shall be submitted on **Procore** as PDF attachments. Examples of compliance submittals include, but are not limited to:
 - a. Contractors Schedule of Values
 - b. Contractors Monthly Progress Payment Requests
 - c. Contract Change proposals requested by the project owner

END OF SECTION

SECTION 01 3200

CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Construction Progress Schedule
- B. Construction Manager's Construction Schedule
- C. Submittal Schedule
- D. Daily Construction Reports
- E. Progress Photographs

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION

3.01 CONSTRUCTION MANAGER'S MASTER CONSTRUCTION SCHEDULE

- A. Upon award of package, Contractor agrees to accept and meet or improve upon the schedule proposed in section **00 3113 PRELIMINARY SCHEDULE** with intermediate handoffs. Each package contractor will be required to participate in schedule coordination meetings with the Construction Manager.
- B. If the bid package contractor does not meet the handoff milestones in the master construction schedule, the bid package contractor shall take measures to increase work forces, increase work hours, initiate revisions to means and methods of construction, and/or other similar measures as required to make up lost time and complete the work in accordance with the construction schedule and remain consistent with project progress and overall construction schedule. Such measures shall be at no additional cost to the Owner. The Construction Manager shall have sole discretion on decisions to accelerate work.
- C. Updating the master construction schedule – Contractors are required to attend and participate in schedule coordination update meetings with the Construction Manager. This will be an opportunity for contractors to further define their scheduled scope of work in conjunction with other trades on site.
- D. Acceptance of revised master construction schedule – After an updated master construction schedule has been issued via Procore, Contractors will have 48 hours to dispute the new schedule. All contractors will be held to the last fully accepted master construction schedule.

3.02 CONSTRUCTION PROGRESS SCHEDULE

- A. Submit preliminary outline to the Construction Manager no later than 48 hours prior to the pre-construction meeting for coordination with Owner's requirements.
- B. Submit revised progress schedule with each application for payment.
- C. Schedules will be electronically submitted through Procore.
- D. Distribute copies of reviewed schedules to project site file, subcontractors, suppliers, and other concerned parties.
- E. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in schedules.
- F. Submit computer generated horizontal bar chart with separate line for each major portion of work or operation, identifying the first day of each week.
- G. Show complete sequence of construction activity, identifying work of separate stages and other logically grouped activities. Indicate early and late start, early and late finish, float dates, and duration.
- H. Indicate estimated percentage of completion for each item of work at each submission.
- I. Participate in joint review and evaluation of schedule with Construction Manager.

- J. Revisions to schedules:
 - 1. Indicate progress of each activity to date of submittal and projected completion date of each activity.
 - 2. Identify activities modified since previous submittal, major changes in scope, and other identifiable changes.
 - 3. Prepare narrative report to define problem areas, anticipate delays, and impact on schedule. Report corrective action taken, or proposed, and its effect including effect of changes on schedules of separate contractors.

3.03 **SUBMITTAL SCHEDULE**

- A. Submit a schedule of submittals, arranged in chronological order by dates required by construction schedule. Include time required for review, re-submittal, ordering, manufacturing, fabrications, and delivery when establishing dates.
 - 1. Coordinate submittal schedule with list of subcontractors, the schedule of values, and construction schedule.
 - 2. Submit concurrently with first complete submittal of contractor's construction schedule.

3.04 **DAILY CONSTRUCTION REPORTS**

- A. Daily Construction Reports: Submitted at weekly intervals.
 - 1. Daily Construction Reports will be submitted to Construction Manager.
- B. Prepare a daily construction report recording the following information concerning events at project site:
 - 1. Count of personnel at Project site
 - 2. Equipment at Project site
 - 3. Material Deliveries
 - 4. High and low temperatures and general weather conditions, including presence of rain or snow
 - 5. Accidents
 - 6. Meetings and significant decisions
 - 7. Unusual events
 - 8. Stoppages, delays, shortages, and losses
 - 9. Meter readings and similar recordings
 - 10. Emergency procedures
 - 11. Orders and requests of authorities having jurisdiction
 - 12. Change orders received and implemented
 - 13. Services connected and disconnected
 - 14. Equipment or system tests and startups
 - 15. Partial completions and occupancies
 - 16. Substantial completions authorized

3.05 **PROGRESS PHOTOGRAPHS**

- A. Progress photographs will be electronically submitted through Procore.
- B. Preconstruction Photographs: Before starting construction, take photographs of project site and surrounding properties, including existing items to remain during construction, from different vantage points, as directed by Construction manager.
 - 1. Take additional photographs as required to record existing damage to site, structure, equipment, or finishes.
- C. Periodic Construction Photographs: Take photographs at regular intervals. Select vantage points to show status of construction and progress since last photographs were taken.

- D. Field Completion Construction Photographs: Take photographs after date of Substantial Completion for submission as project record documents. Construction manager will inform of desired vantage points.

END OF SECTION

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SECTION 01 3300

SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Submittals for Review
- B. Submittals for Information
- C. Submittal Procedures
- D. Samples

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION

3.01 SUBMITTALS FOR REVIEW

- A. When the following are specified in individual sections, submit them for review:
 - 1. Product Data
 - 2. Shop Drawings
 - 3. Samples for Selection
 - 4. Samples for Verification
- B. Submit to Construction Manager to forward to Architect for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
- C. Samples will be reviewed only for aesthetic, color, or finish selection.
- D. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article below and for record document purposes.

3.02 SUBMITTALS FOR INFORMATION

- A. When the following are specified in individual sections, submit them for information:
 - 1. Design data.
 - 2. Certificates.
 - 3. Test reports.
 - 4. Inspection reports.
 - 5. Manufacturer's instructions.
 - 6. Manufacturer's field reports.
 - 7. Other types indicated.
- B. Submit for Construction Manager, Architect, and Owner's knowledge. No action will be taken.

3.03 SUBMITTAL PROCEDURES

- A. Submittals will be electronically submitted through Procore. Contractor will be invited to join web based program after issue of Notice of Intent to award.
- B. Shop Drawing Procedures:
 - 1. Prepare accurate, drawn-to-scale, original shop drawing documentation by interpreting the Contract Documents and coordinating related Work.
 - 2. Do not reproduce the Contract Documents to create shop drawings.
 - 3. Generic, non-project specific information submitted as shop drawings do not meet the requirements for shop drawings.
- C. Transmit each submittal with a copy of approved submittal form.

- D. Sequentially number the submittal form. Revise submittals with original number and a sequential numeric suffix.
- E. Identify Project, Contractor, Subcontractor or supplier; pertinent drawing and detail number, and specification section number, as appropriate on each copy.
- F. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of Products required, field dimensions, adjacent construction work, and coordination of information is in accordance with the requirements of the work and Contract Documents.
- G. Schedule submittals to expedite the project and coordinate submission of related items.
- H. For each submittal review, allow 15 days excluding delivery time to and from the contractor.
- I. Identify variations from the Contract Documents and product or system limitations that may be detrimental to successful performance of the completed work.
- J. When revised for resubmission, identify all changes made since previous submission.
- K. Distribute reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.
- L. Submittals not requested will not be recognized or processed.

3.04 **SAMPLES**

- A. Submit to Construction Manager to forward to Architect/Engineer for review for limited purpose for checking conformance with information given and design concept expressed in the Contract Documents.
- B. Samples for selection as specified in product sections:
 - 1. Submit to Construction Manager to forward to Architect/Engineer for aesthetic, color, or finish selections.
 - 2. Submit samples of finishes from full range of manufacturer's standard colors, textures, and patterns to Construction Manager to forward to Architect/Engineer for selection.
- C. Submit samples to illustrate functional and aesthetic characteristics of products, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
- D. Include identification on each sample, with full project information.
- E. Submit number of samples specified in individual specification sections.
- F. Photograph of submitted samples, along with transmittal sheet, shall be uploaded as a submittal in Procore.

END OF SECTION

SECTION 01 4000

QUALITY REQUIREMENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. References
- B. Quality assurance and control of installation
- C. Tolerances
- D. Defect Assessment
- E. Inspection and testing laboratory services
- F. Manufacturer's field services and reports

1.02 REFERENCES

- A. Conform to reference standard in effect at date of contract.
- B. When required by contract documents, obtain copies of standards.
- C. Should specified reference standards conflict with contract documents request clarification from engineer before proceeding.
- D. The contractual relationship of the parties to the contract shall not be altered from the contract documents by mention or inference otherwise in any reference document.

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION

3.01 QUALITY ASSURANCE/CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship to produce work of specified quality.
- B. Comply fully with manufacturer's instructions, including each step in sequence.
- C. Should manufacturer's instructions conflict with contract documents, request clarification from the engineer prior to proceeding.
- D. Comply with specified standards as a minimum quality for the work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Perform work by persons qualified to produce workmanship of specified quality
- F. Verify that field measurements are as indicated on shop drawings or as instructed by the manufacturer.
- G. Secure products in place with positive anchorage devices designed and sized to withstand stress, vibration, physical distortion, or disfiguration.

3.02 TOLERANCES

- A. Monitor fabrication and installation tolerance control of products to produce acceptable work. Do not permit tolerances to accumulate.
- B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with contract documents, request clarification from Architect before proceeding.
- C. Adjust products to appropriate dimensions; position before securing products in place.

3.03 DEFECT ASSESSMENT

- A. Replace work or portions of work not conforming to specified requirements.

- B. If, in the option of the Owner, it is not practical to remove and replace the work, Architect will direct an appropriate remedy or recommend adjusted payment.

3.04 INSPECTION AND TESTING

- A. Owner shall include and pay for all required special inspections and testing required by IBC Section 1705, if applicable. This does not include inspections and testing required by other specification sections in this Project Manual. Copies of all testing and inspection reports shall be submitted to the Construction Manager and Design Professional by the testing and inspection agency.
- B. Testing Agency Duties:
 - 1. Provide qualified personnel at site. Cooperate with Architect, Construction Manager, and contractor in performance of services.
 - 2. Perform specified sampling and testing of products in accordance with specified standards.
 - 3. Ascertain compliance of materials and mixes with requirements of contract documents.
 - 4. Immediately notify the Construction Manager and contractor of observed irregularities or non-conformance of work or products.
 - 5. Perform additional testing and inspections required by the Owner
- C. Limits on Testing Agency/Inspection Agency Authority:
 - 1. Agency may not release, revoke, alter, or enlarge on requirement of contract documents.
 - 2. Agency may not approve or accept any portion of the work.
 - 3. Agency may not assume any duties of the contractor.
 - 4. Agency has no authority to stop the work.
- D. Contractor responsibilities:
 - 1. Deliver to agency at designated location, adequate samples of materials proposed to be used that require testing, along with proposed mix designs.
 - 2. Cooperate with laboratory personnel, and provide access to the work and to manufacturer's facilities.
 - 3. Provide incidental labor and facilities:
 - a. To provide access to work to be tested/inspected.
 - b. To obtain and handle samples at the site or at source of products to be tested/inspected.
 - c. To facilitate test/inspections.
 - d. To provide storage and curing of test samples.
 - 4. Notify Construction Manager and laboratory 24 hours prior to expected time for operations requiring testing/inspection.
- E. Re-testing required because of non-conformance to specified requirements shall be performed by the same testing agency on instruction by Architect/Construction Manager.
- F. Re-testing required because of non-conformance to specified requirements shall be paid for by the Contractor.

3.05 MANUFACTURER'S FIELD SERVICES AND REPORTS

- A. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start up of equipment, test, adjust and balance of equipment as applicable and to initiate instructions when necessary.
- B. Individuals are to report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to the manufacturers' written instructions.
- C. Submit report in duplicate within 30 days of observation to Construction Manager for review.

END OF SECTION

SECTION 01 5000

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Temporary Utilities
- B. Temporary Sanitary Facilities
- C. Telephone Service
- D. Removal of Utilities, Facilities, and Controls
- E. Temporary Facilities
- F. Equipment
- G. Vehicular Access and Parking
- H. Traffic Regulation
- I. Barriers
- J. Enclosures and Fencing
- K. Waste Removal

1.02 TEMPORARY UTILITIES

- A. Owner will provide the following:
 - 1. Electrical Power, consisting of connection to existing facilities.
 - 2. Water Supply, consisting of connection to existing facilities.
- B. The Contractor shall pay for installation, maintenance, and removal of temporary utilities. Temporary utilities shall not disrupt the Facility's need for continuous service.

1.03 TEMPORARY SANITARY FACILITIES

- A. Provided by Construction Manager.

1.04 TELEPHONE SERVICE

- A. Provide, maintain, and pay for telephone service to field or use a cellular telephone.

1.05 REMOVAL OF UTILITIES, FACILITIES AND CONTROLS

- A. Restore existing facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

PART 2 - PRODUCTS

2.01 TEMPORARY FACILITIES

- A. Field Offices: Coordinate with Construction Manager and Owner if applicable.

2.02 EQUIPMENT

- A. Fire Extinguishers: Portable, UL rated, with class and extinguishing agent as required by locations and classes of fire exposures.

PART 3 - EXECUTION

3.01 VEHICULAR ACCESS AND PARKING

- A. Use designated existing on-site roads for construction traffic.
- B. Parking is as directed by Owner.
- C. When site space is not adequate, provide additional off-site parking.
- D. Use of designated existing on-site streets and driveways used for construction traffic is permitted. Track vehicles not allowed on paved areas.
- E. Use of designated areas of existing parking facilities used by construction personnel as permitted.
- F. Do not allow heavy vehicles or construction equipment in parking areas.
- G. Provide and maintain access to fire hydrants, free of obstructions.
- H. Provide means of removing mud from vehicle wheels before entering streets.

3.02 TRAFFIC REGULATION

- A. Flag Persons: Provide trained and equipped flag persons to regulate traffic when construction operations or traffic encroach on public traffic lanes.
- B. Flares and lights: Use flares and lights during hours of low visibility to delineate traffic lanes and to guide traffic.
- C. Haul Routes:
 - 1. Consult with authority having jurisdiction, establish public thoroughfares to be used for haul routes and site access.
- D. Removal:
 - 1. Remove equipment and devices when no longer required.
 - 2. Repair damage caused by demolition.

3.03 BARRIERS

- A. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public, to allow for Owner's use of site and to protect existing facilities and adjacent properties from damage during construction operations.
- B. Provide barricades and covered walkways required by governing authorities for public rights-of-way.
- C. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

3.04 ENCLOSURES AND FENCING

- A. Will be provided by Construction Manager as needed.

3.05 WASTE REMOVAL

- A. Except for items or materials to be salvaged, recycled or otherwise reused, remove waste materials from project site and legally dispose of them in a landfill or incinerator acceptable to authorities having jurisdiction.
 - 1. Except as otherwise specified, do not allow waste materials that are to be disposed of accumulate on-site.
 - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- B. Burning: Do not burn waste materials.
- C. Waste Disposal Facilities: Provide waste collection containers in sizes adequate to handle waste from construction operations. Comply with requirements of authorities having jurisdiction.

END OF SECTION

SECTION 01 6000

PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. General product requirements
- B. Product options
- C. Maintenance materials
- D. Transportation and handling
- E. Storage and protections

PART 2 - PRODUCTS

2.01 GENERAL PRODUCT REQUIREMENTS

- A. Provide new products unless specifically required or permitted by the contract documents.
- B. Do not use products having any of the following characteristics:
 - 1. Made using or containing CFC's or HCFC's
 - 2. Made of wood from newly cut old growth timber.
- C. Where all other criteria are met, contractor shall give preference to products that:
 - 1. If used on interior, have lower emissions
 - 2. If wet-applied, have lower VOC content
 - 3. Are extracted, harvested, and/or manufactured closer to the location of the project
 - 4. Have longer documented life span under normal used
 - 5. Result in less construction waste
 - 6. Are made of vegetable materials that are rapidly renewable

2.02 PRODUCT OPTIONS

- 1. Products specified by reference standards or by description only: Use of any product meeting those standards or description.
- 2. Products specified by naming one or more manufacturers, with or without a provision for substitutions: Use a product of one of the manufacturers named and meeting specifications or submit a request for substitution for any manufacturer not named by the date specified in this project manual. Substitution requests shall be emailed to the Issuing Officer at the email address provided in Instructions to Bidders Section 1.04.

2.03 MAINTENANCE MATERIALS

- 1. Furnish extra materials, spare parts, tools, and software of types and in quantities specified in individual specification sections.
- 2. Deliver to project site; obtain receipt prior to final payment.

PART 3 - EXECUTION

3.01 TRANSPORTATION AND HANDLING

- A. Package products for shipment in manner to prevent damage; for equipment, package to avoid loss of factory calibration.
- B. If special precautions are required, attach instructions prominently and legibly on outside of packaging.
- C. Coordinate schedule of product delivery to designated prepared areas in order to minimize site storage time and potential damage to stored materials.

- D. Transport and handle products in accordance with manufacturer's instructions.
- E. Transport materials in covered trucks to prevent contamination of product and littering of surrounding areas.
- F. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- G. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage, and to minimize handling.
- H. Arrange for the return of packing materials, such as wood pallets, where economically feasible.

3.02 STORAGE AND PROTECTIONS

- A. Designate receiving/storage areas for incoming products so that they are delivered according to installation schedule and placed convenient to work area in order to minimize waste due to excessive materials handling and misapplication.
- B. Store and protect products in accordance with manufacturers' instructions.
- C. Store with seals and labels intact and legible.
- D. Store sensitive products in weather tight, climate controlled, enclosures in an environment favorable to the product.
- E. For exterior storage of fabricated products, place on sloped supports above ground.
- F. Protect products from damage or deterioration due to construction operations, weather, precipitation, humidity, temperature, sunlight and ultraviolet light, dirt, dust, and other contaminants.
- G. Comply with manufacturers' warranty conditions, if any.
- H. Cover product subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- I. Prevent contact with material that may cause corrosion, discoloration, or staining.
- J. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.
- K. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

END OF SECTION

SECTION 01 7300

EXECUTION

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Examination, preparation, and general installation procedures
- B. Alteration project procedures
- C. Cutting and patching
- D. Cleaning and protection
- E. Adjusting

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION

3.01 EXAMINATION, PREPARATION, AND GENERAL INSTALLATION PROCEDURES

- A. Verify that existing site conditions and substrate surfaces are acceptable for subsequent work. Start of work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Take field measurements before confirming product orders or beginning fabrication, to minimize waste due to over-ordering or misproduction.
- E. Verify that utility services are available, of the correct characteristics, and in the correct locations.
- F. Prior to cutting: Examine existing conditions prior to commencing work; include elements subject to damage or movement during cutting and patching. After uncovering existing work, assess conditions affecting performance of work. Beginning of cutting or patching means acceptance of existing conditions.
- G. Clean substrate surfaces prior to applying next material or substance.
- H. Seal cracks or openings of substrate prior to applying next material or substance.
- I. Apply manufacturer required or recommended substrate primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.
- J. Install products as specified in individual sections, in accordance with manufacturer's instructions and recommendations, and so as to avoid waste due to necessity for replacement.
- K. Make vertical elements plumb and horizontal elements level, unless otherwise indicated.
- L. Install equipment and fittings plumb and level, neatly aligned with adjacent vertical and horizontal lines, unless otherwise indicated.
- M. Make consistent texture on surfaces, with seamless transitions, unless otherwise indicated.
- N. Make neat transitions between different surfaces, maintaining texture and appearance.

3.02 ALTERATION PROJECT PROCEDURES

- A. Materials: As specified in product sections match existing products and work for patching and extending work.
- B. Employ skilled and experienced installer to perform alteration work.
- C. Close openings in exterior surfaces to protect existing work from weather and extremes of temperature and humidity.
- D. Remove unsuitable material not marked for salvage, including rotted wood, corroded metals, and deteriorated masonry and concrete. Replace materials as specified for finished work.
- E. Remove, cut and patch work in a manner to minimize damage and to provide a means of restoring products and finished to original condition.

- F. Remove debris and abandoned items from area and from concealed spaces.
- G. Refinish visible existing surfaces to remain in renovated rooms and spaces to specified condition for each material with a neat transition to adjacent finishes.
- H. Where new work abuts or aligns with existing, perform a smooth and even transition. Patched work to match existing adjacent work in texture and appearance.
- I. When finished surfaces are cut so that a smooth transition with new work is not possible, terminate existing surface along a straight line of division and make recommendation to the Construction Manager. Prior to cutting get the Owner's approval.
- J. Where change of plane of ¼ inch or more occurs, submit recommendation for providing smooth transition to the Construction Manager for review.

3.03 CUTTING AND PATCHING

- A. Employ skilled and experienced installer to perform cutting and patching.
- B. Submit written request in advance of cutting or altering elements which affect:
 - 1. Structural integrity of element.
 - 2. Integrity of weather-exposed or moisture-resistant elements.
 - 3. Efficiency, maintenance, or safety of element.
 - 4. Visual qualities of sight exposed elements.
 - 5. Work of owner or separate contractor.
- C. Execute cutting, fitting, and patching to complete work, and to:
 - 1. Fit the several parts together, to integrate with other work.
 - 2. Uncover work to install or correct ill-timed work.
 - 3. Remove and replace defective and non-conforming work.
 - 4. Remove samples of installed work for testing.
 - 5. Provide openings in elements of work for penetrations of mechanical and electrical work.
- D. Execute work by methods to avoid damage to other work and which will provide proper surfaces to receive patching and finishing.
- E. Cut rigid materials using masonry saw or core drill.
- F. Cut masonry and concrete materials using masonry saw or core drill.
- G. Restore work with new products in accordance with requirements of Contract Documents.
- H. Fit work tight to pipes, sleeves, ducts, conduit and other penetrations through surfaces.
- I. Maintain integrity of wall, ceiling or floor construction; completely seal voids.
- J. Refinish surfaces to match adjacent finishes. Refinish to nearest intersection for continuous surfaces. Refinish entire unit for continuous surfaces for an assembly.
- K. Identify hazardous substances or conditions exposed during the work to the engineer for decision or remedy.

3.04 CLEANING AND PROTECTION

- A. Progress cleaning
 - 1. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
 - 2. Collect and remove waste materials, debris, and trash/rubbish from site periodically and dispose off-site; do not burn or bury.
- B. Protection of installed work
 - 1. Protect installed work from damage by construction operations.
 - 2. Provide special protection where specified in individual specification sections.
 - 3. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
 - 4. Remove protective coverings when no longer needed; reuse or recycle plastic coverings if possible.
 - 5. Prohibit traffic from landscaped areas.

3.05 ADJUSTING

- A. Adjust operating products and equipment to ensure smooth and unhindered operation.

END OF SECTION

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SECTION 01 7700

CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Inspections
- B. Substantial Completion
- C. Project Record Documents
- D. Warranties
- E. Operations and Maintenance Manuals
- F. Operations and Maintenance Data for Materials and Finishes
- G. Operations and Maintenance Data for Equipment and Systems
- H. Training
- I. Final Completion
- J. Maintenance

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION

3.01 INSPECTIONS

- A. Ensure all state inspections have been completed by the authority having jurisdiction.
- B. Upload documentation of all test/inspections to Procore.
- C. Submit a written request for inspection of Substantial Completion. On receipt of request, The Design Professional will either proceed with inspection or notify contractor of unfulfilled requirements. The Design Professional will prepare the Certificate of Substantial Completion after inspection or will notify contractor of items, either on contractor's list or additional items identified by architect that must be completed or corrected before certificate will be issued.
 - 1. Re-inspection: Request re inspection when the work identified in previous inspections as incomplete is completed or corrected.
 - 2. Results of completed inspection will form the basis of requirements for Final Completion.

3.02 SUBSTANTIAL COMPLETION

- A. A substantial completion checklist is attached for reference following this specification section.
- B. Make submittals that are required by governing or other authorities.
 - 1. Provide copies to the Construction Manager through upload to Procore.
- C. Before requesting inspection for determining date of Substantial Completion, complete the following. List items below that are incomplete in request.
 - 1. Submit written certification that contract documents have been reviewed, work has been inspected, and that work is completed in accordance with contract documents and ready for review
 - 2. Prepare a list of items to be completed and corrected (punch list), the value of items on the list, and reasons why the work has not been completed.
 - 3. Submit specific warranties, workmanship bonds, maintenance service agreements, final certifications, and similar documents.
 - 4. Make final changeover of permanent locks and deliver key to the owner. Advise owner's personnel of changeover in security provisions.
 - 5. Complete startup testing of systems.
 - 6. Submit test/adjust, balance records.
 - 7. Terminate and remove temporary facilities from project site, along with mockups, construction tools, and similar elements.

8. Advise owner of changeover in heat and other utilities.
9. Submit changeover information related to owner's occupancy, use, operation, and maintenance.
10. Complete final cleaning requirements, including touch up painting.
11. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.

3.03 PROJECT RECORD DOCUMENTS

- A. Maintain on site one set of the following record documents; record actual revisions to the work:
 1. Drawings
 2. Specifications
 3. Addenda
 4. Change orders and other modifications to the contract
 5. Reviewed shop drawings, product data, and samples
- B. Ensure entries are complete and accurate, enabling future reference by Owner.
- C. Store record documents separate from documents used for construction.
- D. Record information concurrent with construction progress, not less than weekly.
- E. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
 1. Manufacturer's name and product model and number.
 2. Product substitutions or alterations utilized.
 3. Changes made by Addenda and modifications.
- F. Record Drawings:
 1. Measured depths of foundations in relation to finish first floor datum.
 2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the work.
 4. Field changes of dimension and detail.
 5. Details not on original contract drawings.
- G. Record Drawings shall be uploaded to Procore in pdf format.

3.04 WARRANTIES

- A. Submit written warranties for designated portions of the work where commencement of warranties other than date of Substantial Completion is indicated.
- B. Submit properly executed warranties in Procore prior to Final Completion.
- C. Verify that documents are in proper form, contain full information, and are notarized.
- D. Organize warranty documents into an orderly sequence based on the table of contents of the Project Manual.
- E. Include warranties in operation and maintenance manuals.
- F. Items of work delayed beyond date of Substantial Completion, provide updated submittal after acceptance by Owner, listing date of acceptance as start of warranty period

3.05 OPERATIONS AND MAINTENANCE MANUALS

- A. Format: Submit operations and maintenance manuals in the following format:
 1. Portable Document Format (PDF) electronic file. Assemble each manual into a composite electronically indexed file. Submit on digital media acceptable to Owner and upload to Procore.
 - a. Name each indexed document file in composite electronic index with applicable item name. Include a complete electronically linked operation and maintenance directory.

2. Assemble with data arranged in the same sequence as, and identified by the specification sections. Where systems involve more than one specification section, provide separate index for each system.
 3. Include project directory listing title and address of project, names, addresses, and telephone numbers of Architect, Consultants, Contractor and subcontractors, with names of responsible parties.
 4. Include Table of Contents listing every item separated by index and specification section.
- B. Source Data: For each product or system, list names, addresses, and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.
 - C. Product Data: Mark each sheet to clearly identify specific products and component parts, and data applicable to installation. Delete inapplicable information.
 - D. Drawings: Supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams. Do not use project record documents as maintenance drawings.
 - E. Typed Text: As required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

3.06 OPERATIONS AND MAINTENANCE DATA FOR MATERIALS AND FINISHES

- A. For each product, applied material, and finish:
 1. Product data, with catalog number, size, composition, and color and texture designations.
 2. Information for re-ordering custom manufactured products.
- B. Instructions for Care and Maintenance: Manufacturer's recommendations for cleaning agents and methods, precautions against detrimental cleaning agents and methods, and recommended schedule for cleaning and maintenance.
- C. Moisture protection and weather-exposed products: Include product data listing applicable reference standards, chemical composition, and details of installation. Provide recommendations for inspections, maintenance, and repair.
- D. Additional information as specified in individual product specification sections.
- E. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specified products.

3.07 OPERATION AND MAINTENANCE DATA FOR EQUIPMENT AND SYSTEMS

- A. For each item of equipment and each system:
 1. Description of unit or system, and component parts
 2. Identify function, normal operating characteristics, and limiting conditions
 3. Include performance curves, with engineering data and tests
 4. Complete nomenclature and model number of replacement parts.
- B. Where additional instructions are required, beyond the manufacturer's standard printed instructions, have instructions prepared by personnel experienced in the operation and maintenance of the specified products.
- C. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; typed.
- D. Include color coded wiring diagrams as installed.
- E. Operating procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.
- F. Maintenance requirements: Include routine procedure and guide for preventative maintenance and troubleshooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- G. Provide servicing and lubrication schedule and list of lubricants required.
- H. Include manufacturer's printed operation and maintenance instructions.
- I. Include sequence of operation by controls manufacturer.

- J. Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- K. Provide control diagrams by controls manufacturer as installed.
- L. Provide contractor's coordination drawings, with color coded piping diagrams as installed.
- M. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- N. Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- O. Include test and balancing reports.
- P. Additional requirements: As specified in individual specification sections.

3.08 TRAINING

- A. Demonstrate operations of systems, subsystems, and equipment.
- B. Train in operation and maintenance of systems, subsystems, and equipment
- C. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations and to ensure availability of Owner's personnel.
- D. Submit written agenda to Construction Manager for approval prior to scheduling training.
- E. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.

3.09 FINAL COMPLETION

- A. A final completion checklist is attached for reference following this specification section.
- B. Before requesting final inspection for determining date of Final Completion, complete the following:
 - 1. Complete punch list items.
 - 2. Prepare and submit project record documents, operation and maintenance manuals, damage or settlement surveys, and similar final record information.
 - 3. Deliver tools, spare parts, extra materials, and similar items to location designated by owner. Label with manufacturer's name and model number where applicable.
 - 4. Instruct Owner's personnel in operation, adjustment, and maintenance of products, equipment, and systems.
 - 5. All trailers, construction signs, unused, broken or demolition materials have been removed from the site and the premises returned to the original condition in the opinion of the Owner and Design Professional.
 - 6. Submit a final Application for Payment (retainage).
- C. Upon receipt of final payment complete final completion certificate in Procure.

END OF SECTION

Substantial Completion Project Checklist

Date: _____

DAS Project Number: _____

Project Title: _____

Location: _____

Contractor: _____

In order to process the 99% payment (100% pay app less closeout and retainage) on a Capital Project, the Department of Administrative Services needs the following information. Please complete this form and obtain the necessary documents.

Have all state inspections been completed and documentation uploaded to Procore?

(Including but not limited to the following inspections)

- | | | | |
|--------------------------|------------------------------|-----------------------------|------------------------------|
| Boiler Inspection | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| Water Heater Inspection | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| Energy Code Inspection | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| Building Code Inspection | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| Electrical Inspection | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| Elevator Inspection | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |
| Other: _____ | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> N/A |

Occupancy Permit if applicable

Test and Balance has been performed

Certificate of Substantial Completion in Procore (Consensus Docs 814)

Are there any disputes with the above mentioned vendor which need resolution?

Yes (provide description below) No

Can payment (less closeout and retainage) be released? Yes No

Final Completion Project Checklist

Date: _____

DAS Project Number: _____

Project Title: _____

Location: _____

Contractor: _____

In order to process the 100% payment and Retainage payment on a Capital Project, the Department of Administrative Services needs the following information. Please complete this form and obtain the necessary documents.

Have all Warranties been received? Yes No

Have the Operations and Maintenance Manuals been received? Yes No

Who is in possession of the O & M Manuals? _____

Has all training been completed? Yes No

Have all as-built drawings been scanned and uploaded into Procore? Yes No

Have electronic drawing/specification files been transferred to DAS? Yes No

Have all Test & Balance reports been received? Yes No

Have all punchlist items been corrected? Yes No

573 Notification (*To be obtained from the general contractor*): Copy of general contractor's notification of application for retainage to all subcontractors and suppliers. General contractor must follow IAC 26 section 23.13.2.

AIA Form G706 – Contractor's Affidavit of Payment of Debts and Claims

AIA Form G706A – Contractor's Affidavit of Release of Liens

AIA Form G707 – Consent of Surety Company to Final Payment

Certificate of Final Completion in Procore (Consensus Docs 815)

Are there any disputes with the above mentioned vendor which need resolution?

Yes (provide description below) No

Can 100% payment and retainage payment be released? Yes No



ASBESTOS ABATEMENT SPECIFICATION
HHS WRC CAMPUS TUNNEL ABANDONMENT DECENTRALIZATION
PHASE 5 PROJECT 9279.50

WOODWARD RESOURCE CENTER
1251 334TH STREET
WOODWARD, IOWA
204BS07475 – TASK 04

PREPARED FOR:

Iowa Department of Administrative Services
109 SE 13th Street
Des Moines, Iowa 50319

PREPARED BY:

Atlas Technical Consultants LLC
11117 Mockingbird Drive
Omaha, NE 68137

May 12, 2026



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OVERVIEW

Initial Pre-Bid Mandatory Walk Through will be held on Thursday May 21, 2026, at 10am CDT and Wednesday May 27, 2026, at 10am at the Woodward Resource Center (WRC) located at 1251 334th Street in Woodward, Iowa. Abatement Contractors (AC) are to meet at the Story Construction Office Trailers on the east end of the campus by the ballfield.

This section specifies the asbestos abatement requirements and the Contractor's applicable asbestos procedures to be used during the project. This includes removal of materials containing asbestos, transportation, disposal, storage, containment of, and housekeeping activities involving asbestos in products containing asbestos, on the site or location at which construction activities are performed.

A. Phasing:

- Phase I will include the abatement of thermal systems insulation (TSI), and all associated materials outlined below, from the tunnel system from the Administration Building to the Medical Center.
- Phase II will include the abatement of TSI, and all associated materials outlined below, from the tunnel system from the Medical Center to Oak Hall and Alternates 1 and 2.

Alternate 1 is the abatement of asbestos containing materials (ACM) from the Powerhouse and Alternate 2 will include the abatement of ACM from the Chiller Building.

Phase I and Phase II Tunnels are estimated to contain approximately 72,000 lineal feet of asbestos containing pipe insulation and 1,000 mechanical fittings. The AC is to make their own determination of lineal footage and submit their bid(s) accordingly. Change orders associated with the tunnel abatement AC responsibilities below, and the specification that follows, will not be permitted.

B. Trade Responsibilities

General Contractor / Facilities Responsibilities:

- All electricity will be isolated / shut off by the general contractor (GC) / facilities with the exception of clearly marked conduit,
- All piping will be isolated and drained by the general contractor / facilities with the exception of clearly marked runs,
- Provide locations for at least two, 50 amp each, electrical panel tie-in location(s) for installation of temporary electrical panels by AC. Proposed locations for electrical tie-ins are Larches and Maples Buildings.,
- Provide access to water sources in at least two locations in each phase of the abatement project,
- Provide temporary lighting (approximately 1,000 lineal feet) for AC top install in containment areas, and
- Removal of concrete sidewalk from at least three-(3) locations along the tunnel system in each Tunnel Phase, locations TBD.

AC responsibilities (please read carefully):

- The AC will be required to supply the materials and labor to construct an anticipated three (3) temporary shelters (size TBD by AC), secured to the ground with ground anchors and with lockable

doors, over tunnel openings created by the GC. These are to be used to house a 3-stage decon., negative air machines, electrical panels and load out of asbestos waste from tunnels.

- Install GC provided temporary lighting (approximately 1,000 lineal feet) in work areas. If additional temporary lighting is required, the AC shall provide additional lighting,
- AC shall provide temporary electrical panels (2 tie-ins proposed) and their own electrical contractors to hook them up to building panels. Anticipate 200' runs from the building tie ins to the temporary panels which are anticipated to be placed in the AC constructed shelters. Proposed locations for electrical tie-ins are Larches and Maples Buildings.
- All openings during each Phase of the tunnel abatement will need to have a critical barrier installed and doors / openings from the tunnels to the buildings will need to have appropriate signage.
- The AC will be required to have a manometer on site and demonstrate that a minimum of a $-0.02''$ inWC/in. H_2O is being maintained.
- As part of the asbestos abatement, the AC will be required to demolish all piping and conduit, pipe racks, hangers, etc. throughout the tunnels, with the exception of structural steel and items clearly marked by the General Contractor, to leave (as much as possible) a bare concrete tunnel.

Water being used during abatement will be filtered through a 5.0-micron filter before being disposed of in a sanitary sewer.

- Piping and metal may be salvaged by the AC if decontaminated prior to removal from the abatement work area(s).
 - All soil within the tunnel system in Phases I and II will be disposed of as ACM waste,
 - The AC should anticipate performing dewatering activities throughout the tunnel systems during the course of abatement activities. Water being removed from the containment area(s) will be filtered through a 5.0-micron filter before being disposed of in a sanitary sewer.
- C. Per the request of the Owner, Atlas will conduct the final visual inspection and air clearances, as required, to be in compliance with the State of Iowa for each containment area. The contractor WILL NOT be responsible for costs associated with visual inspections and air clearances to be in compliance with the State of Iowa Administrative Code.



APPLICABLE PUBLICATIONS

- A. The publications listed below form a part of the Section to the extent referenced. The publications area referenced in the text by basic designation only.
1. Title 29 Code of the Federal Regulations, U.S. Department of Labor, Occupational Safety and Health Administration (OSHA) Standards.
 - a. Part 1910.95 Occupational Noise Exposure
 - b. Part 1910.134 Respiratory Protection (most recent revision)
 - c. Part 1910 Toxic and Hazardous Substances: Subpart Permissible Exposure Limits (PELs)
 - d. Part 1925.58 Access to Employee Exposure and Medical Records
 - e. Part 1926.1101 Asbestos in Construction (all applicable sections)
 - f. Part 1926.59 Hazard Communication
 2. Title 40 Code of Federal Regulations, U.S. Environmental Protection Agency (EPA) Standards
 - a. Part 61, National Emission Standards for
Subpart A Hazardous Air Pollutants, General Provision
 - b. Part 61, National Emission Standards for
Subpart M Hazardous Air Pollutants, National Emission
Standard for Asbestos; Including Asbestos
NESHAP Revision, Final Rule, Federal Register,
Tuesday, November 20, 1990
 3. Title 49 Code of Federal Regulations, U.S. Department of Transportation (DOT) Standards
 - a. Part 171 Hazardous Substances
 - b. Part 172 Hazardous Materials Tables and Hazardous
Materials Communication Subparts B & C
Regulations
 - c. Part 173, Shippers- General Requirements for Shipments
and Subpart M Packaging
 4. Applicable Iowa State Regulations
 - a. State of Iowa Department of Public Health
 5. National Institute for Occupational Safety and Health (NIOSH) Publication
 - a. Manual of Analytical Methods, Method 7400 (Latest Revision)
 - b. Occupational Safety and Health Guidance Manual for Hazardous Waste
Site Activities, October 1985
 6. American Society for Testing and Materials (ASTM)
 - a. Standard Practice for Visual Inspections of Asbestos Abatement Project
(latest edition)
 7. Applicable Local Regulations
 - a. Applicable local asbestos regulations for the removal and/or transportation
of asbestos, including Dallas County and the City of Woodward, Iowa.



Asbestos Abatement Specification Section 2081

PART 1 - GENERAL

1.1 INTRODUCTION

Asbestos abatement in building spaces is governed by rules established by the State of Iowa. This specification section addresses or references the requirements for complying with Department of Labor (DOL), Iowa Department of Natural Resources (IDNR), Occupation Safety and Health Organization Administration (OSHA), and the United States Environmental Protection Agency (USEPA) National Emission Standards for Hazardous Air Pollutants (NESHAP) asbestos rules. Every rule requirement may not be restated in detail since trained, accredited, and licensed contractors and individuals are required for this work and are presumed to be familiar with the relevant laws and rules. Full regulatory compliance is required, and is a part of the contract, whether specifically stated herein or not.

1.2 APPLICABLE PUBLICATIONS

- B. The publications listed below form a part of the Section to the extent referenced. The publications area referenced in the text by basic designation only.
8. Title 29 Code of the Federal Regulations, U.S. Department of Labor, Occupational Safety and Health Administration (OSHA) Standards.
 - a. Part 1910.95 Occupational Noise Exposure
 - b. Part 1910.134 Respiratory Protection (most recent revision)
 - c. Part 1910 Toxic and Hazardous Substances: Subpart Permissible Exposure Limits (PELs)
 - d. Part 1925.58 Access to Employee Exposure and Medical Records
 - e. Part 1926.1101 Asbestos in Construction (all applicable sections)
 - f. Part 1926.59 Hazard Communication
 9. Title 40 Code of Federal Regulations, U.S. Environmental Protection Agency (EPA) Standards
 - a. Part 61, Subpart A National Emission Standards for Hazardous Air Pollutants, General Provision
 - b. Part 61, Subpart M National Emission Standards for Hazardous Air Pollutants, National Emission Standard for Asbestos; Including Asbestos NESHAP Revision, Final Rule, Federal Register, Tuesday, November 20, 1990
 10. Title 49 Code of Federal Regulations, U.S. Department of Transportation (DOT) Standards
 - a. Part 171 Hazardous Substances
 - b. Part 172 Hazardous Materials Tables and Hazardous Materials Communication Subparts B & C Regulations
 - c. Part 173, and Subpart M Shippers- General Requirements for Shipments Packaging
 11. Applicable Iowa State Regulations
 - a. State of Iowa Department of Public Health
 12. National Institute for Occupational Safety and Health (NIOSH) Publication



- a. Manual of Analytical Methods, Method 7400 (Latest Revision)
 - b. Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, October 1985
13. American Society for Testing and Materials (ASTM)
 - a. Standard Practice for Visual Inspections of Asbestos Abatement Project (latest edition)
 14. Applicable Local Regulations
 - a. Applicable local asbestos regulations for the removal and/or transportation of asbestos, including Woodbury County and the City of Sioux City, Iowa.

1.3 DEFINITIONS

In addition to the terms listed below, all definitions in the laws and regulations listed in Section 1.5 are incorporated by reference, whether or not restated herein.

ACM: Asbestos Containing Materials any material containing greater than one percent (>1%) asbestos by laboratory analysis

Abatement Contractor (AC): the entity responsible for performing the work in this section, and has the training and accreditation to competently perform the work. This entity will obtain and maintain licenses required for the work identified in this section

Asbestos Abatement Supervisor: hereinafter referred to as “supervisor” means any person who supervises asbestos abatement workers. This person must be trained, accredited, and licensed as required, and must also meet OSHA “competent person” criteria for asbestos abatement

Environmental Consultant (EC): is selected by the Owner to serve as the Environmental Project Manager on their behalf. For this project the EC shall be Atlas Technical Consultants LLC

Environmental Project Manager (EPM): is the EC representative to perform environmental monitoring and testing activities on behalf of the Owner on the project, this also shall be Atlas Technical Consultants LLC

HEPA Filter: a High Efficiency Particulate Air filter capable of trapping 99.97% percent of mono-dispersed particles greater than 0.3 micrometers in mass median aerodynamic equivalent diameter

IDNR: the Iowa Department of Natural Resources

NESHAP: the National Emission Standards for Hazardous Air Pollutants

NIOSH: the National Institute for Occupational Safety and Health

OSHA: the Occupational Safety and Health Administration

Owner: the owner of the property and the authority ordering the work specified herein

PCM: Phase Contrast Microscopy

Plasticize: to apply plastic sheeting over surfaces or objects to protect them from contamination or water damage.

PPE (Personal Protective Equipment): protective suits, head and foot covers, gloves, respirators and other items used to protect persons from asbestos or other hazards



SDS: Safety Data Sheet, required by OSHA for any substances which are toxic, caustic, or otherwise hazardous to workers

USEPA: the United States Environmental Protection Agency

Work Area: area or areas where asbestos abatement is being conducted

1.4 SCOPE OF WORK

Asbestos

It is the intent of the Owner to remove the asbestos containing materials identified in Table 1 below, as well as all unmarked piping in the tunnels.

The materials identified in the tables below are those that are anticipated to be impacted by renovation activities. There are additional ACM that have been identified and are associated with these buildings, please reference the revised Hazardous Building Materials Survey prior to impacting suspect materials.

AC is required to demolish all piping and conduit, pipe racks, hangers, etc. throughout the tunnels, with the exception of structural steel and items clearly marked by the General Contractor, to leave (as much as possible) a bare concrete tunnel.

Phase 1 – Tunnels: Administration to Medical Center including all Branches to other Buildings

Asbestos-Containing Materials			
Sample Number	Material	Approx. Quantity	Asbestos Content
T-1	TSI Low Pressure Steam 16" Diameter Run	15,000 LF	40% - 65% Chrysotile
T-2			
T-3			
T-4	TSI High Pressure Steam 6" diameter pipe run	15,000 LF	70% Chrysotile
T-5			22% Amosite 10% Chrysotile
T-6			28% Amosite 7% Chrysotile
T-7, T-17, T-20	TSI – Aircell	2,750 LF	65-80% Chrysotile
T-12, T-18,	TSI High Pressure Steam Elbow	175 MF	65-70% Chrysotile
T-13, T-14, T-15, T-19	TSI Hot Water Elbow	100 MF	60% to 65% Chrysotile
T-16	TSI – Unmarked Pipe Run	4,000 LF	35% Chrysotile
T-23	TSI- 2" Unmarked Pipe Run	500 LF	50% Chrysotile
T-24, T-25	TSI- 2" – 4" Mechanical Fittings	250 MF	7% Amosite 55% Chrysotile
T-26, T-27, T-28, T-29, T-30, T-31	TSI – 2" – 6" Pipe Run	2,000 LF	10-33% Amosite 7-20% Chrysotile

Phase 2 – Tunnels: Medical Center to Oak Hall and all Branches to other Buildings

Asbestos-Containing Materials				
Sample Number	Material	Approx. Quantity	Asbestos Content	
T-1	TSI Low Pressure Steam 16" Diameter Run	12,000 LF	40% - 65% Chrysotile	
T-2				
T-3				
T-4	TSI High Pressure Steam 6" diameter pipe run	12,000 LF	70% Chrysotile	
T-5			22% Amosite 10% Chrysotile	
T-6			28% Amosite 7% Chrysotile	
T-7, T-17, T-20	TSI – Aircell	2,500 LF	65-80% Chrysotile	
T-12, T-18,	TSI High Pressure Steam Elbow	150 MF	65-70% Chrysotile	
T-13, T-14, T-15, T-19	TSI Hot Water Elbow	85 MF	60% to 65% Chrysotile	
T-16	TSI – Unmarked Pipe Run	3,500 LF	35% Chrysotile	
T-23	TSI- 2" Unmarked Pipe Run	400 LF	50% Chrysotile	
T-24, T-25	TSI- 2" – 4" Mechanical Fittings	225 MF	7% Amosite 55% Chrysotile	
T-26, T-27, T-28, T-29, T-30, T-31	TSI – 2" – 6" Pipe Run	1,750 LF	10-33% Amosite 7-20% Chrysotile	

Alternate #1: Powerhouse

Asbestos-Containing Materials				
Sample Number	Material	Location	Approx. Quantity	Asbestos Content
PH-6	Boiler Gasket – Silver Door Hatch	Boiler #3	2 each	65% Chrysotile
PH-7	Boiler Gasket – North End	Boiler #3 and #4	20 LF	65% Chrysotile
PH-8	Boiler Sealant – South End	Boiler #3 and #4	20 LF	45% Chrysotile
PH-13	Rope Gaskets	2 nd Floor – where Old Boilers and Coal Chutes on #3 and #4 Connect	30 LF	65% Chrysotile
PH-15	Caulking on Insulation (White)	Mezzanine Level – Steam Tank	15 LF	2% Amosite <1% Chrysotile
PH-17	Rope Gasket	Fuel Tank Farm – Fuel Oil Storage Tanks #1 - #6	8 each	65% Chrysotile

SF = Square Feet; LF = Linear Feet; MF = Mechanical Fittings

Alternate #2: Chiller Building

Asbestos-Containing Materials				
Sample Number	Material	Location	Approx. Quantity	Asbestos Content
C-2	Black Tar	Dividing Wall	450 SF	8% Chrysotile
C-7	Light Gray Expansion Joint* (see note below)	West Side Exterior	16 LF	8% Chrysotile
C-3	Dark Brown Sealant	South Side Chilled Water Supply and Return	10 SF	5% Chrysotile

SF = Square Feet; LF = Linear Feet; MF = Mechanical Fittings

***Following abatement of the light grey expansion joint from the exterior west side of the Chiller Building, the AC is to replace the caulk with an appropriate flexible caulk to keep the building watertight.**

If the contractor identifies any additional suspect ACM not identified in the original inspections that may be disturbed during the project, stop work and the material(s) will be sampled and analyzed prior to disturbance.

Drawings are provided to identify locations of these materials. All ACM noted on the drawings shall be removed. The contractor is responsible for quantifying the materials in the scope of work during the pre-bid site visit. Any discrepancies of locations or quantities should be brought to the attention of EC as soon as possible and before the bid due date. ACM found inside the work areas, or noted in the drawings, shall be the responsibility of the AC for abatement at no additional cost to the Owner.

Lead

Lead-based paint was identified on various mechanical surfaces scheduled for demolition. The General Contractor will disclose this information to the mechanical demolition contractor so they can inform their employees and the recycler.

If waste with lead-based paint is to be disposed of in a general landfill, the demolition waste stream will be sampled and analyzed for lead concentration using the Toxicity Characteristic Leaching Procedure (TCLP) analysis procedure prior to the waste leaving the generation location.

1.5 WORK INCLUDED

- A. The work includes all labor, equipment, materials, and supplies necessary to perform the scope of work in the documents by the procedures described herein. The contractor, by submitting a bid for the work, represents itself as knowledgeable and expert in the performance of the work, and includes all things usually and customarily necessary to provide a complete and finished job, whether specifically mentioned or not. Related work may be shown in other related documents, prepared by others. Where there is conflict in the documents, written clarification should be requested to the EC.
- B. Removal of asbestos-containing material listed in Section 1.3, including pre-cleaning, establishing regulated areas, isolating the work areas, protection of adjacent areas, containment, construction curtain, cleanup and decontamination to the specified clearance levels, proper packaging and disposal of wastes, and all other steps necessary to complete the scope of work.
- C. Prior to performing abatement, the Contractor is required to restrict public access and visibility of the work by installing a temporary barrier in front of the staging area. The barrier shall include black poly sheeting and secured to prevent unauthorized access.



- b. Collect air samples outside the work area at the perimeter and at the exhaust of the negative air machine.
 - c. The EC will stop the work if airborne asbestos concentrations outside the work area exceed 0.01 f/cc. The work may restart when the source of fiber release has been identified and corrected. Contractor will be responsible for cleaning and decontaminating the outside area if caused by the asbestos abatement activities.
 2. Upon completion of the work, the EC shall:
 - a. Visually inspect the work area for visible debris and/or gross contamination.
 - b. Contractor shall be required to re-clean the area, or portions of areas, until no visible debris and/or gross contamination remains, and the work area is dry.
 - c. Clearance testing by PCM will be performed for each work area.
 - d. Collection and analysis of samples will be conducted in general accordance with NIOSH Method 7400 and the clearance level will not exceed 0.01 f/cc.
 - e. Preparation and submittal of the Project Report to the Owner within 30 days of project completion and receipt of all waste manifests.
- B. The Contractor shall provide OSHA compliance air monitoring to determine exposures to its employees in accordance with OSHA 29 CFR 1926.1101. Frequency of testing will comply with OSHA requirements for the anticipated and actual exposure levels.
 1. A written Exposure Assessment is required prior to the start of the work to determine the requirements for respiratory protection and frequency of OSHA monitoring for each type of activity. If the DOL requests additional monitoring and data for the exposure assessment, the testing will be conducted at the expense of the abatement contractor.
 2. Analysis may be performed on-site by a trained Air Sampling Professional experienced in the fiber counting methods outlined in NIOSH Method 7400 and supporting training documentation or successful training certificate.

1.8 SUBMITTALS BY THE CONTRACTOR

- A. Bid Submittals. The following list of items shall be submitted in whole upon award of the bid. If the following items are not submitted by the Contractor, the bid may be rejected.
 1. Contractor must submit a copy of their current unexpired Iowa permit/license to perform asbestos abatement and their Iowa Contractor Registration.
 2. Disclosure of past and pending violations in respect to environmental, safety or asbestos rules (State and Federal).
- B. All asbestos notifications should be made within the accepted time frame to the Iowa Department of Natural Resources and Iowa Department of Labor as required. Notifications shall be submitted a minimum of 10 working days before commencement of work. A copy of the required submittals shall also be provided to the EC for review prior to submittal to the regulatory agencies.
- C. After the project is awarded, the selected Contractor shall provide the following to the EC 10 days prior to commencement of Work:
 1. Documentation of arrangements of transport and disposal, and landfill name and location.

2. Contractor must submit a copy of their current unexpired Iowa Asbestos Abatement Worker and Supervisor license for all workers anticipated to be assigned to this project. Worker training documentation, medical examinations, fit tests, certifications and training courses shall also be provided that are relevant to the Project.
4. Drawings or sketches for layout and construction of isolation barriers and decontamination units and type of containments.
5. Respirators: NIOSH approvals and manufacturer certification of P-100 cartridges.
6. Fit test documentation for all employees and the fit test agent.
7. Manufacturers' certifications that all HEPA vacuums, negative air pressure equipment, and other local exhaust ventilation equipment conform to ANSI Z9.2-79
8. OSHA Exposure Assessment, if applicable.
9. Laboratory and analyst credentials for contractor OSHA samples.
10. Safety Data Sheets (SDS) for chemicals used on-site.

D. To the EC weekly during the abatement work:

1. Job progress reports detailing abatement activities, progress compared to schedule, problems and actions taken, injury reports, and equipment breakdowns.
2. Quantity of asbestos materials removed.
3. Waste Shipment Records.
4. Work site Entry logs.
5. Measurement logs for negative pressure differentials for each containment.
6. Filter Change logs for respirators, HEPA vacuums, negative air machines, and other engineering controls.
7. OSHA compliance air monitoring data.
8. Worker license and certification log.

PART 2 - PRODUCTS

2.1 TOOLS AND EQUIPMENT

All equipment shall at least conform to minimum industry standards (i.e. ground-fault circuit interrupter (GFCI)).

A. Equipment:

1. Negative Air Machines shall provide HEPA filtration and conform to ANSI Z9.2 fabrication criteria.
2. Respirators shall be NIOSH approved for use with asbestos or other contaminants anticipated in the work.
3. Contractor is fully responsible for complying with OSHA rules for other safety equipment, such as hard hats, safety harnesses, eye protection, gloves, footwear, and any other safety devices used on the site.

B. Tools:

1. Shovels and scoops shall be metal, rubber or plastic, suitable for use in a plasticized containment.

2. Scrapers, brushes, utility knives and other hand tools shall be of good quality and suitable for the intended uses. The contractor shall keep an ample supply on hand for the completion of the work. If fixed open blade knives are to be used, the proper hand protection shall be utilized (i.e. cut resistant gloves).
3. Power tools such as, but not limited to saws, pneumatic chisels, brushes, sanders, and needle guns shall be equipped with shrouds and HEPA-filtered local exhaust systems to capture released particles.
4. Submit proposed tools and methods to be used for removal.
5. Unsafe tools or improper usage of tools may become prohibited items at the discretion of the Owner's Representative based on safety concerns.

2.2 MATERIALS

- A. Installed materials which become a part of the work such as, but not limited to, encapsulants shall be of good quality, non-lead-bearing, free of asbestos, and conform to the respective reinstallation specification sections prepared by others.
 1. Contractor shall ensure that encapsulants and sealants used as primers, basecoats, or covering existing materials are compatible with the respective existing or reinstallation materials and their manufacturers' warranties.
- B. Abatement materials
 1. Polyethylene sheeting for all applications shall be 6-mil nominal thickness for floors, drop cloths, and walls.
 2. Tape shall be 2" or 3" duct tape or other waterproof tape suitable for joining poly seams and attaching poly sheeting to surfaces.
 3. Spray adhesives shall be non-flammable and free of methylene chloride solvents.
 4. Disposal bags shall be 6-mil polyethylene and shall be properly labeled.
 5. Disposable suits, hoods, and foot coverings shall be TYVEK® or similar.
 6. Solvents shall be compatible with any primers, mastics, adhesives, paints, coatings, or other surfacing materials to be installed following their use.
- C. ACCEPTABLE MANUFACTURERS/PRODUCTS: All products must meet or exceed ASTM standards.

PART 3 - EXECUTION

3.1 EMPLOYEE TRAINING, QUALIFICATION AND MEDICAL SCREENING

- A. Supervisors and Workers shall be trained, accredited, and licensed in accordance with State and Federal rules.
 1. Contractor shall keep copies of licenses, initial training course certificate, and most recent annual refresher training certificate at the jobsite at all times for all contractor personnel.
 2. A licensed asbestos abatement supervisor (competent person) shall be present at the worksite at all times when work under this section is being conducted.

- B. Medical Screening. All contractor personnel shall have a current medical examination in accordance with OSHA requirements. Copies of the Physician's Written Opinions shall be kept on site.

3.2 PERMISSIBLE EXPOSURE LIMITS

- A. The OSHA permissible exposure limit (PEL) for worker exposure to airborne asbestos is 0.1 f/cc as an 8-hour time-weighted average (TWA).
- B. The OSHA short term excursion limit for worker exposure to airborne asbestos is 1.0 f/cc for a 30 minute sample.
- C. The permissible level of airborne fibers in areas adjacent to the work area is 0.01 f/cc as determined by PCM in general accordance with NIOSH Method 7400.
 - 1. Work shall immediately cease in the work area containment when an airborne fiber concentrations exceed this level.
 - 2. The source of outside contamination shall be determined, and corrective measures (e.g. wet cleaning, changes in work practices, negative pressure containment) shall be implemented to prevent recurrence.
 - 3. The contractor shall be responsible for cleanup of contamination in adjacent areas caused by the asbestos abatement activities.

3.3 EXPOSURE ASSESSMENT AND MONITORING

- A. The Contractor shall make an assessment of the airborne exposures. The assessment shall conform to OSHA requirements and may be based upon:
 - 1. Initial monitoring of representative workers who the contractor believes are exposed to the greatest airborne concentrations of asbestos.
 - 2. Past monitoring (within the past 12 months) or objective data for conditions closely resembling the processes, type of material, control methods, work practices and environmental conditions to be used for this project.
 - 3. Review of the documentation may require approval from local regulators to be accepted.
- B. The contractor shall perform daily personal monitoring in accordance with those requirements as established in OSHA or by the local governing authority / enforcement officer.

3.4 RESPIRATORY PROTECTION

- A. Respiratory protection shall be worn by all persons potentially exposed to airborne asbestos fibers from the start of the abatement project until all areas have passed clearance air monitoring.
- B. Contractor shall have a written respiratory protection program in accordance with OSHA 29 CFR 1910.134, including but not limited to, medical screening, semi-annual fit testing, training, cleaning and maintenance.
- C. Respirators shall not be removed while in the work area.
- D. Only NIOSH-approved respirators shall be used.

- E. Additional respiratory protection such as organic vapor cartridges, may be needed when handling some solvents, coatings, or stripping products. Consult the MSDS, manufacturer, or industrial hygienist, and obtain the proper cartridges and usages as necessary.

3.5 HYGIENE PRACTICES

- A. Eating, drinking, smoking, chewing gum or tobacco, and applying of cosmetics are not allowed in the work area.
- B. All persons entering the work area are required to wear appropriate PPE, and follow the entry and exit procedures posted in the Personnel Decontamination Enclosure System.
- C. PPE shall include, at a minimum:
 - 1. Full body disposable suits, headgear (including respirators), and footwear.
 - 2. Gloves.
 - 3. Non-disposable footwear and clothing shall remain in the work area and shall be disposed of as contaminated waste when the job is completed.
 - 4. Authorized visitors shall be provided with suitable PPE.

3.6 PROHIBITED ACTIVITIES

- A. Dry removal or dry sweeping.
- B. Use of compressed air for cleaning.
- C. Use of high speed power tools not equipped with a HEPA-filtered local exhaust system.

3.7 WORK AREA ISOLATION AND PREPARATION

- A. General Preparation. Contractor shall:
 - 1. Post:
 - a. OSHA asbestos warning signs at every entrance to the work area.
 - b. Decontamination and work procedures in equipment rooms and clean rooms.
 - c. USEPA NESHAP asbestos rules (40 CFR Part 61, subparts A & M) in the clean room.
 - d. OSHA Asbestos Construction Standards (29 CFR 1926.1101) in the clean room.
 - e. Entry and Exit Log
 - f. List of telephone numbers in the clean room for:
 - (1) local hospital and/or local emergency squad.
 - (2) owner security office (if applicable).
 - (3) owner representative reachable 24 hours per day.
 - (4) contractor's headquarters.
 - (5) architects or consultants directly involved in the project.

2. Secure the work area from entry by unauthorized persons using black polyethylene sheeting as a construction area barrier and post construction warning signs.
3. Separate work areas from occupied areas.
 - a. Seal off all doorways and corridors which will not be used for passage during work.
 - b. Install isolation barriers in all openings larger than 4' x 8', consisting of double-layer 6-mil poly to prevent access to the contained areas.
4. Have an approved fire extinguisher in the equipment room.
5. Install and maintain walk-off mats to the general work entrance.

B. Interior Preparation

1. Install negative air machine in the work area. The equipment shall exhaust through a HEPA filter to the outside of the building, or the exhaust will be double filtered. The equipment shall remain in operation twenty-four hours a day until decontamination of the work area and final air sampling and analysis is completed. Seal openings around exhaust ducts. Exhaust from the negative air movement equipment shall not be allowed to be released within the buildings unless unfeasible as determined by the EC. All HEPA filtered air movement equipment shall be maintained according to this specification or regulations.
2. Coordinate with the Facility or Mechanical Contractor for the shut down and isolation of heating, ventilating, air conditioning (HVAC) systems which are within the work area(s).
3. Seal off all windows, corridors, doorways, bathrooms, closets, skylights, ducts, grilles, diffusers, and other penetrations or openings with 6-mil poly and tape.
4. Protect and cover floors, in those areas in which no abatement is to be performed with 6-mil poly with seams staggered and taped, and extending 12" up walls. Maintain for the duration of the project.
5. Protect and cover the walls in the work area.
6. Protect and cover non-movable fixed objects from which no abatement will be conducted (e.g. fixed cabinets, shelves, etc.).
7. Asbestos materials shall not be disturbed during the Preparation phase.
8. Maintain emergency and fire exits.
9. In all areas for abatement install a three-chamber Worker Decontamination Enclosure System, consisting of clean room, shower room (both hot and cold water), and equipment room separated by air locks, all with curtained doorways, of sufficient size to serve the size of the crew.
 - a. Where an adjacent decon unit is not feasible (i.e., for multiple tented glovebag operations), the AC shall (only with an approved variance from the EC):
 - (1) set up the decon unit within the work area barriers
 - (2) establish a negative pressure of at least 0.02" water column (wc) between the equipment room and adjacent spaces, including the clean room
 - (3) provide at least 4 air changes per hour within the decontamination unit
10. Once operational, the system shall be inspected daily. Damages and defects will be repaired immediately upon discovery.

B. Exterior Preparation (for areas that interface with interior work)

1. 6 mil poly sheeting shall be placed over the ground, foundation, or other surfaces below the abatement area.
2. Unauthorized entry shall be prevented by using appropriate barriers, such as warning tape, fencing, or other suitable barriers.
3. Nearby air intakes, grilles, and other openings into the building interior shall be sealed off with 6 mil poly and tape.

3.8 ABATEMENT PROCEDURES

A. Removal:

1. Asbestos materials shall be wetted and kept wet during removal.
2. ACM waste shall be bagged or containerized as it is removed.
3. Work areas shall be kept wet until visible material is cleaned up.
4. Asbestos waste shall be removed from the work area daily.
 - a. The waste shall be placed and sealed in a properly labeled 6-mil poly bag.
 - b. The bag shall be cleaned and placed in a second properly labeled 6-mil poly bag. This bag shall be sealed by securing with duct tape, folding over taped area and goose necking with duct tape.

3.9 CLEANING AND DECONTAMINATION

- #### **A.**
- All visible accumulations of ACM, debris, tools, and unnecessary equipment shall be removed from the work area.

C. First clean:

1. Wet clean all surfaces and remove excess water.
2. Remove outer layer of poly and dispose as ACM waste (splash guards and poly protecting the underlying surfaces).
3. Critical barriers on windows, doors, penetrations, and other openings shall remain in place and negative air system shall remain in continuous operation until final clearance tests have passed.

- #### **C.**
- Visual inspection: EC and contractor jointly inspect the work area for visible residue and excess water and, if observed, repeat the clean/ wait cycle until residues are not detected and work area is dry.

- #### **D.**
- Remove all tools, cleaning materials, remaining wastes from the work area.

- #### **E.**
- Apply lock-down encapsulants where specified in the Documents.

- #### **F.**
- Notify EC that work area is ready for final clearance testing.

3.10 FINAL CLEARANCE

- #### **A.**
- Final clearance testing shall be performed after the final cleaning and visual inspection has been completed and where no visible water or condensation remains.

- B. All work areas shall be tested and analyzed by either PCM or Transmission Electron Microscopy (TEM) methodologies.
- C. If final clearance test(s) fail, the AC shall be responsible for repeating the cleaning sequence as necessary until final clearance tests are successful, at no additional cost to the owner. The AC shall also be responsible for paying for the additional time and expenses incurred by the EC for conducting the repeat clearance sampling, analysis and project oversight.
- D. Upon completion of a successful visual inspection and test, a “punch list” walkthrough shall be conducted for each area that contained special wastes, non-hazardous special waste or hazardous waste within five working days of completion of the work by the Contractor. The Contractor, Environmental Consultant and the Owner will participate in the walkthrough. All punch list items shall be completed within five working days of walkthrough. The items will include all deficiencies found in the inspections of the AC’s work which is to be corrected. When the deficiencies have been removed, the AC shall request a re-inspection by the EC.

3.11 SPECIAL PROCEDURES

- A. **Glovebag Procedure:** Glovebags may be used to remove small sections of ACM pipe insulation encountered.
 - 1. Typical Preparation/notification requirements apply.
 - 2. Glovebag removal will require a single layer, 6 mil poly tent containment with negative pressure air filtration.
 - 3. Monitoring will be performed by the EC.
 - 4. Glovebag construction shall be 6 mil poly with seamless bottom, suitable for the intended use (straight runs, fittings, elbows, vertical pipes, etc.) without modification.
 - 5. At least two licensed workers shall perform glovebag operations.
 - 6. Workers shall wear full body PPE and at least a ½ mask respirator equipped with a P-100 cartridge. Note here, too, that OSHA still requires an exposure assessment and respirators that are appropriate for the expected airborne fiber concentrations.
 - 7. Prior to use, all loose or damaged material adjacent to the operation shall be wrapped in two layers of 6 mil poly or otherwise be rendered intact.
 - 8. Work Practices shall include:
 - a. Install to completely cover the circumference of pipe or other structure. Pipe insulation diameter shall not exceed ½ the bag working length above the glove sleeves.
 - b. Smoke test for leaks and seal any leaks prior to use.
 - c. Single use and not moved.
 - d. Wet removal methods on the materials to be removed and wet cleaning to remove all visible ACM from the pipe or structure surfaces.
 - e. Not to be used on surfaces greater than 150°F.
 - f. Spray down the interior surfaces of the bag, substrate, and removed ACM.
 - g. Wet down remaining ACM surfaces or seal with encapsulant.
 - h. Seal off the lower portion of the bag containing the ACM waste by twisting several times and sealing with tape.
 - i. Collapse glovebag with a HEPA vacuum.



- j. Place the detached glovebag directly into a 6 mil poly waste disposal bag and gooseneck-seal it in the waste disposal bag for disposal.
- k. Dispose in accordance with this specification.

3.12 WASTE DISPOSAL AND EQUIPMENT LOAD-OUT

A. Preparing equipment for load-out

- 1. Remove gross debris from equipment and wet wipe all surfaces.
- 2. Seal openings to prevent escape of internal contamination; or open equipment, remove filters, and make equipment interiors accessible for cleaning and decontamination.

B. Packaging asbestos wastes:

- 1. All asbestos-containing wastes, including removed ACM and debris, containment poly, critical barrier materials, suits, respirator cartridges, vacuums and negative air machine HEPA filters, water filters, and other asbestos-containing items shall be properly packaged in 6 mil poly for disposal.
- 2. Use double 6 mil poly bags with “gooseneck” seal, or other impermeable containers.
- 3. Wrap large or irregular items in 2 layers of 6 mil poly sheeting and seal with tape.
- 4. Sharp, jagged, or other items that may puncture poly shall be packaged in rigid impermeable containers such as drums or boxes or wrapped in burlap or other protective covering before sealing in double bags or double layers of 6 mil poly.
- 5. Label containers:
 - a. OSHA warning label.
 - b. DOT performance-oriented hazardous material label.
 - c. Name and address of generator and abatement location.

C. Removing items from the work area:

- 1. Packaged asbestos wastes, non-porous debris (such as doors, hardware, and other items that can be decontaminated), and equipment shall be wet cleaned, moved into the equipment decontamination enclosure system, cleaned a second time, and moved into the holding area.
- 2. Containers and equipment shall be removed from the holding area by workers in clean PPE and respirators who enter from the uncontaminated side (outside). The equipment decontamination enclosure system shall not be used to enter or exit the work area.

D. Storage of packaged asbestos wastes shall be in a completely enclosed dumpster or other suitable container that can be secured. The secured area shall be kept locked at all times to prevent unauthorized access.

E. Shipment of items from the project.

- 1. Decontaminated tools and equipment may be shipped by normal carrier to warehouse, another jobsite, or other destination.
- 2. For asbestos wastes:
 - a. Line shipping container with 6 mil poly prior to loading packaged asbestos wastes.



- b. Post NESHAP placards during loading.
- c. Persons performing loading operations shall wear PPE including respirators.
- d. Containers and packages shall be tightly packed together to prevent shifting during transport. Large components or heavy items shall be secured to prevent shifting and shall not be stacked on top of bags.
- e. Execute the NESHAP-required Waste Shipment Record (WSR) to be signed by the generator, transporter, and landfill. All WSRs shall be returned to the EC within 30 days of shipment.

F. Disposal of packaged asbestos wastes.

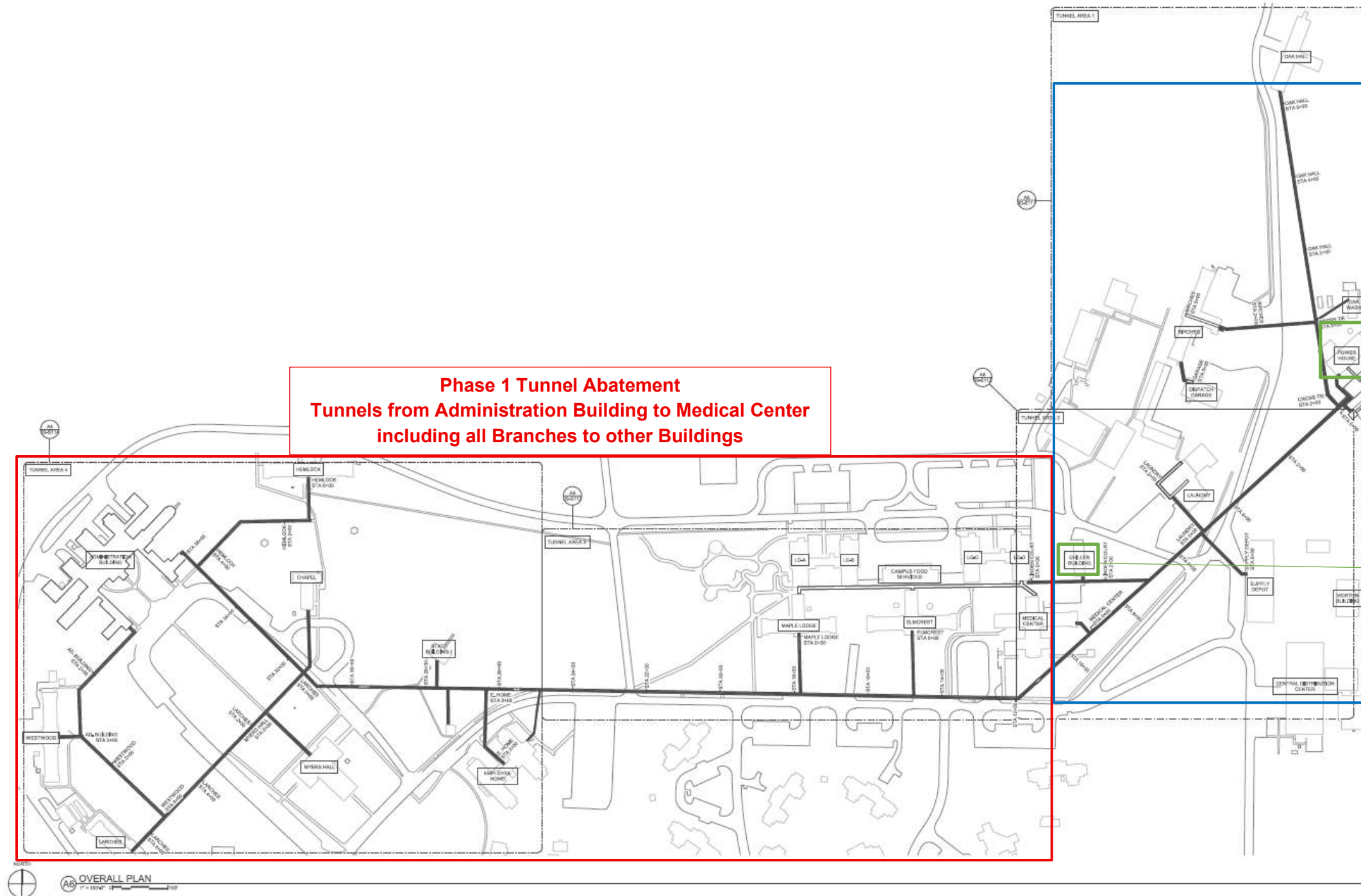
- 1. Only landfills approved and permitted by the State of Iowa for accepting asbestos wastes may be used for disposal.

3.13 DEMOBILIZATION

- A. EC shall visually inspect the work area for evidence of visible debris prior to releasing the area for tear-down. Detection of contamination will require additional cleaning and re-testing of the work area.
- B. Remove critical barriers and seals.

END OF SECTION 02081

Drawings



Project No. 204BS07475

Date: May 11, 2026, 2026

Project Manager: Phillip Thomas

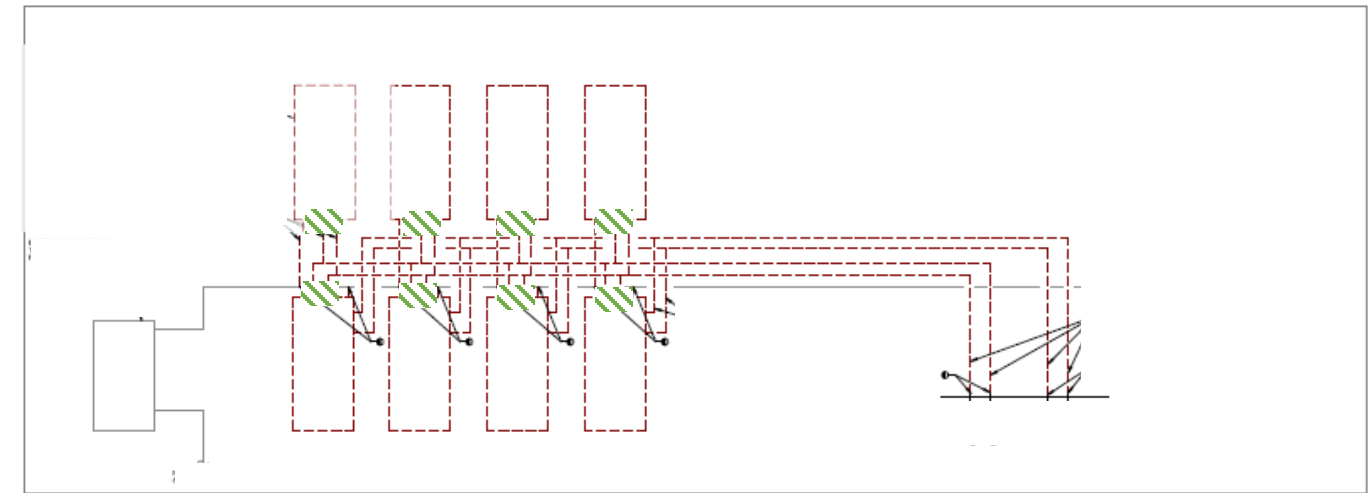
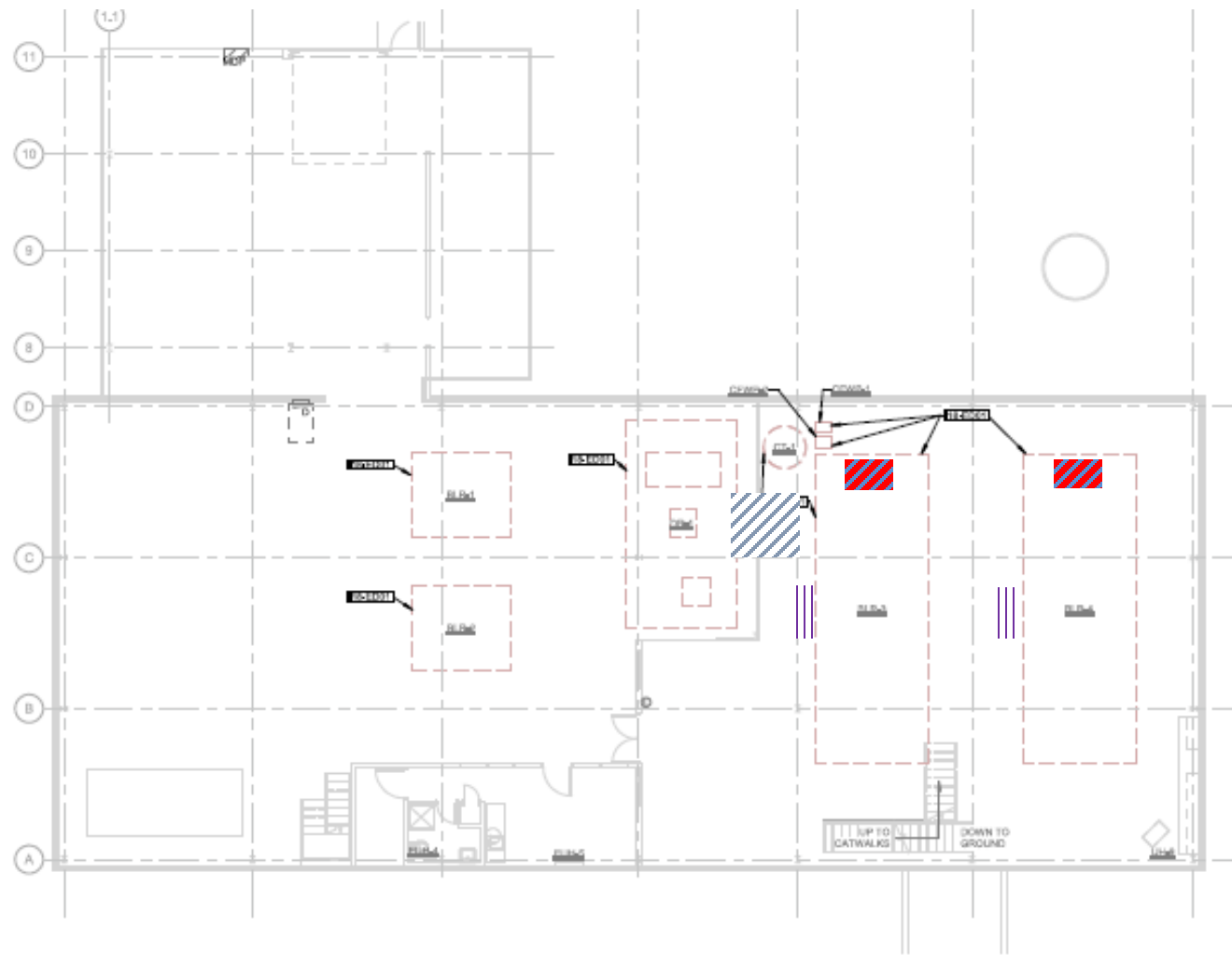
Name: WRC Campus Utility Decentralization Phase 5 Project 9279.50



11117 Mockingbird Drive
Omaha, NE 68137
PH. (402) 697-9747

Asbestos Containing Material Locations

Tunnel Phasing
Woodward Resource Building
1251 334th Street
Woodward, Iowa



A5 FIRST FLOOR ELECTRICAL DEMOLITION PLAN
1/8" = 1'-0"



Boiler Gaskets and sealants, 1st Floor



Boiler Gaskets On Coal Feeders, 2nd Floor Above Boilers 3 and 4



Caulking on Steam Tank Insulation, 2nd Floor Mezzanine



Gaskets on Fuel Oil Tanks

Project No. 204BS07475

Date: May 11, 2026

Project Manager: Phillip Thomas

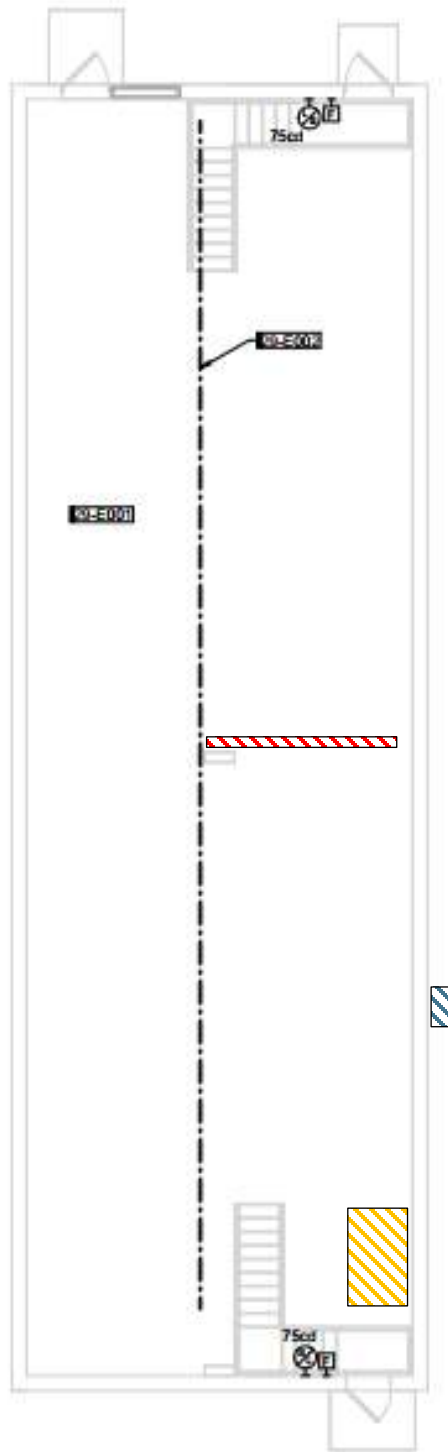
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PH. (402) 697-9747

Asbestos Containing Material Locations

Powerhouse
Woodward Resource Building
1251 334th Street
Woodward, Iowa



- = Dark Brown Sealant on chilled water supply
- = Black Wall Tar on Dividing Wall
- = Exterior Expansion Joint



(F5) GROUND LEVEL FIRE ALARM PLAN
 1/8" = 1'-0" 0' 12"

Project No. 204BS07475	Date: May 11, 2026
Project Manager: Phillip Thomas	
Name: WRC Campus Utility Decentralization Phase 5 Project 9279.50	

ATLAS
 11117 Mockingbird Drive
 Omaha, NE 68137
 PH. (402) 697-9747

Asbestos Containing Material Locations
Chiller Building Woodward Resource Building 1251 334 th Street Woodward, Iowa

**SECTION 02 4100
DEMOLITION**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Selective demolition of building elements for alteration purposes.

1.2 RELATED REQUIREMENTS

- A. Section 01 1200 - Contract Summary: Descriptions of work performed as a part of each bid package.
- B. Section 01 5000 - Temporary Facilities and Controls: Site fences, security, protective barriers, and waste removal.
- C. Section 01 6000 - Product Requirements: Handling and storage of items removed for salvage and relocation.

1.3 SUBMITTALS

- A. See Section 01 3300 - SUBMITTALS, for submittal procedures.
- B. Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.

PART 2 PRODUCTS -- NOT USED

PART 3 EXECUTION

3.1 SCOPE

- A. Scope of demolition is indicated on Drawings.
- B. Remove other items indicated, for salvage.

3.2 GENERAL PROCEDURES AND PROJECT CONDITIONS

- A. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
 - 1. Obtain required permits.
 - 2. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
 - 3. Provide, erect, and maintain temporary barriers and security devices.
 - 4. Use physical barriers to prevent access to areas that could be hazardous to workers or the public.
 - 5. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
 - 6. Do not close or obstruct roadways or sidewalks without permit.

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IDAS Project # 9279.50

SH Project # 2240007040

7. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.
 8. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon or limit access to their property.
- B. Do not begin removal until receipt of notification to proceed from Owner.
- C. Protect existing structures and other elements that are not to be removed.
1. Provide bracing and shoring.
 2. Prevent movement or settlement of adjacent structures.
 3. Stop work immediately if adjacent structures appear to be in danger.

3.3 SELECTIVE DEMOLITION FOR ALTERATIONS

- A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
1. Verify that construction and utility arrangements are as indicated.
 2. Report discrepancies to Architect before disturbing existing installation.
 3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.
- B. Separate areas in which demolition is being conducted from other areas that are still occupied.
1. Provide, erect, and maintain temporary dustproof partitions of construction specified in Division 01, 5000 inch (127000 mm), if locations are indicated on drawings.
- C. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.
- D. Remove existing work as indicated and as required to accomplish new work.
1. Remove rotted wood, corroded metals, and deteriorated masonry and concrete; replace with new construction specified.
 2. Remove items indicated on drawings.
- E. Services (including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications): Remove existing systems and equipment as indicated.
1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components.
 2. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
 3. Verify that abandoned services serve only abandoned facilities before removal.
 4. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification.
- F. Protect existing work to remain.
1. Prevent movement of structure; provide shoring and bracing if necessary.
 2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
 3. Repair adjacent construction and finishes damaged during removal work.

4. Patch as specified for patching new work.

3.4 DEBRIS AND WASTE REMOVAL

- A. Remove debris, junk, and trash from site.
- B. Leave site in clean condition, ready for subsequent work.
- C. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

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**SECTION 03 3000
CAST-IN-PLACE CONCRETE**

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Provision and installation of formwork, reinforcing steel, and cast-in-place concrete detailed and described on the drawings and hereinafter specified.
- B. Provision and installation of all related items described on the drawings or hereinafter specified.
- C. Tunnel Filling Notes

1.2 RELATED SECTIONS

- A. Division 05 - Metal fabrications to be cast in concrete.

1.3 QUALITY ASSURANCE

- A. Standards and Codes: Comply with the provisions of the following Codes, Specifications, and Standards except as otherwise indicated.
 - 1. ACI 211.1 - Recommended Practice for Selecting Proportions for Normal Weight Concrete.
 - 2. ACI 301 - Specification for Structural Concrete for Buildings.
 - 3. ACI 304 - Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete.
 - 4. ACI 305 - Recommended Practice for Hot Weather Concreting.
 - 5. ACI 306 - Recommended Practice for Cold Weather Concreting.
 - 6. ACI 318 - Building Code Requirements for Reinforced Concrete.
 - 7. ACI 347 - Recommended Practice for Concrete Formwork.
 - 8. CRSI - Manual of Standard Practice.
 - 9. CRSI - Recommended Practice for Placing Reinforcing Bars.
 - 10. CRSI - Recommended Practice for Placing Bar Supports, Specifications, and Nomenclature.
 - 11. CRSI - Recommended Practice for Reinforcing Bar Splices.
 - 12. ASTM A82 - Standard Specifications for Cold-Drawn Steel Wire for Concrete Reinforcement.
 - 13. ASTM A185 - Welded Steel Wire Fabric for Concrete Reinforcement.
 - 14. ASTM A615 - Deformed and Plain Billet Steel Bars for Concrete Reinforcement.
 - 15. AWS D12.1 - Welding Reinforcing Steel, Metal Inserts, and Connections in Reinforced Concrete Construction.
 - 16. ASTM C31 - Practice for Making and Curing Concrete Test Specimens in the Field.

IDAS - WRC Decentralization Ph 5- Tunnel Abandonment
IDAS Project # 9279.50
SH Project # 2240007040

17. ASTM C33 - Concrete Aggregates.
 18. ASTM C39 - Test Method for Compressive Strength of Cylindrical Concrete Specimens.
 19. ASTM C42 - Method of Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.
 20. ASTM C94 - Ready-Mixed Concrete.
 21. ASTM C143 - Test for Slump of Portland Cement Concrete.
 22. ASTM C150 - Portland Cement.
 23. ASTM C171 - Sheet Materials for Curing Concrete.
 24. ASTM C172 - Method of Sampling Fresh Concrete.
 25. ASTM C192 - Method of Making and Curing Concrete Test Specimens in the Laboratory.
 26. ASTM C231 - Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
 27. ASTM C260 - Air Entraining Admixtures for Concrete.
 28. ASTM C309 - Liquid Membrane - Forming Compounds for Curing Concrete.
 29. ASTM C494 - Chemical Admixtures for Concrete.
 30. ASTM C618 - Coal Fly Ash and Raw or Calcined Natural Pozzolan for use in Concrete.
 31. AASHTO M 182 - Specification for Burlap Cloth made for Jute or Kenaf.
- B. Workmanship: The Contractor is responsible for correction of concrete work which does not conform to the specified requirements, including strength, tolerances, and finishes.
- C. Tests for Concrete Materials
1. The Construction Manager will employ a testing laboratory to perform quality control tests in accordance with Chapter 17 of the International Building Code (IBC) 2015 edition and to submit test reports to the Construction Manager's and Contractor's Representatives. Duties of the Special Inspector consist of the following as outlined in IBC Table 1705.3:

INSPECTION AND TESTING (Continuous and Periodic as Defined by IBC)	CONTINUOUS	PERIODIC	REFERENCE STANDARD	IBC REFERENCE
1. Inspect reinforcement and verify placement.	---	X	ACI 318 Ch. 20, 25.2, 25.3, 26.5.1-26.5.3	1908.4
2. Inspect anchors cast in concrete.	---	X	ACI 318: 17.8.2	---
3. Inspect anchors post-installed in hardened concrete members.	X			---
a. Adhesive anchors			ACI 318:	

installed in horizontally or upwardly inclined orientations to resist sustained tension loads. b. Mechanical anchors and adhesive anchors not defined in 4.a.		X	17.8.2.4 ACI 318: 17.8.2	
4. Verifying use of required design mix.	---	X	ACI 318: Ch. 19, 26.4.3, 26.4.4	1904.1, 1904.2, 1908.2, 1908.3
5. Prior to concrete placement, fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.	X	---	ASTM C 172 ASTM C 31 ACI 318: 26.4.5, 26.12	1908.10
6. Inspect concrete placement for proper application techniques.	X	---	ACI 318: 26.4.5	1908.6, 1908.7, 1908.8
7. Verify maintenance of specified curing temperature and techniques.	---	X	ACI 318: 26.4.7-26.4.9	1908.9
8. Inspect formwork for shape, location and dimensions of the concrete member being formed.	---	X	ACI 318: 26.10.1(b)	---

2. Materials and installed work may require testing and retesting, as directed by the Construction Manager, at any time during the process of the work. Allow free access to material stockpiles and facilities at all times. Tests, not specifically indicated to be done at the Construction Manager's expense, including the retesting of rejected materials and installed work, shall be done at the Contractor's expense.
 3. Refer to paragraph 3.10C for additional testing requirements for placing concrete by pumping.
- D. Concrete Quality Control Testing During Construction
1. An independent testing laboratory will be retained to perform all quality control tests and to submit test reports to the Construction Manager.
 2. Concrete will be sampled and tested for quality control during the placement of concrete as follows:
 - a. Sampling Fresh Concrete: Secure composite samples in accordance with ASTM C172.
 - b. Slump: ASTM C143; one test on concrete taken at point of discharge for each set of compressive strength test specimens.

IDAS - WRC Decentralization Ph 5- Tunnel Abandonment

IDAS Project # 9279.50

SH Project # 2240007040

- c. Air Content: ASTM C231, pressure method; one for each set of compressive strength test specimens.
 - d. Compressive Test Specimen: ASTM C31, one set of four (3 to be broken and 1 spare) standard cylinders for each compressive strength test, unless otherwise directed. Mold and store cylinders for laboratory cured test specimens except when field-cured test specimens are required.
 - e. Compressive Strength Tests: ASTM C39; one set for the first 25 cubic yards or fraction thereof, of each concrete class placed in any one day, and one set for each additional 50 cubic yards placed; one specimen tested at seven days and two specimens tested at 28 days.
3. When the strength of field-cured cylinders is less than 85% of companion laboratory-cured cylinders, evaluate current operations and provide corrective procedures for protecting and curing the in-place concrete.
 4. The Contractor shall notify the Constuction Manager and testing laboratory 48 hours in advance of each placement of concrete in order that concrete tests may be scheduled.
 5. Report test results in writing to the Construction Manager on the same day that tests are made. Reports of compressive strength tests shall contain the project identification name and number, date of concrete placement, name of Contractor, name of concrete supplier and truck number, name of concrete testing service, concrete type and class, location of concrete batch in the structure, design compressive strength at 28 days, concrete mix proportions and materials; compressive breaking strength, and type of break for both seven day tests and 28 day tests.
 6. Additional Tests: Additional tests of in-place concrete will be required when test results indicate the specified concrete strengths and other characteristics have not been attained in the structure, as directed by the Construction Manager or Engineer of Record. Tests to determine the adequacy of the concrete shall be by cored cylinders complying with ASTM C42, or by other methods as directed. Contractor shall pay for such tests conducted, and any other additional testing as may be required, when unacceptable concrete is verified.

1.4 SUBMITTALS

- A. Manufacturer's Data: For information only, submit manufacturer's data and instructions for proprietary materials and items, including reinforcement and accessories, admixtures, patching compounds, joints systems, flowable mortar or foamed cellular concrete, and others.
- B. Submit shop drawings under provisions of Section 01 33 00 - Submittals.
 1. Submit shop drawings for fabrication, bending, and placement of concrete reinforcement. Comply with the CRSI Manual of Standard Practice showing bar schedules, stirrup spacing, diagrams of bent bars, and arrangements of concrete reinforcement. Include special reinforcement required at openings through concrete.
 2. Accompanying the shop drawings, submit steel producer's certificates of mill analysis, tensile and bend tests for reinforcing steel.

PART 2 - PRODUCTS

2.1 REFERENCE STANDARDS

- A. AASHTO M 182 - Standard Specification for Burlap Cloth Made from Jute or Kenaf and Cotton Mats; 2005.
- B. ASTM C42 - Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete; 2016.
- C. ASTM C171 - Standard Specification for Sheet Materials for Curing Concrete; 2020.
- D. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete; 2019.
- E. ASTM C618 - Standard Specification for Coal Ash and Raw or Calcined Natural Pozzolan for Use in Concrete; 2025a.

2.2 FORM MATERIALS

- A. Forms may be of wood, plywood, concrete-form-grade hardboard, metal or other acceptable material, which will produce smooth, true surfaces.
- B. Forms for tunnel filling shall be plywood, properly braced against bow, at the limits of each pour.
- C. Provide lumber dressed on at least two edges and one side of tight fit.
- D. Metal forms shall have smooth surfaces free from any pattern, irregularities, dents, and sags.
- E. Wood forms shall have smooth surfaces free from any patten, irregularities, dents, and sags. Wood grain finishes are not acceptable for tunnel and vault surfaces exposed above grade.
- F. Provide commercial formulation form-coating compounds that will not bond with, stain, nor adversely affect concrete surfaces, and will not impair subsequent treatments of concrete surfaces requiring bond or adhesion, nor impede wetting of surfaces to be cured with water or curing compound.
- G. Form Ties
 - 1. Factory-fabricated, adjustable-length, removable or snapoff metal form ties, designed to prevent form deflection, and to prevent spalling concrete surfaces upon removal.
 - 2. For concrete that will be exposed, provide ties so portion remaining within concrete after removal is at least 1-1/2" inside concrete.
 - 3. Unless otherwise shown, provide form ties which will not leave holes larger than one inch in diameter in concrete surfaces.

2.3 REINFORCING MATERIALS

- A. Reinforcing bars (all reinforcing bars shall be epoxy coated):
 - 1. ASTM A775 - Grade 60, Epoxy Coated.
 - 2. ASTM A36 - For tie rods, turn buckles, plates and nuts.
- B. Steel Wire: ASTM A82, plain, cold-drawn, steel.

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IDAS Project # 9279.50

SH Project # 2240007040

- C. Supports for Reinforcement: Provide wire bar-type supports for reinforcement including bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire fabric in place. All devices shall be plastic-coated or hot-dipped galvanized steel type, sized and shaped as required. Where slab on grade is poured over underslab waterproofing membrane, use bolsters that will not damage membrane.

2.4 CONCRETE MATERIALS

- A. Portland Cement: ASTM C150, Type 1 or Portland Limestone Cement: ASTM C150, Type 1L
 - 1. Fly Ash: ASTM C618, Class C.
 - 2. CarbonCure: www.carboncure.com
 - 3. Engineer pre-approved equivalent.
- B. Aggregate: Fine and coarse aggregate for concrete shall comply with ASTM-33 (concrete aggregate).
 - 1. Maximum aggregate size: Not larger than one-fifth of the narrowest dimension between sides of forms, one-third of the depth of slabs, nor three-fourths of the minimum clear spacing between individual reinforcing bars or bundles of bars.
 - 2. Limit flint and chert to 1% maximum, by weight of coarse aggregate in all exposed cast-in-place concrete.
 - 3. Limit lignite to 0.07% by weight of fine aggregate in all exposed cast-in-place concrete.
- C. Water: Clean, potable, and free from injurious amount of oil, acid, alkali, organic matter or other deleterious substances.
- D. Admixtures
 - 1. Air-entraining: ASTM C260.
 - 2. Water-reducing: ASTM C494, Type A. Water-reducing agents shall be applied at the dosage rates recommended by the manufacturer. Absolutely no chlorides will be permitted.
 - 3. Crystalline waterproofing admixture shall be Xypex Admix C-series by Xypex Chemical Corp., 1-800-961-4477, Penetron ADMIX by Pentron, or Krystol Internal Membrane (KIM) by Kryton Products, MasterLife 300D by Master Builders Solutions US LLC, or engineer pre-approved equivalent. Admixture shall be proportioned and mixed per manufacturer's recommendations. Admixture shall reduce permeability (COE CRD-C48) by at least 90% and shall have low, very low or negligible chloride ion penetrability (ASTM C1202). Admixture required for all vault concrete.

2.5 RELATED MATERIALS

- A. Curing and sealing compound shall be non-membrane forming. The compound shall be MasterKure HD 200WB produced by MASTER BUILDERS' SOLUTIONS, SpecHard, or approved equivalent.
- B. Concrete repair compound: MasterEmaco N 423 RS produced by MASTER BUILDERS' SOLUTIONS, Sika MonoTop 615, or approved equivalent.
- C. Preformed joint filler shall be Deck-O-Foam, produced by WR Meadows, or approved equivalent.
- D. Joint sealant compound for vertical joints shall be MasterSeal NP2 by MASTER BUILDERS' SOLUTIONS, ISO-Flex 881 by Limtal, Sikaflex-2C NS Bc Mix, or approved substitute. Color to be gray to match concrete.

- E. Joint sealant compound for slab control joints shall be MasterSeal SLI, produced by MASTER BUILDERS' SOLUTIONS, Sikaflex-1c SL, or approved equivalent.
- F. Joint sealant compound for interior expansion joints shall be MasterSeal SLI, produced by MASTER BUILDERS' SOLUTIONS, Sikaflex-1c SL, or approved equivalent.
- G. Non-shrink grout shall be Masterflow 713, produced by MASTER BUILDERS' SOLUTIONS, SikaGrout 328 or approved equivalent.
- H. Below grade construction joints shall be Grace Construction Products, Adcor 500S hydrophilic non-bentonite waterstop for non-moving concrete construction joints, or engineer pre-approved equivalent.
- I. Post-installed rebar epoxy shall be Hilti HIT-RE 500V, Epcon G5 by Redhead Concrete Anchoring Solutions, Set 3C by Simpson, or engineer pre-approved equivalent.

2.6 PROPORTIONING AND DESIGN OF MIXES

- A. Proportion mixes by the laboratory trial batch method using materials to be employed on the project for each class of concrete required, complying with ACI 211.
 - 1. Required 28-day compressive strength of all concrete is 4000 psi (27579.04 kPa). Comply with the following:
 - a. Slump.....4" max., 2" min.
- B. Laboratory Trial Batches: An independent testing facility acceptable to the Construction Manager will be employed at the Contractor's expense to select concrete proportions, prepare test specimens in accordance with ASTM C192, and conduct strength tests in accordance with ASTM C39, specified in ACI 301.
- C. Submit written reports of each proposed mix for each class of concrete at least 15 days prior to start of work. Do not begin concrete production until mixes have been reviewed.
- D. Adjustment to Concrete Mixes: Mix design adjustments may be requested by the Contractor when characteristics of materials, conditions, weather, test results, or other circumstances warrant. Laboratory test data for revised mix designs and strength results must be submitted and approved before using in the work. No change in contract price will be allowed for these changes.
- E. Use air-entraining admixture in exterior exposed concrete. Add air-entraining admixture at the manufacturer's prescribed rate to result in concrete at the point of placement having air content within the following limits. Concrete structures and slabs exposed to freezing and thawing:
 - 1. 3.5 to 6.5% for maximum 2" aggregate
 - 2. 4.5 to 7.5% for maximum 3/4" aggregate
 - 3. 5.5 to 8.5% for maximum 1/2" aggregate
- F. Water reducing agents may be used as determined by the mix design organization with the approval of the Engineer of Record.
- G. Cementitious Materials: Permitted to substitute cementitious materials other than Portland cement in concrete. Limit percentage, by weight, of cementitious materials other than Portland cement in concrete as follows:
 - 1. Fly Ash: 25 percent.

IDAS - WRC Decentralization Ph 5- Tunnel Abandonment

IDAS Project # 9279.50

SH Project # 2240007040

2. CarbonCure Carbon Dioxide injection: CarbonCure injected carbon dioxide system is permitted at contractor's option to reduce Portland cement content by up to 5%. CarbonCure shall be added to the mix using the CarbonCure delivery system. The delivery shall be provided and calibrated by CarbonCure and integrated into the PCC plant batching system. The reduction is for Portland cement only and is determined after substitution of fly ash has occurred. Blended cements are to be considered cement when determining Portland cement reductions.

2.7 CONCRETE MIXING

- A. Ready-Mix Concrete: Comply with the requirements of ASTM C94 as herein specified. Addition of water to the batch will not be permitted.
- B. During hot weather, or under conditions contributing to rapid setting of concrete, a shorter mixing time than specified in ASTM C94 may be required.
- C. When the air temperature is between 85°F and 90°F, reduce the mixing and delivery time from 1-1/2 hours to 75 minutes, and when the air temperature is above 90°F, reduce the mixing and delivery time to 60 minutes.

2.8 TUNNEL FILL

- A. Fill existing tunnel with IDOT 2506 Flowable Mortar or Foamed Cellular Concrete, herein referred to as "grout". Submit grout mix with properties that make fill removable without damaging existing utilities. Grout shall have similar insulating properties to native soils. Grout shall have a compressive strength of 50 to 100 psi.

PART 3 - EXECUTION

3.1 FORMS

- A. Design, erect, brace, and maintain formwork to support vertical and lateral loads that might be applied until such loads can be supported by the concrete structure. Construct formwork so concrete members and structures are of correct size, shape, alignment, elevation, and position.
- B. Design formwork to be readily removable without impact, shock, or damage, to cast-in-place concrete surfaces and adjacent materials.
- C. Accurately place and secure in position, prior to placing concrete, all anchors, bolts, inserts, and other items to be embedded in concrete; including items furnished under other sections of the Specification and for other contractors on the project.
- D. Provide openings in concrete formwork to accommodate work of other trades. Determine size and location of openings, recesses, and chases from those trades involved.
- E. Earth cuts shall not be used as forms for vertical surfaces without written approval of the Engineer of Record.
- F. Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, or other debris just before concrete is placed. Retighten forms after concrete placement if required to eliminate mortar leaks.
- G. Contractor to remove forms prior to grouting adjacent areas during tunnel filling.

3.2 PREPARATION OF FORM SURFACES

- A. Coat the contact surfaces of forms with a form-coating compound before reinforcement is placed.
- B. Thin form-coating compounds only within thinning agent of type, and in amount, and under conditions of the form-coating compound manufacturer's directions. Do not allow excess form-coating material to accumulate in the forms or to come into contact with concrete surfaces against which fresh concrete will be placed. Apply in compliance with manufacturer's instructions.

3.3 REMOVAL OF FORMS AND TEMPORARY BRACING

- A. Formwork not supporting concrete, such as sides of wall, beams, and similar parts of the work, may be removed after curing at not less than 50°F for 24 hours after placing, provided that:
 - 1. Concrete is sufficiently hard not to be damaged by form removal operations.
 - 2. Curing and protection operations are maintained.
- B. Formwork supporting weight of concrete, such as beams, slabs, etc., shall not be removed until:
 - 1. The concrete has attained 75% of the minimum 28-day strength, or
 - 2. 14 days has passed since pouring the concrete.

3.4 REUSE OF FORMS

- A. Clean and repair surfaces of forms to be reused in the work. Split, frayed, delaminated or otherwise damaged form facing material will not be acceptable. Apply new form coating compound material to concrete contact form surfaces as specified for new formwork.
- B. When forms are extended for successive concrete placement, thoroughly clean surfaces, remove fins and laitance, and tighten forms to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces.

3.5 REINFORCING

- A. Fabricate and place to shapes and dimensions indicated or required to carry out intent of drawings and Specifications. Clean off rust, ice, or other coatings that would reduce bond. Do not use reinforcing reduced in section. Field bending of bars is not allowed without Engineer of Record's permission.
- B. Tagging shall be with metal, linen, or rope fiber tags filled in with machine or waterproof ink. Paper tags shall not be used.

3.6 PLACEMENT OF REINFORCING

- A. Accurately place all reinforcing steel as shown on the drawings. Fasten rigidly so that it cannot be displaced during the construction operation.
- B. The minimum cover of concrete for all reinforcement shall conform to the dimensions shown on the drawings, which indicate the clear distance from the edge of the reinforcement to the concrete surface. Where not otherwise specified or shown by the written dimension, the minimum coverage of the concrete over the steel shall be as follows:
 - 1. Concrete cast against and permanently exposed to earth - 3 inches (76.2 mm)
 - 2. Formed concrete exposed to earth or weather - 2 inches (50.8 mm)

IDAS - WRC Decentralization Ph 5- Tunnel Abandonment

IDAS Project # 9279.50

SH Project # 2240007040

- C. Splices shall be lapped as shown on the drawing. Those not shown or called out shall have a minimum lap as follows:
 - 1. No. 6 and Smaller Bar (plain) lap 52 bar diameters
 - 2. No. 7 thru No. 10 Bar (plain) lap 63 bar diameters
 - 3. No. 6 and Smaller Bar (epoxy-coated) lap 62 bar diameters
 - 4. No. 7 thru No. 10 Bar (epoxy-coated) lap 75 bar diameters
- D. All reinforcing steel, including welded wire mesh, shall be accurately located and held in position by the use of proper reinforcing steel supports, spacers, and accessories in accordance with the drawings and Manual of Standard Practice for Detailing Reinforced Concrete Structures ACI 315. Tie bars securely at intersections.

3.7 EMBEDDED ITEMS

- A. The Contractor shall provide for the installation of all items embedded in the concrete such as coil rod inserts, anchor bolts, etc. as shown on the Drawings or as provided for in other Divisions of this Project Manual.

3.8 DRILLED AND EPOXY SET DOWEL INSTALLATION

- A. Drill hole in existing concrete of size per manufacturer's recommendation for diameters of dowel bar. Incline the hole in the concrete such that the epoxy will be retained in the hole. Clean and prepare hole per manufacturer's recommendation.
- B. Fill hole with epoxy.
- C. Immediately place dowel bar into epoxied hole.
- D. Allow epoxy to take initial set before disturbing dowel bar.

3.9 CONCRETE PLACEMENT

- A. Preplacement Inspection: Before placing concrete, inspect and complete the formwork installation, reinforcing steel, and items to be embedded or cast in. Notify other crafts to permit the installation of their work; cooperate with other trades in setting such work, as required. Thoroughly wet wood forms immediately before placing concrete, as required where form coatings are not used.
- B. General: Comply with ACI 304, and as herein specified.
 - 1. Deposit concrete continuously or in layers of such thickness that no concrete will be placed on concrete which has hardened sufficiently to cause the formation of seams or planes of weakness within the section. If a section cannot be placed continuously, provide construction joints as herein specified. Deposit concrete as nearly as practicable to its final location to avoid segregation due to rehandling or flowing.
 - 2. Deposit concrete in forms in horizontal layers not deeper than 24 inches (609.6 mm) and in a manner to avoid inclined construction joints. Where placement consists of several layers, place each layer while preceding layer is still plastic to avoid cold joints. Control rate of placement so as not to exceed structural capacity of forms.
 - 3. Consolidate placed concrete by mechanical vibrating equipment supplemented by hand-spading, rodding, or tamping. Use equipment and procedures for consolidation of concrete in accordance with the recommended practices of ACI 309, to suit the type of concrete and project conditions.

4. Do not use vibrators to transport concrete inside of forms. Insert and withdraw vibrators vertically at uniformly spaced locations not farther than the visible effectiveness of the machine. Place vibrators to rapidly penetrate the placed layer of concrete and at least six inches into the preceding layer. Do not insert vibrators into lower layers of concrete that have begun to set. At each insertion limit the duration of vibration to the time necessary to consolidate the concrete and complete embedment of reinforcement and other embedded items without causing segregation of the mix.
 5. Deposit and consolidate concrete slabs in a continuous operation, within the limits of construction joints, until the placing of a panel or section is completed.
 6. Consolidate concrete during placing operations so that concrete is thoroughly worked around reinforcement and other embedded items and into corners.
 7. Bring slab surfaces to the correct level with a straightedge and strike off. Use bull floats or darbies to smooth the surface, leaving it free of humps or hollows. Do not sprinkle water on the plastic surface.
 8. Maintain reinforcing in the proper position during concrete placement operations.
- C. Cold Weather Placing
1. Protect concrete work from physical damage or reduced strength which could be caused by frost, freezing actions, or low temperatures, in compliance with ACI 306 and as herein specified.
 2. When air temperature has fallen to or is expected to fall below 40°F, uniformly heat all water and aggregates before mixing as required to obtain a concrete mixture temperature of not less than 50°F, and not more than 80°F at point of placement.
 3. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
 4. Do not use calcium chloride, salt, and other materials containing antifreeze agents or chemical accelerators, unless otherwise accepted in writing by the Engineer of Record.
- D. Hot Weather Placing
1. When hot weather conditions exist that would seriously impair the quality and strength of concrete, place concrete in compliance with ACI 305 and as herein specified.
 2. Cool ingredients before mixing to maintain concrete temperature at time of placement below 90°F. Mixing water may be chilled, or chopped ice may be used to control the concrete temperature, provided the water equivalent of the ice is calculated to the total amount of mixing water.
 3. Cover reinforcing steel with water-soaked burlap if it becomes too hot, so that the steel temperature will not exceed the ambient air temperature immediately before embedment in concrete.
 4. Do not use retarding admixtures unless otherwise accepted in mix designs.

3.10 PLACING CONCRETE BY PUMPING

- A. Cast-in-place concrete at the Contractor's option may be placed by pumping in accordance with ACI 304.
- B. Design Mix
1. Submit separate design mix for pumping concrete. Mix design must state number of gallons of water to be added at jobsite or no water to be added at jobsite.
 2. Note fine aggregate gradation and water and cement content are more critical and different from the regular concrete mix.

3. Slump may be increased by one inch for individual batches at point of discharge.
- C. Pumping Equipment and Placement
1. Do not convey through aluminum or aluminum alloy pipes.
 2. The loss of slump in pumping equipment shall not exceed two inches.
 3. The mortar used for lubricating the pumping equipment shall be discarded.
 4. Slump and air tests shall be taken at both points of delivery to pump equipment and at point of discharge from the line.
 5. Concrete cylinders shall be taken at the point of discharge from the line.

3.11 JOINTS

A. Construction Joints

1. Provide construction joints as indicated on the drawings or as to least impair the strength of the structure.
2. Thoroughly clean the face of joint before placing adjacent slabs or walls. Wet the surface and coat with a neat cement grout immediately before placing the second slab.

B. Expansion Joints

1. Provide where exterior pavements abut the exterior walls and where otherwise shown on the plans.
2. Install 3/4-inch thick expansion strip the full depth of the slab set with the top of the joint material 3/8-inch below the surface of the concrete in strict accordance with the manufacturer's recommendations.

3.12 FINISHING FORMED SURFACES

- A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed 1/8" on formed-surface irregularities.
1. Apply to concrete surfaces not exposed to public view.
- B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum number of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed 1/4" on formed-surface irregularities.
1. Apply to concrete surfaces exposed to public view to receive a rubbed finish, or to be covered with a coating or covering material applied directly to concrete.
- C. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.
- D. Maintain surface flatness with maximum variation of 1/8-inch in 10 feet (304.8 cm).

3.13 CURING FORMED SURFACES

- A. Protect and cure exposed surfaces, including surfaces from which forms have been removed less than 60 hours after concrete has been placed for at least 4 calendar days after concrete is placed.

- B. Cover surfaces with paper or plastic film that is tough, pliable and moisture proof, or the surface may be covered with burlap or sand kept continuously wet.

3.14 FINISHING AND CURING OF FLOOR AND ROOF SLABS

- A. Tunnel and vault floor slabs shall be floated, troweled, and fiber broom finished with edges tooled.
- B. Tunnel and vault roof slabs shall be floated and troweled.
- C. Concrete slabs shall be sealed with a curing membrane as soon as the finishing operation is completed. Application shall be in strict compliance with the recommendations of the manufacturer.

3.15 CONCRETE SURFACE REPAIRS

- A. Surface defects, including tie holes and honeycomb, unless otherwise specified by the contract documents, shall be repaired immediately after form removal.
- B. All honeycomb and other defective concrete shall be removed down to sound concrete with edges perpendicular to the surface or slightly undercut. No feathered edges will be permitted. The area to be patched and an area of at least six inches wide surrounding it shall be dampened to prevent absorption of water from the patching mortar. A bonding grout shall be prepared using a mix of approximately one-part cement to one-part fine sand passing No. 30 mesh sieve, mixed to the consistency of thick cream, and then well brushed into the surface.
- C. The patching mixture shall be made of the same materials and of approximately the same proportions as used for the concrete, except that the coarse aggregate shall be omitted and the mortar shall consist of not more than one part cement to 2-1/2 parts sand by damp loose volume. White Portland cement shall be substituted for a part of the gray Portland cement on exposed concrete in order to produce a color matching the color of the surrounding concrete, as determined by a trial patch. Quantity of mixing water shall be no more than necessary for handling and placing. Patching mortar shall be mixed in advance and allowed to stand with frequent manipulation with a trowel, without addition of water, until it has reached the stiffest consistency that will permit placing.
- D. After surface water has evaporated from the area to be patched, the bond coat shall be well brushed into the surface. When the bond coat begins to lose the water sheen, the premixed patching mortar shall be applied. The mortar shall be thoroughly consolidated into place and struck off so as to leave the patch slightly higher than the surrounding surface. To permit initial shrinkage, it shall be left undisturbed for at least one hour before being finally finished. The patched area shall be kept damp for seven days. Metal tools shall not be used in finishing a patch in a formed wall which will be exposed.
- E. After being cleaned and thoroughly dampened, tie holes shall be filled solid with patching mortar.
- F. Concrete slab surfaces that contain defects which adversely affect durability, strength, or appearance, shall be repaired by a method approved by the Construction Manager and Engineer of Record or they shall be replaced.

3.16 PATCHING EXISTING CONCRETE

- A. Clean surfaces to be patched of all loose particles, oils, grease, etc., and roughen surfaces as required.
- B. Predampen surfaces before application of patching compound.

- C. Mix, apply, finish, and cure patching compound in strict compliance with the manufacturer's instructions.

3.17 TUNNEL FILLING

- A. Contractor to monitor and document the volume of grout used to fill tunnels. Provide venting and additional fill ports as required in temporary forms for grout.
- B. Grout tunnel to top of roof slab.
- C. Do not fill hatches to top of access structure so hatch can be removed without requiring grout modification.
- D. Where sidewalk panels are to be replaced, remove hatch prior to grouting. Tunnel must be grouted prior to demolition of sidewalk panel, as panel is anticipated to be tunnel roof and provide support to the walls.

END OF SECTION

**SECTION 07 1300
SHEET WATERPROOFING**

PART 1

1.1 SECTION INCLUDES

- A. Vault wall and roof sheet waterproofing membrane.
- B. Below slab sheet waterproofing membrane.
- C. Drainage panels and Protection boards.

1.2 REFERENCE STANDARDS

- A. ASTM C836 - Standard Specification for High Solids, Cold Liquid-Applied Elastomeric Waterproofing Membrane for Use with Separate Wearing Course.
- B. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers-Tension; 2006a.
- C. ASTM D570 - Standard Test Method for Water Absorption of Plastics; 1998 (Reapproved 2005).
- D. ASTM D882 - Standard Test Method for Tensile Properties of Thin Plastic Sheets.
- E. ASTM D903 - Standard Test Method for Peel or Stripping Strength of Adhesive Bonds.
- F. ASTM D1434 - Standard Test Method for Determining Gas Permeability Characteristics of Plastic Film and Sheeting.
- G. ASTM D1876 - Standard Test Method for Peel Resistance of Adhesives (T-Peel Test)
- H. ASTM D1970 - Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet materials Used as Steep Roofing Underlayment for Ice Dam Protection.
- I. ASTM D3767 - Standard Practice for Rubber - Measurements and Dimensions.
- J. ASTM D5385 - Standard Test Method for Hydrostatic Pressure Resistance of Waterproofing Membranes
- K. ASTM E96/E96M- Standard Test Methods For Water Vapor Transmission of Materials; 2005.
- L. ASTM E154 - Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover.

1.3 SUBMITTALS

- A. See Section 01 33 00 - Submittals, for submittal procedures.
- B. Product Data: Provide data for membranes and fabricated drainage composite.
- C. Manufacturer's Installation Instructions: Indicate special procedures. The manufacturer's engineering department shall review the details of the assembly and submit a letter stating their approval.
- D. Warranty: Submit manufacturer warranty and ensure forms have been completed in Woodward Resource Center's name and registered with manufacturer.9
- E. Quality: Submit installer qualifications.

IDAS - WRC Decentralization Ph 5- Tunnel Abandonment

IDAS Project # 9279.50

SH Project # 2240007040

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Company trained and certified by the manufacturer, and approved by the membrane manufacturer in writing.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials and products in labeled packages. Store and handle in strict accordance with manufacturer's instructions, recommendations and material safety data sheets. Protect from damage from sunlight, weather, excessive temperatures and construction operations.
- B. Proceed with installation only when the substrate construction and preparation work is complete and in condition to receive sheet membrane waterproofing.
- C. Remove damaged material from the site and dispose of in accordance with applicable regulations.
- D. Sequence deliveries to avoid delays but minimize on-site storage.

1.6 WARRANTY

- A. Contractor shall correct defective Work within a five (5) year period after Date of Substantial Completion; remove and replace materials concealing waterproofing at no extra cost to Owner.
- B. Provide five (5) year manufacturer warranty for waterproofing failing to resist penetration of water and failure of material, except where such failures are the result of structural failures of building. Hairline cracking of concrete due to temperature change or shrinkage is not considered a structural failure.
- C. Manufacturer to notify Construction Manager in writing prior to construction if the specified warranty will require a Owner provided third party inspection.

PART 2 - PRODUCTS

2.1 REFERENCE STANDARDS

- A. ASTM D412 - Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers--Tension; 2016 (Reapproved 2021).
- B. ASTM D570 - Standard Test Method for Water Absorption of Plastics; 2022.
- C. ASTM D882 - Standard Test Method for Tensile Properties of Thin Plastic Sheeting; 2018.
- D. ASTM D903 - Standard Test Method for Peel or Stripping Strength of Adhesive Bonds; 1998 (Reapproved 2025).
- E. ASTM D1434 - Standard Test Method for Determining Gas Permeability Characteristics of Plastic Film and Sheeting; 2023.
- F. ASTM D1876 - Standard Test Method for Peel Resistance of Adhesives (T-Peel Test); 2008 (Reapproved 2023).
- G. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials; 2024a.

2.2 MANUFACTURERS

- A. Sheet Waterproofing Membrane (Vault wall and roof waterproofing) SWPM-1: Grace Construction Products, Bituthene System 4000 Membrane, Polyguard 650 Membrane, Carlisle Coating & Waterproofing MiraDRI sheet waterproofing, W.R. Meadows, Mel-Rol membrane, or engineer pre-approved equivalent.
- B. Blindsheet Sheet Waterproofing Membrane (underside of base slab): Grace Construction Products, Preprufe 300R Membrane, Polyguard Underseal Underslab Membrane, Carlisle Coating & Waterproofing Miraply H sheet waterproofing, W.R. Meadows, Precon membrane, or engineer pre-approved equivalent.
- C. Obtain waterproofing membranes and accessories that are the product of one manufacturer for the foundation wall, roof, and underslab.

2.3 MEMBRANE MATERIALS

- A. Sheet Waterproofing Membrane (Vault wall and roof waterproofing):
 - 1. Self Adhesive cold-applied composite sheet consisting of rubberized asphalt and cross laminated, high density polyethylene film specially formulated for use with water-based surface conditioner.
 - 2. Thickness: 0.060 inch (1.52 mm). measured in accordance with ASTM D3767 Method A
 - 3. Flexibility: Unaffected by 180° bend over 1 inch (25.4 mm). mandrel at -45°F in accordance with ASTM D1970.
 - 4. Tensile Strength, Membrane Die C: 325 psi (2240.80 kPa) measured in accordance with ASTM D412 Modified
 - 5. Tensile Strength, Film: 5,000 psi (34473.80 kPa) measured in accordance with ASTM D882 Modified.
 - 6. Ultimate Elongation: 300% minimum measured in accordance with ASTM D412 Modified.
 - 7. Crack Cycling at -25°F: Unaffected when tested in accordance with ASTM C836.
 - 8. Lap Adhesion at Minimum Application Temperature: 5 lbs/in measured in accordance with ASTM 1876 Modified.
 - 9. Peel Strength: 9 lbs/in measured in accordance with ASTM D903 Modified.
 - 10. Puncture Resistance, Membrane: 50 lbs minimum when tested in accordance with ASTM E154.
 - 11. Resistance to Hydrostatic Head: 231 ft of water measured in accordance with ASTM D5385.
 - 12. Permeance: 0.1 perms maximum in accordance with ASTM E96 Section 12 - Water Method.
 - 13. Water Absorption: 0.1% maximum in accordance with ASTM D570.
 - 14. Manufacturers: GCP Bituthene 4000, Polyguard 650 Membrane, Carlisle Coating & Waterproofing MiraDRI sheet waterproofing, W.R. Meadows, Mel-Rol membrane, or engineer pre-approved equivalent.
- B. Blindsheet Sheet Waterproofing Membrane (below slab waterproofing):
 - 1. High density polyethylene film and layers of specially formulated synthetic adhesive layers.
 - 2. Thickness: 0.046 inch (1.17 mm). measured in accordance with ASTM D3767 Method A.

IDAS - WRC Decentralization Ph 5- Tunnel Abandonment

IDAS Project # 9279.50

SH Project # 2240007040

3. Low Temperature Flexibility: Unaffected at -10 degrees Fahrenheit (-12.22 degrees Celsius) in accordance with ASTM D1970.
4. Ultimate Elongation: Greater than 300% minimum measured in accordance with ASTM D412 Modified.
5. Crack Cycling at -10°F: Unaffected when tested in accordance with ASTM C836.
6. Tensile Strength, Film: 4,000 psi (27579.04 kPa) measured in accordance with ASTM D412.
7. Peel Adhesion to Concrete: 5 lbs/in measured in accordance with ASTM D903 Modified.
8. Lap Adhesion: 2.5 lbs/in measured in accordance with ASTM D1876 Modified.
9. Resistance to Hydrostatic Head: 231 ft of water measured in accordance with ASTM D5385.
10. Puncture Resistance, Membrane: 180 lbs minimum when tested in accordance with ASTM E154.
11. Permeance: 0.1 perms maximum in accordance with ASTM E96 Method B.
12. Water Absorption: 0.5% maximum in accordance with ASTM D570.
13. Manufacturers: GCP Preprufe 300R, Polyguard Underseal Underslab Membrane, Carlisle Coating & Waterproofing Miraply H sheet waterproofing, W.R. Meadows, Precon membrane, or engineer pre-approved equivalent.

2.4 ACCESSORIES

- A. Primer: Grace Construction Products, Bituthene Primer WP-3000, or engineer pre-approved equivalent.
- B. Surface Conditioner: Grace Construction Products, Bituthene System 4000 Surface Conditioner, or engineer pre-approved equivalent.
- C. Membrane: Grace Construction Products, Bituthene Liquid Membrane, or engineer pre-approved equivalent.
- D. Waterstop: Grace Construction Products, Adcor 500S hydrophilic non-bentonite waterstop for non-moving concrete construction joints, or engineer pre-approved equivalent.
- E. Miscellaneous Materials: Tape and other accessories specified or acceptable to manufacturer of pre-applied waterproofing membrane.

2.5 PROTECTION BOARDS

- A. Protection Board: Nominally 2" thick 25 psi (172.37 kPa) minimum compressive strength insulation panels: Owens Corning FOAMULAR 250 Rigid Foam Insulation; Dow STYROFOAM Extruded Polystyrene Foam Insulation, Certifoam 25 SE, or engineer pre-approved equivalent.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify substrate surfaces are durable; free of matter detrimental to adhesion or application of waterproofing system.
- C. Verify that items that penetrate surfaces to receive waterproofing are securely installed.

3.2 PREPARATION

- A. Protect adjacent surfaces not designated to receive waterproofing.
- B. Clean and prepare surfaces to receive waterproofing in accordance with manufacturer's instructions.
- C. Do not apply waterproofing to surfaces unacceptable to membrane manufacturer.
- D. Seal cracks and joints with sealant using depth to width ratio as recommended by sealant manufacturer.
- E. Surfaces for Adhesive Bonding: Apply surface conditioner at a rate recommended by manufacturer. Protect conditioner from rain or frost until dry.

3.3 INSTALLATION - MEMBRANE

- A. Install membrane waterproofing in accordance with manufacturer's instructions.
- B. Roll out membrane. Wrinkles and bubbles are not acceptable and are to be repaired per the manufacturer's installation requirements.
- C. Self-Adhering Membrane: Remove release paper layer. Roll out on substrate with a mechanical roller to encourage full contact bond.
- D. Overlap edges and ends and seal by method recommended by manufacturer, minimum 3 inches (76.2 mm). Apply and tool a uniform bead of sealant to joint edge.
- E. Reinforce membrane with multiple thickness of membrane material over joints, whether joints are static or dynamic.
- F. Weather lap joints on sloped substrate in direction of drainage. Seal joints and seams.
- G. Install flexible flashings. Seal items penetrating through membrane with flexible flashings. Seal watertight to membrane.
- H. Seal membrane and flashings to adjoining surfaces. Install termination bar at all edges. Install counterflashing over all exposed edges.

3.4 INSTALLATION - DRAINAGE PANEL AND PROTECTION BOARD

- A. Where wall does not have exterior rigid insulation, place drainage panel directly against membrane, butt joints, place to encourage drainage downward. Scribe and cut boards around projections, penetrations, and interruptions.
- B. Where wall has exterior rigid insulation, place drainage panel directly against outside of rigid insulation, butt joints, place to encourage drainage downward. Scribe and cut boards around projections, penetrations, and interruptions. Stagger lapped joints between drainage board and rigid insulation to eliminate direct voids in the insulation. Where voids are unavoidable, use spray foam to fill all voids.
- C. Do not cover waterproofing membrane until inspection by Construction Manager's agent has been complete.

3.5 FIELD QUALITY CONTROL

- A. Construction Manager shall observe completed installation of waterstop and waterproofing prior to concealment of each. Contractor to notify Construction Manager at least 24 hours prior to completion of work to schedule review.

3.6 PROTECTION

- A. Do not permit traffic over unprotected or uncovered membrane.

END OF SECTION

**SECTION 22 0500
COMMON WORK RESULTS FOR PLUMBING**

GEPART 1 GENERAL

1.1 SECTION INCLUDES

- A. The work shall include the furnishings of systems, equipment and materials specified in this Division and as called for on the Plumbing Drawings to include supervision, quality control, operation, methods and labor for the fabrication, installation, start-up and tests for the complete plumbing installation. The work shall also include the furnishing of necessary hoisting facilities to set materials and equipment in place and the furnishing of any scaffolding and transportation associated with this work.
- B. Examine the project site and become familiar with existing conditions which will affect the work. Review the drawings and specifications of other trades and take note of conditions to be created which will affect the work. All conditions shall be considered in the preparation of bids; no additional compensation will be made on the behalf of this Contractor.
- C. Provide labor necessary to demolish the existing plumbing systems as shown on the drawings, as described in Part 3.1, Existing Conditions, or as required.
- D. Where noted on the drawings or where called for in other sections of the specification, the Contractor for this division shall install equipment furnished by others, and shall make required service connections. Verify with the supplier of the equipment the requirements for the installation. This contractor shall be responsible for the removal and installation of railings, piping, ductwork, louvers, etc. as required to install new equipment.

1.2 DAMAGE

- A. The Contractor shall be responsible for damage to the work of other trades, or to the building and its contents, caused by equipment installation.

1.3 PERMITS AND INSPECTIONS

- A. Obtain and furnish necessary permits and inspection certificates for material and labor furnished. Permits and certificates shall be obtained from the proper inspection authorities. The cost of permits, certificates and fees required in connection with the installation shall be borne by the Contractor, unless otherwise noted in the detailed contractual description preceding these specifications. Where applications are required for the procuring of utility services to the building, see that such application is properly filed with the utility, and that information required for such an application is presented to the extent and in the form required by the utility company.

1.4 CODES AND STANDARDS

- A. Standards listed by reference, including revisions by issuing authority, form a part of this specification section to the extent indicated. Standards listed are identified by issuing authority, authority abbreviation, designation number, title or other designation established by issuing authority. Standards subsequently referenced herein are referred to by issuing authority abbreviation and standard designation.
- B. Applicable provisions of the following codes and standards are hereby imposed on a general basis for the mechanical work in addition to specific applications specified by individual work sections of these specifications.

IDAS - WRC Decentralization Ph 5- Tunnel Abandonment

IDAS Project # 9279.50

SH Project # 2240007040

- C. Any product used for dispensing potable water shall meet NSF 61 and NSF 372 testing standards. Third party testing shall be required.
- D. If any work indicated on the drawings or specified herein conflicts in any way with any of the rules and regulations of the above Authorities, the Contractor shall promptly notify the Architect/Engineer in writing and do so no less than 72 hours before bids are opened. In the event the Contractor fails to notify the Architect/Engineer and changes are required by said conflicts, the Contractor shall make such changes as are required without additional cost to this Owner.
- E. Installations must be safe in every respect, and must not create a condition which will be harmful to building occupants; to operating, installing or testing personnel; to workmen; or to the public. The contractor for each installation shall be solely responsible for providing installations which will meet these conditions. If the Contractor believes that the installation will not be safe for all parties, report these beliefs in writing to the Architect/Engineer before any equipment is purchased or work is installed, giving recommendations. The Architect/Engineer will work out required changes and adjustments in contract price where adjustments are warranted.

1.5 DRAWINGS

- A. A complete set of up-to-date Project Drawings and Specifications shall be kept on the site at all times. Prior to installing any of the work, check the drawings for dimensions and see that the work does not interfere with clearance required for ceilings, beams, foundations, finished columns, pilasters, partitions and electrical equipment as shown on the drawings and details. After work is installed and it develops that interferences occur which have not been called to the Architect/Engineer's attention before the installation, the Contractor shall, at his own expense, make such changes in his work as directed by the Architect/Engineer.
- B. The contract drawings for plumbing work are in part diagrammatic, intended to convey the scope of work and indicate general arrangement and approximate sizes and locations of equipment and materials. Where job conditions require reasonable changes in indicated locations and arrangement, the Contractor shall make such changes as directed by the Architect/Engineer, without additional cost to the Owner.
- C. Because of the scale of the drawings, certain basic items such as pipe fittings, access panels, and sleeves may not be shown; but where such items are required by other sections of these specifications or where they are required by the nature of the work, they shall be furnished and installed. Rough-in dimensions and locations shall be verified with the supplier of equipment furnished by other trades, or by the Owner, prior to the time of roughing-in.
- D. Equipment specification may not deal individually with minute items required such as components, parts, controls and devices which may be required to produce the equipment performance specified, or as required to meet the equipment warranties. Where such items are required, they shall be included by the supplier of the equipment, whether or not specifically called for.
- E. The drawings and the specifications are cooperative and supplementary. It is the intent of both said drawings and specifications to cover all mechanical requirements in their entirety as nearly as possible. The Contractor shall closely check the drawings and specifications for any obvious errors or omissions and bring any such condition to the attention of the Architect/Engineer prior to the receipt of bids, in order to permit clarification by means of a mailed Addendum. If there is no question prior to the bid proposal date, the Architect/Engineer shall assume that the drawings and specifications are complete and correct and will expect the intent of said documents to be complied with, and the installation to be complete in all respects, according to said intent.

- F. Locate equipment which must be serviced, operated or maintained in fully accessible positions. Minor deviations from the contract drawings may be made to allow for better accessibility, but changes of magnitude, or which involve extra cost, shall not be made without prior approval. Ample space shall be allowed for removal of parts that may require replacement or service in the future.
- G. All valves, pumps, etc. shall be accessible for maintenance purposes. Locate items carefully and coordinate with other trades so that each valve and piece of equipment is accessible and functional. Items located above a non-accessible ceiling, chase, or soffit shall be accessible through an access door. Coordinate location of access doors with the contractor.

1.6 RESPONSIBILITY

- A. The Contractor's responsibility shall not end with the installation and connecting of the various apparatus. It shall include the services of an experienced superintendent, who shall be constantly in charge of the work, together with the qualified journeymen, helpers and laborers required to properly unload, install, connect, adjust, start, operate and test the work involved, including equipment and materials furnished by other trades or by the Owner, until such time as the entire plumbing installation functions properly in every detail.

1.7 COORDINATION

- A. Coordinate the work with other trades prior to installation.
- B. No piping or equipment, which is foreign to the electrical equipment, or architectural appurtenances shall be run over the top of any electrical panels or electrical equipment, in accordance with NEC 110.26. This does not prohibit sprinkler protection for the installation.
- C. The determination of quantities of material and equipment required shall be made from the drawings. Schedules on the drawings and in the specifications are completed as an aid, but where discrepancies arise, it shall be the Contractor's responsibility to provide the required quantity.
- D. Where the specifications state that equipment shall be furnished, installed or provided, it shall be understood to mean this Contractor shall furnish and install completely, unless it is specifically stated that the equipment is to be furnished and installed by others.
- E. The Architect/Engineer reserves the right to determine space priority of the contractors in the event of interference between the piping and equipment of the various contractors. Conflicts between the drawings and specifications, or between requirements set forth for the various trades, shall be called to the attention of the Architect/Engineer. If clarification is not asked for prior to the taking of bids, it will be assumed that none is required, and that the Contractor has submitted his bid in conformance with plans and specifications as issued and that no interference exists.
- F. No piping or equipment foreign to an elevator hoistway and machine room shall be run inside the hoistway or machine room in accordance with NEC 620.37 and ASME A17.1 Safety Code for Elevators and Escalators.

1.8 GUARANTEE AND MAINTENANCE

- A. Materials and equipment shall be guaranteed to be free from defects and to be new equipment; no secondhand, used or salvaged equipment will be allowed. The Owner's existing equipment which is to be relocated or reinstalled under this contract shall be refurbished, cleaned and repaired, and made subject to the guarantee and maintenance as herein specified, unless specifically noted otherwise.

IDAS - WRC Decentralization Ph 5- Tunnel Abandonment

IDAS Project # 9279.50

SH Project # 2240007040

- B. Keep the entire portion of the work in repair, without additional cost to the Owner, so far as defects in workmanship, apparatus, material or construction are concerned for one (1) year from the date of final acceptance, except as otherwise specified herein.
- C. Equipment which fails to meet performance ratings as specified and shown on the drawings shall be removed and replaced by new equipment that meets the specified requirements, without additional cost to the Owner.
- D. Materials and workmanship shall be subject to the review of the Architect/Engineer, in whose presence various tests shall be made as required by these specifications.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.1 EXISTING CONDITIONS

- A. Examine the existing buildings and grounds or site and become familiar with the conditions as they exist, or that will in any manner affect the work under this contract. No allowance will be made subsequently, in this connection, on behalf of the Contractor for any error or negligence by the Contractor.
- B. Existing equipment, such as duct or pipe, in or on the existing building and grounds which is to be replaced, or which interferes in any way with the remodeling of the existing facilities and/or installation of new equipment, shall be removed from the premises or relocated by this Contractor, as directed by the Architect/Engineer. Do not remove from the premises any equipment that may have maintenance value to the Owner without permission of the Owner. Equipment, duct or pipe not to be reused shall be removed from the premises, unless otherwise noted herein or shown on the drawings.
- C. Where existing equipment is removed or changed, all piping no longer in service shall be removed and stubs plugged as directed by the Architect/Engineer. Building surfaces damaged and openings left by removal of equipment shall be repaired by the proper trades and paid for by this Contractor, unless otherwise noted on the drawings. The cutting and fitting shall be done by this Contractor. The cutting of floor, ceiling or wall surfaces shall be done by this Contractor with extreme care, in order to avoid any disrupting or damage of existing utility services which may be encountered. Coordinate with other trades and with the Contractor or Construction Manager to minimize the damage to the building in order to reduce the amount of patching required.
- D. Where new openings are cut and concealed piping is encountered, such items shall be removed or relocated as required. Where systems to be removed stub through floors, walls or ceilings, openings shall be patched so that no evidence of the former installation remains.
- E. Existing active services (water, gas, sewer, electric), when encountered, shall be protected against damage. Do not prevent or disturb operation of active services that are to remain. If active services are encountered which require relocation, make request to authorities with jurisdiction for determination of procedures. Where existing services are to be abandoned, they shall be terminated in conformance with requirements of the utility or municipality having jurisdiction.
- F. The location, size and elevation of underground utilities shown on the drawings are in accordance with data supplied by the Owner and/or the various utility companies. The Contractor shall verify this data and shall report any discrepancies to the Architect/Engineer, in writing, before submitting his bid.

3.2 INTERRUPTION OF SERVICE

- A. Changes in service shall be made so as to provide a minimum of interference with the operation of services in the building. When changes require shutdown of building services, notify the proper building authorities no less than 48 hours in advance and obtain approval from these authorities before making changes. Such notices shall give duration and nature of shutdown. Temporary arrangements shall be approved by the Architect/Engineer and/or Owner.
- B. Any and all interruptions to building services shall be in accordance with Division 01 - General Requirements.

3.3 PIPING SYSTEMS - COMMON REQUIREMENTS

- A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on Coordination Drawings.
- B. Install piping in concealed locations, unless otherwise indicated and except in equipment rooms and service areas.
- C. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.
- D. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.
- E. Install piping at indicated slopes.
- F. Install fittings for changes in direction and branch connections.
- G. Install piping to allow application of insulation.
- H. Select system components with pressure rating equal to or greater than system operating pressure.

3.4 OPENINGS, CUTTING, AND PATCHING

- A. The Contractor shall coordinate the placing of openings in the new structure, as required for the installation of the plumbing work.
- B. Furnish to the Contractor the accurate locations and sizes for required openings. This shall not relieve this Contractor of the responsibility of checking to assure that proper size openings are provided. When additional patching is required due to this Contractor's failure to inspect this work, this Contractor shall make arrangements for the patching required to properly close the opening, to include patch painting. This Contractor shall pay any additional cost incurred in this respect.
- C. When cutting and patching of the structure is made necessary due to this Contractor's failure to install piping, sleeves or equipment on schedule, or due to this Contractor's failure to furnish, on schedule, the information required for the leaving of openings, it shall be this Contractor's responsibility to make arrangements for this cutting and patching. This Contractor shall pay any additional cost incurred in this respect.

IDAS - WRC Decentralization Ph 5- Tunnel Abandonment

IDAS Project # 9279.50

SH Project # 2240007040

- D. Provide cutting and patching and patch painting in the existing structure, as required for the installation of the work. Furnish lintels and supports as required for openings. Cutting of structural support members will not be permitted without prior approval of the Architect/Engineer. Extent of cutting shall be minimized. Use core drills, power saws or other machines which will provide neat, minimum openings. Patching shall match adjacent materials and textures and shall be performed by craftsmen skilled in the respective craft required.
- E. Underfloor Plumbing Work:
 - 1. Contractor shall coordinate all related activity with Construction Manager at least 24 hours before beginning construction activity.
 - 2. Contractor, before saw-cutting floor, must first field verify all existing piping service, sizes, locations, depths, flow directions as well as coordinate with any other trades who may have utilities such as wires or conduits concealed beneath floor and which may be subject to damage and subsequent service interruptions. The cost to repair any damaged utilities shall be borne by The Contractor.
 - 3. Contractor shall be responsible for erecting and maintaining suitable temporary construction barriers and enclosures for containment of all construction dust and debris. Enclosures and barriers shall be maintained under negative pressure and fans and filters as needed to assist with containment.

3.5 EXCAVATION AND BACKFILL

- A. See C-series drawings for requirements for trench excavation, backfill, and compaction.
- B. Contractor shall coordinate all related activity with Construction Manager at least 24 hours before beginning construction activity.
- C. The Contractor shall be responsible for erecting and monitoring of all safety barricades and related protection around excavation and work areas.
- D. Trenches and excavations may be backfilled by the Contractor only after required testing has been satisfactorily performed and locations of connections and appurtenances which will be concealed have been recorded by the Contractor in the construction record documents.
- E. Bedding:
 - 1. Water mains or sanitary sewer force mains may be installed with undisturbed or compacted soil bedding provided the subgrade is consistent and the Contractor provides hand excavation for bells such that the pipe barrel bears evenly on the subgrade.
 - 2. Contractor shall be responsible for prompt cleanup and disposal of all unsuitable or excess bedding materials.
- F. Backfill:
 - 1. Suitable excavated material: Free of cinders, ashes, refuse, rocks, pavement fragments, vegetative or organic matter. Unless noted otherwise on the plans, sand shall not be used.
 - 2. Granular backfill shall be crushed limestone or gravel with 100% passing a $\frac{3}{4}$ " (19 mm) sieve, 50-80% passing a No. 4 (4.75 mm) sieve, and 25-60% passing a No. 8 (2.36 mm) sieve. (IADOT Gradation No. 10)
 - 3. Place backfill simultaneously on both sides of pipe to prevent displacement and place at an angle so that impact on installed pipe is minimized.

4. Backfill in the pipe envelope (top of bedding to a point 12" (300 mm) above the pipe) shall be hand placed. Material shall be of even consistency and free of clumps and boulders, finely divided, and shall be compacted to 90% maximum Standard Proctor Density. Material within the pipe envelope shall be the same as specified for trench backfill, unless noted otherwise on the Plans
5. Contractor shall be responsible for prompt cleanup and disposal of all unsuitable or excess backfill materials.

3.6 CONCRETE AND MASONRY WORK

- A. Concrete work included herein or shown on the drawings shall be in conformance with Division 3 - Concrete.
- B. Concrete work included herein or shown on the drawings shall be done only by experienced cement finishers. Brickwork, where included, shall be laid only by experienced brick masons. Brick shall be of uniform size, hard burned, and shall be laid in cement mortar, except for patch work at a location where cement and lime mortar has previously been used. Exposed, finish brickwork shall match existing brickwork as closely as practical and shall be to the satisfaction of the Architect/Engineer and Owner.
- C. Concrete bases and pads for mechanical equipment will be furnished by Contractor. This Contractor shall coordinate size and location.
- D. Concrete bases and pads for mechanical equipment shall be furnished by this Contractor. Size bases to extend minimum of 4" beyond equipment base in any direction, and 4" above finished floor elevation. Construct of reinforced concrete, roughen floor slab beneath base for bond, and provide steel rod anchors between floor and base. Locate anchor bolts using equipment manufacturer's templates. Chamfer top and edge corners.
- E. Locate, furnish and install all support, hanger and equipment anchor bolts and related hardware.
- F. Underfloor Plumbing Work:
 1. Contractor shall coordinate all related activity with Construction Manager at least 24 hours before beginning construction activity.
 2. Contractor shall saw cut, remove and properly dispose of concrete and related debris as required to accommodate new underfloor piping and fixtures.
 3. Patch floor to match adjacent floor textures and reinforce with #3 rebar, 18" O.C. (drill and grout 3" imbed).
 4. Unless noted otherwise, concrete shall be commercial grade with a minimum 28-day compressive strength of 3,000 PSI. Do not allow air content of troweled finished floors to exceed 3%

3.7 ROOF OPENINGS

- A. Roof openings required by this Contractor that are not shown on the Structural or Architectural Drawings shall be cut and adequately reinforced by an experienced roofing contractor.
- B. Roof penetrations for piping shall be through curbed roof openings. Equipment supports shall be by curbed and flashed runners meeting current National Roofing Contractor Association (NRCA) standards and details. Pitch pockets, pitch pans, and wood blocking are not acceptable.
- C. All roof work shall be completed such that it does not void any existing roof warranty.

3.8 PAINTING

- A. The finish of any item that has been marred, scratched or damaged in any way by this Contractor shall be repainted at the expense of this Contractor, and to the satisfaction of the Architect/Engineer and the Owner.
- B. Painting and finishing of exposed mechanical systems including piping and duct shall be as shown on the drawings.

3.9 CLEANING

- A. Keep the premises clean of all dirt and debris, caused by the work in accordance with Division 1 - General Requirements.
- B. Keep the premises clean of all debris caused by the work at all times, and keep materials stored, in areas designated by the Owner, in such a manner as not to interfere with the progress of the work of other Contractors or with the operation of existing facilities.
- C. At the conclusion of the construction, the site shall be thoroughly cleaned of all rubble, debris and unused material and shall be left in good order. Closed off spaces shall be cleaned of waste such as material, cartons, and wood frame members used in the construction.

3.10 SUSPENSION FROM WOOD STRUCTURAL MEMBERS

- A. In general, concentrated or other loads shall not be suspended directly from the bottom of wood structural members, unless approved by the Architect/Engineer. Loads suspended from open web joists or trusses may be transferred to the bottom chord of the structural member at the panel points. Loads suspended from solid web joists shall be transferred to the joists only through the top flange or web. Suspension systems shall be reviewed by the Architect/Engineer.

3.11 PROTECTION

- A. Special steps shall be taken as necessary for the protection of equipment and materials furnished under Division 22. Equipment and materials shall be protected by Contractor from any physical damage due to weather elements, dirt, dents, sheet rock installation, and painting until the project is completed. Damage, if incurred, shall be promptly repaired at no additional cost to Owner, as-needed to restore equipment and materials to original as-new condition.
- B. Protection of equipment during the finishing (sheet rock, plastering and painting) of the building interior shall be the responsibility of the contractor or contractors performing that work. This shall not relieve this Division 22 Contractor of the ultimate responsibility of checking and ensuring that adequate protection is provided and maintained at all times.
- C. Where the installation or connection of equipment requires Division 22 Contractor to work in areas previously finished by other Contractors, the Division 22 Contractor shall be responsible to ensure that such finished areas are adequately protected and are not marred, soiled or otherwise damaged during the course of their said work. If damage occurs this Division 22 Contractor shall be responsible to arrange for the other Contractors to repair and refinish any damaged areas and shall pay for all repair, rework and refinishing required.
- D. When heavy materials must be placed upon or transported over the roof deck, sheeting shall be placed to distribute the weight and support such materials. Any damage shall be immediately corrected at no cost to the Owner.

3.12 ASBESTOS IDENTIFICATION AND CONTROL

- A. In the event that suspected asbestos containing material (ACM) is encountered during the course of the work, cease operations in the immediate area and promptly notify both the Owner and Architect/Engineer. Suspected materials will then be sampled and analyzed by the Owner's Representative.
- B. Should ACM be confirmed, the Owner's Representative shall direct the abatement procedures. This work shall be awarded either by subcontract to the Contractor or under a separate contract.
- C. During abatement operations, cease operations in the immediate area of the abatement. Operations in other areas of the project may be performed, but care must be taken to control dust to avoid contamination of air monitoring samples. The Contractors shall coordinate activities with the asbestos abatement contractor as well as the Owner's Representative.
- D. Should no ACM be identified, operations in the restricted areas may be resumed. At the discretion of the Owner or Owner's representative, any schedule delays caused by identification, analysis or abatement may be added in the form of an extension of time to the contract via a Change Order.

3.13 NOISE AND VIBRATION

- A. Contractor shall install all equipment in a such a manner so as to control the transmission of noise and vibration from any installed equipment, components or systems, so the sound level in any occupied area does not exceed NC-35 levels. Contractor shall correct all objectionable noise levels in any occupied areas and at no additional cost to Owner, which are due to improperly installed or isolated equipment, components or systems.

3.14 TESTS AND DEMONSTRATIONS

- A. Systems shall be tested and placed in proper working order prior to demonstrating systems to the Owner.
- B. Prior to acceptance of the plumbing installation, demonstrate to the Owner or his designated representatives essential features and functions of all systems installed, and instruct the Owner in the proper operation and maintenance of such systems.
- C. Furnish the necessary trained personnel to perform the demonstrations and instructions, and arrange to have the manufacturer's representatives for the system present to assist with the demonstrations. The Owner and Contractor shall each sign a certification stating that the training has been performed and the Owner accepts same.

END OF SECTION

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**SECTION 22 0523
GENERAL DUTY VALVES FOR PLUMBING PIPING**

PART 1 GENERAL

1.1 SECTION INCLUDES:

- A. Provide equipment, materials, labor, and supervision necessary to install valves as indicated on drawings and in schedules, and herein specified.
- B. As nearly as possible, all valves shall be of a single manufacturer.
- C. Valves shall conform to ANSI standard dimensions.
- D. ASME Compliance:
 - 1. ASME B16.10 for ferrous valve dimensions.
 - 2. ASME B31.9 for building services piping valves.
- E. NSF Compliance: NSF/ANSI 61 and/or NSF/ANSI 372 for valve materials for potable-water service. Valves for domestic water must be 3rd Party Certified.

1.2 SUBMITTALS

- A. Submit detailed Shop Drawings and Product Data clearly indicating manufacturer, model, size, dimensions and pressure rating.
- B. For records documentation submit valve schedule, indicating valve ID, type, size and intended service and location.

1.3 PACKAGING

- A. Valves shall be furnished or provided with protective packaging to prevent damage during shipping or on the job site.
- B. Prepare valves for shipping as follows:
 - 1. Protect internal parts against rust and corrosion.
 - 2. Protect threads, flange faces, grooves, and weld ends.
 - 3. Set angle, and globe valves closed to prevent rattling.
 - 4. Set ball and plug valves open to minimize exposure of functional surfaces.
 - 5. Set butterfly valves closed or slightly open.
 - 6. Block check valves in either closed or open position.
- C. Use the following precautions during storage:
 - 1. Maintain valve end protection.
 - 2. Store valves indoors and maintain at higher than ambient dew point temperature. If outdoor storage is necessary, store valves off the ground in watertight enclosures.
- D. Use sling to handle large valves; rig sling to avoid damage to exposed parts. Do not use handwheels or stems as lifting or rigging points.

1.4 DEFINITIONS

CWP: Cold working pressure.

EPDM: Ethylene propylene copolymer rubber.

NBR: Acrylonitrile-butadiene, Buna-N, or nitrile rubber.

PTFE: Polytetrafluoroethylene plastic.

SSP - Saturated Steam Pressure

WP - Working Pressure

SWP - Steam Working Pressure

W.O.G. - Water, Oil, Gas Pressure

BR - Bronze

I.B.B.M. - Iron Body, Bronze-Mounted

O.S.&Y. - Outside Screw and Yoke

N.R.S. - Non-Rising Stem

R.S. - Rising Stem

M.S.S. - Manufacturer's Standardization Society of the Valve and Fitting Industry, Inc.

Lead Free: Refers to the wetted surface of pipe, fittings and fixtures in potable water systems that have a weighted average lead content =0.25% per Safe Drinking Water Act as amended January 4, 2011, Section 1417. .

PART 2 PRODUCTS

2.1 GENERAL

- A. Materials: Discs, gaskets, packings, seats, diaphragms and lubricants shall conform to recommendations of the valve manufacturer for the intended use.
- B. Body materials, unless otherwise stated:
 - 1. Bronze: 125-150 lbs., ASTM B62
 - 2. High Grade Steam-Metal or Valve-Bronze Alloy: 200-300 lbs., ASTM B61
 - 3. Cast Iron: ASTM A126, Class B
 - 4. Ductile Iron: ASTM A395, A536
 - 5. Cast Steel: ASTM A216
- C. Lead Free silicon bronze (ASTM listed) valves shall be made with corrosion-resistant materials. Manufacturer shall provide third party certification tested in accordance with EN ISO 6509 regarding dezincification corrosion resistance and stress corrosion cracking.
- D. Bronze Valves: NPS 2 (DN 50) and smaller with threaded or solder ends, unless otherwise indicated.
- E. Ferrous Valves: NPS 2-1/2 (DN 65) and larger with flanged ends, unless otherwise indicated.
- F. Valve Pressure and Temperature Ratings: Not less than indicated and as required for system pressures and temperatures.
- G. Valve Sizes: Same as upstream piping unless otherwise indicated.
- H. Valve-End Connections:
 - 1. Flanged: With flanges according to ASME B16.1 for iron valves.

2. Grooved: With grooves according to AWAA C606.
 3. Solder Joint: With sockets according to ASME B16.18.
 4. Threaded: With threads according to ASME B1.20.1.
 5. Copper Press: With sockets according to ASME B16.22/ASTM B75.
- I. Valves in Insulated Piping: With 2-inch stem extensions and the following features:
1. Ball Valves: With extended operating handle of non-thermal-conductive material that meets UL 2043 approved for inside air plenum, and protective sleeve that allows operation of valve without breaking the vapor seal or disturbing insulation and memory stops that are fully adjustable after insulation is applied.
 2. Butterfly Valves: Shall have 2" extended neck for insulation clearance.
 3. Gate Valves: With rising stem.

2.2 MANUFACTURERS

- A. Subject to compliance with requirements, provide products manufactured by one of the following, as listed for each valve type, or Engineer-approved equivalent.

Valve Type	Approved Manufacturer
Check Valves	Crane, Stockham, Lunkenheimer, Hammond Industrial Series, NIBCO, Milwaukee, Metraflex
Ball Valves	Jamesbury, Apollo, Jenkins, Milwaukee, Watts, Worchester, Powell, or NIBCO
Butterfly Valves	Lined: Keystone, Demco, Milwaukee, Centerline, Nibco High Performance: Jamesbury, Dezurik, Durco, Victaulic

2.3 CHECK VALVES

- A. Provide check valves complying with MSS SP-71 or MSS SP-80 for water, steam, and air shall be as follows unless otherwise shown on the drawings:
1. 3 in. and smaller: 200-lb. saturated steam, swing type, threaded, bronze body meeting ASTM B62, pressure tight removable disc, hinge bumper to prevent sticking open, can be mounted horizontally or vertically.
 2. Over 3 in.: 125-lb. saturated steam, swing check, flanged iron body meeting ASTM A126 Class B design to prevent disc sticking open, removable disc, bronze trimmed for steam or water, otherwise all iron construction.
 3. Non-slam type for pump discharge duty – 2-1/2 in. and larger: I.B.B.M., flanged, class 300, wafer style.
 4. Lift check type for boiler feed - 2 in. and smaller: 125-lb. saturated steam, ball cone, check valve with threaded bronze body and spring loaded seating action.

2.4 BALL VALVES

- A. Provide ball valves complying with MSS SP-72 or MSS SP-110. Ball valves shall be as follows unless otherwise indicated on the drawings.

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IDAS Project # 9279.50

SH Project # 2240007040

1. 2 in. and smaller: ASTM B584 bronze body, 2-piece, full port stainless steel brass ball, screwed or soldered ends with teflon seats and seals, blow out proof stem, tee or lever handle rated to 150 SWP/600WOG.
2. Over 2 in.: ASTM A2116 carbon semi-steel or ASTM A536 ductile iron body, 2-piece, full port stainless steel brass ball, ANSI rated flanged ends with teflon seats and lever handle rated to 150 SWP/600WOG.

2.5 BUTTERFLY VALVES

A. Lined

1. Disc - Aluminum bronze ASTM B148 Class 9B or ASTM B584 Alloy 876 for chilled, heating and condenser water, air, and fuels
2. Seat:
 - a. Buna N hardback type ASTM D735-SB620AABE1E3G for chilled, hot and condenser water, air, fuels.
 - b. Hypalon ASTM D2000 for chemically treated water and water - 10 F to +180 F.
 - c. EPT ASTM D2000 for hot water, low-pressure steam +190 F to +230 F.
3. Stem - Stainless steel dry journal type 416, ASTM A582.
4. Bodies – Semi-steel; ASTM A126 Class B; cast iron, ASTM 448; ductile iron. ASTM A536; or cast steel, ASTM A216. On insulated piping, butterfly valves shall have extended neck suitable for the associated insulation thickness.
5. Actuators - Lever handle with infinite position lever with positive locking feature on valve sizes 2 in. through 5 in. Geared hand wheel on valve sizes 6 in. and larger. Furnish chain operator for valve 6 inches and larger, and located 8 feet or more above the finished floor in mechanical equipment rooms.
6. General Specifications
 - a. Butterfly valves may be of flanged, wafer, or lug type (lugs drilled and tapped). Grooved valve couplings may be used where grooved piping is applied
 - b. Elastomer seats shall be bonded to a rigid backup ring, be field replaceable, and of the types listed above.
 - c. The disc shall be aluminum bronze of the floating type with no external disc to stem fasteners. Drive is accomplished by a square stem engaging in a broached disc.
 - d. Stems shall be stainless steel of the one-piece type, completely sealed from line flow.
 - e. Working Pressures: 28 in. vacuum to 250 lb. working pressures, 300 lb. test, with bubble-tight end of line shutoff.
 - f. Dead end service at full pressure without the need of a downstream flange.

B. High Performance

1. Disc - 316 S.S. eccentric disc.
2. Seat - One-piece flexible TFE polymer seat.
3. Stem - 17-4 pH stainless steel with TFE shaft seal wrapped in stainless steel; Chevron type TFE packing.

4. Bodies - ANSI class 150 carbon steel; nickel aluminum bronze; 316 stainless steel; Monel Alloy 20.
 5. Actuators - Lever handle with infinite position lever with positive locking feature on valve sizes 2 in. through 5 in. Geared handwheel on valve sizes 6 in. and larger. Geared handwheel on valve sizes 6 in. and larger. Furnish chain operator and chain for valves 6 inches and larger, and located 8 feet or more above the finished floor in mechanical equipment rooms.
 6. General Specifications
 - a. Butterfly valves may be of flanged, wafer, or lug type (lugs drilled and tapped). Grooved valve couplings may be used where grooved piping is applied.
 - b. Elastomer seats shall be bonded to a rigid backup ring, be field replaceable, and of the types listed above.
 - c. The spherical segmented wafer disc shall be aluminum bronze of the floating type with no external disc to stem fasteners. Drive is accomplished by a square stem engaging in a broached disc.
 - d. Stems shall be of the two-piece type, completely sealed from line flow.
 - e. Working Pressures: 28 in. vacuum to 150 lb. working pressures, 300 lb. test, with bubble-tight shutoff.
- 2.6 ACTUATORS, HANDWHEELS, OPERATORS, HANDLES, AND WRENCHES
- A. Provide suitable handwheels for gate, globe and drain valves.
 - B. Valve Actuator Types:
 1. Handwheel: For valves other than quarter-turn types.
 2. Hand lever: For quarter-turn valves NPS 6 (DN 150) and smaller.
 3. Chainwheels: Valve actuation assembly with sprocket rim, brackets, and chain for mounting height.

PART 3 EXECUTION

3.1 VALVE LOCATIONS – GENERAL

- A. Install isolation valves at each branch off of horizontal mains and vertical risers.

3.2 EXAMINATION

- A. Examine valve interior for cleanliness, freedom from foreign matter, and corrosion. Remove special packing materials, such as blocks, used to prevent this movement during shipping and handling.
- B. Operate valves in positions from fully open to fully closed. Examine guides and seats made accessible by such operations.
- C. Examine threads on valve and mating pipe for form and cleanliness.
- D. Examine mating flange faces for conditions that might cause leakage. Check bolting for proper size, length, and material. Verify that gasket is of proper size, that its material composition is suitable for service, and that it is free from defects and damage.

- E. Do not attempt to repair defective valves; replace with new valves.

3.3 VALVE INSTALLATION

- A. Follow the manufacturer's recommended installation instructions concerning soldering, silver brazing, welding, threading, and installation of flanged valves in order to prevent damage to the valve and assure its maximum efficiency. Additional specific installation requirements are as follows:
 - 1. Thread pipe for threaded valves to standard length only, using new block dies.
 - 2. Put pipe compound on the pipe end, not into the valve threads. Securely screw pipe and valve together.
 - 3. Blow out or otherwise thoroughly clean pipe sections before they are installed.
 - 4. Close valve before installation.
 - 5. Secure and adjust valves for no leaks and for easy operation.
 - 6. Install valves with stems horizontal or vertical above the pipe and square with building construction. Install valves in position to allow full stem movement.
 - 7. Install valves so piping does not place a stress or strain on the valve body. Locate valves for easy access and provide separate support where necessary.
 - 8. Install extended-stem valves where insulation is indicated. Stems shall be extended such that the handle moves freely without contact with the insulation.
 - 9. Install drain valves at low points of piping, at each mechanical equipment item, and elsewhere, where indicated.
 - 10. Locate valves, cock, and hose bibbs to allow easy accessibility for operation, maintenance and repair.
 - 11. Lugged butterfly valves with rubber-lined seats shall be installed with the disc(s) partially open. Bolts shall be torqued to the manufacturer's recommendations.
- B. Install valves with unions or flanges at each piece of equipment arranged to allow service, maintenance, and equipment removal without system shutdown.
- C. Install check valves for proper direction of flow and as follows:
 - 1. Swing Check Valves: In horizontal position with hinge pin level.
 - 2. Lift Check Valves: With stem upright and plumb.
- D. When soldering use paste fluxes that are approved by the manufacturer for use with Lead Free Alloys.

3.4 PROVISION FOR WRENCHES

- A. One operating wrench shall be provided for every 10 valves of each type not equipped with handwheels or levers. A minimum of two wrenches shall be provided for each type of valve.

3.5 SPECIAL OPERATORS FOR 1/4 TURN PRODUCTS

- A. Special slow closing operators shall be provided for quick closing valves to prevent the destructive fluid action of "water hammer" effects.
 - 1. Steam under 50 PSI and incompressible fluids: As recommended by the manufacturer.

3.6 ADJUSTING

- A. Adjust or replace valve packing after piping systems have been tested and put into service but before final adjusting and balancing. Replace valves if persistent leaking occurs.

3.7 GENERAL REQUIREMENTS FOR VALVE APPLICATIONS

- A. Drawings indicate valve types to be used. If valve applications are not indicated, use the following:
 - 1. Shutoff Service: Ball or Butterfly valves.
 - a. Piping NPS 2 (DN 50) and smaller: Furnish bronze ball or gate valves.
 - b. Piping NPS 2-1/2 (DN 65) and larger: Furnish cast-iron butterfly or gate valves with flanged ends.
 - 2. Drain Duty: Hose-end drain valves.
 - 3. Cast-iron, grooved-end valves may be used with grooved-end piping.
 - 4. Butterfly Valve Dead-End Service: Single-flange (lug) type.
- B. Install shutoff valve close to water main on each branch and riser serving plumbing fixtures or equipment, on each water supply to equipment, and on each water supply to plumbing fixtures that do not have supply stops. Use ball or gate valves for piping NPS 2 (DN 50) and smaller. Use butterfly or gate valves for piping NPS 2-1/2 (DN 65) and larger.
- C. Install drain valves for equipment at base of each water riser, at low points in horizontal piping, and where required to drain water piping.
 - 1. Install hose-end drain valves at low points in water mains, risers, and branches.
 - 2. Install stop-and-waste drain valves where indicated.
- D. Install balancing valve in each hot-water circulation return branch and discharge side of each pump and circulator. Set balancing valves partly open to restrict but not stop flow. Use ball valves for piping NPS 2 (DN 50) and smaller and butterfly valves for piping NPS 2-1/2 (DN 65) and larger. Balancing valves are specified in Division 22 Section "Domestic Water Piping Specialties."
- E. If valves with specified CWP ratings are not available, the same types of valves with CWP ratings may be substituted.
- F. Select valves, except wafer types, with the following end connections:
 - 1. For Copper Tubing, NPS 2 (DN 50) and Smaller: Threaded, Sweat solder, or Press-to-fit ends.
 - 2. For Copper Tubing, NPS 2-1/2 to NPS 4 (DN 65 to DN 100): Grooved Mechanical Coupling, Flanged, or Threaded ends .
 - 3. For Steel Piping, NPS 2 (DN 50) and Smaller: Threaded or Welded ends.
 - 4. For Steel Piping, NPS 2-1/2 to NPS 4 (DN 65 to DN 100): Grooved Mechanical Coupling, Welded , or Flanged ends.

END OF SECTION

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**SECTION 22 0529
HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Provide equipment, materials, labor and supervision necessary to install pipe hangers and supports.
- B. Pipe support systems shall secure pipes in place, prevent pipe vibration, provide vertical adjustment for maintaining required grades, and provide for expansion and contraction.
- C. Where supports are attached to concrete or other structural members, care shall be taken to prevent damage or weakening of the structural members.
- D. Where concrete inserts are to be used, it shall be this Contractor's responsibility to accurately locate and attach inserts to concrete forms.

1.2 REFERENCE STANDARDS

- A. American National Standards Institute, ANSI:
 - 1. ANSI B31.1 Power Piping
 - 2. ANSI B31.9 Building Services Piping
- B. Manufacturers Standardization Society of the Valve and Fittings Industry, MSS, 1815 North Fort Myer Drive, Arlington, VA 22209.
 - 1. MSS SP-58: Pipe Hangers and Supports - Materials, Design and Manufacturer.
 - 2. MSS SP-69: Pipe Hangers and Supports - Selection and Application.
- C. Anvil International, 2 Holland Way, Exeter, NH 03833, www.anvilintl.com, (603) 418-2800.
 - 1. Pipe Hangers and Supports Catalog (Jan. 2015)

1.3 DEFINITIONS

- A. Pipe Hanger: A device normally suspended from structure and is used to carry the piping weight in tension.
- B. Pipe Support: A device by which piping is normally carried from beneath and is used to carry the piping weight in compression.

1.4 SUBMITTALS

- A. Submit manufacturer's product data on all hangers and support devices. Product data to include, but not be limited to materials, finishes, approvals, load ratings, and dimensional information.

PART 2 PRODUCTS

2.1 HANGERS AND SUPPORTS

- A. Hangers and support devices shall be Anvil International Inc., Tolco, Fee and Mason, Michigan, B-Line or Engineer approved equivalent. Figure numbers within are based on Anvil International, Inc..

PART 3 EXECUTION

3.1 INSTALLATION - HORIZONTAL PIPE SUPPORTS

- A. Hanger rods for steel, wrought iron and brass pipe shall be installed in accordance with MSS SP-69 Tables 3 and 4 and the following schedule:

Pipe Size	Rod Diameter	Maximum Spacing
Up to 1 1/4"	3/8"	7'-0"
1 1/2" and 2"	3/8"	9'-0"
2"	3/8"	10'-0"
2 1/2", 3", and 3 1/2"	1/2"	10'-0"
4" and 5"	5/8"	12'-0"
6"	3/4"	12'-0"
8"	7/8"	14'-0"
10" and 12"	7/8"	16'-0"
14" and 16"	1"	16'-0"
18"	1 1/8"	18'-0"
20" and 24"	1 1/4"	20'-0"

- B. Hanger rods for copper pipe and tube shall be installed in accordance with MSS-SP-69 Tables 3 and 4 and the following schedule:

Pipe Size	Rod Diameter	Maximum Spacing
1/2" and 3/4"	3/8"	5'-0"
1"	3/8"	6'-0"
1 1/4"	3/8"	7'-0"
1 1/2"	3/8"	8'-0"
2"	3/8"	8'-0"
2 1/2"	1/2"	9'-0"
3", 3 1/2", and 4"	1/2"	10'-0"
5"	1/2"	13'-0"
6"	5/8"	14'-0"
8"	3/4"	16'-0"

- C. Support horizontal cast iron soil pipe with two hangers for each pipe length. Locate hangers close to couplings.
- D. In addition to the above specified spacings, install additional hangers at change in pipe direction and at concentrated loads, large valves and strainers.
- E. Where more than one pipe is to be run parallel together, they may be supported on trapeze type hangers. Trapeze bar angles and hanger rods shall be of sufficient size to support the particular group of pipes. Trapeze hanger spacing shall be based on the smallest pipe on the rack. When hanging from light gauge metal trusses, coordinate pipe hanger spacing and hanger rod connection points with the truss manufacturer.
- F. For suspending hanger rods from brackets attached to walls, use welded steel brackets: Fig. 194 for loads up to 750 lbs; Fig. 195 for loads up to 1500 lbs; Fig. 199 for loads up to 3000 lbs.

- G. Where pipes are to be racked along walls, use " Unistrut" pipe racks or 12 gauge steel strut channel, 1-5/8" x 1-5/8" minimum.
 - 1. Mount pipes to strut channel with two-piece pipe straps to match outside diameter of pipe including insulation.
- H. Attach all pipe hangers from support rods using double locknuts tightened to prevent loosening.

3.2 INSTALLATION - VERTICAL PIPE SUPPORTS

- A. Support vertical steel, wrought iron, copper and brass pipe at every other floor line.
- B. Support vertical cast iron soil pipe at every floor line.
- C. In addition to the above, support vertical pipes at base of riser with base fitting set on concrete or brick pier, or by hanger located on horizontal connection close to riser.
- D. Where pipe sleeves extend above floor, place pipe clamps at ceiling below and support clamp extensions from inserts or other approved attachment.

3.3 PIPE ATTACHMENTS

- A. For horizontal steel and wrought iron pipe, use carbon steel adjustable clevis hanger, Fig. 260. For floor support or support directly above steel beams, use adjustable pipe roll stand, Fig. 177.
- B. For horizontal copper pipe and tube, use copper-plated, carbon steel adjustable swivel ring, Fig. CT-69.
- C. When thermal expansion for horizontal pipe is in excess of 1/2" axially, use adjustable steel yoke pipe roll, Fig. 181, or adjustable pipe roll stand, Fig. 177.
- D. For horizontal cast iron soil pipe, use carbon steel adjustable clevis hanger, Fig. 260.
- E. For vertical steel, wrought iron and cast iron pipe, use extension pipe or riser clamps, Fig. 261.
- F. For vertical copper pipe and tube, use copper-plated, copper plated copper tubing riser pipe clamp, Fig. CT-121.

3.4 INTERMEDIATE ATTACHMENTS

- A. Hanger rods: Carbon steel single or double end threaded, Figs. 140, 253 as required. Continuous threaded rod, Fig. 146 may be used wherever possible.
- B. Chain wire or perforated strap hangers will not be permitted. One pipe shall not be suspended from another pipe.

3.5 STRUCTURAL ATTACHMENTS

- A. For attaching steel or copper plated hanger rods to reinforced concrete, use galvanized malleable iron universal concrete inserts; Fig. 282 for loads up to 1140 lbs.
- B. For attaching steel hanger rods to structural steel beams, use malleable iron C-clamps; Fig. 92, Fig. 93 or Fig. 94 with retaining clip Fig. 89 or Fig. 89X for loads up to 500 lbs; Fig. 218 with extension piece for loads up to 1,365 lbs. For copper plated hanger rods, use copper plated malleable iron C-clamps; Fig. CT-138R for loads up to 180 lbs.
- C. For attaching steel hanger rods to wood structural members, use malleable iron ceiling flange; Fig. 153 for loads up to 1,270 lbs. For copper plated hanger rods, use copper plated malleable iron ceiling flange: Fig. CT-128R for loads up to 180 lbs.

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IDAS Project # 9279.50

SH Project # 2240007040

- D. Vertical expansion shields or toggles shall not be used for suspending hanger rods, except with permission in cases where inserts have been omitted or cannot be used. If permitted, use expansion shields; for rod sizes up to ½", 320 lbs. max. load. For hanger rods larger than ½" use attachment plate, Fig. 52, with wedge anchors.
- E. Powder actuated anchoring methods shall not be used.

3.6 PIPE COVERING PROTECTION

- A. Hangers and supports for insulated piping shall not injure or pierce insulation. Provide insulation protection shields in conjunction with hanger or roll device. Use Fig. 160 and 165, Protection Saddles.

3.7 SUPPLEMENTAL STEEL

- A. Provide supplemental steel as required to hang or support plumbing equipment or piping.

END OF SECTION

**SECTION 22 0700
PLUMBING INSULATION**

PART 1 GENERAL

1.1 CODES AND STANDARDS

- A. Insulating materials, jackets and mastics shall meet flame spread, fuel contribution and smoke developed ratings in accordance with NFPA-90A. Flame spread rating in accordance with NFPA 255, ASTM E-84, or UL 723 of not more than 25; smoke developed rating of not more than 50, unless otherwise noted in this section.
- B. Insulation that has been treated with a flame-retardant additive to meet the flame spread and smoke developed ratings shown above is not permitted.
- C. Insulation materials shall be non-corrosive to the materials they are applied to, including stress corrosion cracking of stainless steel and shall not breed or promote mold, fungus or bacteria.
- D. Insulation shall meet or exceed all requirements of ASHRAE/IES 90.1 - Energy Standard for Buildings Except Low-Rise Residential Buildings .

1.2 QUALIFICATION

- A. Insulating materials by Owens-Corning, Armacell, Pittsburgh-Corning, Knauf, Johns Manville, or Engineer approved equivalent.
- B. Mastics and adhesives as recommended by insulation manufacturer.

1.3 SUBMITTALS

- A. Product Data: Submit manufacturer's technical product data and installation instructions for each type of mechanical insulation and jacket. Submit schedule showing manufacturer's product number, flame spread and smoke development rating, k-value, density, temperature limitations, sound absorption coefficients, thickness, and furnished accessories for each mechanical system requiring insulation.

PART 2 PRODUCTS

2.1 INSULATION

- A. Description:
 - 1. Type A: Preformed, sectional, heavy density fiberglass insulation, suitable for operating temperatures form - 20 F to +850 F. Equipped with factory-applied, all-service vapor barrier jacket constructed of white Kraft paper bonded to aluminum foil reinforced with fiberglass yarn, with pressure-sensitive, self-sealing longitudinal laps and butt strips. Thermal conductivity of 0.23 BTU-in/hr-ft²- F @ 75 F mean temperature. Water vapor permeance of 0.02 perms. Johns Manville "Micro-Lok HP or Engineer approved equivalent.

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IDAS Project # 9279.50

SH Project # 2240007040

2. Type B: Flexible, elastomeric pipe and sheet insulation with closed-cell structure. Shall comply with ASTM C534, Type I, Grade 1 for tubular materials and ASTM C534 Type II, Grade 1 for sheet materials. Suitable for operating temperatures from -40° F to 220° F. Outdoor applications, and where otherwise noted, shall receive a weather-resistant, protective, latex enamel finish. Thermal conductivity of 0.28 BTU-in/hr-ft²-°F @ 75° F mean temperature. Water vapor permeance of 0.08 perms. Insulation shall be equivalent to Armacell AP Armaflex; adhesive equivalent to Armacell Armaflex 520 or Armaflex 520 BLV Low-VOC Contact Adhesive; finish equivalent to Armacell Armaflex WB finish.
3. Type C: Flexible, elastomeric thermal insulation with an expanded, closed-cell structure. Pre-slit tubular form with a pressure-sensitive adhesive strip for closure and vapor sealing of the longitudinal joint. Butt joints, sealed with 3M-471 tape. White color. Suitable for operating temperature of 40 F to 200 F. Thermal conductivity of 0.28 BTU-in/hr-ft²- F mean temperature. Water vapor permeance of 0.20 perms. Insulation shall be Armacell Self-Seal Armaflex 2000 or Engineer approved equivalent.

2.2 PIPE INSULATION SCHEDULE (IECC - INTERNATIONAL ENERGY CONSERVATION CODE) 2012

SERVICE	TYPE	INSULATION THICKNESS	PIPE SIZE
Domestic cold water	A, B, C	1/2"	Less than 1 1/2"
		1"	1 1/2" and larger

2.3 INSULATION JACKETS

- A. 20-mil high impact PVC secured with spray contact adhesive. All PVC jacketing shall meet the 25/50 SDR. Manville "Zeston 2000" or equivalent.
- B. 6-oz/sq yd UL listed cotton canvas fabric secured with Childers CP50 lagging adhesive.
- C. Fitting and valve jackets shall be premolded PVC with joints and seams sealed with a spray contact adhesive or vapor barrier mastic. Premolded jackets shall be Manville "Zeston 2000" or approved equivalent.
- D. At wall penetrations and on exterior pipe, provide an additional jacket of 0.020 inch thick smooth finish aluminum secured with 0.015 inch thick, 3/8-inch wide aluminum bands. Metal jacket shall have factory applied moisture barrier. Fitting and valve covers to be preformed of same material as adjacent metal jacket.
- E. Where PVC or metal jackets are used, delete the factory applied ASJ on pipe and equipment operating above 75° F.
- F. PVC jackets shall be used in the following areas and systems:
 1. Whenever piping is routed exposed through occupied spaces.
 2. Premolded PVC at all fittings and valve jackets.

PART 3 EXECUTION

3.1 GENERAL

- A. Use only experienced applicators regularly engaged in the trade. Rough work will be rejected. Application details shall be in accordance with the insulation materials supplier's recommendations, except where a higher standard is specified.

- B. Install materials after systems have been tested and approved. Material such as rust, scale, dirt and moisture shall be removed from surfaces to be insulated.
- C. Insulation shall be kept clean and dry at all times.
- D. Where pipes and ducts pass through fire rated walls, floors and partitions, a fire seal shall be provided.
- E. When flexible cellular insulation is used, it shall be installed with seams and joints sealed with contact adhesive.
 - 1. Wherever possible, the insulation shall be placed over the pipe before it is installed. Seal the butt joints with Armacell Armaflex 520, or Armaflex 520 BLV Low-VOC Contact Adhesive or equal.
 - 2. Where the insulation cannot be slipped on, cut the insulation longitudinally and apply it to the piping. Seal longitudinal seam and butt joints with Armacell Armaflex 520 adhesive, or Armaflex 520 BLV Low-VOC Contact Adhesive or equal. In all cases, the insulation, equal to Armacell AP, protected with half-round PVC sleeves the length of three times the nominal pipe size, minimum length to be 8 inches.

3.2 PIPE INSULATION INSTALLATION

- A. Insulate fittings, valves, unions, flanges, strainers, flexible connections and expansion joints with premolded or mitered segments of same insulating material as for adjacent pipe covering.
- B. Pipe insulation shall continue through sleeves and hangers with vapor barrier and/or jacket.
- C. Insert to be between support shield and piping but under the finish jacket. Provide an insert at hangers not less than 6 inches long, of same thickness and contour as adjoining insulation, to prevent insulation from sagging at support points. Inserts shall be heavy density insulating material suitable for the planned temperature range. Factory fabricated inserts may be used.
- D. Neatly finish insulation at supports, protrusions and interruptions.
 - 1. On hot systems where fittings are to be left exposed, insulation ends shall be beveled away from bolts for easy access.
 - 2. On cold systems, valve stems shall be sealed with caulking which allows free movement of the stem, but provides a seal against moisture incursion.
- E. For outdoor pipe insulation, increase pipe insulation thickness by 1/2" from thickness listed in schedule.
- F. Wherever piping penetrates a floor or is exposed in a finished area such as kitchens, furnish a floor pipe escutcheon and/or PVC (white) jacket to protect insulation and allow for a smooth finish for cleaning.

END OF SECTION

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**SECTION 22 1116
DOMESTIC WATER PIPING**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Provide equipment, materials, tools, labor, and supervision necessary to furnish, fabricate, and install complete piping system.

1.2 CODES AND STANDARDS

- A. Pipe materials specified in this Section shall apply to technical sections of Division 22 of the Project Manual where applicable. Special requirements as may be called for in the technical sections, or shown on the Drawings, shall take precedence over General Requirements herein. Piping located in plenums shall be plenum rated for fire and smoke.
- B. Lead Free: Refers to the wetted surface of pipe, fittings and fixtures in potable water systems that have a weighted average lead content =0.25% per Safe Drinking Water Act as amended January 4, 2011, Section 1417 .
- C. NSF Compliance: NSF/ANSI 61 and/or NSF/ANSI 372 for valve materials for potable-water service. Valves for domestic water must be 3rd Party Certified.

1.3 PRODUCT HANDLING

- A. Provide factory-applied plastic end-caps on each length of pipe and tube. Maintain end-caps through shipping, storage, and handling as required to prevent pipe-end damage and eliminate dirt and moisture from inside of pipe and tube.
- B. Where possible, store pipe and tube inside and protected from weather. Where necessary to store outside, elevate well above grade and enclose with durable, waterproof wrapping.
- C. Protect flanges and fittings from moisture and dirt by inside storage and enclosure, or by packaging with durable, waterproof wrapping.

1.4 SUBMITTALS

- A. For each system served: Submit piping schedule listing, by range of sizes, piping material used.
- B. Submit manufacturer's specifications and/or catalog data including material and pressure test certifications for pipe, fittings, valves, and other related items including but not limited to pipe hangers and supports.

PART 2 PRODUCTS

2.1 PIPING

- A. Pipe Material and Service:
 - 1. Ductile iron water pipe, standard-mechanical joint ASTM A536. ANSI A21.5, AWWA C150: Underground water service main 3" diameter and larger.
 - 2. Copper water tube, hard temper, ASTM B88:

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SH Project # 2240007040

- a. Type K: Domestic water piping lines under building, concealed in solid concrete or masonry walls or construction; underground water service up to 3" dia
 - b. Type L: Aboveground domestic water piping lines
- B. Fittings:
1. Cast iron water pipe - Class 250, ANSI A21.20, AWWA C110, standard mechanical joint fitting with lugs for connecting to pipe.
 2. Threaded pipe - ASME B16.3 malleable iron fittings, 125-pound, standard flat band water pattern.
 3. Copper water tube, cast bronze or wrought copper, solder joint type. ANSI B16.18 and B16.22.
 4. Brass pipe - cast bronze screwed, 125 pound, flat band water pattern, chromium plated, for chromium-plated pipe.

2.2 JOINTS

- A. Threaded pipe - make joints using approved pipe joint compound, applied to male threads only. Cut pipe square, cut threads clean, remove burrs, and ream ends to full size of bore. Threads shall not be exposed on chromium-plated pipe.
- B. Copper water and drainage tube - use 95-5 tin antimony or silver solder, cut pipe square, clean and polish tube ends and inner surface of fittings, apply flux and solder joint as recommended by manufacturer of solder type fittings. Use same methods for copper refrigerant pipe, except use silver solder with 15% silver content, equivalent to Sil-Flos 15.
- C. Threadless brass pipe - use brazing alloy which will flow freely at 1300 degree F. Use flux and brazing method as recommended by manufacturer of brazing alloy.
- D. When soldering use paste fluxes that are approved by the manufacturer for use with Lead Free Alloys.

2.3 GENERAL VALVE APPLICATIONS

- A. Drawings indicate valve types to be used. If valve applications are not indicated, use the following:
 1. Shutoff Service: Ball, Butterfly, or Gate valves.
 - a. Piping NPS 3 and smaller: Furnish bronze ball or gate valves.
 - b. Piping NPS 2-1/2 (DN 65) and larger: Furnish cast-iron butterfly or gate valves with flanged ends.
 2. Drain Duty: Hose-end drain valves.
 3. Cast-iron, grooved-end valves may be used with grooved-end piping.
 4. Butterfly Valve Dead-End Service: Single-flange (lug) type.
- B. Select valves, except wafer types, with the following end connections:
 1. For Copper Tubing, NPS 2 (DN 50) and Smaller: Threaded, Sweat solder, or Press-to-fit ends.
 2. For Copper Tubing, NPS 2-1/2 to NPS 4 (DN 65 to DN 100): Grooved Mechanical Coupling, Flanged, or Threaded ends .
 3. For Steel Piping, NPS 2 (DN 50) and Smaller: Threaded or Welded ends.

4. For Steel Piping, NPS 2-1/2 to NPS 4 (DN 65 to DN 100): Grooved Mechanical Coupling, Welded, or Flanged ends.
- C. If valves with specified CWP ratings are not available, the same types of valves with CWP ratings may be substituted.

2.4 NIPPLES AND UNIONS

- A. Nipples shall conform to size, weight, and strength of adjoining pipe. When length of unthreaded portion of nipple is less than 1-1/2", use extra strong nipple; do not use close nipples.
- B. For pipe 3" and smaller, use screwed unions; over 3", use flanged unions. For steel and wrought iron pipe, use malleable iron ground joint unions, black or galvanized, to conform to pipe. Cast iron flanged unions are to be gasket type. For threaded brass pipe, use bronze ground joint unions with octagon ends. Install unions on equipment intended to be disassembled.
- C. Dielectric unions shall be installed between connections of copper pipe and ferrous piping.

2.5 SLEEVES

- A. Floor sleeves shall be provided by the contractor. Coordinate with existing structure and notify engineer if structure interferes with design.
- B. Sleeves passing through non-load bearing walls and partitions shall be galvanized sheet steel with lock seam joints of minimum gauges as follows: For pipes 2-1/2" in size and smaller - 24-gauge; 3 in. to 6 in. - 22-gauge; over 6 in. - 20-gauge.
- C. Sleeves passing through load bearing walls, concrete beams, fireproof walls, foundations, footings, and waterproof floors shall be Schedule 40 galvanized steel pipe or cast iron pipe.
- D. Sleeves for insulated piping shall be of sufficient internal diameter to take pipe and insulation and to allow for free movement of pipe. Waterproof sleeves shall be of sufficient internal diameter to take pipe and waterproofing material.
- E. In finished areas where pipes are exposed, sleeves shall be terminated flush with wall, partitions and ceilings, and shall extend 1/2 in. above finished floors. Extend sleeves 1 in. above finished floors in areas likely to entrap water and fill space between sleeves and pipe with graphite packing and caulking compound.
- F. Sleeves passing through membrane waterproofing or roofing shall be flashed and sealed.

2.6 PIPE ESCUTCHEONS

- A. Provide pipe escutcheons with inside diameter closely fitting pipe outside diameter, or outside of pipe insulation where pipe is insulated. Select outside diameter of escutcheon to completely cover pipe penetration hole in floors, walls, or ceilings; and pipe sleeve extensions, if any. Furnish pipe escutcheons with chrome finish for occupied areas, prime paint finish for unoccupied areas.
- B. Pipe Escutcheons for Moist Areas: For waterproof floors, and areas where water and condensation can be expected to accumulate, provide cast brass or sheet brass escutcheons, solid or split hinged.
- C. Pipe Escutcheons for Dry Areas: Provide sheet steel escutcheons, solid or split hinged.
- D. Manufacturer: Chicago Specialty; Producers Specialty; Sanitary-Dash, or Engineer Pre-Approved Equivalent.

2.7 GUARDS

- A. Where exposed insulated piping extends through floor, provide sheet metal guard around insulation to extend up from floor 60 inches. Guard to be galvanized sheet steel not less than 26-gauge.

2.8 FIRE SAFING

- A. Metal piping and sleeves passing through floors, roof, partitions and fire walls, shall be provided with firestop by packing space between pipe and sleeve with UL listed non-sag and self-leveling fire safing insulation per manufacturer's instructions.
- B. Plastic piping passing through fire rated floors and fire rated walls shall be provided with firestop by providing intumescent wrap strip around the pipe, enclosed in steel collar attached to structure.
- C. Cracks, Voids, or Holes Up to 4" Diameter: Use non-sag or self-leveling putty or caulking, one-piece intumescent elastomer, non-corrosive to metal, compatible with synthetic cable jackets, and capable of expanding 10 times when exposed to flame or heat, UL listed.
- D. Openings 4" or Greater: Use sealing system capable of passing 3-hour fire test in accordance with ASTM E814, consisting of wall wrap or liner, partitions, and end caps capable of expanding when exposed to temperatures of 250 to 350 degree F (121 to 177 degree C), UL listed.
- E. Seal all holes or voids made by penetrations to ensure an effective barrier against smoke, fire, toxic and combustible gases.
- F. Unless protected, from possible loading or traffic, install firestopping materials in floors having void openings or four (4) inches or more to support the same floor load requirements.
- G. Manufacturer: Subject to compliance with requirements, provide non-sag and self-leveling fire barrier caulk, wrap/strip, moldable putty and sheet forms of one of the following:
 - 1. 3M Brand.
 - 2. Flame Stop.
 - 3. Dow Corning.
 - 4. Metacaulk.
 - 5. Engineer Pre-Approved Equivalent.
- H. Horizontal penetrations through fire rated walls where plenum rated cables or tubing bundles are being installed shall be made with EZ-Path Fire-rated Pathway by Specified Technologies, Inc. or Engineer Pre-Approved Equivalent.

2.9 MECHANICAL SLEEVE SEALS

- A. Modular mechanical type, consisting of interlocking synthetic rubber links shaped to continuously fill annular space between pipe and sleeve, connected with bolts and pressure plates which cause rubber sealing elements to expand when tightened, providing watertight seal and electrical insulation.
- B. Manufacturer: Thunderline or Engineer Pre-Approved Equivalent.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install pipe for plumbing and mechanical systems as shown on the Drawings, as called for in other Sections, and as specified herein
- B. Arrange and install piping approximately as indicated, straight, plumb, and as direct as possible, form right angles on parallel lines with building walls. Keep pipes close to walls, partitions, and ceilings, offsetting only where necessary to follow walls and avoid interference with other mechanical items. Locate groups of pipes parallel to each other; space at a distance to permit applying full insulation and to permit access for servicing valves. Piping to be run in concealed locations unless indicated exposed, or in equipment rooms.
- C. Install horizontal piping as high as possible without sags or humps so that proper grades can be maintained for drainage. Branch piping shall come off the tops of mains unless shown otherwise.
- D. Locate valves within reachable distance from equipment being served for easy access and operation. Do not locate valves with stems below horizontal.
- E. Check piping for interference with other trades; avoid placing water pipes over electrical equipment.
- F. Verify final equipment locations before roughing in.
- G. Where rough-ins are required for equipment furnished by others, verify exact rough-in dimensions with Owner or equipment supplier before roughing-in.
- H. Install shutoff valve close to water main on each branch and riser serving plumbing fixtures or equipment, on each water supply to equipment, and on each water supply to plumbing fixtures that do not have supply stops. Use ball or gate valves for piping NPS 2 (DN 50) and smaller. Use butterfly or gate valves for piping NPS 2-1/2 (DN 65) and larger.
- I. Install drain valves for equipment at base of each water riser, at low points in horizontal piping, and where required to drain water piping.
 - 1. Install hose-end drain valves at low points in water mains, risers, and branches.
 - 2. Install stop-and-waste drain valves where indicated.

3.2 SLEEVES

- A. Install sleeves for piping passing through floors, roof, walls and foundations.
- B. Install fire-proofing per manufacturer's written instructions.

3.3 ESCUTCHEONS

- A. Install escutcheons for pipes entering finished spaces.

3.4 MECHANICAL SLEEVE SEAL INSTALLATION

- A. Install mechanical sleeve seals at all pipe penetrations through foundations below grade.
- B. Loosely assemble rubber links around pipe and bolts and pressure plates located under each bolt head and nut. Push into sleeve and center. Tighten bolts until links have expanded to form watertight seal.

3.5 PIPE PENETRATIONS

- A. Penetrations shall be free of debris and dirt. Dam the penetration (when required) with an acceptable material. Apply firestop material to the penetration per manufacturer's installation instructions. Use a caulking gun, putty knife or other normal trade tools. Remove damming materials where necessary after cure. Clean up with Xylene.

3.6 FIRE SAFING

- A. Install fire safing at all penetrations through walls, floors, etc. per manufacturer's installation instructions as required to meet UL listing.

3.7 FIELD QUALITY CONTROL

- A. Inspect domestic water piping as follows:
 - 1. Do not enclose, cover, or put piping into operation until it has been inspected and approved by authorities having jurisdiction.
 - 2. During installation, notify authorities having jurisdiction at least 24 hours before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction:
 - a. Roughing-in Inspection: Arrange for inspection of piping before concealing or closing-in after roughing-in and before setting fixtures.
 - b. Final Inspection: Arrange final inspection for authorities having jurisdiction to observe tests specified below and to ensure compliance with requirements.
 - 3. Re-inspection: If authorities having jurisdiction find that piping will not pass test or inspection, make required corrections and arrange for re-inspection.
 - 4. Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.
- B. Test domestic water piping as follows:
 - 1. Fill domestic water piping. Check components to determine that they are not air bound and that piping is full of water.
 - 2. Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired. If testing is performed in segments, submit separate report for each test, complete with diagram of portion of piping tested.
 - 3. Leave new, altered, extended, or replaced domestic water piping uncovered and unconcealed until it has been tested and approved. Expose work that was covered or concealed before it was tested.
 - 4. Cap and subject piping to static water pressure of 50 psig (345 kPa) above operating pressure, without exceeding pressure rating of piping system materials. Isolate test source and allow to stand for four hours. Leaks and loss in test pressure constitute defects that must be repaired.
 - 5. Repair leaks and defects with new materials and retest piping or portion thereof until satisfactory results are obtained.
 - 6. Prepare reports for tests and required corrective action.

3.8 ADJUSTING

- A. Perform the following adjustments before operation:

1. Close drain valves, hydrants, and hose bibbs.
2. Open shutoff valves to fully open position.
3. Open throttling valves to proper setting.
4. Remove plugs used during testing of piping and plugs used for temporary sealing of piping during installation.
5. Remove and clean strainer screens. Close drain valves and replace drain plugs.
6. Remove filter cartridges from housings and verify that cartridges are as specified for application where used and are clean and ready for use.
7. Check plumbing specialties and verify proper settings, adjustments, and operation.

3.9 CLEANING

- A. Domestic water piping shall be cleaned and disinfected prior to substantial completion. Immediately prior to occupancy, the system(s) shall be flushed and a water sample submitted to the local Water Works for testing.
- B. Clean and disinfect potable domestic water piping as follows:
 1. Purge new piping and parts of existing domestic water piping that have been altered, extended, or repaired before using.
 2. Use purging and disinfecting procedures prescribed by authorities having jurisdiction or, if methods are not prescribed, procedures described in either AWWA C651 or AWWA C652 or as described below:
 - a. Flush piping system with clean, potable water until dirty water does not appear at outlets.
 - b. Fill and isolate system according to either of the following:
 - 1) Fill system or part thereof with water/chlorine solution with at least 50 ppm (50 mg/L) of chlorine. Isolate with valves and allow to stand for 24 hours.
 - 2) Fill system or part thereof with water/chlorine solution with at least 200 ppm (200 mg/L) of chlorine. Isolate and allow to stand for three hours.
 - (a) Flush system with clean, potable water until no chlorine is in water coming from system after the standing time.
 - (b) Submit water samples in sterile bottles to authorities having jurisdiction. Repeat procedures if biological examination shows contamination.
- C. Clean interior of domestic water piping system. Remove dirt and debris as work progresses.
- D. Prepare and submit reports of purging and disinfecting activities.

END OF SECTION

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**SECTION 23 0500
COMMON WORK RESULTS FOR HVAC**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. The work shall include the furnishings of systems, equipment and materials specified in this Division and as called for on the Mechanical Drawings to include supervision, quality control, operation, methods and labor for the fabrication, installation, start-up and tests for the complete mechanical installation. The work shall also include the furnishing of necessary hoisting facilities to set materials and equipment in place and the furnishing of any scaffolding and transportation associated with this work.
- B. Examine the project site and become familiar with existing conditions which will affect the work. Review the drawings and specifications of other trades and take note of conditions to be created which will affect the work. All conditions shall be considered in the preparation of bids; no additional compensation will be made on the behalf of this Contractor.
- C. Provide labor necessary to demolish the existing mechanical system as shown on the drawings, as described in Part 3, Existing Conditions, or as required.
- D. Where noted on the drawings or where called for in other sections of the specification, the Contractor for this division shall install equipment furnished by others, and shall make required service connections. Verify with the supplier of the equipment the requirements for the installation. This contractor shall be responsible for the removal and installation of railings, piping, ductwork, louvers, etc. as required to install new equipment. Coordinate shipping splits for all equipment provided by this contractor.

1.2 DAMAGE

- A. The Contractor shall be responsible for damage to the work of other trades or to the building and its contents, caused by equipment installation.

1.3 PERMITS AND INSPECTIONS

- A. Obtain and furnish necessary permits and inspection certificates for material and labor furnished. Permits and certificates shall be obtained from the proper inspection authorities. The cost of permits, certificates and fees required in connection with the installation shall be borne by the Contractor, unless otherwise noted in the detailed contractual description preceding these specifications. Where applications are required for the procuring of utility services to the building, see that such application is properly filed with the utility, and that information required for such an application is presented to the extent and in the form required by the utility company.

1.4 CODES AND STANDARDS

- A. Applicable provisions of the following codes and standards are hereby imposed on a general basis for the mechanical work (in addition to specific applications specified by individual work sections of these specifications):
- B. If any work indicated on the drawings or specified herein conflicts in any way with any of the rules and regulations of the above authorities, the Contractor shall notify the Architect/Engineer in writing 72 hours before bids are opened. In the event the Contractor fails to notify the Architect/Engineer and changes are required by said conflicts, the Contractor shall make such changes as are required without additional cost to this Owner.

IDAS - WRC Decentralization Ph 5- Tunnel Abandonment

IDAS Project # 9279.50

SH Project # 2240007040

- C. Installations must be safe in every respect, and must not create a condition which will be harmful to building occupants; to operating, installing or testing personnel; to workmen; or to the public. The contractor for each installation shall be solely responsible for providing installations which will meet these conditions. If the Contractor believes that the installation will not be safe for all parties, report these beliefs in writing to the Architect/Engineer before any equipment is purchased or work is installed, giving recommendations. The Architect/Engineer will work out required changes and adjustments in contract price where adjustments are warranted.

1.5 DRAWINGS

- A. A complete set of project documents shall be on the site at all times. Prior to installing any of the work, check the drawings for dimensions and see that the work does not interfere with clearance required for ceilings, beams, foundations, finished columns, pilasters, partitions and electrical equipment as shown on the drawings and details. After work is installed and it develops that interferences occur which have not been called to the Architect/Engineer's attention before the installation, the Contractor shall, at his own expense, make such changes in his work as directed by the Architect/Engineer.
- B. The contract drawings for mechanical work are in part diagrammatic, intended to convey the scope of work and indicate general arrangement and approximate sizes and locations of equipment and materials. Where job conditions require reasonable changes in indicated locations and arrangement, the Contractor shall make such changes as directed by the Architect/Engineer, without additional cost to the Owner.
- C. Because of the scale of the drawings, certain basic items such as pipe fittings, access panels, and sleeves may not be shown; but where such items are required by other sections of these specifications or where they are required by the nature of the work, they shall be furnished and installed. Rough-in dimensions and locations shall be verified with the supplier of equipment furnished by other trades, or by the Owner, prior to the time of roughing-in.
- D. Equipment specification may not deal individually with minute items required such as components, parts, controls and devices which may be required to produce the equipment performance specified, or as required to meet the equipment warranties. Where such items are required, they shall be included by the supplier of the equipment, whether or not specifically called for.
- E. The drawings and the specifications are cooperative and supplementary. It is the intent of both said drawings and specifications to cover all mechanical requirements in their entirety as nearly as possible. The Contractor shall closely check the drawings and specifications for any obvious errors or omissions and bring any such condition to the attention of the Architect/Engineer prior to the receipt of bids, in order to permit clarification by means of a mailed Addendum. If there is no question prior to the bid proposal date, the Architect/Engineer shall assume that the drawings and specifications are complete and correct and will expect the intent of said documents to be complied with, and the installation to be complete in all respects, according to said intent.
- F. Locate equipment which must be serviced, operated or maintained in fully accessible positions. Minor deviations from the contract drawings may be made to allow for better accessibility, but changes of magnitude, or which involve extra cost, shall not be made without prior approval. Ample space shall be allowed for removal of parts that may require replacement or service in the future.

- G. All valves, fire dampers, automatic dampers, smoke dampers, damper operators, reheat coils, etc. shall be accessible for maintenance purposes. Locate items carefully and coordinate with other trades so that each piece of equipment is accessible and functional. Items located above a non-accessible ceiling, chase, or soffit shall be accessible through an access door. Coordinate location of access doors with the general contractor.

1.6 RESPONSIBILITY

- A. The Contractor's responsibility shall not end with the installation and connecting of the various apparatus. It shall include the services of an experienced superintendent, who shall be constantly in charge of the work, together with the qualified journeymen, helpers and laborers required to properly unload, install, connect, adjust, start, operate and test the work involved, including equipment and materials furnished by other trades or by the Owner, until such time as the entire mechanical installation functions properly in every detail.

1.7 COORDINATION

- A. Coordinate the work with other trades prior to installation.
- B. No piping, ducts or equipment foreign to the electrical equipment or architectural appurtenances shall be run over the top of any electrical panels or electrical equipment, in accordance with NEC 110-16 and 384-4. This does not prohibit sprinkler protection for the installation.
- C. The determination of quantities of material and equipment required shall be made from the drawings. Schedules on the drawings and in the specifications are completed as an aid, but where discrepancies arise, it shall be the Contractor's responsibility to provide the required quantity.
- D. Where the specifications state that equipment shall be furnished, installed or provided, it shall be understood to mean this Contractor shall furnish and install completely, unless it is specifically stated that the equipment is to be furnished and installed by others.
- E. The Architect/Engineer reserves the right to determine space priority of the contractors in the event of interference between the piping and equipment of the various contractors. Conflicts between the drawings and specifications, or between requirements set forth for the various trades, shall be called to the attention of the Architect/Engineer. If clarification is not asked for prior to the taking of bids, it will be assumed that none is required, and that the Contractor has submitted his bid in conformance with plans and specifications as issued and that no interference exists.
- F. No piping, ducts or equipment foreign to an elevator hoistway and machine room shall be run inside the hoistway and machine room in accordance with NEC 620-37 and ASME A17.1, 102.2.

1.8 GUARANTEE AND MAINTENANCE

- A. Materials and equipment shall be guaranteed to be free from defects and to be new equipment; no secondhand, used or salvaged equipment will be allowed.
- B. Keep the entire portion of the work in repair, without additional cost to the Owner, so far as defects in workmanship, apparatus, material or construction are concerned for one (1) year from the date of final acceptance, except as otherwise specified herein.
- C. Equipment, which fails to meet performance ratings as specified and shown on the drawings, shall be removed and replaced by new equipment that meets the specified requirements, without additional cost to the Owner.

IDAS - WRC Decentralization Ph 5- Tunnel Abandonment

IDAS Project # 9279.50

SH Project # 2240007040

- D. Materials and workmanship shall be subject to the review of the Architect/Engineer, in whose presence various tests shall be made as required by these specifications.

PART 2 PRODUCTS

2.1 SUBMITTAL PROCESS

- A. Submit shop drawings and catalog data for mechanical equipment specified in Division 23 in accordance with Division 01.
- B. Submittal data for mechanical equipment shall consist of shop drawings and/or catalog cuts showing technical data necessary to evaluate the material or equipment to include dimensions, wiring diagrams, performance curves, rating, control sequence, and other descriptive data necessary to describe fully the item proposed and its operating characteristics. Shop drawings shall be submitted on equipment and materials as required by the specifications.
- C. Approval of materials, including alternate or substitute items, shall be obtained in writing from the Architect/Engineer, verbal approval will not be considered binding.
- D. Shop drawings shall be submitted and shall have been signed, checked, approved, and initialed by the Contractor prior to submittal to the Architect/Engineer. The Architect/Engineer will review shop drawings to aid in interpreting the plans and specifications, and will in so doing assume that the shop drawings conform to specified requirements set forth in this specification. The approval of the shop drawing by the Architect/Engineer does not relieve the Contractor of the responsibility of complying with elements of the specification. The name of the job, Architect/Engineer, location, and specification section shall appear on all pages of shop drawings. Equipment marks (such as EF-1, RTU-1) shall be indicated for each item.
- E. At the completion of the job, furnish one (1) electronic copy of parts lists, operating and maintenance instructions, and manuals bookmarked in one electronic file.
- F. At the completion of the project, prepare and submit to the Owner record drawings showing the location of piping and ductwork. Drawing shall give accurate dimensions of such equipment for future use by the Owner. This drawing shall be submitted as soon as work is completed and before authorization of final payment.

2.2 SUBCONTRACTORS AND MATERIALS

- A. Submit to the Architect/Engineer for review, when requested, a list of subcontractors, materials and equipment proposed to be used. The list must be reviewed by the Architect/Engineer before this Contractor may enter into any subcontractual agreement. Equipment, materials, and devices, etc. shall be subject to the review of the Architect/Engineer, whether or not said items are herein specified.

2.3 STANDARDS OF MATERIALS AND WORKMANSHIP

- A. Materials shall be new, complete with manufacturer's guarantee or warranty, and shall be as listed by Underwriters Laboratories (UL), Inc., Air Movement and Control Association (AMCA), American Gas Association (AGA), Air Conditioning and Refrigeration Institute (ARI), etc., if a standard has been established by that agency for the type of material.
- B. Materials shall also comply with applicable standards of the National Electrical Manufacturer's Association, National Board of Fire Underwriters, National Fire Protection Association, National Safety Council, National Bureau of Standards, the National Electrical Code and the Williams-Steiger Occupational Safety and Health Act of 1970. Such standards are hereby made a part of these specifications.

- C. Work shall be performed by workmen skilled in the particular craft, shall be executed in a workmanlike manner, and shall present a neat mechanical appearance when completed. Align, level and adjust equipment for satisfactory operation, and install so that connecting and disconnecting of piping and accessories can be made readily and so that parts are easily accessible for inspection, operation and maintenance. Methods and techniques of installation shall be subject to the review of the Architect/Engineer.
- D. Materials shall be the standard product of a reputable manufacturer regularly engaged in the manufacture of the specific product. Materials of the same type of class shall be the products of one manufacturer. For example, fans shall be from the same manufacturer and pumps from the same manufacturer.
- E. Materials shall be protected from damage, and stored indoors or protected from the weather at all times, unless other storage arrangements are approved by the Architect/Engineer.
- F. Bearing lubrication fittings shall be as recommended by the manufacturer and shall be extended, where necessary, to an accessible location.
- G. Material and equipment shall be installed in strict accordance with the manufacturer's recommendations.

2.4 MATERIAL SUBSTITUTIONS

- A. Proposals as submitted shall be based on the products specifically named in the specification or on the drawings. Material or equipment by manufacturers other than those specified may be used only by permission of the Architect/Engineer. Such permission for substitution must be requested, in writing in accordance with Division 01.
- B. The Architect/Engineer reserves the sole right for the approval of proposed material or equipment, and the phrase, "or approved equivalent", used in these specifications, or on the drawings, shall be interpreted to mean an equivalent approved by the Architect/Engineer.
- C. Changes required by alternate equipment shall be made at no additional cost to the Owner; and costs incurred by other trades, public utilities or the Owner, as a result of the use of such equipment, shall be the responsibility of the Contractor.
- D. Furnish to the Architect/Engineer, when requested, samples of proposed material or equipment substitutions. These samples shall remain with the Architect/Engineer as long as needed.
- E. Identify the differences in alternate material or equipment as compared to that specified, and indicate the benefits to the project as a result of selecting the alternative.
- F. The Architect/Engineer reserves the right to refuse approval of equipment which does not meet the specification, in their opinion, or of equipment for which no local experience of satisfactory service is available. The Architect/Engineer further reserves the right to reject equipment for which maintenance service and the availability of replacement parts is questionable.

PART 3 EXECUTION

3.1 EXISTING CONDITIONS

- A. Examine the existing buildings and grounds and become familiar with the conditions as they exist, or that will in any manner affect the work under this contract. No allowance will be made subsequently, in this connection, on behalf of the Contractor for any error or negligence by the Contractor.

IDAS - WRC Decentralization Ph 5- Tunnel Abandonment

IDAS Project # 9279.50

SH Project # 2240007040

- B. Existing equipment, such as duct or pipe, in or on the existing building and grounds which is to be replaced, or which interferes in any way with the remodeling of the existing facilities and/or installation of new equipment, shall be removed from the premises or relocated by this Contractor, as directed by the Architect/Engineer. Do not remove from the premises, any equipment that may have maintenance value to the Owner without permission of the Owner. Equipment, duct or pipe not to be reused shall be removed from the premises, unless otherwise noted herein or shown on the drawings.
- C. Where existing equipment is removed or changed, all duct and pipe no longer in service shall be removed and stubs plugged as directed by the Architect/Engineer. Building surfaces damaged and openings left by removal of equipment shall be repaired by the proper trades and paid for by this Contractor, unless otherwise noted on the drawings. The cutting and fitting shall be done by this Contractor. The cutting of floor, ceiling or wall surfaces shall be done by this Contractor with extreme care, in order to avoid any disrupting or damage of existing utility services which may be encountered. Coordinate with other trades and with the General Contractor to minimize the damage to the building in order to reduce the amount of patching required.
- D. Where new openings are cut and concealed piping is encountered, such items shall be removed or relocated as required. Where systems to be removed stub through floors, walls or ceilings, openings shall be patched so that no evidence of the former installation remains.
- E. Existing active services (water, gas, sewer, electric), when encountered, shall be protected against damage. Do not prevent or disturb operation of active services that are to remain. If active services are encountered which require relocation, make request to authorities with jurisdiction for determination of procedures. Where existing services are to be abandoned, they shall be terminated in conformance with requirements of the utility or municipality having jurisdiction.
- F. The location, size and elevation of underground utilities shown on the drawings are in accordance with data supplied by the Owner and/or the various utility companies. The Contractor shall verify this data and shall report any discrepancies to the Architect/Engineer before submitting his bid.

3.2 INTERRUPTION OF SERVICE

- A. Changes in service shall be made so as to provide a minimum of interference with the operation of services in the building. When changes require shutdown of building services, notify the proper building authorities no less than 24 hours in advance and obtain approval from these authorities before making changes. Such notices shall give duration and nature of shutdown. Temporary arrangements shall be approved by the Architect/Engineer and/or Owner.
- B. Any and all interruptions to building services shall be in accordance with Division 01.

3.3 OPENINGS, CUTTING, AND PATCHING

- A. The General Contractor shall coordinate the placing of openings in the new structure, as required for the installation of the mechanical work.
- B. Furnish to the General Contractor the accurate locations and sizes for required openings. This shall not relieve this Contractor of the responsibility of checking to assure that proper size openings are provided. When additional patching is required due to this Contractor's failure to inspect this work, this Contractor shall make arrangements for the patching required to properly close the opening, to include patch painting. This Contractor shall pay any additional cost incurred in this respect.

- C. When cutting and patching of the structure is made necessary due to this Contractor's failure to install piping, ducts, sleeves or equipment on schedule, or due to this Contractor's failure to furnish, on schedule, the information required for the leaving of openings, it shall be this Contractor's responsibility to make arrangements for this cutting and patching. This Contractor shall pay any additional cost incurred in this respect.
- D. Provide cutting and patching and patch painting in the existing structure, as required for the installation of the work. Furnish lintels and supports as required for openings. Cutting of structural support members will not be permitted without prior approval of the Architect/Engineer. Extent of cutting shall be minimized. Use core drills, power saws or other machines which will provide neat, minimum openings. Patching shall match adjacent materials and surfaces and shall be performed by craftsmen skilled in the respective craft required.

3.4 CONCRETE AND MASONRY WORK

- A. Concrete work included herein or shown on the drawings shall be done only by experienced cement finishers. Brickwork, where included, shall be laid only by experienced brick masons. Brick shall be of uniform size, hard burned, and shall be laid in cement mortar, except for patch work at a location where cement and lime mortar has previously been used. Exposed, finish brickwork shall match existing brickwork as closely as practical and shall be to the satisfaction of the Architect/Engineer and Owner.
- B. Concrete bases and pads for mechanical equipment will be furnished by General Contractor. This Contractor shall coordinate size and location.
- C. Furnish equipment anchor bolts and be responsible for their proper installation and accurate location.

3.5 ROOF OPENINGS

- A. Roof openings required by this Contractor that are not shown on the Structural or Architectural Drawings shall be cut and (if necessary) reinforced by an experienced roofing contractor.
- B. Roof penetrations for duct and piping shall be through curbed roof openings. Equipment supports shall be by curbed and flashed runners meeting current National Roofing Contractor Association (NRCA) standards and details. Pitch pockets, pitch pans, and wood blocking are not acceptable.
- C. All roof work shall be completed such that it does not void any existing roof warranty.

3.6 PAINTING

- A. The finish of any item that has been marred, scratched or damaged in any way by this Contractor shall be repainted at the expense of this Contractor, and to the satisfaction of the Architect/Engineer and the Owner.
- B. Painting and finishing of exposed mechanical systems including piping and duct shall be as shown on the drawings and in DIVISION 09 - FINISHES.

3.7 CLEANING

- A. Keep the premises clean of all debris, caused by the work as described in DIVISION 01.
- B. At the conclusion of the construction, the site shall be thoroughly cleaned of all rubble, debris and unused material and shall be left in good order. Closed off spaces shall be cleaned of waste such as material, cartons, and wood frame members used in the construction.

3.8 SUSPENSION FROM WOOD STRUCTURAL MEMBERS

- A. In general, concentrated or other loads shall not be suspended directly from the bottom of wood structural members, unless approved by the Architect/Engineer. Loads suspended from open web joists or trusses may be transferred to the bottom chord of the structural member at the panel points. Loads suspended from solid web joists shall be transferred to the joists only through the top flange or web. Suspension systems shall be reviewed by the Architect/Engineer.

3.9 WIRING FOR MECHANICAL EQUIPMENT

- A. The electrical contractor will provide power to and connection of motors and equipment furnished by this Contractor. Where disconnect switches are not specified to be furnished with the equipment, the electrical Contractor will furnish disconnect switches for equipment furnished by this Contractor.
- B. Provide integral wiring, alarm wiring, control wiring, temperature control wiring and interlock wiring for equipment furnished, whether or not such wiring is furnished by the equipment vendor.
- C. Except where other Sections call for starters to be furnished by manufacturers as part of their equipment, the electrical contractor will furnish motor starters for motors furnished by this Contractor.
- D. Furnish to the electrical contractor, shop drawings and a schedule for motors and other mechanical equipment furnished, which require electrical services. The schedule shall include the locations for rough-ins, electrical loads, size, and electrical characteristics for services required.
- E. Additional costs incurred, where motors or equipment furnished by this Contractor require larger services or services of different electrical characteristics than those called for on the Electrical Drawings, due to the Contractor furnishing substitute equipment, shall be paid for by this Contractor.
- F. Review the Electrical Drawings and call to the attention of the Architect/Engineer, prior to bidding, omissions of electrical services required for equipment.
- G. Mechanical equipment which requires fuse protection, to maintain UL listing, shall be coordinated with the electrical contractor to provide such protection.

3.10 PROTECTION

- A. Special care shall be taken for the protection of equipment furnished by this Contractor. Equipment and material shall be protected from elements such as weather, painting and plastering until the project is completed. Damage from rust, paint or scratches shall be repaired as required to restore equipment to original condition.
- B. Protection of equipment during the plastering and painting of the building shall be the responsibility of the contractor performing that work, but this shall not relieve this Contractor of the responsibility of checking to assure that adequate protection is being provided.
- C. Where the installation or connection of equipment requires this Contractor to work in areas previously finished by other contractors, this Contractor shall be responsible that such areas are protected and are not marred, soiled or otherwise damaged during the course of such work. This Contractor shall arrange with the other contractors for repairing and refinishing of such areas which may be damaged.

- D. When heavy materials must be placed upon or transported over the roof deck, sheeting shall be placed to distribute the weight and support such materials. Any damage shall be immediately corrected at no cost to the Owner.

3.11 ASBESTOS IDENTIFICATION AND CONTROL

- A. In the event that suspected asbestos containing material (ACM) is encountered during the course of the work, cease operations in the immediate area and promptly notify the Architect/Engineer. Suspected materials will then be sampled and analyzed by the Owner. Should ACM be identified, the Owner's Representative will direct the procedures for abatement, either by subcontract to the Contractor or separate contractor. During abatement operations, cease operations in the immediate area of the abatement. Operations in other areas of the project may be performed, but care must be taken to control dust to avoid contamination of the abatement containment or air monitoring samples. The Contractor shall coordinate activities with the asbestos abatement contractor.
- B. Should no ACM be identified, operations may be resumed. Delays caused by identification, analysis or abatement may be added to the time of the contract, at the discretion of the Architect/Engineer by Change Order.

3.12 NOISE AND VIBRATION

- A. Be responsible for the installation of all equipment in such a manner as to control the transmission of noise and vibration from any installed equipment or system, so that the sound level does not exceed NC35 in any occupied space. Be responsible for the correction of any objectionable noise in any occupied area due to improperly installed equipment.

3.13 TESTS AND DEMONSTRATIONS

- A. Systems shall be tested and placed in proper working order prior to demonstrating systems to the Owner.
- B. Prior to acceptance of the mechanical installation, demonstrate to the Owner or his designated representatives essential features and functions of all systems installed, and instruct the Owner in the proper operation and maintenance of such systems.
- C. Furnish the necessary trained personnel to perform the demonstrations and instructions, and arrange to have the manufacturer's representatives for the system present to assist with the demonstrations. The Owner and Contractor shall each sign a certification stating that the training has been performed and the Owner accepts same.

END OF SECTION

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**SECTION 23 1113
FACILITY FUEL-OIL PIPING**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Piping and fittings.
- B. Flanges and piping components.
- C. Pipe hangers and supports.
- D. Valves.

1.2 REFERENCE STANDARDS

- A. API RP 1615 - Installation of Underground Petroleum Storage Systems; 2011 (Reaffirmed 2020).
- B. ASME BPVC - Boiler and Pressure Vessel Code; 2023.
- C. ASME BPVC-IX - Boiler and Pressure Vessel Code, Section IX - Qualification Standard for Welding, Brazing, and Fusing Procedures; Welders; Brazers; and Welding, Brazing, and Fusing Operators; 2023.
- D. ASME B1.1 - Unified Inch Screw Threads (UN, UNR, and UNJ Thread Forms); 2024.
- E. ASME B16.3 - Malleable Iron Threaded Fittings: Classes 150 and 300; 2021.
- F. ASME B16.5 - Pipe Flanges and Flanged Fittings: NPS 1/2 through NPS 24 Metric/Inch Standard; 2020.
- G. ASME B16.9 - Factory-Made Wrought Butt welding Fittings; 2024.
- H. ASME B16.11 - Forged Fittings, Socket-Welding and Threaded; 2021.
- I. ASME B16.12 - Cast Iron Threaded Drainage Fittings; 2025.
- J. ASME B18.2.1 - Square, Hex, Heavy Hex, and Askew Head Bolts and Hex, Heavy Hex, Hex Flange, Lobed Head, and Lag Screws (Inch Series); 2012 (Reaffirmed 2021).
- K. ASME B18.2.2 - Nuts for General Applications: Machine Screw Nuts; and Hex, Square, Hex Flange, and Coupling Nuts (Inch Series); 2022.
- L. ASME B31.3 - Process Piping; 2022, with Errata (2023).
- M. ASME B31.9 - Building Services Piping; 2020.
- N. ASTM A53/A53M - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2024.
- O. ASTM A105/A105M - Standard Specification for Carbon Steel Forgings for Piping Applications; 2024.
- P. ASTM A182/A182M - Standard Specification for Forged or Rolled Alloy and Stainless Steel Pipe Flanges, Forged Fittings, and Valves and Parts for High-Temperature Service; 2025a.
- Q. ASTM A234/A234M - Standard Specification for Piping Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and High Temperature Service; 2023a.
- R. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength; 2021.

IDAS - WRC Decentralization Ph 5- Tunnel Abandonment

IDAS Project # 9279.50

SH Project # 2240007040

- S. ASTM A563/A563M - Standard Specification for Carbon and Alloy Steel Nuts (Inch and Metric); 2021a.
- T. ASTM D229 - Standard Test Methods for Rigid Sheet and Plate Materials Used for Electrical Insulation; 2019, with Editorial Revision.
- U. ASTM F844 - Standard Specification for Washers, Steel, Plain (Flat), Unhardened for General Use; 2019 (Reapproved 2024).
- V. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation; 2018, with Amendment (2019).

1.3 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.
- B. Product Data: Provide data on pipe materials, pipe fittings, valves, and accessories. Provide manufacturers catalog information. Indicate valve data and ratings.

1.4 QUALITY ASSURANCE

- A. Welding Materials and Procedures: Comply with ASME BPVC.
- B. Welders Certification: In accordance with ASME BPVC-IX.
- C. Valves: Manufacturer's name and pressure rating marked on valve body.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Protect piping and fittings from soil and debris with temporary end caps and closures. Maintain in place until installation.

PART 2 PRODUCTS

2.1 PIPING AND FITTINGS

- A. Regulatory Requirements:
 - 1. Comply with the material, fabrication, and operating requirements of ASME B31.3, except as modified herein.
 - 2. Comply with ASME B31.9 for installation of fuel oil piping.
 - 3. Comply with applicable regulations for installation of fuel oil system.
- B. Comply with the material, fabrication, and operating requirements of ASME B31.3, except as modified herein.
- C. Carbon Steel Pipe:
 - 1. Comply with One of the Following:
 - a. ASTM A53/A53M, Type E or S, Grade B, seamless or electric welded, Schedule 80 for pipe less than 2-1/2 inches (65 mm) in diameter or Schedule 40 for pipe 2-1/2 inches (65 mm) in diameter and larger.
 - 2. End Connections:
 - a. Forged, socket weld type, complying with ASTM A182/A182M and ASME B16.11 for pipe or fittings less than 2-1/2 inches (65 mm).

- b. Buttweld type complying with ASTM A234/A234M, Grade WPB and ASME B16.9 for pipe or fittings 2-1/2 inches (65 mm) and larger of the same wall thickness as the adjoining pipe.
- c. Threaded type complying with ASME B16.3, Class 150 or ASME B16.11.

2.2 FLANGES, COUPLINGS, AND PIPING COMPONENTS

A. Flanges:

- 1. Provide flanged end connections on equipment, fittings, piping, piping components, adapters, couplings, and valves complying with ASME B16.5, Class 150.
- 2. Carbon Steel: Comply with ASTM A105/A105M.
- 3. Gaskets, Non-Isolating:
 - a. 1/8 inch (3.2 mm) thick.
 - b. Comply with ASME B16.12, raised-faced type.
 - c. Material: Buna-N.
- 4. Gaskets, Electrically Isolating:
 - a. Comply with ASTM D229.
 - b. Electrical Insulating Material: 1000 ohms resistance.
 - c. Chemically compatible with fuel handled.
 - d. Full face type.
 - e. Provide full surface, spiral-wound, mylar, insulating sleeves between bolts and holes of flanges.
 - f. Furnish bolt shank diameter not less than diameter at root of threads.
 - g. Provide high-strength 1/8 inch (3.2 mm) thick, phenolic, insulating washers next to flanges with flat, circular, stainless steel washers over the insulating and under bolt heads and nuts.
 - h. Supply adequate bolt length to accommodate insulating gaskets and stainless steel washers.
- 5. Bolts, Nuts, and Washers:
 - a. Comply with ASME B18.2.1 and ASME B18.2.2.
 - b. Bolts:
 - 1) Regular hexagonal type.
 - 2) Threaded in accordance with ASME B1.1, Class 2A fit, Coarse Thread Series, for sizes 1 inch (25 mm) and smaller and Eight-Pitch Thread Series for sizes larger than 1 inch (25 mm).
 - 3) Provide sufficient length to obtain full bearing on nuts, projecting no more than two full threads beyond nuts with bolts tightened to required torque.
 - c. Nuts:
 - 1) Hexagonal, heavy series type.

IDAS - WRC Decentralization Ph 5- Tunnel Abandonment

IDAS Project # 9279.50

SH Project # 2240007040

- 2) Threaded in accordance with ASME B1.1, Class 2B fit, Coarse Thread Series for sizes 1 inch (25 mm) and smaller and Eight-Pitch Thread Series for sizes larger than 1 inch (25 mm).
- d. Carbon Steel Material:
 - 1) Bolts: Comply with ASTM A307, Grade B, hot-dipped galvanized.
 - 2) Nuts: Comply with ASTM A563/A563M, Grade A, hex-style, hot-dipped galvanized.
 - 3) Washers: Comply with ASTM F844, hot-dipped galvanized.
- B. Piping Components:
 1. Provide components that meet the material, fabrication, and operating requirements of ASME B31.3, except as modified herein.
 2. Pressure Design Class: Class 150, as defined in ASME B16.5.

2.3 PIPE HANGERS AND SUPPORTS

- A. Provide hangers and supports that comply with MSS SP-58.
 1. If type of hanger or support for a particular situation is not indicated, select appropriate type using MSS SP-58 recommendations.
- B. Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
- C. Floor Support: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.

PART 3 EXECUTION

3.1 PIPING INSTALLATION

- A. Install in accordance with manufacturer's instructions and API RP 1615.
- B. Route piping in orderly manner and maintain gradient.
- C. Group piping whenever practical at common elevations.
- D. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.
- E. Provide clearance for installation of insulation and access to valves and fittings.

END OF SECTION

**SECTION 23 2213
STEAM AND CONDENSATE HEATING PIPING**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Provide equipment, materials, tools, labor, and supervision necessary to furnish, fabricate, and install complete piping system.

1.2 STANDARDS AND CODES

- A. Pipe materials specified in this Section shall apply to technical sections of Division 23 of the Project Manual where applicable. Special requirements as may be called for in the technical sections, or shown on the Drawings, shall take precedence over General Requirements herein. Piping located in plenums shall be plenum rated for fire and smoke.

1.3 PRODUCT HANDLING

- A. Provide factory-applied plastic end-caps on each length of pipe and tube. Maintain end-caps through shipping, storage, and handling as required to prevent pipe-end damage and eliminate dirt and moisture from inside of pipe and tube.
- B. Where possible, store pipe and tube inside and protected from weather. Where necessary to store outside, elevate well above grade and enclose with durable, waterproof wrapping.
- C. Protect flanges and fittings from moisture and dirt by inside storage and enclosure, or by packaging with durable, waterproof wrapping.

1.4 SUBMITTALS

- A. Submit manufacturer's product data and installation instructions. Data shall include manufacturer, model, size, dimensions, and pressure ratings.
- B. Submit piping schedule listing each pipe material used and systems served.

PART 2 PRODUCTS

2.1 MATERIAL

- A. Material and Service
 - 1. Black steel pipe seamless, Schedule 40, ASTM A53: Steam supply to 80 psig.
 - 2. Black steel pipe, Schedule 80, ASTM A53: Steam supply over 80 psig and steam condensate return. Steam vent piping.
- B. Fittings
 - 1. Threaded pipe - malleable iron fittings, 125-pound standard flat band water pattern.
 - 2. Welded pipe - welded neck fittings and welded neck flanges, same material and strength as pipe.
 - 3. Carbon steel pipe - material and strength shall correspond to pipe specifications. ANSI B31.5.
- C. Joints

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IDAS Project # 9279.50

SH Project # 2240007040

1. Threaded pipe - make joints using approved pipe joint compound, applied to male threads only. Cut pipe square, cut threads clean, remove burrs, and ream ends to full size of bore. Threads shall not be exposed on chromium-plated pipe.
2. Welded pipe - welding shall conform to welding section of ANSI B31.1 "Code for Power Piping". Pipe up to 2" diameter shall be screwed. Pipe 2 ½" diameter and over shall be welded.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install pipe for plumbing and mechanical systems as shown on the Drawings, as called for in other Sections, and as specified herein.
- B. Arrange and install piping approximately as indicated, straight, plumb, and as direct as possible, form right angles on parallel lines with building walls. Keep pipes close to walls, partitions, and ceilings, offsetting only where necessary to follow walls and avoid interference with other mechanical items. Locate groups of pipes parallel to each other; space at a distance to permit applying full insulation and to permit access for servicing valves. Piping to be run in concealed locations unless indicated exposed, or in equipment rooms.
- C. Slope steam piping one inch in 40 feet (0.25 percent) in direction of flow. Use eccentric reducers to maintain bottom of pipe level.
- D. Slope steam condensate piping one inch in 40 feet (0.25 percent). Provide drip trap assembly at low points and before control valves. Run condensate lines from trap to nearest condensate receiver. Provide loop vents over trapped sections.
- E. Install horizontal piping as high as possible without sags or humps so that proper grades can be maintained for drainage. Branch piping shall come off the tops of mains unless shown otherwise.
- F. Locate valves within reachable distance from equipment being served for easy access and operation. Do not locate valves with stems below horizontal.
- G. Check piping for interference with other trades; avoid placing water pipes over electrical equipment.
- H. Where rough-ins are required for equipment furnished by others, verify exact rough-in dimensions with Owner or equipment supplier before roughing-in.

3.2 PIPING TESTS ALL STEAM HEATING SYSTEMS PIPING

- A. Test pressure piping in accordance with ANSI B31.
- B. General: Provide temporary equipment for testing, including pump and gauges. Test piping system before insulation is installed whenever feasible, and remove control devices before testing. Test each natural section of each piping system independently, but do not use piping system valves to isolate sections where test pressure exceeds valve pressure rating. Fill each section with water or air and pressurize for the indicated pressure and time.
 1. Required test period is 2 hours.
 2. Test each piping system at 150% of operating pressure indicated, but not less than 25-psi test pressure.
 3. Observe each test section for leakage at end of test period. Test fails if leakage is observed or if pressure drop exceeds 5% of test pressure.

- C. Repair piping systems sections that fail the required piping test, by disassembly and reinstallation, using new materials to the extent required to overcome leakage. Do not use chemicals, stop-leak compounds, mastics, or other temporary repair methods.
- D. Drain test water from piping systems after testing and repair work has been completed.
- E. Pipes shall be thoroughly flushed and cleaned prior to being put into service. The flushing water must not go through any air handler, boiler, heating coils, terminal heating coils, or unit heaters. Strainer screens are to be removed prior to the flushing operation and are to be replaced when the flushing operation has been completed.
 - 1. Flushing operations are to be reviewed with and approved by the Owner's representative prior to any flushing operation. Pipe scale, welding slag, and any other debris shall be removed from pipes. The Owner's representative shall determine when the flushing operation is complete.

END OF SECTION 23 2213

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**SECTION 26 0505
SELECTIVE DEMOLITION FOR ELECTRICAL**

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Electrical demolition.

PART 2 PRODUCTS

2.1 MATERIALS AND EQUIPMENT

- A. Materials and equipment for patching and extending work: As specified in individual sections.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that abandoned wiring and equipment serve only abandoned facilities.
- B. Demolition drawings are based on casual field observation and existing record documents.
- C. Report discrepancies to Architect/Engineer before disturbing existing installation.
- D. Beginning of demolition means installer accepts existing conditions.

3.2 PREPARATION

- A. Disconnect electrical systems in walls, floors, and ceilings to be removed.
- B. Provide temporary wiring and connections to maintain existing systems in service during construction. When work must be performed on energized equipment or circuits, use personnel experienced in such operations.
- C. Existing Electrical Service: Maintain existing system in service until new system is complete and ready for service. Disable system only to make switchovers and connections. Minimize outage duration.
 - 1. Obtain permission from Owner at least 72 hours before partially or completely disabling system.
 - 2. Make temporary connections to maintain service in areas adjacent to work area.

3.3 DEMOLITION AND EXTENSION OF EXISTING ELECTRICAL WORK

- A. Perform work for removal and disposal of equipment and materials containing toxic substances regulated under the Federal Toxic Substances Control Act (TSCA) in accordance with applicable federal, and state regulations. Applicable equipment and materials include, but are not limited to:
 - 1. PCB-containing electrical equipment, including transformers, capacitors, and switches.
 - 2. PCB- and DEHP-containing lighting ballasts.

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SH Project # 2240007040

3. Mercury-containing lamps and tubes, including fluorescent lamps, high intensity discharge (HID), arc lamps, ultra-violet, high pressure sodium, mercury vapor, ignitron tubes, neon, and incandescent.
 - B. Remove, relocate, and extend existing installations to accommodate new construction.
 - C. Remove abandoned wiring to source of supply.
 - D. Remove exposed abandoned conduit, including abandoned conduit above accessible ceiling finishes. Cut conduit flush with walls and floors, and patch surfaces.
 - E. Disconnect abandoned outlets and remove devices. Remove abandoned outlets if conduit servicing them is abandoned and removed. Provide blank cover for abandoned outlets that are not removed.
 - F. Disconnect and remove electrical devices and equipment serving utilization equipment that has been removed.
 - G. Disconnect and remove abandoned luminaires. Remove brackets, stems, hangers, and other accessories.
 - H. Repair adjacent construction and finishes damaged during demolition and extension work.
 - I. Maintain access to existing electrical installations that remain active. Modify installation or provide access panel as appropriate.
 - J. Extend existing installations using materials and methods compatible with existing electrical installations, or as specified.

3.4 CLEANING AND REPAIR

- A. Clean and repair existing materials and equipment that remain or that are to be reused.
- B. Panelboards: Clean exposed surfaces and check tightness of electrical connections. Replace damaged circuit breakers and provide closure plates for vacant positions. Provide typed circuit directory showing revised circuiting arrangement.

END OF SECTION