PROJECT MANUAL

SPECIFICATIONS FOR ASBESTOS ABATEMENT

Former Elkem Carbide (Auditor's Parcel D)
365 Carbide Lane
Keokuk, Iowa 52632

Prepared For:
City of Keokuk
501 Main Street
Keokuk, Iowa 52632

Prepared By:

8951 Windsor Parkway
Johnston, Iowa 50131

November 21, 2025

CERTIFICATIONS PAGE

PROJECT MANUAL

for

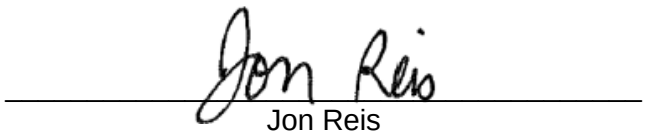
Specifications for Asbestos Abatement

Former Elkem Carbide (Auditor's Parcel D)

365 Carbide Lane

Keokuk, Iowa 52632

Specifications Prepared By:



Jon Reis
Eocene Environmental Group, Inc.
Accredited by the State of Iowa for Asbestos Project Design
License #25-12881 Expires 01-13-2026

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365 CARBIDE LANE, KEOKUK, IOWA 52632

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ASBESTOS ABATEMENT
FORMER ELKEM CARBIDE (AUDITOR'S PARCEL D)
365 CARBIDE LANE, KEOKUK, IA 52632

Time and Place for Filing Sealed Proposals: Sealed bids for the work consisting of asbestos abatement as stated below must be filed before 10:00 A.M. on December 29, 2025, in the Office of the City Clerk, City of Keokuk, 501 Main Street, Keokuk, Iowa 52632. Bidder must provide acknowledgement of addenda, if issued. The proposal shall be sealed in an envelope, properly identified as the Proposal with the project title and the name and address of the bidder and delivered at or before the time and at the place provided in the Notice and Instruction to Bidders. It is the sole responsibility of the bidder to see that its proposal is delivered prior to the time for opening bids, along with the appropriate bid security sealed in the separate envelope identified as Bid Security, if required, and attached to the outside of the bid proposal envelope. Any proposal received after the scheduled time for the receiving of proposals will be returned to the bidder unopened and will not be considered. Bidder shall include verification of license to remove asbestos meeting the requirements of Iowa Code, Chapter 88B.

Time and Place Sealed Proposals Will be Opened and Considered: Sealed proposals will be opened, and bids tabulated at 10:00 A.M. on December 29, 2025, in the Office of the City Clerk, City of Keokuk, 501 Main Street, Keokuk, Iowa 52632. Bid Proposals will be officially "Received" and acted upon January 5, 2026, at 5:30 pm at the City of Keokuk City Council Meeting, City Council Chambers at City Hall. The City of Keokuk reserves the right to reject any and all bids. Notice to proceed is expected to be on January 6, 2026.

Time for Commencement and Completion of Work: Work on the improvement shall commence upon approval of the contract by the City of Keokuk, and as stated in the Notice to Proceed. The Contractor shall have the project complete by February 15, 2026 (40 days after the Notice to Proceed).

Bid Security. Each bidder shall accompany its bid with bid security, as defined in Section 26.8 of the Iowa Code in the amount equal to 5 percent of the total amount of the bid.

Pre-Bid Meeting: A **MANDATORY** pre-bid meeting and walkthrough is scheduled for 10:00 A.M. on Monday, December 8, 2025, at 365 Carbide Lane, Keokuk, Iowa. Bidders will be invited to ask questions and tour the facility. Bidders will be required to sign an attendance form at the meeting.

Questions: All questions must be submitted via email to Jon Reis at jreis@eocene.com by noon on Tuesday, December 16, 2025. Responses to any submitted questions will be via email by noon on Friday, December 19, 2025.

Contract Documents: The Project Manual governing the asbestos abatement which has been made a part of this Notice and the proposed contract are on file with the City of Keokuk, Office of the City Clerk at 501 Main Street, Keokuk, Iowa 52632, phone 319-524-2050. The Project Manual can be obtained from Eocene at 8951 Windsor Parkway, Johnston, Iowa 50131; phone 515-473-6256 or via email from jreis@eocene.com. Complete digital project bidding documents are available for free by entering Quest project #9970272 on the website's Project Search page. Please contact QuestCDN.com at 952-233-1632 or info@questcdn.com for assistance in free membership registration, viewing, downloading, and working with this digital project information.

The Project Manual can also be found on the City of Keokuk's website under Current Bid Projects: https://cityofkeokuk.org/bids-rfps-and-quotes/.

Public Hearing: A public hearing will be held by the City of Keokuk on the proposed contract documents (plans, specifications and form of contract), estimated cost for the improvement, and award of contract at its meeting at 5:30 P.M. on Monday, January 5, 2026, at City Hall, 501 Main Street, Keokuk, Iowa 52632.

Sales Tax Exemption Certificates. The bidder shall not include sales tax in the bid. The City of Keokuk will distribute tax exemption certificates and authorization letters to the Contractor and all subcontractors who are identified. The Contractor and subcontractor may make copies of the tax exemption certificates and provide a copy to each supplier providing construction materials eligible for exemption. These tax exemption certificates and authorization letters are applicable only for this specific project under the Contract.

Davis Bacon Wages. For the purposes of this contract, the City of Keokuk has determined that all construction, alteration and repair activity involving the remediation of hazardous substances is subject to Davis Bacon Prevailing Wage Term and Condition.

PROJECT DESCRIPTION: The work includes removal and disposal of Asbestos Containing Materials (ACMs) from three buildings (Building #s 3, 4, and 9) associated with the former Elkem Carbide facility on Auditor's Parcel D located at 365 Carbide Lane, Keokuk, Iowa 52632. The buildings are slated for demolition. Specifications for asbestos removal includes both friable and nonfriable ACMs. All ACMs removed from the property must be disposed of at a permitted facility that accepts asbestos. All materials removed from the property shall be done in accordance with local, state, and federal regulations.

This Notice is given by authority of the City of Keokuk

_____

Celeste El Anfaoui, City Clerk

*****END OF SECTION*****

INSTRUCTIONS TO BIDDERS

ASBESTOS ABATEMENT
FORMER ELKEM CARBIDE (AUDITOR'S PARCEL D)
365 CARBIDE LANE, KEOKUK, IOWA 52632

The work comprising the above referenced project shall be constructed in accordance with the SUDAS Standard Specifications, 2025 Edition and as further modified by supplemental specifications and special provision included in the contract documents. The terms used in the contract version of the documents are defined in said Standard Specifications. Contractors must read the Project Manual in its entirety and comply with the requirements. Please be certain that all documents have been completed properly, as failure to complete and sign all documents and to comply with the requirements listing within the Project Manual can cause your bid not to be read.

I. BID SECURITY

A. The bid security must be in the minimum amount of 5% of the total bid amount including all add alternates (do not deduct the amount of alternates). Bid security shall be in the form of a cashier's check, a certified check drawn on a FDIC insured bank in Iowa or drawn on a FDIC insured bank chartered under the laws of the United States; or a certified share draft drawn on a credit union in Iowa or chartered under the laws of the United States; or a bid bond executed by a corporation authorized to contract as a surety in Iowa or satisfactory to the Jurisdiction.

B. The bid bond must be submitted on the enclosed Bid Bond form as no other bid bond forms are acceptable. All signatures on the bid bond must be original signatures in ink; facsimile (fax) of any signature on the bid bond is not acceptable.

C. Bid security other than said bid bond shall be in accordance with Chapter 26 of the Iowa Code.

II. PRE-BID ACCESS TO THE SITE

A. A **MANDATORY** pre-bid meeting will be held on site, 365 Carbide Lane, Keokuk, Iowa at 10:00 A.M. on Monday, December 8, 2025.

III. SUBMISSION OF THE PROPOSAL AND IDENTITY OF BIDDER

A. Sealed bids for the work consisting of asbestos abatement must be filed before 10:00 A.M. on December 29, 2025, in the Office of the City Clerk, City of Keokuk, 501 Main Street, Keokuk, IA 52632. Bidder must provide acknowledgement of addenda, if issued. The proposal shall be sealed in an envelope, properly identified as the Proposal with the project title and the name and address of the bidder and delivered at or before the time and at the place provided in the Notice and Instruction to Bidders. It is the sole responsibility of the bidder to see that its proposal is delivered prior to the time for opening bids, along with the appropriate bid security sealed in the separate envelope identified as Bid Security, if required, and attached to the outside of the bid proposal envelope. Any proposal received after the scheduled time for the receiving of proposals will be returned to the bidder unopened and will not be considered. Bidder

shall include verification of license to remove asbestos meeting the requirements of Iowa Code, Chapter 88B.

B. The following documents shall be completed, signed and returned in the Proposal envelope. The bid cannot be read if any of these documents are omitted from the Proposal envelope.

1. PROPOSAL – Complete each of the following parts:

- Part B – Acknowledgment of Addenda, if any have been issued;
- Part C – Bid Items, Quantities and Prices
- Part F – Identity of Bidder;

Sign the proposal. The signature on the proposal and all proposal attachments must be an original signature in ink signed by the same individual who is the Company Owner or an authorized Officer of the Company; copies, facsimiles, or electronic signatures will not be accepted.

The following documents must be submitted as printed. No alterations, additions, or deletions are permitted. If the Bidder notes a requirement in the contract documents which the Bidder believes will require a conditioned or unsolicited alternate bid, the Bidder must immediately notify Jon Reis, of Eocene in writing. Eocene will issue any necessary interpretation by an addendum for the City of Keokuk.

C. Bidder shall include verification of license to remove asbestos meeting the requirements of Iowa Code, Chapter 88B.

IV. PROSECUTION AND PROGRESS OF THE WORK

A. The work is located in the City of Keokuk.

Work shall commence upon approval of the contract by the Council, and as stated in the Notice to Proceed. All work under the Contract must be substantially complete on or before 40 days after the Notice to Proceed.

B. Each successful bidder will be required to furnish a corporate surety bond in an amount equal to 100% of its contract price. Said bond shall be issued by a responsible surety approved by the City of Keokuk and shall guarantee the faithful performance of the contract and the terms and conditions therein contained and shall guarantee the prompt payment of all material and labor, and protect and save harmless the City of Keokuk from claims and damages of any kind caused by the operations of the contract and shall also guarantee the maintenance of the improvement caused by failures in materials and construction for a period of two years from and after acceptance of the contract.

C. The City of Keokuk, in acordance with Title VI of the Civil Rights Act of 1964, as Amended, hereby notifies all bidders that it will affirmatively insure that in any contract entered into pursuant to this advertisement, minority business enterprises will be afforded full opportunity to submit bids in response to this invitation and will not be

discriminated against on the grounds of race, color, or national origin in consideration for an award.

D. Once Contractor has mobilized to begin construction, Contractor shall remain on-site until Project is substaintially complete as determined by the City of Keokuk or their Consultant.

V. PREFERENCE OF PRODUCTS AND LABOR

A. By virtue of statutory authority, preference will be given to products and provisions grown and coal produced within the State of Iowa, and to Iowa domestic labor, to the extent lawfully required under Iowa statutes. Failure to submit a fully completed Bidder Status Form with the bid may result in the bid being deemed nonresponsive and rejected.

VI. TAXES

A. Sales Tax Exemption Certificates. The bidder shall not include sales tax in the bid. The City of Keokuk will distribute tax exemption certificates and authorization letters to the Contractor and all subcontractors who are identified. The Contractor and subcontractor may make copies of the tax exemption certificates and provide a copy to each supplier providing construction materials. These tax exemption certificates and authorization letters are applicable only for this specific project under the Contract.

B. Income Tax:

1. Successful Bidder is subject to payment of Iowa income tax on income from this work in amounts prescribed by law.

2. If successful bidder is a non-Iowa partnership, individual or association, they shall furnish evidence prior to execution of contract that bond or securities have been posted with the Iowa Department of Revenue in the amount required by law.

VII. DAVIS BACON WAGES

A. For the purposes of this contract, the City of Keokuk has determined that all construction, alteration and repair activity involving the remediation of hazardous substances is subject to Davis Bacon Prevailing Wage Term and Condition. Davis Bacon information is included in Appendix 4 of the Project Manual.

******END OF SECTION******

BID FORMS

ASBESTOS ABATEMENT
FORMER ELKEM CARBIDE (AUDITOR'S PARCEL D)
365 CARBIDE LANE, KEOKUK, IOWA 52632

PROPOSAL: PART A – SCOPE

The City of Keokuk, hereinafter called "CITY", has need for a permitted contractor to complete the work comprising the below referenced improvement. The undersigned Bidder hereby proposes to complete the work as specified in the contract documents, at the prices hereinafter provided in Part C of the Proposal, for the following described improvements:

PROJECT DESCRIPTION: The work includes removal and disposal of Asbestos Containing Materials (ACMs) from three buildings (Building #s 3, 4, and 9) associated with the former Elkem Carbide facility on Auditor's Parcel D located at 365 Carbide Lane, Keokuk, Iowa 52632. The buildings are slated for demolition. Specifications for asbestos removal includes both friable and nonfriable ACMs. All ACMs removed from the property must be disposed of at a permitted facility that accepts asbestos. All materials removed from the property shall be done in accordance with local, state, and federal regulations.

PROPOSAL: PART B – ACKNOWLEDGMENT OF ADDENDA

The Bidder hereby acknowledges that all addenda become a part of the contract documents when issued, and that each such addendum has been received and utilized in the preparation of this bid. The Bidder hereby acknowledges receipt of the following addenda by inserting the number of each addendum in the blanks below:

ADDENDUM NUMBER _____ ADDENDUM NUMBER _____

ADDENDUM NUMBER _____ ADDENDUM NUMBER _____

PROPOSAL: PART C – BID ITEMS AND QUANTITIES

This is a **LUMP SUM PRICE CONTRACT**. The bidder must provide a Lump Sum Bid Price for the Asbestos Abatement for the identified structures. The Quantities shown on the Proposal Attachment: Part C – Bid Items and Quantities are approximate only but are considered sufficiently adequate for the purpose of comparing bids. The CITY shall use the Total Price and any selected alternates for comparison of bids.

PROPOSAL: PART D – GENERAL

The Bidder hereby acknowledges that the CITY, in advertising for bids for this project, reserves the right to:

1. Reject any or all bids. Award of the contract, if any, to be to the lowest responsive, responsible bidder; and
2. Reject any or all alternates in determining the items to be included in the contract. Designation of the lowest responsive, responsible bidder to be based on the base bid and selected alternatives, if any; and
3. Make such alterations in the contract documents or in the proposal quantities as it determines necessary in accordance with the contract documents after execution of the contract. Such alterations shall not be considered a waiver of any conditions of the contract documents, and shall not invalidate any of the provisions thereof; and

The Bidder hereby agrees to:

1. Commence the work upon written Notice to Proceed, and
2. Complete the project by February 15, 2026 (40 days after the Notice to Proceed).

PROPOSAL: PART E – NON-COLLUSION AFFIDAVIT

The Bidder hereby certifies:

1. That this proposal is not affected by, contingent on, or dependent on any other proposal submitted for any improvement with CITY; and
2. That no individual employed by the Bidder has employed any person to solicit or procure the work on this project, nor will any employee of the Bidder make any payment or agreement for payment of any compensation in connection with the procurement of this project; and
3. That no part of the bid price received by the Bidder was or will be paid to any person, corporation, firm, association, or other organization for soliciting the bid, other than the payment of their normal compensation to persons regularly employed by the Bidder whose services in connection with the construction of the project were in the regular course of their duties for the Bidder; and
4. That this proposal is genuine and not collusive or sham; that the Bidder has not colluded, conspired, connived or agreed, directly or indirectly, with any bidder or person, to submit a sham bid or to refrain from bidding, and has not in any manner, directly or indirectly, sought, by agreement or collusion, or communication or conference, with any person, to fix the bid price of the Bidder or of any other bidder, and that all statements in this proposal are true; and
5. That the individual(s) executing this proposal have the authority to execute this proposal on behalf of the Bidder.

PROPOSAL: PART F – IDENTITY OF BIDDER

The bidder shall indicate whether the bid is Submitted by a/an:

- ☐ Individual, Sole Proprietorship
- ☐ Partnership
- ☐ Corporation
- ☐ Limited Liability Company
- ☐ Joint-venture; all parties must join-in and execute all documents
- ☐ Other

_____
Bidder

_____
Signature

By _____
Name (Print/Type)

_____
Title

_____
Street Address

_____
City, State, Zip Code

_____
Telephone Number

Type or print the name and title of the company's owner, president, CEO, etc. if a different person than entered above

_____
Name

_____
Title

NOTE: The signature on this proposal must be an original signature in ink by the same individual who is the Company Owner or authorized Officer of the Copy; copies, facsimiles, or electronic signatures will not be accepted.

PROPOSAL ATTACHMENT: PART C – BID ITEMS, QUANTITIES, AND PRICES

This is a **LUMP SUM PRICE CONTRACT**. The bidder must provide a Lump Sum Bid Price for the Asbestos Abatement for the identified structures. The Quantities shown on the Proposal Attachment: Part C – Bid Items and Quantities are approximate only but are considered sufficiently adequate for the purpose of comparing bids. The CITY shall use the Total Price and any selected alternates for comparison of bids.

Materials and quantities are approximate only but are considered adequate for the purpose of this Project Manual. The Contractor is responsible for verification of all materials and quantities listed below. No additions to the contract will be allowed for additional ACMs discovered that amount to less than ten percent (10%) of each material listed below. If additional amounts greater than ten percent (10%) are identified, Contractor is to stop work and notify the CITY and/or CITY'S consultant immediately. No compensation for removal of suspect ACMs without prior authorization by CITY and/or CITY'S consultant will be approved. All materials and quantities are subject to revision by the CITY.

BASE BID PRICE BREAKDOWN INFORMATION

ITEM	DESCRIPTION	TOTAL PRICE
1	Asbestos Abatement and Disposal – Former Elkem Carbide (Auditor's Parcel D)	$
	TOTAL AMOUNT BID	$

ASBESTOS CONTAINING MATERIAL LIST

Sample #	Material Substance	Color	Floor	Location	Asbestos Content	Est. Quantity
Building 3 (Auditor's Parcel D, Lab Building East)						
3-WG-1,2,3	Window Glaze	Gray	Ext	Exterior	4% Chrysotile	20 LF
Building 4 (Auditor's Parcel D, Lab Building West)						
4-DWJC-1,2,3	Drywall and Joint Compound	White	1	Throughout	<1% Chrysotile	7,200 SF
4-WM-1,2,3	Wall Mastic	Black	1	Behind Wood Paneling in Offices	12% Chrysotile	800 SF
Building 9 (Auditor's Parcel D, Paste Block Building)						
9-TR-1,2,3	Transite Panel	Gray	Ext	North Side of Building	20% Chrysotile	10,000 SF

NOTE: IT IS UNDERSTOOD THAT THE QUANTITIES OF ACMS DOCUMENTED WITHIN THIS PROJECT MANUAL ARE ESTIMATED FOR THE PURPOSE OF THIS BID. ALL QUANTITIES SHALL BE VERIFIED BY CONTRACTOR PRIOR TO SUBMISSION OF BID.

_____
Bidder Name

In the event of discovery of items or materials exceeding 10% of the approximate quantity or not identified within the specifications are located during abatement, Contractor will be bound to the following prices:

ITEM	Material Substance	Unit	Unit Price
1	Window Glaze	LF	$
2	Drywall and Joint Compound	SF	$
3	Wall Mastic	SF	$
4	Transite Panel	SF	$

NOTE: IT IS UNDERSTOOD THAT THE QUANTITIES OF ACMS DOCUMENTED WITHIN THIS PROJECT MANUAL ARE ESTIMATED FOR THE PURPOSE OF THIS BID. ALL QUANTITIES SHALL BE VERIFIED BY CONTRACTOR PRIOR TO SUBMISSION OF BID.

_____

Bidder Name

CONTRACTING FORMS AND SUPPLEMENTS

ASBESTOS ABATEMENT
FORMER ELKEM CARBIDE (AUDITOR'S PARCEL D)
365 CARBIDE LANE, KEOKUK, IOWA 52632

THIS CONTRACT, made and entered into at _____ this _____day of_____, by and between the City of Keokuk (CITY), and _____ _____, hereinafter called the "Contractor".

WITNESSETH:

The Contractor hereby agrees to complete the work comprising of asbestos abatement as specified in the contract documents, which are officially on file with the City of Keokuk, Office of the City Clerk at 501 Main Street, Keokuk, Iowa 52632. This contract includes all such contract documents. The Contractor further agrees to complete the work in strict accordance with said contract documents, and to guarantee the work as required by law, for the time required in said contract documents, after its acceptance by CITY.

This contract is awarded and executed for completion of the work specified in the contract documents for the bid prices shown on the Contract Attachment: Bid Items and Quantities which were proposed by the Contractor in its proposal submitted in accordance with the Notice to Bidders and Notice of Public Hearing for the following described improvements:

PROJECT DESCRIPTION: The work includes removal and disposal of Asbestos Containing Materials (ACMs) from three buildings (Building #s 3, 4, and 9) associated with the former Elkem Carbide facility on Auditor's Parcel D located at 365 Carbide Lane, Keokuk, Iowa 52632. The buildings are slated for demolition. Specifications for asbestos removal includes both friable and nonfriable ACMs. All ACMs removed from the property must be disposed of at a permitted facility that accepts asbestos. All materials removed from the property shall be done in accordance with local, state, and federal regulations.

The Contractor agrees to perform said work for and in consideration of CITY'S payment of the bid amount of _____dollars ($). Work on the improvement shall commence upon approval of the contract by CITY, and as stated in the Notice to Proceed. The Contractor shall complete the project by February 15, 2026.

IN WITNESS WHEREOF, the Parties hereto have executed this instrument, in triplicate on the date first shown written.

CITY

By _____
Mark Smidt, Mayor

(Seal)
ATTEST:

_____
Celeste El Anfaoui, City Clerk

CONTRACTOR:

_____

By _____
Contractor's Contact Name
Contractor's Title

_____

_____
Street Address

_____
City, State, Zip Code

_____
Telephone

NOTICE TO PROCEED

Jurisdiction: City of Keokuk, Iowa

Contractor:

Effective Date of Contract:

Engineer:

Project: 365 Carbide Lane (Auditor's Parcel D) Asbestos Abatement

TO CONTRACTOR:

Jurisdiction hereby notifies Contractor that the Contract Times under the above Contract will commence to run on _____, 20____.

On that date, Contractor shall start performing its obligations under the Contract Documents. No Work shall be done at the Site prior to such date. In accordance with the Contract, the number of calendar days to achieve Substantial Completion and readiness for final payment is 40.

Before starting any work at the Site, Contractor must comply with the following:
[Note any access limitations, security procedures, or other restrictions]

Jurisdiction: City of Keokuk Iowa

_____
Authorized Signature

By: Mark Smidt

Title: Mayor

Date Issued:

Copy: Community Development Director

BOND FORMS FOR

ASBESTOS ABATEMENT
FORMER ELKEM CARBIDE (AUDITOR'S PARCEL D)
365 CARBIDE LANE, KEOKUK, IOWA 52632

KNOW ALL BY THESE PRESENTS:

That we, _____ as Principal, and _____, as Surety, are held and firmly bound unto the City of Keokuk, Iowa, as Obliged (hereinafter referred to as the "Jurisdiction"), in the penal sum of _____ dollars ($_____), or _____ % of the amount bid in lawful money of the United States, for which payment said Principal and Surety bind themselves, their heirs, executors, administrators, successors, and assigns jointly and severally, firmly by these presents.

The condition of the above obligation is such that whereas the Principal has submitted to the Jurisdiction a certain proposal, in a separate envelope, and hereby made a part hereof, to enter into a contract in writing, for the following described improvements;

FORMER ELKEM CARBIDE ASBESTOS ABATEMENT

The work includes removal and disposal of Asbestos Containing Materials (ACMs) from three buildings (Building #s 3, 4, and 9) associated with the former Elkem Carbide facility on Auditor's Parcel D located at 365 Carbide Lane, Keokuk, Iowa 52632. The buildings are slated for demolition. Specifications for asbestos removal includes both friable and nonfriable ACMs. All ACMs removed from the property must be disposed of at a permitted facility that accepts asbestos. All materials removed from the property shall be done in accordance with local, state, and federal regulations.

The Surety hereby stipulates and agrees that the obligations of said Surety and its bond shall be in no way impaired or affected by any extension of the time within which the Jurisdiction may accept such bid or execute such Contract; and said Surety does hereby waive notice of any such extension.

In the event that any actions or proceedings are initiated with respect to this Bond, the parties agree that the venue thereof shall be Lee County, State of Iowa. If legal action is required by the Jurisdiction against the Surety or Principal to enforce the provisions of the bond or to collect the monetary obligation incurring to the benefit of the Jurisdiction, the Surety or Principal agrees to pay the Jurisdiction all damages, costs, and attorney fees incurred by enforcing any of the provisions of this Bond. All rights, powers, and remedies of the Jurisdiction hereunder shall be cumulative and not alternative and shall be in addition to all rights, powers and remedies given to the Jurisdiction, by law. The Jurisdiction may proceed against Surety for any amount guaranteed hereunder whether action is brought against Principal or whether Principal is joined in any such action or actions or not.

NOW, THEREFORE, if said proposal by the Principal be accepted, and the Principal shall enter into a contract with the Jurisdiction in accordance with the terms of such proposal, including the provision of insurance and of a bond as may be specified in the contract documents, with good and sufficient surety for the faithful performance of such contract, for the prompt payment of labor and material furnished in the prosecution thereof, and for the maintenance of said improvements as may be required therein, then this obligation shall become null and void; otherwise, the Principal shall pay to the Jurisdiction the full amount of the bid bond, together with court costs, attorney's fees, and any other expense of recovery.

Signed and sealed this _____ day of _____ 20____.

Surety:	**PRINCIPAL:**
_____	_____
Surety Company	Bidder
By: _____	By: _____
Signature Attorney-in-Fact/Officer	Signature
_____	_____
Printed Name of Attorney-in-Fact/Officer	Printed Name
_____	_____
Company Name	Title
_____	_____
Company Address	Address
_____	_____
City, State, Zip Code	City, State, Zip Code
_____	_____
Company Telephone Number	Telephone Number

NOTE:

1. All signatures on this Bond must be original signatures in ink; copies, facsimile, or electronic signatures will not be accepted.
2. This Bond must be sealed with the Surety's raised, embossing seal.
3. The Certificate or Power of Attorney accompanying this Bond must be valid on its face and sealed with the Surety's raised, embossing seal.

The name and signature of the Surety's Attorney-in-Fact/Officer entered on this Bond must be exactly as listed on the Certificate or Power of Attorney accompanying this Bond.

SURETY BOND NO. _____

PERFORMANCE, PAYMENT, AND MAINTENANCE BOND FOR

ASBESTOS ABATEMENT
FORMER ELKEM CARBIDE (AUDITOR'S PARCEL D)
365 CARBIDE LANE, KEOKUK, IOWA 52632

KNOW ALL BY THESE PRESENTS:

That we, _____, as Principal (hereinafter the "Contractor" or "Principal"), and _____, as Surety, are held and firmly bound unto the City of Keokuk, Iowa, as Obliged (hereinafter referred to as the "Jurisdiction"), and to all persons who may be injured by any breach of any of the conditions of this Bond in the penal sum of _____

_____

dollars ($_____), lawful money of the United States, for the payment of which sum, well and truly to be made, we bind ourselves, our heirs, legal representatives and assigns, jointly or severally, firmly by these presents.

The conditions of the above obligations are such that whereas said Contractor entered into a contract with the Jurisdiction bearing date the _____ day of _____, 20_____ (hereinafter the "Contract"), wherein said Contractor undertakes and agrees to construct the following described improvements:

FORMER ELKEM CARBIDE ASBESTOS ABATEMENT

The work includes removal and disposal of Asbestos Containing Materials (ACMs) from three buildings (Building #s 3, 4, and 9) associated with the former Elkem Carbide facility on Auditor's Parcel D located at 365 Carbide Lane, Keokuk, Iowa 52632. The buildings are slated for demolition. Specifications for asbestos removal includes both friable and nonfriable ACMs. All ACMs removed from the property must be disposed of at a permitted facility that accepts asbestos. All materials removed from the property shall be done in accordance with local, state, and federal regulations.

The Contractor agrees to faithfully perform all the terms and requirements of said Contract within the time therein specified, in a good and workmanlike manner, and in accordance with the Contract Documents.

It is expressly understood and agreed by the Contractor and Surety in this Bond that the following provisions are a part of this Bond and are binding upon said Contractor and Surety, to-wit:

1. PERFORMANCE: The Contractor shall well and faithfully observe, perform, fulfill, and abide by each and every covenant, condition, and part of said Contract and Contract Documents, by reference made a part hereof, for the above referenced improvements, and shall indemnify and save harmless the Jurisdiction from all outlay and expense incurred by the Jurisdiction by reason of the Contractor's default of failure to perform as required. The Contractor shall also be responsible for the default or failure to perform as required under the Contract and Contract Documents by all its subcontractors, suppliers, agents, or employees furnishing materials or providing labor in the performance of the Contract.

2. PAYMENT: The Contractor and the Surety on this Bond hereby agreed to pay all just claims submitted by persons, firms, subcontractors, and corporations furnishing materials for or performing labor in the performance of the Contract on account of which this Bond is given, including but not limited to claims for all amounts due for labor, materials, lubricants, oil, gasoline, repairs on machinery, equipment, and tools, consumed or used by the Contractor or any subcontractor, wherein the same are not satisfied out of the portion of the contract price the Jurisdiction is required to retain until completion of the improvement, but the Contractor and Surety shall not be liable to said persons, firms, or corporations unless the claims of said claimants against said portion of the contract price shall have been established as provided by law. The Contractor and Surety hereby bind themselves to the obligations and conditions set forth in Chapter 573 of the Iowa Code, which by this reference is made a part hereof as though fully set out herein.

3. MAINTENANCE: The Contractor and the Surety on this Bond hereby agree, at their own expense:

    a. To remedy any and all defects that may develop in or result from work to be performed under the Contract within the period of two year(s) from the date of acceptance of the work under the Contract, by reason of defects in workmanship or materials used in construction of said work;

    b. To keep all work in continuous good repair; and

    c. To pay the Jurisdiction's reasonable costs of monitoring and inspection to assure that any defects are remedied, and to repay the Jurisdiction all outlay and expense incurred as a result of Contractor's and Surety's failure to remedy any defect as required by this section.

4. GENERAL: Every Surety on this Bond shall be deemed and held bound, any contract to the contrary notwithstanding, to the following provisions:

    a. To consent without notice to any extension of time to the Contractor in which to perform the Contract;

    b. To consent without notice to any change in the Contract or Contract Documents, which thereby increases the total contract price and the penal sum of this Bond, provided that all such changes do not, in the aggregate, involve an increase of more than 20% of the total contract price, and that this Bond shall then be released as to such excess increase; and

    c. To consent without notice that this Bond shall remain in full force and effect until the Contract is completed, whether completed within the specified contract period, within an extension thereof, or within a period of time after the contract period has elapsed and the liquidated damage penalty is being charged against the Contractor.

    d. That no provision of this Bond or of any other contract shall be valid that limits to less than five years after the acceptance of the work under the Contract the right to sue on this Bond.

e. That as used herein, the phrase “all outlay and expense” is not to be limited in any way, but shall include the actual and reasonable costs and expenses incurred by the Jurisdiction including interest, benefits, and overhead where applicable. Accordingly, “all outlay and expense” would include but not be limited to all contract or employee expense, all equipment usage or rental, materials, testing, outside experts, attorneys’ fees (including overhead expenses of the Jurisdiction’s staff attorneys), and all costs and expenses of litigation as they are incurred by the Jurisdiction. It is intended the Contractor and Surety will defend and indemnify the Jurisdiction on all claims made against the Jurisdiction on account of Contractor’s failure to perform as required in the Contract and Contract Documents, that all agreements and promises set forth in the Contract and Contract Documents, in approved change orders, and in this Bond will be fulfilled, and that the Jurisdiction will be fully indemnified so that it will be put into the position it would have been in had the Contract been performed in the first instance as required.

In the event the Jurisdiction incurs any “outlay and expense” in defending itself against any claim as to which the Contractor or Surety should have provided the defense, or in the enforcement of the promises given by the Contractor in the Contract, Contract Documents, or approved change orders, or in the enforcement of the promises given by the Contractor and Surety in this Bond, the Contractor and Surety agree that they will make the Jurisdiction whole for all such outlay and expense, provided that the Surety’s obligation under this Bond shall not exceed 125% of the penal sum of this Bond.

In the event that any actions or proceedings are initiated regarding this Bond, the parties agree that the venue thereof shall be Lee County, State of Iowa. If legal action is required by the Jurisdiction to enforce the provisions of this Bond or to collect the monetary obligation incurring to the benefit of the Jurisdiction, the Contractor and the Surety agree, jointly and severally, to pay the Jurisdiction all outlay and expense incurred therefor by the Jurisdiction. All rights, powers, and remedies of the Jurisdiction hereunder shall be cumulative and not alternative and shall be in addition to all rights, powers, and remedies given to the Jurisdiction, by law. The Jurisdiction may proceed against surety for any amount guaranteed hereunder whether action is brought against the Contractor or whether Contractor is joined in any such action(s) or not.

NOW THEREFORE, the condition of this obligation is such that if said Principal shall faithfully perform all the promises of the Principal, as set forth and provided in the Contract, in the Contract Documents, and in this Bond, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

When a word, term, or phrase is used in this Bond, it shall be interpreted or construed first as defined in this Bond, the Contract, or the Contract Documents; second, if not defined in the Bond, Contract, or Contract Documents, it shall be interpreted or construed as defined in applicable provisions of the Iowa Code; third, if not defined in the Iowa Code, it shall be interpreted or construed according to its generally accepted meaning in the construction industry; and fourth, if it has no generally accepted meaning in the construction industry, it shall be interpreted or construed according to its common or customary usage.

Failure to specify or particularize shall not exclude terms or provisions not mentioned and shall not limit liability hereunder. The Contract and Contract Documents are hereby made a part of this Bond.

Witness our hands, in triplicate, this _____ day of _____, 20____.

Surety Countersigned By:

_____
Signature of Agent

_____
Printed Name of Agent

_____
Company Name

_____
Company Address

_____
City, State, Zip Code

_____
Company Telephone Number

PRINCIPAL:

_____
Contractor

By: _____
Signature

_____
Title

SURETY:

_____
Surety Company

By: _____
Signature Attorney-in-Fact Officer

_____
Printed Name of Attorney-in-Fact Officer

_____
Company Name

_____
Company Address

_____
City, State, Zip Code

_____
Company Telephone Number

FORM APPROVED BY:

_____
Attorney for Jurisdiction

NOTE:

1. All signatures on this Bond must be original signatures in ink; copies, facsimile, or electronic signatures will not be accepted.
2. This Bond must be sealed with the Surety's raised, embossing seal.
3. The Certificate or Power of Attorney accompanying this Bond must be valid on its face and sealed with the Surety's raised, embossing seal.

The name and signature of the Surety's Attorney-in-Fact/Officer entered on this Bond must be exactly as listed on the Certificate or Power of Attorney accompanying this Bond.

SECTION 00 73 19

HEALTH AND SAFETY REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Health and Safety requirements.

1.02 MEASUREMENT AND PAYMENT

A. Work specified in this section is included in the lump sum contract price.

1.03 DESCRIPTION

A. Contractor is responsible for implementation and enforcement of safe work practices including, but not limited to, personnel exposure to refuse, hazardous materials; use of trenching, sheeting, and shoring; scaffolding; materials handling; operation of equipment; and safety of public during progress of work.

1.04 QUALITY ASSURANCE

A. Regulatory Requirements:

1. Contractor shall plan for and ensure personnel comply with basic provisions of OSHA Safety and Health Standards (29 CFR 1910), and General Construction Standards (29 CFR 1926) as appropriate.
2. Comply with applicable laws and regulations of any public body having jurisdiction for safety of persons or property.

1.05 OPERATIONS AND EQUIPMENT SAFETY

A. Contractor is responsible for initiating, maintaining, and supervising safety precautions and programs in connection with work. Contractor shall take necessary precautions for safety of employees on Project site and other persons and organizations who may be affected by Project.

B. Contractor's duties and responsibilities for safety in connection with work shall continue until such time as work is complete as applicable under the Contract.

1.06 HEALTH AND SAFETY

A. Contractor is responsible for implementation and enforcement of health and safety requirements, as well as compliance with all applicable state and federal laws, and will take necessary precautions and provide protection for following.

1. Personnel working on or visiting Project site, irrespective of employer.
2. Work and materials or equipment to be incorporated in work area on- or off-site.
3. Other property at or adjacent to Project site.
4. Public exposed to job related operations or potential release of toxic or hazardous materials.

B. Contractor shall prepare site-specific health and safety plan (HASP) following the

requirements of 29-CFR 1910.120, and 29-CFR 1910.146. Such plan shall include appropriate measures for confined space entry as project conditions warrant. If Contractor does not have capability to prepare HASP, Contractor shall employ consultants with appropriate capabilities. Contractor is solely responsible for adequacy of HASP's preparation, monitoring, management, and enforcement. At minimum, Contractor's HASP shall address following.

1. Site description and history.
2. Project activities, including coordination with other Contractors.
3. Hazard evaluation.
4. On-site safety responsibilities.
5. Work zones.
6. Personnel training.
7. Medical monitoring.
8. Atmospheric monitoring.
9. Personal protection, clothing, and equipment.
10. Decontamination procedures.
11. Emergency procedures.

1.07 CONSULTANT'S RESPONSIBILITIES

A. When Consultant is required to be present on Project site to perform consulting services, Consultant will comply with Contractor's safety plans, programs, and procedures.

B. If Consultant determines Contractor's safety plans, programs, and procedures do not provide adequate protection for Consultant, Consultant may direct its employees to leave Project site or implement additional safeguards for Consultant's employees. If taken, these actions will be in furtherance of Consultant's responsibility to its own employees only, and Consultant will not assume responsibility for protection of any other persons affected by work.

C. If Consultant observes situations which appear to have potential for immediate and serious injury to persons, Consultant may warn persons who appear to be affected by such situations and shall advise Contractor and CITY of its actions. Such warnings, if issued, shall be given based on general humanitarian concerns, and Consultant will not, by issuance of any such warning, assume responsibility to issue future warnings or any general responsibility for protection of persons affected by work.

1.08 SUBMITTALS

A. Submit copies of Health and Safety Plan (HASP) to CITY and Consultant within 10 business days after Notice to Award. Work on-site shall not proceed until HASP has been submitted.

1. Submittal of Contractor's HASP to Consultant is to inform Consultant and CITY so they can comply with HASP during performance of their on-site responsibilities as described in Contract Documents.

2. Submittal of Contractor's HASP shall neither impose on Consultant or CITY responsibility for adequacy of HASP nor relieve Contractor from full responsibility, therefore.

PART 2 PRODUCTS

(Not Used)

PART 3 EXECUTION

(Not Used)

END OF SECTION

SECTION 01 00 00

GENERAL REQUIREMENTS

ASBESTOS ABATEMENT
FORMER ELKEM CARBIDE (AUDITOR'S PARCEL D)
365 CARBIDE LANE, KEOKUK, IOWA 52632

1. DEFINITION AND INTENT
2. GENERAL PROVISIONS AND COVENANTS
3. WORK REQUIRED
4. SALVAGE OF MATERIALS AND EQUIPMENT
5. PLANS AND SPECIFICATIONS
6. CONSTRUCTION FACILITIES
7. SUBMITTALS
8. STANDARDS AND CODES
9. DEFINITIONS
10. RIGHT-OF-WAYS
11. EMPLOYMENT PRACTICES
12. WORK HOURS
13. DUST ABATEMENT
14. QUANTITIES
15. MAINTENANCE BOND AND WARRANTY PERIODS (if required)
16. MEASUREMENT AND PAYMENT
17. INSURANCE REQUIREMENTS
18. INCIDENTAL CONTRACT ITEMS
19. EXISTING UTILITIES
20. PROJECT SUPERVISION
21. COORDINATION WITH OTHERS
22. CONSTRUCTION LIMITS
23. CONSTRUCTION SCHEDULE
24. DISPOSAL
25. TEMPORARY FENCES
26. RESPONSIBILITY OF CONTRACTOR
27. BUILD AMERICA, BUY AMERICAN

1. DEFINITION AND INTENT

A. The Technical Specifications that apply to the materials and construction practices for this project are defined as follows:

1. Omissions of words or phrases such as “the Contractor shall”, “in accordance with”, “shall be”, “as noted on the Plans”, “according to the Plans”, “a”, “an”, “the” and “all” are unintentional; supply omitted words or phrases by inference.

2. “CITY” or “Jurisdiction” shall mean the City of Keokuk (CITY), or contracting agent.

3. “Person” shall mean any individual, partnership, limited partnership, joint venture, society, association, joint stock company, corporation, limited liability company, estate, receiver, trustee, assignee, or referee, whether appointed by a court or otherwise, and any combination of individuals.

4. “Consultant”: Eocene Environmental Group, Inc. 8951 Windsor Parkway, Johnston, Iowa 50131, (515) 473-6256, fax (515) 528-8005, and shall mean CITY’S designated agent.

5. The intent of the Technical Specifications is to describe the abatement desired, performance requirements, and standards of materials and abatement.

6. “Work” shall mean the work to be done and the equipment, supplies, and materials to be furnished under the contract unless some other meaning is indicated by the context.

7. “Or equal” shall follow manufacturers names used to establish standards and, if not stated, is implied.

2. GENERAL PROVISIONS AND COVENANTS

A. Contractor must comply with all applicable federal, state, and local regulations.

B. Cooperate with regulatory agencies to ensure safe and lawful execution of work.

C. Procedures outlined herein are not intended to fully cover all special abatement procedures but are offered as an aid to the Contractor in planning work.

D. Cooperate with the CITY to minimize inconvenience to property owners, other jurisdictions and motorists and to prevent delays in abatement and interruption to continuous operation of utility services and site access.

E. The Contractor is expected to provide adequate personnel and equipment to perform work within specified time of abatement.

F. Install and maintain temporary fencing as required by OSHA or as needed to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent properties from damage during construction operations. The fence must be maintained for the duration of the Work.

G. Contractor may not demobilize from the Property once Work begins until completion and acceptance of Work.

3. WORK REQUIRED

A. Work under this contract includes all materials, equipment, transportation, labor, disposal and associated work for the asbestos abatement project.

B. This project consists of one contract for all Work described.

4. SALVAGE OF MATERIALS AND EQUIPMENT

   A. No salvage of materials by the Contractor is allowed.

5. PLANS AND SPECIFICATIONS

   A. Upon request, the Consultant will furnish one set of the Project Manual to the Contractor after award of the contract.

   B. Follow all updates and revisions issued during the Project.

6. CONSTRUCTION FACILITIES

   A. Provide telephone numbers where Contractor's representative can be reached during workdays and on nights and weekends in event of emergency.

   B. Power and water are disconnected and must be supplied by the Contractor.

   C. Provide and maintain suitable sanitary facilities for abatement personnel for duration of Work; remove upon completion of Work.

   D. Do not store abatement equipment, employee's vehicles, or materials on streets open to traffic. Location for storage of equipment by Contractors is subject to approval of CITY.

   E. The contractor shall provide suitable storage facilities necessary for proper storage of materials and equipment.

   F. The Contractor will be required to make arrangements for all services required during the abatement period and pay for such services at no additional cost to the CITY.

7. SUBMITTALS

   A. Provide abatement schedule showing dates of starting and completing various portions of Work. Abatement can begin after the 10-day notification period has expired and must be completed on/by February 15, 2026.

   B. Include all other submittals:

      1. Copy of a completed and submitted Iowa DNR 10-Day Notification Form (included in Appendix 3). Form to be submitted to Iowa DNR within 10 business days after Notice of award.

      2. Waste Manifests (no later than one (1) week after completion date).

      3. Certificate of Insurance (within 10 business days after Notice of Award).

      4. Payment and Performance Bond (within 10 business days after Notice of Award).

      5. Daily field reports (Monday following each work week).

      6. Sign-in logs (Monday following each work week).

      7. Davis-Bacon Payroll certifications for Contractor and subcontractor(s) (within one week following each week of Work).

8. STANDARDS AND CODES

   A. Construct improvements with best present-day abatement practices and equipment.

   B. Comply with OSHA worker safety.

   C. Comply with EPA and Iowa DNR for regulations for hazardous material handling and disposal.

D. Conform with and test in accordance with applicable sections of the following standards and codes.

1. Title 29 Code of Federal Regulations Section 1910.1001, General Industry Standard for Asbestos.
2. Title 29 Code of Federal Regulations Section 1926.1101, Construction Industry Standard for Asbestos.
3. Title 29 Code of Federal Regulations Section 1910.134, General Industry Standard for Respiratory Protection.
4. Title 29 Code of Federal Regulations Section 1910.2, Access to Employee Exposure and Medical Records.
5. Title 29 Code of Federal Regulations Section 1910.1200, Hazard Communication Rule.
6. Title 40 Code of Federal Regulations Part 61 Subpart A and Subpart M (revised Subpart B), National Emissions Standard for Hazardous Air Pollutants.
7. Iowa Administrative Code Section 875 Chapter 155, Asbestos Removal & Encapsulation.
8. Title 49 Code of Federal Regulations Part 171 - 180, Department of Transportation, Transportation of Hazardous Waste.

E. The following standards, regulations, codes and other applicable documents are additional requirements of asbestos abatement projects.

1. E.P.A. Guidance Document: Asbestos Waste Management Guidance (Blue Book).

F. The most recent edition of any relevant regulation, standard, document or code shall be in effect. Where conflict among the requirements or with these Specifications exists, the most stringent requirements shall be utilized.

9. DEFINITIONS

ABATEMENT: Procedures to control fiber release from asbestos containing materials. Includes removal, encapsulation, enclosure, and repair.

ACBM: Asbestos Containing Building Material.

ACM: Asbestos Containing Material

ACCREDITED: Refers to a person or laboratory means that such person or laboratory is accredited in accordance with section 206 of Title II of the Toxic Substance Control Act.

ADDENDA: are written or graphic instruments issued by the CITY prior to the execution of the Contract which modify or interpret the Bidding Documents by addition, deletions, clarifications or corrections.

ACGIH: American Conference of Governmental Industrial Hygienists, 3640 Park 42 Drive, Cincinnati, OH 45241.

AGGRESSIVE METHOD: Removal or disturbance of building material by sanding, abrading, grinding, or other method that breaks, crumbles, or disintegrates intact ACM.

AHERA: Asbestos Hazard Emergency Response Act.

AIHA: American Industrial Hygiene Association, 3120 Fairview Park Drive, Suite 360, Falls Church, VA 22042.

AIR LOCK: A system for permitting passage with minimal air movement between a contaminated and an uncontaminated area.

ALTERNATE BID: (or alternate) is an amount stated in the Bid for which the Bidder offers to perform the Work described in the Bidding Documents as the alternate bid.

AMENDED WATER: Water to which a surfactant has been added.

ANSI: American National Standards Institute, 1899 L Street, NW, 11th Floor, Washington, DC 20036.

ASBESTOS CONTAINING WASTE MATERIAL: Asbestos containing material or asbestos contaminated objects requiring disposal.

ASTM: American Society for Testing and Materials, 100 Barr Harbour Drive, PO Box C700, West Conshohocken, PA 19428.

AUTHORIZED VISITOR: The CITY (and any designated representatives) and any representatives of a regulatory or other agency having jurisdiction over the project.

BASE BID: is the sum stated in the Bid for which the Bidder offers to perform the Work described in the Bidding Documents as the base bid.

BID: is a complete and properly signed proposal to do the Work or designated portion thereof for the sums stipulated therein, submitted in accordance with the Bidding Documents.

BIDDER: A person or entity who submits a bid.

BIDDING DOCUMENTS: Include the Instructions to Bidders, the bid form, other sample bidding and contract forms, and the proposed Contract Documents including Addenda issued prior to receipt of bids.

BRAND METHOD: A differential pressure containment system that does not infringe on the patent rights of GPAC, Inc's Reduced Pressurization and Filtration System.

BUILDING OWNER: CITY, or an authorized representative

CEILING CONCENTRATION: The concentration of an airborne substance that shall not be exceeded.

CLASS I ASBESTOS WORK: Activities involving the removal of TSI and Surfacing ACM and PACM.

CLASS II ASBESTOS WORK: Activities involving the removal of ACM which is not TSI or surfacing material. This includes, but is not limited to, the removal of asbestos containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastics.

CLASS III ASBESTOS WORK: Repair and maintenance operations, where ACM, including TSI and surfacing material is likely to be disturbed.

CLASS IV ASBESTOS WORK: Maintenance and custodial activities during which employees contact ACM and PACM, and activities to clean up waste and debris containing ACM and PACM.

CLEAN ROOM: An uncontaminated area which is a part of the worker decontamination containment system with provisions for storage of workers' street clothes and clean protective equipment.

COMPETENT PERSON: One who is capable of identifying existing asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure, who has the authority to take prompt corrective measures to eliminate them. In addition, for Class I and Class II work who is specially trained in a training course which meet the criteria of EPA's Model Accreditation Plan for project designer or supervisor, or its equivalent and, for Class III and Class IV work, who is trained in an Operations & Maintenance (O&M) course developed by EPA.

CONSULTANT: Eocene Environmental Group Inc., 8951 Windsor Parkway, Johnston, Iowa 50131.

CONTRACTOR: The individual and/or business with the CITY arranges to perform the asbestos abatement and demolition.

CURTAINED DOORWAY: A device to allow passage from one room to another while permitting minimal air movement between the rooms, by placing two overlapping sheets of plastic in doorway with both secured at top and opposite vertical edges. This doorway is to be used only by GPAC, Inc. approved licensees.

DECONTAMINATION CONTAINMENT SYSTEM: A series of connected rooms separated from the Work area and from each other by airlocks, for the decontamination of workers and equipment.

DEMOLITION: The wrecking or taking out of any building component, system, finish or assembly of a facility together with any related handling operations.

DISTURBANCE: Contact which releases fibers from ACM or PACM or debris containing ACM or PACM. This term includes activities that disrupt the matrix of ACM or PACM, render ACM or PACM friable, or generate visible debris. Disturbance includes cutting away small amounts of ACM or PACM, no greater than the amount which can be contained in one standard sized glove bag or waste bag in order to access a building component. In no event shall the amount of ACM or PACM so disturbed exceed that which can be contained on one glove bag or waste bag which shall not exceed 60 inches in length and width.

ENCAPSULANT: A material that surrounds or embeds asbestos fibers in an adhesive matrix, to prevent release of fibers.

BRIDGING ENCAPSULANT: an encapsulant that forms a discrete layer on the surface of an in situ asbestos matrix.

PENETRATING ENCAPSULANT: an encapsulant that is absorbed by the in situ asbestos

matrix without leaving a discrete surface layer.

ENCLOSURE: An airtight, impermeable barrier made of enclosure material to control release of asbestos fibers from contaminated building surfaces.

ENCLOSURE MATERIAL: Polyethylene sheeting or spray applied water-based strippable coating.

EQUIPMENT ROOM: A contaminated area which is part of the worker decontamination containment system with provisions for storage of contaminated clothing and equipment.

EPA: U.S. Environmental Protection Agency, 401 M Street S.W., Washington, D.C. 20460.

FRIABLE ASBESTOS: Asbestos containing material which can be crumbled to dust (when dry) under hand pressure.

HVAC: Heating, ventilation and air conditioning system.

HEPA FILTER: A High Efficiency Particulate Air filter capable of removing particles .3 microns in diameter with 99.97% efficiency.

HEPA VACUUM: A vacuum system equipped with HEPA filtration.

HOMOGENEOUS AREA: An area of surfacing material, thermal system insulation material, or miscellaneous material that is uniform in color and texture.

LEAD-BASED PAINT: Any paint or surface coating that contains lead equal to or exceeding one milligram per square centimeter (1.0 mg/cm2) or 0.5% by weight.

NEGATIVE EXPOSURE ASSESSMENT: A demonstration by the employer, that the employee exposure during an operation is expected to be consistently below the PEL's.

NESHAP: The National Emission Standards for Hazardous Air Pollutants (40 CFR Part 61).

NIOSH: The National Institute for Occupational Safety and Health, CDC-NIOSH, Building J. N.E. Room 3007, Atlanta, GA 30033.

NIST: National Institute of Standards and Technology.

NPE: Negative Pressure Enclosure

OSHA: The Occupational Safety and Health Administration, 200 Constitution Avenue, Washington, D.C. 20210.

OWNER'S REPRESENTATIVE: Eocene Environmental Group, Inc., 8951 Windsor Parkway, Johnston, Iowa 50131.

PACM: Presumed asbestos containing material.

PAT PROGRAM: Proficiency Analytical Testing Program.

PEL: Permissible Exposure Limit, for asbestos currently 0.1 f/cc for an 8-hour TWA.

PROTECTION FACTOR: The ratio of the ambient concentration of an airborne substance to the concentration of the substance inside the respirator at the breathing zone of the wearer. The protection factor is a measure of the degree of protection provided by a respirator to the wearer.

REMOVAL: The stripping of any asbestos containing material from surfaces or components of a facility.

REPAIR: Overhauling, rebuilding, reconstructing, or reconditioning of structures or substrates, including encapsulation or other repair of ACM or PACM attached to structures or substrates.

SHOWER ROOM: A room between the clean room and the equipment room in the worker decontamination containment with hot and cold or warm running water controllable at the top and suitably arranged for complete showering during decontamination.

STAGING AREA: Either the holding area or some area near the waste transfer airlock where containerized asbestos waste has been placed prior to removal from the Work area.

STRIP: To take off friable asbestos materials from any part of the facility.

SURFACTANT: A chemical wetting agent added to water to improve penetration.

TEM: Transmission electron microscope.

TIME WEIGHTED AVERAGE (TWA): The average concentration of a contaminant in air during a specific time period.

TSI: Thermal System Insulation.

UNIT PRICE: is an amount stated in the Bid as a price per unit of measurement for materials or services as described in the Bidding Documents or in the proposed Contract Documents.

VISIBLE EMISSIONS: Any emissions containing particulate asbestos material that are visually detectable without the aid of instruments. This does not include condensed, uncombined water vapor.

WASTE GENERATOR: The individual and/or business who performs the asbestos abatement.

WASTE TRANSFER AIRLOCK: A decontamination system utilized for transferring containerized waste from inside to outside of the Work area.

WET CLEANING: The process of eliminating asbestos contamination from building surfaces and objects by using cloth, mops, or other cleaning utensils which have been dampened with water and afterwards thoroughly decontaminated or disposed of as asbestos contaminated waste.

WORK AREA: Designated rooms, spaces, or areas of project in which asbestos abatement actions are to be undertaken or which may become contaminated as a result of such abatement actions. A contained Work area is a Work area which has been sealed, plasticized, and equipped with a decontamination containment system. A non-contained Work area is an isolated or controlled-access Work area which has not been plasticized

nor equipped with a decontamination containment system.

10. RIGHT-OF-WAYS

A. The project location is on public property. None of the Work will be within CITY right-of-way.

11. EMPLOYMENT PRACTICES

A. Neither the Contractor nor the Contractor's Subcontractors shall employ any person whose physical or mental condition is such that this employment will endanger the health and safety of anyone employed on the Project.

B. The Contractor shall not commit any of the following employment practices and agrees to include the following clauses in any Subcontracts:

1. To discharge from employment or refuse to hire any individual because of sex, race, color, religion, national origin, sexual orientation, marital status, age, or disability unless such disability is related to job performance of such person or employee.

2. To discriminate against any individual in terms, conditions, or privileges or employment because of sex, race, color, creed, religion, national origin, sexual orientation, gender identify, age, or disability unless such disability is related to job performance of such person or employee.

12. WORK HOURS

A. The Contractor will be required to limit the Contractor's Work hours on the Project from 7:00 a.m. to 6:00 p.m., Monday through Friday, unless otherwise directed by the Consultant. Contractor to specify work hours to the CITY and Consultant. Notice to work on weekends and Holidays must be presented to the CITY and Consultant at least 48 hours in advance and requires written permission from the CITY.

13. DUST ABATEMENT

A. The Contractor shall make all reasonable efforts to control dust and assure dust does not become a problem. Anytime ACM debris is disturbed, Contractor is required, at a minimum, to mist the area to minimize airborne fibers and ensure no visible emissions. The Consultant and CITY reserve the right to stop Contractor's operations whenever dust becomes a problem on the project and direct the Contractor to submit a revised operations plan to solve the dust problem.

14. QUANTITIES

A. The Contractor is to realize some of the quantities on this Project are best estimates and may vary from actual conditions at time of abatement of the Project. Quantities must be regarded as approximate only and are given as a guide to the Bidder and for comparison of Bids. No additions to the contract will be allowed for additional ACMs discovered that amount to less than 10% of the quantities identified in Part C – Bid Items and Quantities. If additional amounts greater than 10% are identified, Contractor is to stop Work and notify the CITY and Consultant immediately.

15. MAINTENANCE BOND AND WARRANTY PERIODS (IF REQUIRED)

A. The requirements of the Payment, Performance and Maintenance Bond warranty period are modified as follows:

1. To remedy any and all defects that may develop in or result from Work to be performed under the Contract within two years from the date of acceptance of the

Work under the Contract, by reason of defects in workmanship or materials used in construction of said work.

16. MEASUREMENT AND PAYMENT

A. Contract unit or lump sum prices are full compensation for furnishing all materials, equipment, tools, transportation, and labor necessary to construct and complete each item of Work as specified. No separate payment will be made for Work included in this project. All additional Work must be in writing as a detailed change order signed by the CITY.

17. INSURANCE REQUIREMENTS

A. The Contractor shall purchase and maintain insurance to protect the Contractor and the Jurisdiction against all hazards herein enumerated throughout the duration of the contract. Said insurance shall be provided by an insurance company or companies, “admitted” or “non-admitted” to do business in the State of Iowa, having an A.M. Best rating of no less than “B+.”

B. Except for workers compensation insurance, the Contractor shall purchase and maintain such insurance as will protect the Contractor and the Jurisdiction as set forth below, which may arise out of or result from the Contractor’s operations under the contract, whether such operations be by the Contractor, its subcontractors or consultants, suppliers, third parties, or the agents, officers, or employees of any of them. In addition, the Contractor shall purchase and maintain workers compensation insurance to cover its employees.

The limits shall be not less than the following amounts or greater where required by Laws and Regulations:

Commercial General Liability	
General Aggregate Limit	$2,000,000
Products – Completed Aggregate	$2,000,000
Personal and Advertising Injury	$1,000,000
Each Occurrence	$1,000,000

Workers Compensation	
Bodily Injury by Accident	$1,000,000 (each accident)
Bodily Injury by Disease	$1,000,000 (each accident)
Bodily Injury by Disease	$1,000,000 (policy limit)

Automobile Liability	
Bodily Injury	$1,000,000 (each person)
Bodily Injury	$1,000,000 (each accident)
Property Damage	$1,000,000 (each accident)

Excess or Umbrella Liability	
Each Occurrence	$2,000,000
Aggregate	$2,000,000

18. INCIDENTAL CONTRACT ITEMS

A. The following list includes, but is not limited to, major items that are incidental to the project and will not be paid for as separate bid items. Other items may be designated as incidental under certain bid items.

- Capping any utilities
- Construction fencing
- Construction staging & phasing
- Coordination and cooperation with affected property owners
- Coordination and cooperation with the CITY
- Coordination and cooperation with other Contractors
- Coordination and cooperation with other projects in the area
- Coordination and cooperation with utility companies
- Dewatering and handling storm water flow during construction
- Dust control measures
- Excavation, verification and protection of existing utilities
- Monitoring weather conditions
- Protection of existing hydrant(s) and valve(s)
- Protection of existing trees and plantings not shown as removals
- Protection of existing utilities and light poles
- Removing and reinstalling existing signs
- Removal means and methods of hazardous materials (including slow unmanned elevator operations)
- Site cleanup/restoration
- Temporary safety closures
- Temporary street closure

19. EXISTING UTILITIES

A. Prior to construction, contact all utility companies and have all utility lines and services located. The Contractor is responsible for exposing utilities in order to confirm their locations ahead of the Work.

B. Contractor is solely responsible for damage to utilities or private or public property due to utility disruption.

C. The Contractor shall notify utility company immediately if utility infrastructure is damaged during abatement.

D. Contractor will contact and work with utility companies to relocate utility infrastructure in direct conflict with line and grade of the work during abatement. Support and protect all utilities that are not moved.

E. Protect and maintain services during abatement. Notify CITY and Consultant 48 hours prior to any planned utility service interruptions.

F. If utility Work does occur during the abatement period, Work schedules from the contractor and from the utility companies will be submitted to the Consultant for coordination to obtain mutual acceptable schedules, if possible.

G. No claims for additional compensation or time extension will be allowed to the Contractor for interference or delay caused by utility companies.

20. PROJECT SUPERVISION

A. The Contractor shall be represented in person at the abatement site at all times that abatement operations are proceeding by a qualified supervisor or other designated, qualified representative capable of providing adequate supervision. The supervisor or

representative must be duly authorized to receive and execute instructions, notices and written orders from the CITY.

B. Issues that arise during abatement relating to traffic control and abatement staging, etc. are the responsibility of the Contractor.

C. Bi-weekly progress meetings, if specified at the preconstruction meeting, with the Contractor and Consultant will be held at the project site to review the updated project schedule and progress, coordinate activities, resolve conflicts and coordinate the abatement Work. The day and time for this meeting will be set at the preconstruction meeting.

21. COORDINATION WITH OTHERS

A. Cooperate and coordinate abatement with CITY, Consultant, utility companies, affected property Jurisdictions and other contractors working in vicinity of this project.

B. It is the Contractor′s responsibility to schedule and coordinate Work to minimize abatement delays and conflicts.

C. Coordinate with property owners prior to beginning Work that will affect their parcel.

22. CONSTRUCTION LIMITS

A. To the extent possible, confine the construction operations within the property boundary.

B. Do not store equipment, vehicles or materials within the right-of-way of any streets open to traffic or on temporary access roads at any time.

C. Areas disturbed outside of abatement limits shall be restored at the contractor’s expense to the satisfaction of the CITY.

D. Contractor shall park all vehicle, trailers and storage containers in areas approved by the CITY.

23. CONSTRUCTION SCHEDULE

A. The Contractor will prepare and submit to the Consultant for approval a project schedule that will assure the completion of the project within the time specified.

B. Adequate equipment and forces shall be made available by the Contractor to start Work immediately upon receipt of the Notice to Proceed

C. Submit abatement schedule at the preconstruction meeting and periodically update it as requested by the Consultant.

D. The Contractor shall be required to meet the final completion date as specified in the written Notice to Proceed.

E. Notify the CITY and property owners at least 48 hours prior to any street closures.

1. Notify all property owners, residential and business, affected by the street closures by written notice placed on the front door. Include the following items in the notice:

    a. The street name, location and proposed date of street closure

    b. The estimated schedule for completion of Work

    c. The estimated date for reopening of the street

    d. Procedure for garbage collection, recycling and postal service

24. DISPOSAL

A. Dispose of materials in accordance with applicable laws and ordinances.

1. Burning of brush and other debris is not permitted. Contractor responsible for selecting disposal site.
2. Dispose of broken concrete, asphalt, granular material, rubble, excess or unsuitable excavated material. Contractor is responsible for selecting disposal site.
3. Cooperate with all applicable county, state and federal agencies concerning disposal of materials.
4. The CITY has the first right to any excess materials from abatement.
5. No salvage of materials by the Contractor is allowed.

25. TEMPORARY FENCES

A. Contractor to install and maintain temporary fencing as required by OSHA or as needed to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent properties from damage from construction operations. The fence must be maintained for the duration of the Work.

26. RESPONSIBILITY OF CONTRACTOR

A. Supervision of the Work.

B. Protection of all property from injury or loss resulting from abatement operations.

C. Replace or repair objects sustaining any such damage, injury or loss to satisfaction of CITY or Consultant.

D. Cooperate with CITY, Consultant, and representatives of utilities in locating utility lines and structures. Incorrect, inaccurate or inadequate information concerning location of utilities or structures shall not relieve the Contractor of responsibility for damage thereto caused by abatement operations. Contractor shall field verify all utility locations.

E. Keep cleanup current with abatement operations.

F. Comply with all federal, State of Iowa, and the City of Keokuk, Iowa laws and ordinances.

27. DAVIS-BACON WAGE

A. For the purposes of this contract, the City of Keokuk has determined that all construction, alternation, and repair activity involving the remediation of hazardous substances is subject to Davis-Bacon Prevailing Wage Term and Condition. Davis-Bacon information is included in Appendix 4.

28. BUILD AMERICA, BUY AMERICAN

A. This project will utilize federal funding, and as such is a federal air project and subject to additional requirements and contract provisions. The Build America, Buy American Act will apply.

END OF SECTION

SECTION 01 10 00

SUMMARY

PART 1 GENERAL

1.01 PROJECT DESCRIPTION

A. Project: Former Elkem Carbide (Auditor's Parcel D)
Asbestos Abatement
365 Carbide Lane
Keokuk, Iowa 52632

B. CITY: City of Keokuk
Address: 501 Main Street
Contact: Brian Carroll
Phone: 319-524-2050 ext. 2210
Email: bcarroll@cityofkeokuk.org

Consultant: Eocene Environmental Group Inc.
Contact: Jon Reis
Address: 8951 Windsor Parkway, Johnston, Iowa 50131
Phone: 515-473-6256
Email: jreis@eocene.com

C. The work includes removal and disposal of Asbestos Containing Materials (ACMs) from three buildings (Building #s 3, 4, and 9) associated with the former Elkem Carbide facility on Auditor's Parcel D located at 365 Carbide Lane, Keokuk, Iowa 52632. The buildings are slated for demolition. Specifications for asbestos removal includes both friable and nonfriable ACMs. All ACMs removed from the property must be disposed of at a permitted facility that accepts asbestos. All materials removed from the property shall be done in accordance with local, state, and federal regulations.

1.02 CONTRACTS

A. Perform Work under a lump sum cost contract with the CITY. Contractor may subcontract a portion or portions of Work as provided in these specifications to fulfill the terms of the Contract. Under no circumstances does the subcontracted Work relieve the Contractor from fulfilling the terms of the Contract.

1.03 COMMENCEMENT OF THE WORK

A. The Contractor shall not commence Work nor allow Subcontractors or Sub-subcontractors to commence Work until:

1. The Agreement has been fully executed.
2. The CITY has approved the Contractor's Performance and Maintenance and Payment Bonds, if required.
3. The CITY has approved evidence of the Contractor's Liability Insurance and other insurance required to be purchased by the Contractor. A complete description of the policy is required in addition to the CITY being listed as an additional insured. CITY'S Hold Harmless Agreement must be executed prior to contract execution.
4. The CITY has issued a Notice to Proceed.

5. The CITY has the right to postpone abatement or delay the construction schedule as it relates to the abatement.

1.04 COMPLETION TIME

A. Work under the proposed Contract Documents shall commence immediately after receipt of the Notice to Proceed and shall be completed and ready for use or operation, subject to any extension of time which may be granted by the CITY, as defined in the Contract as completed by February 15, 2026 (40 days after Notice to Proceed).

1.05 OWNER OCCUPANCY

A. The CITY shall have the right to take possession of and use any completed or partially completed portions of the building upon completion of air testing.

1.06 CONTRACTOR USE OF SITE AND PREMISES

A. General: Contractor shall have full use of premises for abatement operations, including use of Project site, during the abatement period. Contractor's use of premises is limited only by CITY'S right to perform Work or to retain other contractors on portions of Project.

B. Use of Site: Limit use of premises to areas within the Contract limits indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.

C. Driveways and Entrances: Keep driveways, access easements, and entrances serving premises clear and available at all times. Do not use these areas for parking or storage of materials.

1.07 WORKING HOURS

A. The Contractor's hours of operations are as indicated in the Special Provisions.

B. The Contractor must request to the CITY and Consultant, in writing, 48 hours in advance of any deviation to these hours, such as outside of specified Work hours, weekend, or Holiday Work. The Contractor is responsible for all additional expenses due to weekend or Holiday Work hours. This includes, but is not limited to: CITY'S Consultant, Testing Laboratory personnel, etc. Such additional charges shall be a subsidiary obligation of Contractor. With the exception of additional charges incurred by the Consultant (which the Contractor shall reimburse the CITY for), no extra payment shall be made by CITY on account of such overtime Work.

C. Contractor shall secure the site when not working or working after standard working hours.

1.08 WORK RESTRICTIONS

A. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by adjacent owners, tenants, or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated.

1. Notify CITY and utility service not less than 48-hours in advance of proposed utility interruptions.

2. Do not proceed with utility interruptions without utility service and CITY'S written permission.

B. Haul Routes:

1. Notify CITY of all haul routes to disposal sites.

2. In accordance with Section 02 81 00 – Transportation and Disposal of Hazardous Materials.

1.09 WORK SEQUENCE

A. Coordinate abatement schedule and operations with CITY.

1.10 PERMITS, FEES AND NOTICES

A. The Contractor shall secure and pay for all permits and governmental fees, licenses and inspections for the proper execution and completion of the Work which are customarily secured after execution of the Contract and which were legally required at the time bids were received.

PART 2 PRODUCTS

(Not Used)

PART 3 EXECUTION

(Not Used)

END OF SECTION

SECTION 01 30 00

ADMINISTRATIVE REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Materials Survey.
2. Meetings.
3. Submittals.

1.02 MEASUREMENT AND PAYMENT

A. Work specified in this section is included in the lump sum contract price.

PART 2 PRODUCTS

(Not Used)

PART 3 EXECUTION

3.01 MATERIALS SURVEY

A. Project is based on known items and quantities as of the time and date of this project manual. The Contractor is to verify all quantities identified within the Project Manual. Costs for additional survey services shall be the responsibility of the Contractor.

3.02 PRECONSTRUCTION MEETING

A. CITY or Consultant will schedule a meeting after Notice of Award.

B. Attendance Required:

1. CITY.
2. Consultant.
3. Contractor – the Supervisor overseeing the project must attend.
4. Major Subcontractors.

C. Agenda:

1. Submission of list of Subcontractors, list of Products, schedule of values, and progress schedule.
2. Designation of personnel representing the parties in Contract and the CITY and Consultant.
3. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and Contract closeout procedures.
4. Use of premises by CITY and Contractor.
5. CITY'S Requirements.

6. Facilities and controls provided by CITY/Contractor.
7. Temporary utilities provided by CITY/Contractor.
8. Security and housekeeping procedures.
9. Scheduling.
10. Procedures for maintaining record documents.

D. Consultant shall record minutes and distribute copies within seven days after meeting to participants, with copies to CITY, participants, and those affected by decisions made.

3.03 PROGRESS MEETINGS

A. Contractor to schedule and administer meetings throughout progress of the Work on weekly intervals.

B. Contractor to make arrangements for meetings, prepare agenda with copies for participants, preside at meetings, record minutes, and distribute copies within seven days to Consultant, CITY, participants, and those affected by decisions made.

C. Attendance Required: Job superintendent, major Subcontractors and suppliers, CITY, Consultant, as appropriate to agenda topics for each meeting.

D. Agenda:

1. Review minutes of previous meetings.
2. Address public concerns and complaints.
3. Review of Work progress.
4. Field observations, problems, and decisions.
5. Identification of problems which impede planned progress.
6. Review of submittals schedule and status of submittals.
7. Maintenance of progress schedule.
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. Schedule next meeting.

E. Contractor shall record minutes and distribute copies within seven days after meeting to participants, with copies to Consultant, CITY, participants, and those affected by decisions made.

3.04 SUBMITTALS

A. Required submittals are specified in individual sections.

3.05 NUMBER OF COPIES OF SUBMITTALS

A. Documents for Review:

1. Submit the number of copies which the Contractor requires, plus three copies which will be retained by the Consultant.

B. Documents for Information: Submit two copies.

3.06 SUBMITTAL PROCEDURES

A. Transmit each submittal with Contractor's standard submittal form, if provided.

B. Schedule submittals to expedite the Project and deliver. Coordinate submission of related items.

3.07 RE-SUBMITTALS

A. Re-submittals will be handled in the same manner as first submittals. On re-submittals, direct specific attention, in writing on the transmittal letter and on re-submitted shop drawings by use of revision triangles or other similar methods, to revisions other than the corrections requested by the CITY or Consultant, on previous submissions. Any such revisions which are not clearly identified shall be made at the risk of the Contractor. Make corrections to any Work done because of this type revision that is not in accordance with the Contract Documents as may be required by the Consultant.

END OF SECTION

SECTION 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Temporary abatement facilities for Consultant and Contractor including telephone, water, sanitary, security, temporary fencing, parking and field office.
2. Requirements to minimize pollution of air, water, or land, control of noise, and the disposal of solid waste materials.
    a. Solid waste disposal.
    b. Control of chemical waste.
    c. Control of dust.
    d. Control of noise.
    e. Protection of roadways.

1.02 MEASUREMENT AND PAYMENT

A. Work specified in this section is included in the lump sum contract price.

1.03 QUALITY ASSURANCE

A. Items provided under this section shall be listed and labeled by UL or other Nationally Recognized Testing Laboratory (NRTL).

1. Term “NRTL” shall be as defined in OSHA Regulation 1910.7.
2. Terms “listed” and “labeled” shall be as defined in National Electrical Code, Article 100.

B. Comply with federal, state, and local codes and regulations, and with utility company requirements.

1.04 SUBMITTALS

A. Submit in accordance with Section 01 30 00 – Administrative Requirements.

PART 2 PRODUCTS

2.01 TEMPORARY UTILITIES

A. Contractor shall provide and pay for all electrical power and lighting required for abatement purposes unless otherwise notified by Consultant.

2.02 TEMPORARY TELEPHONE SERVICE

A. A cellular phone shall be acceptable as temporary phone service. Provide telephone number(s) at which responsible representatives of Contractor can be reached evenings, weekends and holidays.

2.03 TEMPORARY WATER SERVICE

A. Contractor shall provide and pay for water service and all water used unless otherwise notified by Consultant.

2.04 TEMPORARY SANITARY FACILITIES

A. Contractor to provide and maintain temporary toilet facilities and enclosures for Contractor's workers, Consultant's personnel, CITY'S personnel and testing firm personnel working at project site. Provide at time of project mobilization and maintain until project completion.

B. Portable toilets with hand sanitizer shall be acceptable. Comply with all applicable codes and regulations. Arrange for regular cleaning and/or replacement of portable toilets.

C. Maintain daily in clean and sanitary condition.

2.05 TEMPORARY FENCE AND GATES

A. Ensure the presence of fencing as required by OSHA, or as needed, to prevent unauthorized entry to abatement areas and to protect existing facilities and adjacent properties from damage from abatement operations. The fence shall be erected before abatement and be maintained for the duration of the Work.

B. Materials shall be sufficiently durable to be effective for duration of construction period.

2.06 FIELD OFFICES AND BUILDINGS

A. If desired by Contractor, erect where designated by Consultant, and maintain in good condition, temporary field office, tool, and storage building(s) for Contractor's use. Buildings are not required and cost is incidental to the project.

1. Tool storage building(s) shall be of ample size to provide space for tools and equipment.

2. Building(s) shall be neat and well-constructed, surfaced with plywood, drop siding, Masonite or other similar material, well painted and void of advertisements.

PART 3 EXECUTION

3.01 GENERAL

A. Employ and utilize environmental protection methods, obtain all necessary permits, and fully observe all local, state, and federal regulations. Contractor shall be responsible for any and all fines imposed by any regulatory agency due to the Contractors activities.

3.02 WATER CONTROL

A. Conform to the regulations and requirements of legally authorized surface water management agencies.

B. Protect site from puddling or running water. Provide water barriers as required to protect property from water damage.

C. Water utilized for asbestos removal must me containerized and properly disposed of at a permitted facility unless field filtered in accordance with local, state and federal regulations.

3.03 SOLID WASTE DISPOSAL

A. Contractor Generated:

1. Collect solid waste on a daily basis.
2. Solid waste generated off-site shall not be brought onto or accepted at the site as part of this Contract.
3. Refer to individual specification sections for disposal requirements for other solid waste, debris, and ACM.

3.04 CONTROL OF DUST

A. The control of dust shall mean that no abatement activity shall take place without applying all such reasonable measures as may be required to prevent particulate matter from becoming airborne so that it remains visible beyond the limits of construction.

B. Utilize methods and practices of abatement to eliminate dust in full observance of agency regulations.

C. The Consultant will determine the effectiveness of the dust control program and may request the Contractor to provide additional measures, at no additional cost to CITY.

3.05 PROTECTION OF AIR QUALITY

A. Minimize air pollution by requiring use of properly operating combustion emission control devices on abatement vehicles and equipment and encourage shutdown of motorized equipment not in use.

B. Do not burn trash at Project site.

3.06 CONTROL OF NOISE

A. Conduct operations to cause least annoyance to residents in vicinity of Work and comply with applicable local ordinances.

B. Equip compressors, hoists, and other apparatus with mechanical devices necessary to minimize noise and dust. Equip compressors with silencers on intake lines.

C. Equip gasoline or oil-operated equipment with silencers or mufflers on intake and exhaust lines.

D. Route vehicles carrying soil, debris, or other material over such streets as will cause least annoyance to public and do not operate on public streets outside of times specified in General Requirements

3.07 PROTECTION OF ROADWAYS & PARKING AREAS

A. Contractor is responsible for maintenance and restoration of public roads used for hauling of materials and equipment to and from the site.

B. Contractor shall clean debris resulting from operations on the haul roads on a daily basis, or as instructed by the Consultant.

C. The Contractor shall not utilize local storm sewer inlets to wash and remove debris from the haul roads.

D. All hauling operations on- and off-site shall be completed in a manner that minimizes deposition of litter and debris on adjacent roadways

3.08 SECURITY

A. Contractor must leave the property secured to protect Work, existing facilities, and CITY'S operations from unauthorized entry, vandalism, or theft. CITY is not responsible

for vandalism or theft to Contractor's property.

B. Coordinate with CITY'S security program (if available), CITY'S police department, and CITY'S fire department.

3.09 CLEAN UP

A. Building:

1. Contractor is to remove any debris generated from the abatement on daily basis and may not stockpile job related materials in common areas of the building during the project.

3.10 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

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

B. Clean and repair damage caused by installation or use of temporary Work.

3.11 COMPLETION OF WORK

A. Upon completion of Work, leave area in a clean, natural looking condition.

B. Remove all signs of temporary construction and activities incidental to construction of required permanent Work

END OF SECTION

SECTION 02 81 00

TRANSPORTATION AND DISPOSAL OF HAZARDOUS MATERIALS

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Requirements for the transportation and disposal of materials generated during this Project which require off-site disposal and/or treatment. Materials that will or may be found on-site requiring off-site recycling or disposal include:

   a. Rubbish, trash, and miscellaneous garbage.

   b. Asbestos containing materials (ACM).

   c. Miscellaneous building debris and rubble.

B. Furnish all labor, equipment, materials and incidentals required to transport all materials required to be recycled or disposed of off-site.

1.02 MEASUREMENT AND PAYMENT

A. Work specified in this section is included in the lump sum contract price.

1.03 SUBMITTALS

A. Within 10 days after Notice to Award:

1. Names and locations of all facilities proposed to be used for the disposal of materials off-site.

2. Acceptance criteria, if any for each type of waste stream at each facility proposed.

3. Sampling and analytical criteria, if any, for each type of waste stream at each facility proposed.

4. Any other restrictions which may be imposed by each of the proposed facilities.

5. CITY has up to five days to review and respond following receipt of submittals.

6. Proposed transportation routes and alternate transportation routes to each disposal facility.

B. As the Work proceeds:

1. Blank sample of shipping documents and disposal manifests for each type of waste stream a minimum of three days prior to their proposed date of use.

2. Copies of all waste profile forms, waste disposal manifests, and bills of lading required by the disposal facilities.

3. Copies of certificates of disposal, destruction, treatment, recycling as applicable and as issued by the disposal facility following acceptance and final disposition of the various waste streams.

C. At Contract Closeout:

1. Summary spreadsheet of all waste hauled from the site, quantities, and identification of the disposal facility.

1.04 QUALITY ASSURANCE

A. Ensure each facility possesses all necessary permits required for accepting and disposing of wastes and that these permits are current.

B. Use only disposal facilities previously approved by CITY for performance of Work.

C. Contractor shall have responsibility to meet requirements of these Specifications, and acceptance of bid does not constitute nor imply approval of proposed off-site waste disposal facility(ies). CITY shall have right to deny approval of any/all facility(ies) that does not comply with these Specifications.

D. CITY may schedule inspections of disposal facility, as appropriate, to assess compliance status.

E. In event that identified and approved facility ceases to accept stated waste materials or facility ceases operations, it is Contractor's responsibility to locate alternate approved and permitted facility for accepting waste materials. Contractor is responsible for making necessary arrangements to utilize facility, and alternate facility must be approved by CITY in same manner and with same information as for original facility.

F. Originate, maintain, and provide CITY or CITY'S Consultant with copies of waste shipment manifest records for all waste materials transported off-site. Contractor shall verify nature and quantity of wastes shipped on each load. Manifest forms and records shall be consistent with requirements of RCRA, U.S. DOT regulations, and state requirements. CITY shall be designated generator for purposes of transport manifest.

   1. Provide CITY with written documentation verifying receipt of each load at designated treatment or disposal facility and verification of proper treatment or disposal.

   2. Notify CITY immediately if Contractor fails to receive "Notification of Receipt" of any waste shipment within reasonable time frame approved by CITY or CITY'S Consultant. Contractor shall undertake whatever actions are necessary to determine status of shipment and remedy situation.

1.05 REFERENCE STANDARDS

A. Comply with all applicable federal, state and local laws, codes and ordinances which govern or regulate waste transportation and disposal. Regulations regarding transportation and final disposal of wastes at minimum include but are not limited to the following:

B. United States Federal Government – Code of Federal Regulations (CFR)

   1. 29 CFR Occupational Safety and Health Standards

   2. 49 CFR 387 (46 CFR 30874, 47073)

   3. Department of Transportation DOT-E 8876

   4. 40 CFR 136 Guidelines Establishing Test Procedures for Analysis of Pollutants

   5. 40 CFR 261 Identification and Listing of Hazardous Waste

   6. 40 CFR 262 Standards Applicable to Generators of Hazardous Waste

   7. 40 CFR 263 Standards Applicable to Transporters of Hazardous Waste

   8. 40 CFR 264 Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities

9. 40 CFR 265 Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal
10. 40 CFR 266 Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities
11. 40 CFR 268 Subparts (C) and (D) Land Disposal Restrictions
12. 40 CFR 279 Standards for the Management of Used Oil
13. 49 CFR 107 Hazardous Materials Program Procedures
14. 49 CFR 171 General Information, Regulations and Definitions
15. 49 CFR 172 Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information and Training Requirements
16. 49 CFR 173 Shippers – General Requirements for Shipments and Packaging
17. 49 CFR 177 Carriage by Highway
18. 49 CFR 178 Specifications for Packaging

PART 2 PRODUCTS

2.01 PACKING MATERIALS

A. Provide all of the materials and equipment required for packaging, labeling, placarding and transportation of waste streams from the site in conformance with department of transportation, federal, state and local regulations.

PART 3 EXECUTION

3.01 NOTIFICATION

A. Notify all applicable federal, state and local representatives, or any other authority which has jurisdiction over the mode and route of transport, in advance of commencing waste stream transport. Obtain all required approvals from those parties having jurisdiction over the transport.

3.02 MANIFESTING

A. Provide and prepare manifests as required for the transportation and disposal of the waste streams from the site. Waste manifests shall be completed in a form acceptable to the state and federal regulatory agencies. After completion by the Contractor, all waste manifests shall be signed by the CITY or CITY'S Consultant.

3.03 LABELING

A. Upon removal of all contaminated materials, properly label all containers or transports prior to transporting these materials for disposal. Contractor shall be responsible for labeling all containers and transports in accordance with applicable federal and state regulations.

3.04 TRANSPORTATION AND ENTRY/EXIT REQUIREMENTS

A. Transport all waste streams from the site in conformance with department of transportation, federal, state and local regulations governing the type of waste stream

being transported. This includes, but not limited to, requirements for operator training and requirements for packaging, labeling, marking, placarding of various waste shipments.

B. All waste streams shall be transported directly to the disposal facility from the site. Neither the route nor the mode of transportation shall deviate from the routes submitted to the CITY without prior written approval from the CITY or CITY'S Consultant.

C. Inspect existing roadways immediately adjacent to the site and document their condition prior to project start-up. Any/all repairs or improvements, including permits and/or approvals, to accommodate off-site transportation of wastes shall be responsibility of Contractor. Provide documentation to CITY or CITY'S Consultant prior to any hauling operations.

D. Document all entry/exit procedures for transports in Off-Site Transportation and Disposal Plan and shall instruct and provide written instructions to all transporters as to these procedures. Contractor shall see that all personnel are provided with adequate protective equipment in accordance with Contractor's health and safety plan.

3.05 LOADING OF MATERIALS INTO TRANSPORT CONTAINERS

A. Waste streams will be loaded into transport containers in a manner which minimizes the spilling of materials. Materials which have been segregated on site shall not be mixed in transport containers unless characterized as same waste type. Waste streams shall be secured in transport containers in accordance with the regulations which govern the transportation of these materials. At a minimum, each load of excavated material must be covered prior to leaving the site. Materials shall be loaded into transport containers in manner which does not damage any polyethylene sheeting or other protective liner installed. Transport vehicles shall not be driven over waste streams stockpiled on site or contaminated material which will be excavated during the completion of the Work.

B. Furnish, install, and maintain any on-site temporary loading facilities as required.

C. Provide equipment, personnel, and on-site facilities necessary to handle and load waste materials designated for off-site transport.

D. Ensure that all waste materials loaded for off-site transportation have been accurately identified and are in compliance with appropriate state and federal regulations.

E. Each container shall be visually inspected upon loading to ensure it is properly sealed and there are no signs of spillage or leakage. All vehicles hauling bulk wastes from the site shall be inspected by the Contractor prior to leaving the site. Contractor shall certify proper containerization for each transporter leaving the site.

F. Containers found to be leaking or bulk transports found leaking shall not be loaded until source of leaking is located and source contained. Area where leaking occurred, and any contaminated equipment shall be decontaminated.

G. Contractor shall be responsible for any and all cleanup activities involving waste spilled in transit or during loading operations and shall be at the Contractor's expense.

H. Contractor shall be responsible for verifying appropriate container sizes for off-site disposal in accordance with Federal Department of Transportation (DOT), state, and local regulations. Any requirements and expenses for oversize load are Contractor's responsibility.

3.06 HAULING REQUIREMENTS

A. Implement hauling or transport schedule which minimizes congestion on and around site.

B. Obtain and prepare manifest forms, obtain waste code numbers, and complete waste shipment records as required by State of Iowa and 40 CFR 261 for verifying waste type and quantity of each load transported off-site. Manifest form shall be verified by CITY or CITY'S Consultant and copies of each manifest retained by CITY or CITY'S Consultant following shipment.

C. CITY or CITY'S Consultant will provide hazardous waste generator identification number and/or EPA identification number (for hazardous waste only) pursuant to 40 CFR 261 for use on manifest, if required.

D. CITY or CITY'S Consultant will sign hazardous waste manifest as generator.

E. Transport waste from site only to those facilities listed on manifest.

F. Routes and timing must be coordinated with appropriate state regulatory agencies. All highway and road restrictions shall be adhered to by Contractor.

G. Use transporter(s) approved by CITY. Any use of substitute or additional transporters shall have previous approval of the CITY.

3.07 VEHICLE DECONTAMINATION

A. Decontaminate transport vehicles and containers in a designated decontamination area prior to their leaving the site. Decontamination shall include the removal of material on the tires and axles of trucks and any other material on the vehicle as a result of loading operations.

3.08 OFF-SITE DISPOSITION

A. Dispose the various waste streams at CITY preapproved facilities. All waste facilities must have a valid facility permit from the regulating authority (U.S. or state) for that type of facility and for the type of waste which will be received. All disposal facilities must be constructed in a manner which meets or exceeds the requirements of federal regulations governing the type of disposal facility. No change in disposal facility for any type of waste stream shall be allowed without prior written approval of the CITY or CITY'S Consultant.

END OF SECTION

SECTION 02 82 00

ASBESTOS REMEDIATION

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes:

1. Removal, Cleanup and Disposal of Asbestos Containing Material (ACM).
2. Applicable Standards and Guidelines.

1.02 MEASUREMENT AND PAYMENT

A. Work specified in this section is included in the lump sum contract price.

1.03 DESCRIPTION

A. The work includes removal and disposal of Asbestos Containing Materials (ACMs) from three buildings (Building #s 3, 4, and 9) associated with the former Elkem Carbide facility on Auditor's Parcel D located at 365 Carbide Lane, Keokuk, Iowa 52632. The buildings are slated for demolition. Specifications for asbestos removal includes both friable and nonfriable ACMs. All ACMs removed from the property must be disposed of at a permitted facility that accepts asbestos. All materials removed from the property shall be done in accordance with local, state, and federal regulations.

1. Contractor is responsible for verifying all quantities.
2. No additional compensation will be made for materials not included in Contractor's lump sum bid.

1.04 REFERENCE STANDARDS

A. Title 29, Code of Federal Regulations, Sections 1910.1001, 1910.134, 1910.2, 1910.1200 and 1926.58. Occupational Safety and Health Administration (OSHA), US Department of Labor.

B. Title 40, Code of Federal Regulations, Part 61, Subparts A and M, National Emission Standards for Hazardous Air Pollutants. U.S. Environmental Protection Agency.

C. Title 40, Code of Federal Regulations, Part 763, Subparts E and G, Asbestos Abatement Project.

D. Chapter 88B of the Code of Iowa, removal or Encapsulation of Asbestos.

E. Chapter 81 of the Iowa Administrative Code, Asbestos Control Procedures, Iowa Bureau of Labor.

F. Iowa Bureau of Labor Guidelines for removal of Asbestos, Chapter 155.

G. 29 CFR 1926 - U.S. Occupational Safety and Health Standards; current edition.

H. Title Code of Federal Regulations Part 763, Asbestos Containing Materials in Schools.

I. EPA Guidance Document: Asbestos Waste Management Guidance (Blue Book).

1.05 SUBMITTALS

A. Pre-Abatement – to be received within 10 business days after Notice of Award. CITY will not compensate for project start delays due to late submittals.

1. Provide CITY and Consultant with a copy of written notification to federal and state agencies (IDNR 10-Day Notification).
2. Submit a list of all personnel who will be involved in the abatement activity including, supervisors, workers, and any other personnel or agent who may be responsible for any aspect of the abatement activities. The list shall include all personnel's Asbestos Abatement Certification numbers and expiration dates. No personnel may be on-site if not certified.
3. Submit shop drawings for layout and construction of decontamination enclosure systems and barriers for isolation of the Work areas detailed in this Specification and required by applicable regulations if necessary.
4. With the CITY or CITY'S consultant, inspect the premises wherein all abatement and abatement related activities will occur and submit a statement signed by both, agreeing on property condition prior to the commencement of the Work.

B. Abatement activities:

1. Contractor shall submit, as required by the CITY, job progress reports detailing abatement activities.
2. Contractor shall keep daily copies of Work site entry logbooks with information on worker and visitor access. This must include the names and certification numbers and an outline of Work accomplished by those who enter. Daily field reports must be provided to the Consultant the Monday following each work week.
3. Contractor shall submit a copy of emergency procedures.
4. Contractor shall record a log of all personnel who enter the Work area which will be made available to the CITY or CITY'S consultant upon request. Sign-in logs to be provided to the Consultant the Monday following each work week.
5. Submit copies of all transport manifests, trip tickets and disposal receipts for all asbestos waste materials removed from the Work area during the abatement process within seven (7) calendar days of completion of project.
6. The Project will not be considered complete until all submittals are received by the CITY, which will affect payment for the project.

1.06 QUALITY ASSURANCE

A. Asbestos Firm Qualifications: An experienced firm that has specialized in asbestos abatement Work similar in size and scope to that indicated for this Project.

1. Asbestos abatement workers must be licensed by the Iowa Department of Inspections, Appeals, & Licensing for the purpose of removal, encapsulation, enclosure, demolition, and maintenance of structures or components covered by or composed of asbestos containing materials.

B. Regulatory Requirements: Comply with governing OSHA, IDNR and U.S. EPA notification regulations before beginning renovation or demolition activities. Comply with hauling and disposal regulations of authorities having jurisdiction.

C. Pre-Abatement Conference: Attend conference at Project site.

PART 2 PRODUCTS

2.01 MATERIALS

A. The Contractor shall provide all materials and supplies necessary to complete the project.

B. Store all materials so as to prevent damage or contamination.

C. Damaged or deteriorating materials shall not be used.

D. Containment materials shall be a minimum of four mil thick for walls and covering stationary objects. Containment materials for floors and other uses, including hauling, shall be at least six mil in thickness.

E. Disposal bags shall be a minimum of six mil in thickness, pre printed with labels as required by 40 CFR 61.22(j)(3)(i)(C) and 49 CFR Part 172.

F. Disposal drums shall be metal or fiberboard with locking ring tops. Stick on labels conforming to (E) shall be applied.

G. Warning signs as specified by OSHA 29 CFR 1910.1001(j)(1)(ii) shall be used.

H. Surfactant shall be a 50/50 mixture of polyoxyethyleneether and polyoxyethylene ester, or equivalent, mixed 1 fluid ounce to 5-gallon proportion, or as specified by the manufacturer.

2.02 EQUIPMENT

A. General

1. The Contractor shall supply all tools and equipment necessary to complete the project.
2. A sufficient quantity of HEPA filtered air filtration units must be utilized to maintain required air exchanges.
3. Full body disposable protective clothing impenetrable to asbestos shall be provided to authorize personnel as needed.
4. Approved safety equipment shall be provided as needed.
5. Equipment needed to complete the project such as scaffolds (may not be wood per the Fire Prevention Bureau (FPB) Policy 2011-3), ladders, and hand tools, and other tools shall be provided as needed.
6. HEPA filtered vacuums shall be available as needed during the project.

B. Respiratory Equipment

1. Respiratory protection in compliance with applicable OSHA regulations shall be provided.
2. For Class I work, the abatement workers and supervisors shall wear, at a minimum, powered air-purifying respirators with appropriate HEPA filters until such time that personal and short-term excursion limit samples show airborne asbestos levels of 0.3 f/cc or less. After these levels are achieved, the abatement workers and supervisors may switch to 1/2 face negative pressure respirators. If airborne asbestos levels reach a level of over 0.3 f/cc, PAPR's must again be utilized.

C. Protective Clothing

1. Disposable clothing including head, and foot protection shall be provided by the Contractor in sufficient quantities and adequate sizes for all workers and authorized visitors.
2. Launderable clothing, if required, shall be provided by the Contractor in sufficient quantities and adequate sizes for all workers and authorized visitors.
3. Hard hats, protective eyewear, gloves, rubber boots, and/or other footwear shall be provided by the Contractor as required for workers and authorized visitors. Safety shoes may be required for some activities.

PART 3 EXECUTION

3.01 EXAMINATION

A. Survey existing conditions and correlate with requirements indicated to determine extent of asbestos abatement required.

B. Contractor to verify all quantities of ACM.

3.02 PREPARATION

A. The Contractor shall post signs at all entrances to the job site, or 20 feet from the Work area at 30-foot intervals around the perimeter of the job site. Contractor must leave the Property secured to protect the Work area.

B. The Contractor will shut off and lock out all electric power feeding the job site. The Contractor will then provide temporary power together with ground fault circuit interrupters to supply the electrical needs of the project.

C. All alterations to the Work area for purposes of containment set up or removal shall be the responsibility of the Contractor unless agreed upon previously with the CITY.

D. The Contractor will shut down and lock out all HVAC systems that supply or pass through the Work area. Seal all vents with tape and two layers of four mil polyethylene (poly).

E. The Contractor will arrange for sanitary facilities for abatement personnel outside the Work area and maintain them in a sanitary condition.

F. The Contractor is responsible for providing water for project purposes.

G. The Contractor will preclean all movable objects in the Work area and remove them to an uncontaminated area.

H. The Contractor shall preclean all fixed objects and surfaces in the Work area. After precleaning, enclose fixed objects in at least four mil poly sheeting and seal securely with tape. Use the precleaning form in this specification to record the date, method, area, and identity of the supervisor.

I. The Contractor shall cover floors in the work area with two layers of six mil poly. Floor material shall extend at least 12 inches up side walls. Seams that may allow leakage will be minimized and staggered.

J. The Contractor shall cover walls in the work area with two layers of four mil poly. Wall material shall overlap floor materials by at least 12 inches.

K. The Contractor shall provide a worker decontamination system where workers will enter

and exit the work area.

L. Any negative pressure containment must be smoke tested at the beginning of every shift and documented. Negative pressure containments must have a minimum of four air changes per hour and a differential pressure of 0.02 column inches of water.

3.03 GENERAL PROCEDURES

A. Removal of ACM

1. Wet all asbestos containing material with water or an amended water solution using equipment capable of providing a fine spray mist, in order to reduce airborne fiber concentrations when the material is disturbed. Saturate the material, however, do not allow excessive water to accumulate in the Work area. Keep all removed material wet enough to prevent fiber release until it can be containerized for disposal. Wetting procedures are not equally effective on all types of asbestos containing materials but shall be used in all cases.

2. Saturated asbestos containing material shall be removed in manageable sections. Removed material should be containerized before moving to a new location for continuance of Work. Surrounding areas shall be periodically sprayed and maintained in a wet condition until visible material is cleaned up.

3. Material removed from each Work area shall not be dropped or thrown into disposal trucks or bins. Material should be removed as intact sections or components whenever possible and carefully lowered to the truck or bin container.

4. Area air sampling will be completed randomly during abatement. Following the completion of abatement and passing of a visual inspection, final clearance air monitoring samples will be collected from each containment area. All air samples will be analyzed using Phase Contrast Microscopy (PCM).

5. All Contractor staff working within a regulated area must have documentation of a negative exposure assessment for the type of work being performed from the previous 12 months. Personal air sampling may be completed by the Contactor in the absence of a negative exposure assessment. If a previous negative exposure assessment has not been completed, personal air sampling must be completed within seven days of beginning Work.

6. Each Work area shall be cleaned until it is free of ACM and/or contaminated debris or until approved by Consultant. Consultant will be on-site to conduct visual survey of each work area that has been abated and will also collect PCM Final Clearance air monitoring samples. Should any visible reside remain, including nails or staples, it will be assumed to be asbestos and the work area will be recleaned by the Contractor and reinspected. A visual inspection form will be signed by the Contractor and Consultant following passing of a visual inspection. If PCM air monitoring samples fail, contractor will be responsible for recleaning the work area and removing porous materials from work area prior to a retesting.

7. Following passing of a visual inspection and PCM final clearance air samples, if collected – will be for interior containments – the containment material may be removed upon notification from the Consultant.

B. Disposal of ACM

1. As the Work progresses, to prevent exceeding available storage capacity on-site, sealed and labeled containers of asbestos containing waste shall be removed and

transported to the prearranged disposal location.

2. Disposal must occur at an authorized site in accordance with regulatory requirements of NESHAPS and applicable state and local guidelines and regulations.
3. All Waste Shipment Records shall be delivered to the CITY. A recommended record keeping format utilizes the Waste Shipment Record (WSR) which includes the names and addresses of the Generator (CITY), Contractor, Transporter, and Disposal Site, the estimated quantity of the asbestos waste and the type of containers used. The form should be signed by the Contractor, the Transporter and the Disposal Site Operator, as the responsibility for the material changes hands. Instructions can be found with the Waste Shipment Records.
4. The Contractor and Transporter should retain a copy of the WSR upon completing their portion of it. The Disposal Site Operator should retain a copy and return a completed copy to the Generator within 45 days of the ACM leaving the Project Area.
5. All ACM that is readied for transport must be labeled with the name of the waste generator and the location at which the waste was generated. The contractor is responsible for providing the label.
6. Once debris have been removed from the Work area, they shall be loaded into a lined or enclosed truck for transportation.
7. The enclosed cargo area of the truck shall be free of debris and lined with six mil poly sheeting to prevent contamination from leaking or spilled containers. Floor sheeting shall be installed first and extend up the side walls. Wall sheeting shall be overlapped and taped into place.
8. Any debris or residue observed on containers or surfaces outside of the Work area resulting from cleanup or disposal activities shall be immediately cleaned up using HEPA filtered vacuum equipment and/or wet methods as appropriate.

3.04 ABATEMENT PROCEDURES

A. Class I Work

1. Removal of Asbestos Containing Materials

   a. The Contractor shall wet all asbestos materials with amended water and saturate it to the substrate. Saturate the asbestos material sufficiently so that at no time will there be fiber release from dry asbestos. Misting or spraying may be used to assist in fiber settling.

   b. Immediately following removal, wet asbestos shall be packed into bags or drums. Seal containers and move them to the waste container airlock. Bags should not be overfilled. Asbestos waste with sharp components shall be contained in drums before removal from the Work area.

   c. Asbestos material shall not be dropped or thrown to the floor. Material should be removed as intact sections or components whenever possible and carefully lowered to the floor. If this cannot be done for materials greater than 50-feet above the floor, a dust-tight chute shall be constructed to transport the material to containers on the floor or the material may be containerized at elevated levels (e.g., on scaffolds) and carefully lowered to the ground by mechanical means. For materials between 15 and 50 feet above the ground, they may be

containerized at elevated levels or dropped onto inclined chutes or scaffolding for subsequent collection and containerization.

d. Bags of asbestos waste shall be removed from Work area at the end of each shift to prevent water leakage.

e. Surfaces from which asbestos was stripped shall be brushed or hand cleansed until no visible asbestos residue remains.

f. Special circumstances (e.g., live electrical equipment or live steam lines) may prohibit the adequate use of wet methods to reduce fiber concentrations. For these situations, a dry removal may be required. The contractor will have to acquire special permits, different from those mentioned herein from the NESHAP enforcement agency.

g. The regulated areas are to be established and all removal workers are to wear appropriate respirators and protective clothing.

2. Clean-up Procedures

a. Collect and containerize all visible accumulations of asbestos containing materials and debris.

b. Wet clean all surfaces in the Work area using rags, mops, or sponges, as appropriate.

c. Remove all containerized waste from the Work area and waste container airlock.

d. Decontaminate and remove all unnecessary tools and equipment.

e. Inspect the Work area for visible residue. If any accumulation of residue is observed, it will be assumed to asbestos and the Work area shall be recleaned.

f. Apply a thin coating of an encapsulating agent to all surfaces in the Work area to seal in non-visible residue. The Contractor shall verify the compatibility of any encapsulating agent with future replacement material.

B. Class II Asbestos Work - Roofing

1. Roofing material shall be removed intact to the extent possible.

2. Cutting machines shall be continuously misted during use, unless misting substantially decreases worker safety.

3. All loose dust left from cutting operations must be immediately HEPA vacuumed.

4. Unwrapped or unbagged roofing material must immediately be lowered to the ground via covered, dust-tight chute, crane or hoist, or wrapped in plastic sheeting and lowered to the ground no later than the end of the Work shift.

5. Upon being lowered to the ground, unwrapped material shall be transferred to a closed receptacle in such a manner as to preclude the dispersion of dust.

6. Roof level heating and ventilation air intake sources shall be isolated or the ventilation system shall be shut down.

7. The regulated areas are to be established and all removal workers are to wear appropriate respirators and protective clothing.

C. Class II Asbestos Work - Siding, shingles, or transite panels

1. Cutting, abrading, or breaking of these materials shall be prohibited unless the employer can demonstrate that other methods less likely to release asbestos fibers cannot be used.
2. Each panel or shingle shall be sprayed with amended water prior to removal.
3. Unwrapped or unbagged panels or shingles must immediately be lowered to the ground via covered, dust-tight chute, crane or hoist, or wrapped in an impervious waste bag or wrapped in plastic sheeting and lowered to the ground no later than the end of the Work shift.
4. Nails shall be removed intact. If determined they are not able to be removed intact, Contractor may cut with flat, sharp instruments.
5. The regulated areas are to be established and all removal workers are to wear appropriate respirators and protective clothing.

D. Class II Asbestos Work - Other

1. The material must be thoroughly wetted with amended water prior to removal.
2. The material shall be removed in an intact manner unless the employer demonstrates that intact removal is not possible.
3. Cutting, abrading, or breaking of these materials shall be prohibited unless the employer can demonstrate that other methods less likely to release asbestos fibers cannot be used.
4. ACM removed, shall be immediately bagged or wrapped, or kept wetted until transferred to a closed receptacle, no later than the end of the Work shift.
5. The regulated areas are to be established and all removal workers are to wear appropriate respirators and protective clothing.

E. Class III Asbestos Work

1. Work shall be performed using wet methods.
2. To the extent feasible, the Work shall be performed using local exhaust ventilation.
3. Where the disturbance involves drilling, cutting, abrading, sanding, chipping, breaking, or sawing of TSI or surfacing material, the employer shall use impermeable drop cloths, and shall isolate the area using mini-containments or glovebags.
4. The employer shall contain the area using impermeable drop cloths and plastic barriers or their equivalent, or shall build an NPE.
5. The regulated areas are to be established and all removal workers are to wear appropriate respirators and protective clothing.

F. Class IV Asbestos Work

1. ACM or PACM debris will be promptly cleaned using wet methods and/or HEPA vacuuming.
2. The regulated areas are to be established and all removal workers are to wear appropriate respirators and protective clothing.
3. In areas where friable TSI or surfacing materials are located, waste and debris must be assumed to contain asbestos.

3.05 GLOVEBAG PROCEDURES

A. Glovebagging may not be performed on pipes whose temperature exceeds 150 degrees Fahrenheit.

B. The regulated areas are to be established and all removal workers are to wear appropriate respirators and protective clothing

C. At least two persons shall perform the work on each individual glovebag.

D. A protective shroud of at least six mil poly shall be placed under the glovebag area. A plastic barrier shall be utilized if the glovebag area is occupied.

E. Loose and friable material adjacent to the glovebag is to be wrapped and sealed in two layers of six mil poly.

F. Glove bags must be installed so that they completely cover the pipe or other structure where asbestos removal work is to be done. Glove bags shall be installed by cutting the sides of the glove bag to fit the size of the pipe form which asbestos is to be removed. The glove bag is attached to the pipe by folding the open edges together, stapling them, and securely sealing them with tape. All openings in the glove bag must be sealed with duct tape or equivalent to prevent any leakage from the bag.

G. Each glove bag is to be smoke tested after installation on the pipe prior to beginning removal. Smoke testing will be done by the Consultant or Contractor by inserting the smoke tube through a small hole in the glove bag. The glove bag is then filled with smoke, the tube is removed, and the hole patched with duct tape. The glove bag is then squeezed. If smoke escapes from the glove bag, the leak is to be sealed. Removal may begin after approval by Consultant or documentation of adequate smoke testing by the Contractor.

H. The employees who are performing the asbestos removal with the glove bag must don at least a half mask dual-cartridge HEPA filtered respirator and wear disposable protective clothing. Respirators should be worn by employees who are in close contact with the glove bag and who may thus be exposed as a result of small gaps in the seams of the bag or holes punched through the bag by a razor knife or a piece of wire mesh.

I. A HEPA filtered vacuum is to be inserted into the glovebag and left running continuously during the glovebag removal.

J. The material to be removed must be adequately wetted with a wetting agent prior to removal. The removed asbestos material from the pipe or other surface must be thoroughly wetted with a wetting agent (applied with a sprayer wand inserted through a small hole cut in the bag with an airtight seal).

K. A wetting agent must then be used to spray any layer of dry material that is exposed beneath the mesh, the surface of the stripped underlying structure, and the inside of the glove bag.

L. After removal of the layer of asbestos containing material, the pipe or surface from which asbestos has been removed must be thoroughly cleaned with a brush and wet wiped with a wetting agent until no traces of the asbestos containing material can be seen.

M. Any asbestos containing insulation edges that have been exposed as a result of the removal or maintenance activity must be encapsulated with bridging encapsulant to ensure that the edges do not release asbestos fibers to the atmosphere after the glove bag has been removed.

N. When the asbestos removal and encapsulation have been completed, the bag may be removed from the pipe and sealed with tape to keep the asbestos materials safely in the bottom of the bag. The glove bag must then be double bagged in a labeled six mil poly bag, sealed, and removed from the work area to be disposed of properly.

3.06 SCOPE OF WORK

A. Drywall and Joint Compound Removal

1. Remove the asbestos containing drywall and joint compound. All asbestos removal work is to be done as per this specification. The Contractor is to remove all movable objects in the containment area. All objects which must remain in the containment areas are to be sealed with a minimum of one layer of four mil poly. The containments must have a minimum of four air changes per hour and a differential pressure of 0.02 column inches of water. A single cell decontamination unit must be attached to the containment.

   The floor(s) in the containment area are to have a minimum of two layers of six mil poly. Remaining walls are to have a minimum of two layers of four mil poly.

   The asbestos containing material is to be wetted before and during removal. The drywall and joint compound is to be removed intact to the extent possible. The Contractor is responsible for cleaning up the ACM debris in the removal area by wet methods, HEPA-filtered vacuums, or a combination of each. The asbestos containing material must immediately be placed in six mil poly bags with the appropriate OSHA, DOT, and waste generator labels affixed. All disposal containers must be cleaned prior to removal from the contained area. If the contractor is using barrels, barrels must be lined with six mil poly and properly sealed and labeled. The asbestos containing material is to be disposed of at an approved landfill.

B. Mastic (Wall Wall) Removal

1. Remove the asbestos containing mastic. All asbestos removal Work is to be done as per this specification. The Contractor is to remove all movable objects in the containment area. All objects which must remain in the containment areas are to be sealed with a minimum of one layer of four mil poly. The containments must have a minimum of four air changes per hour and a differential pressure of 0.02 column inches of water. A single cell decontamination unit must be attached to the containment.

   The floor(s) in the containment area are to have a minimum of two layers of six mil poly. Remaining walls are to have a minimum of two layers of four mil poly.

   The asbestos containing material is to be wetted before and during removal. The mastic is to be removed intact to the extent possible. The Contractor is responsible for cleaning up the ACM debris in the removal area by wet methods, HEPA-filtered vacuums, or a combination of each. The asbestos containing material must immediately be placed in six mil poly bags with the appropriate OSHA, DOT, and waste generator labels affixed. All disposal containers must be cleaned prior to removal from the contained area. If the contractor is using barrels, barrels must be lined with six mil poly and properly sealed and labeled. The asbestos containing material is to be disposed of at an approved landfill.

C. Transite Panel Debris Removal

   Remove the asbestos containing transite panel debris. All asbestos removal is to be

done as per this specification. The asbestos containing material is to be wetted before and during removal. The transite panel debris is to be removed intact to the extent possible. The asbestos containing material must immediately be placed in six mil poly bags with the appropriate OSHA, DOT, and waste generator labels affixed. All disposal containers must be cleaned prior to removal from the contained area. If the contractor is using barrels, barrels must be lined with six mil poly and properly sealed and labeled. The asbestos containing material is to be disposed of at an approved landfill.

D. Transite Panel (Exterior) Removal

1. Remove the asbestos containing transite paneling. All asbestos removal Work is to be done as per this specification. The Contractor is to drape one layer of six mil poly on the ground around the perimeter of the building. The poly is to be draped in such a manner as to catch any asbestos debris that may be caused by the removal process.

   The asbestos containing material is to be wetted before and during removal. The transite paneling is to be removed intact to the extent possible. Nails or staples shall be removed intact, if determined they are not able to be removed intact than the contractor may cut with flat, sharp instruments. The Contractor is responsible for cleaning up the ACM debris in the removal area by wet methods, HEPA-filtered vacuums, or a combination of each. The asbestos containing material must immediately be placed in six mil poly bags with the appropriate OSHA, DOT, and waste generator labels affixed. All disposal containers must be cleaned prior to removal from the contained area. If the contractor is using barrels, barrels must be lined with six mil poly and properly sealed and labeled. The asbestos containing material is to be disposed of at an approved landfill.

E. Window Glazing Removal (Exterior)

1. Remove the asbestos containing window glazing. All asbestos removal Work is to be done as per this specification. The Contractor is to drape one layer of six mil poly on the ground around the perimeter of the building beneath the asbestos containing window glazing. The poly is to be draped in such a manner as to catch any asbestos debris that may be caused by the removal process.

   The asbestos containing material is to be wetted before and during removal. The window glazing is to be removed intact to the extent possible and may include removal of entire windows. The Contractor is responsible for cleaning up the ACM debris in the removal area by wet methods, HEPA-filtered vacuums, or a combination of each. The asbestos containing material must immediately be placed in six mil poly bags with the appropriate OSHA, DOT, and waste generator labels affixed. All disposal containers must be cleaned prior to removal. If the contractor is using barrels, barrels must be lined with six mil poly and properly sealed and labeled. The asbestos containing material is to be disposed of at an approved landfill

END OF SECTION

APPENDIX 1 – Asbestos Containing Materials Inspection Reports

TETRA TECH

August 18, 2016

Mr. Todd Davis
Site Assessment Manager
U.S. Environmental Protection Agency, Region 7
11201 Renner Boulevard
Lenexa, Kansas 66219

Subject: **Phase II Targeted Brownfields Assessment – Hazardous Materials Survey**
Elkem Carbide
Keokuk, Lee County, Iowa
EPA Region 7 START 4, Contract No. EP-S7-13-06, Task Order No. 0002.019.017
Task Monitor: Todd Davis, Site Assessment Manager

Dear Mr. Davis:

Tetra Tech, Inc. is pleased to submit the enclosed Phase II Targeted Brownfields Assessment (TBA) – Hazardous Materials Survey report regarding the structures at the Elkem Carbide site in Keokuk, Iowa. If you have any questions or comments regarding this submittal, please call me at (816) 412-1775.

Sincerely,

David A Zimmerman
for Rob Monnig, PE
START Project Manager

David A Zimmerman
for Ted Faile, PG, CHMM
START Program Manager

Enclosures

cc: Debra Dorsey, START Project Officer (cover letter only)

415 Oak Street, Kansas City, MO 64106
Tel 816.412.1741 Fax 816.410.1748 www.tetratech.com

HAZARDOUS MATERIALS SURVEY
FOR PHASE II TARGETED BROWNFIELDS ASSESSEMENT

ELKEM CARBIDE
KEOKUK, IOWA

Superfund Technical Assessment and Response Team (START) 4 Contract
Contract No. EP-S7-13-06, Task Order 0002.019.017

Prepared For:

U.S. Environmental Protection Agency
Region 7
Superfund Division
11201 Renner Boulevard
Lenexa, Kansas 66219

August 18, 2016

Prepared By:

Tetra Tech, Inc.
415 Oak Street
Kansas City, Missouri 64106
(816) 412-1741

CONTENTS

APPENDICES

CONTENTS (Continued)

FIGURES (Appendix B)

TABLES

EXECUTIVE SUMMARY

The Tetra Tech, Inc. (Tetra Tech) Superfund Technical Assessment and Response team (START) was tasked by the U.S. Environmental Protection Agency (EPA) Region 7 Superfund Division to perform asbestos and lead-based paint (LBP) inspections, and a household hazardous waste (HHW) inventory as part of a Phase II Targeted Brownfields Assessment (TBA) of the Elkem Carbide site in Keokuk, Iowa. The primary purpose of the survey was to assess potential impacts of asbestos, LBP, and HHW on the structures.

The following findings and recommendations are based on observations during the survey and analytical results from samples collected at the subject property buildings:

- Regulated asbestos-containing material (ACM) was identified within Building 1 on the subject property in approximately 110 square feet (ft^2) of 12" X 12" orange patterned floor tile in the kitchen. The floor tile was represented by sample 1-FT6-1. Laboratory results indicated that the floor tile contained 5-percent chrysotile asbestos. Because of asbestos in the floor tile, it should be removed by a licensed asbestos abatement contractor before any renovation or demolition disturbs the material. The removed waste must be transported to a disposal site able to accept non-friable ACM. If the material is not to be disturbed, it may remain in place.

- Regulated ACM was identified within Building 1 on the subject property in approximately 800 ft^2 of 9" X 9" brown floor tile in the south entrance and conference room. The floor tile was represented by samples 1-FT7-1, -2, and -3. Laboratory results indicated that the floor tile contained 6-percent chrysotile asbestos. Because of asbestos in the floor tile, it should be removed by a licensed asbestos abatement contractor before any renovation or demolition disturbs the material. The removed waste must be transported to a disposal site able to accept non-friable ACM. If the material is not to be disturbed, it may remain in place.

- Regulated ACM was identified on the exterior windows of Building 3 on the subject property in approximately 20 linear feet of window glaze. The window glaze was represented by samples 3-WG-1, -2, and -3. Laboratory results indicated that the window glaze contained 4-percent chrysotile asbestos. Because of asbestos in the window glaze, it should be removed by a licensed asbestos abatement contractor before any renovation or demolition disturbs the material. The removed waste must be transported to a disposal site able to accept non-friable ACM. If the material is not to be disturbed, it may remain in place.

- Regulated ACM was identified within Building 4 on the subject property in approximately 800 ft^2 of wall mastic behind paneling in the offices. The wall mastic was represented by samples 4-WM-1, -2, and -3. Laboratory results indicated that the wall mastic contained 12-percent chrysotile asbestos. Because of asbestos in the wall mastic, it should be removed by a licensed asbestos abatement contractor before any renovation or demolition disturbs the material. The removed waste must be transported to a disposal site able to accept non-friable ACM. If the material is not to be disturbed, it may remain in place.

- Regulated ACM was identified within Building 9 on the subject property in approximately 10,000 ft^2 of transite paneling. The transite paneling was represented by samples 9-TR-1, -2,

and -3. Laboratory results indicated that the transite paneling contained 20-percent chrysotile asbestos. Because of asbestos in the transite paneling, it should be removed by a licensed asbestos abatement contractor before any renovation or demolition disturbs the material. The removed waste must be transported to a disposal site able to accept non-friable ACM. If the material is not to be disturbed, it may remain in place.

- The Department of Housing and Urban Development (HUD) considers LBP as paint with lead levels above 1.0 mg/cm2. If the LBP surfaces are impacted during the renovations, or if the buildings are going to be demolished, Tetra Tech recommends the contractor conducting the renovation/demolition, comply with the Occupational Safety and Health Administration (OSHA) Lead in Construction Standard, Title 29 of Code of Federal Regulations (CFR), Part 1926.62. In addition, Tetra Tech recommends a sample be collected from the debris pile for a Toxicity Characteristic Leaching Procedure (TCLP) analysis (Title 40 CFR 261.24) prior to transport to the landfill. A representative sample should be collected and analyzed for all eight metals specified in 40 CFR Part 261.24 (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver). This would allow determination of the proper method of disposal of the materials. Of the 224 XRF readings from painted surfaces, 43 lead concentrations exceeded 1.0 mg/cm^2. The following is a summary of those positive readings:

    - LBP was identified in Building 1 on white concrete walls in the northeast open area and south entry; off-white plaster ceiling, green wall concrete, and white wall concrete at the bottom of the stairs; red metal door in the kitchen; and tan support pole in the covered parking area totaling approximately 3,980 square feet (ft^2).

    - LBP was identified in Building 2 on grey metal support beams; yellow concrete floor; and yellow metal door frame on the south garage door totaling approximately 3,060 ft^2.

    - LBP was identified in Building 3 on tan and white brick walls, tan and white concrete pillars, tan ceramic walls, and tan wood walls in the locker room; brown and beige ceramic wall tile, brown and white concrete pillars, blue concrete ceiling, and brown and tan brick walls in the entryway; brown wood exterior windows; blue brick walls on the west side; white brick walls and blue and white wood walls on the lab side; black wood door and brown wood screen door on the exterior west lab; light brown metal support beam, light brown wood overhand, and tan wood window frames on the exterior totaling approximately 9,794 square ft^2.

    - LBP was identified in Building 6 on grey metal doors and door frames on the exterior east side; yellow and brown/red metal stair railing and white concrete ceiling in the storage room; red/brown metal support beams in the 2nd floor storage room; and white metal door in the hall to the storage room totaling approximately 1,295 ft^2.

    - LBP was identified in Building 7 on yellow metal support beams totaling approximately 20 ft^2.

    - LBP was identified in Building 8 on yellow metal support beams in the main warehouse; yellow metal support beams and railings in the east/center stairwell; yellow metal door frame on the southeast side; red metal door and door frame in the north office area; and white metal support beams in the outer area totaling approximately 16,100 ft^2.

    - LBP was identified in Building 9 on yellow concrete post in the main plant, yellow metal door in the south garage, yellow metal stair railing and concrete guard post in the north

plant, blue metal guard post in the north plant, and yellow metal door in the north garage totaling approximately 80 ft^2.

- HHW and hazardous materials were inventoried during the survey. Tetra Tech recommends proper disposal of the materials based on their characteristics prior to renovation or demolition of the subject property buildings.

1.0 INTRODUCTION

Tetra Tech, Inc. (Tetra Tech) Superfund Technical Assessment and Response team (START) was tasked by the U.S. Environmental Protection Agency (EPA) Region 7 Superfund Division to perform asbestos and lead-based paint (LBP) inspections, and a household hazardous waste (HHW) inventory as part of a Phase II Targeted Brownfields Assessment (TBA) of the Elkem Carbide site in Keokuk, Iowa. The primary purpose of the survey was to assess potential impacts of asbestos, LBP, and HHW on the structures.

The survey team included Mr. Jeffrey Mitchell, Licensed State of Iowa Asbestos Inspector and Licensed EPA LBP Inspector, and Ms. Kaitlyn Bahr, Ms. Joann Jeplawy, and Mr. Tommy Rebecchi, all licensed Asbestos Inspectors. Inspector certifications are in Appendix A. Survey strategy and sample methodology were developed based on planned reuse of the structures at this address. Because of limitations on destructive sampling methods, additional suspect materials may be present within walls, voids, or other concealed areas. Assumptions and deviations regarding the subject property survey are identified in Section 10.0. Prior to future remodeling or demolition of the structures, further survey work may be needed to comply with all local, state, and federal requirements regulating asbestos containing materials (ACM), LBP, and HHW.

Tetra Tech conducted the survey on June 27 and 28, 2016. The purpose of the survey was to evaluate the subject property for presence, quantity, locations, and characterization of ACM that may require abatement prior to any remodeling or demolition activities, in accordance with National Emissions Standards for Hazardous Air Pollutants (NESHAP) regulations as adopted by the U.S. Environmental Protection Agency (EPA). The intent of the asbestos NESHAP regulations is to protect the public (and workers) by minimizing release of asbestos fibers during activities involving processing, handling, and disposal of ACM. Inhalation of asbestos fibers can cause cancer and other lung diseases (Agency for Toxic Substances and Disease Registry [ATSDR] 2008). The survey was completed in accordance with industry standard practice for hazardous materials surveys. Asbestos samples were collected in accordance with NESHAP regulations as adopted by the EPA.

Tetra Tech also conducted a screening for presence, quantity, and locations of LBP exceeding lead hazard levels, which would require Occupational Safety and Health Administration (OSHA) worker safety precautions during remodeling or demolition activities. The LBP survey was conducted according to protocols similar to the single-family housing inspection procedures in Department of Housing and Urban Development (HUD) guidelines (HUD 1997) by use of an XT-260 x-ray fluorescence (XRF)

spectrometer manufactured by Innov-X Systems, Inc. (Innov-X). The Innov-X is a state-of-the-art XRF spectrum analyzing system for quantitative measurement of lead in paint on various substrates.

Finally, as part of the survey, Tetra Tech completed an inventory of HHW and hazardous materials in the structure. The inventory included but was not limited to the following types of materials: thermostats and fluorescent light bulbs possibly containing mercury, fluorescent light ballasts potentially containing polychlorinated biphenyls (PCB), emergency lighting and exit signs that house batteries containing heavy metals, appliances containing Freon, product containers holding hazardous materials (such as cleaning supplies, paint, etc.), and any other HHW items.

A site-specific work plan and quality assurance project plan (QAPP) in support of survey activities were submitted to EPA on March 30, 2016, and were approved on June 8, 2016, prior to the survey at the subject property (Tetra Tech 2016). Field activities accorded with the QAPP, except where noted. Tetra Tech prepared this report in accordance with generally accepted industrial hygiene practice and procedures. This report does not cover or comment on structural areas not assessed either visibly or by sample collection. The data evaluation and assessment stated herein constitute a professional opinion; no other warranty is expressed or implied. Assumptions and deviations regarding the subject property building surveyed are identified in Section 10.0.

Tetra Tech provided these services consistent with the level and skill ordinarily exercised by members of the profession currently practicing under similar conditions. This statement is in lieu of other statements either expressed or implied. 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, the findings, conclusions, or recommendations is at the risk of said user. This survey report does not warrant against future operations or conditions that may not be consistent with its recommendations. Moreover, because of some limitations on destructive sampling during the survey, completion of the survey does not guarantee identification of all hazardous materials, ACMs, or LBP—hazardous materials may be present in voids of walls or ceilings.

Section 2.0 of this report discusses the site structures. Section 3.0 specifies field survey and analytical protocols for the asbestos survey. Section 4.0 presents the field survey and analytical protocols for the LBP screening. Section 5.0 describes procedures regarding the HHW and hazardous materials inventory. Section 6.0 presents asbestos findings. Section 7.0 describes LBP findings. Section 8.0 provides HHW and hazardous materials inventory findings. Section 9.0 offers recommendations based on survey

findings. Section 10.0 specifies assumptions and deviations, and Section 11.0 provides a list of references cited within this document.

2.0 SUBJECT PROPERTY BUILDINGS

The subject property hosts nine commercial buildings, all locations of which are depicted on Figure 3 in Appendix B:

- Building #1, the northernmost building, is a former office space. The building is generally finished with drywall walls, lay-in acoustic tile ceilings, and vinyl floor tile. Building #1 contains an assortment of office supplies left behind, including desks, filing cabinets, a copier, and a fax machine. The building is equipped with a heating, venting, and air conditioning (HVAC) system.

- Building #2, south of Building #1, is a warehouse with corrugated sheet metal siding. It was formerly used for carbide container storage (Terracon 2009).

- Building #3 was formerly a laboratory and first aid center. The paint on the interior is heavily flaking. Building #3 contains old laboratory supplies such as ovens, sampling equipment, and x-ray equipment. Standing water in the basement rendered the area inaccessible.

- Building #4 is a former office space. The interior of the building is finished with drywall and vinyl floor tile.

- Building #5 is the North Substation. The interior is finished with painted brick walls and concrete floors.

- Building #6 served as the receiving and maintenance building. The interior is generally finished with painted brick walls and concrete floors. Standing water in the basement rendered the area inaccessible.

- Building #7 is a shed with corrugated sheet metal siding currently used to store a few drums.

- Building #8, the southernmost building, formerly served as the carbon block manufacturing building. The building is made of corrugated sheet metal and brick.

- Building #9 is a manufacturing building with corrugated sheet metal siding formerly used for production of electrode paste.

3.0 ACM FIELD SURVEY AND ANALYTICAL PROTOCOLS

Tetra Tech made every effort to inspect all areas of the structures. Minor demolition of materials (destructive sampling) was required during the survey effort. The inspector took care to ensure that the structure remained unoccupied during sample collection. Asbestos samples were collected in accordance with NESHAP as adopted by EPA and Asbestos Hazard and Emergency Response Act of 1986 (AHERA) protocols. AHERA defines "asbestos containing material" (ACM) as any material or product that contains more than 1 percent (%) asbestos. Suspected ACMs were grouped as homogeneous areas if the material was similar in appearance and texture; however, if the inspector decided that a material (for example, wall texturing) was not similar in appearance and texture to other materials in the subject property building, the inspector distinguished the material as unique and collected samples of each unique material accordingly. Because of limitations on destructive sampling methods, additional suspect materials not detected may be present in walls, voids, or other concealed areas. Assumptions and deviations regarding the building surveys are identified in Section 10.0.

Bulk samples of suspected ACM were collected to ensure that each distinct layer of material was represented in the sample. A wetting agent was applied to friable surfaces prior to sample collection to reduce potential for fiber release. All samples collected were placed in plastic bags, labeled, and sealed immediately upon collection. To prevent cross-contamination between samples, the sampling instruments were wiped clean by use of a wet, lint-free cloth after collection of each sample. A unique sample identification number was assigned to each sample.

The samples remained in the inspector's custody until sent to the laboratory. Upon completion of sampling activities, the bulk samples were sent, along with Tetra Tech's chain-of-custody documentation, to Quantem Laboratories (Quantem) in Oklahoma City, Oklahoma. Suspect ACM samples were analyzed per EPA Method 600/R-93/116 by Quantem via Polarized Light Microscopy (PLM) analysis and, in some cases, 400 Point Count. Quantem is a National Voluntary Laboratory Accreditation Program (NVLAP)-certified laboratory, certification number 101959. Section 6.0 of this report summarizes ACM analytical results. Sample locations are shown on Figures 2a -2g in Appendix B. Appendix C includes ACM analytical results and chain-of-custody forms for the bulk samples.

4.0 LBP SCREENING AND ANALYTICAL PROTOCOLS

Tetra Tech made every effort to inspect all areas of the buildings. HUD *Guidelines for the Evaluation and Control of LBP in Housing* (1997) suggests that paint applied before 1978 could contain lead.

An XRF screening of suspected LBP was performed according to protocols similar to the single-family housing inspection procedures in the HUD *Guidelines*. Tetra Tech utilized an Innov-X XRF to perform the LBP screening. The Innov-X is a state-of-the-art XRF spectrum analyzing system for quantitative measurement of lead in paint on various substrates. Tetra Tech performed XRF screening of suspect painted surfaces that possibly would be impacted during renovation or demolition activities.

Tetra Tech utilized the XRF "Lead Paint Mode" for testing, standardized per the equipment instruction manual, and programmed the unit with an action level of 1.0 milligram per square centimeter (mg/cm^2). The Innov-X automatically adjusts the measurement time to be the least time needed to make a definitive measurement based on the action level. Paint containing greater than or equal to 1.0 mg/cm^2 lead by XRF testing or 1.0 mg/cm^2 lead by laboratory analysis is considered LBP.

Tetra Tech performed XRF calibration checks on the Innov-X according to the manufacturer's recommended protocol and the HUD *Guidelines*. These quality control readings were used to monitor performance of the Innov-X. Calibration-check readings were taken after every hour of operation with use of a Standard Reference Material (SRM) paint film, developed by the National Institute of Standards and Technology (NIST). Section 7.0 of this report summarizes results from XRF screening of samples of painted surfaces collected at the subject property.

5.0 HOUSEHOLD HAZARDOUS WASTE AND HAZARDOUS MATERIALS INVENTORY

Tetra Tech completed an inventory of HHW and other potentially hazardous materials in the structure. This inventory included but was not limited to the following types of materials: thermostats and fluorescent light bulbs possibly containing mercury, fluorescent light ballasts potentially containing PCBs, emergency lighting and exit signs that house batteries containing heavy metals, appliances containing Freon, product containers holding hazardous materials (such as cleaning supplies, paint, etc.), and any other HHW items that may have been present.

Tetra Tech used an inventory field sheet and went through every room in the structures identifying, categorizing, and quantifying HHW and hazardous materials. Tetra Tech made every effort to provide a complete inventory of these items; however, Tetra Tech cannot guarantee an accounting of every item. A summary of HHW and hazardous materials inventoried during the survey is in Section 8.0 of this report.

6.0 ACM FINDINGS

The laboratory report in Appendix C provides the PLM and/or 400 Point Count results from the ACM samples collected from the structures, which are summarized in Table 1 below. Bolded results in Table 1 indicate where asbestos was detected at a concentration greater than 1 percent.

TABLE 1

SUMMARY OF SUSPECT ACM LABORATORY ANALYSIS
ELKEM CARBIDE – KEOKUK, IOWA

Figure Key	Sample ID	Material Description	Material Locations	Analytical Result (% ACM*)	Quantity**
Building 1					
1	1-CBM-1	Brown Cove Base with Mastic	Throughout top floor and kitchen	ND	NA
2	1-CBM-2	Brown Cove Base with Mastic	Throughout top floor and kitchen	ND	NA
3	1-CBM-3	Brown Cove Base with Mastic	Throughout top floor and kitchen	ND	NA
4	1-FT-1	12” X 12” Brown Vinyl Floor Tile with Adhesive	West half of top floor	ND	NA
5	1-FT-2	12” X 12” Brown Vinyl Floor Tile with Adhesive	West half of top floor	ND	NA
6	1-FT-3	12” X 12” Brown Vinyl Floor Tile with Adhesive	West half of top floor	ND	NA
7	1-CT-1	2’ X 4’ Pinhole/Fissure Ceiling Tile	Throughout top floor and basement	ND	NA
8	1-CT-2	2’ X 4’ Pinhole/Fissure Ceiling Tile	Throughout top floor and basement	ND	NA
9	1-CT-3	2’ X 4’ Pinhole/Fissure Ceiling Tile	Throughout top floor and basement	ND	NA
10	1-ST-1	Stair Tread	Top floor	ND	NA
11	1-ST-2	Stair Tread	Top floor	ND	NA
12	1-ST-3	Stair Tread	Top floor	ND	NA
13	1-CT2-1	2’ X 2’ Pinhole/Fissure Ceiling Tile	Open office area, top floor, and conference room	ND	NA
14	1-CT2-2	2’ X 2’ Pinhole/Fissure Ceiling Tile	Open office area, top floor, and conference room	ND	NA
15	1-CT2-3	2’ X 2’ Pinhole/Fissure Ceiling Tile	Open office area, top floor, and conference room	ND	NA
16	1-FT2-1	12” X 12” Grey Vinyl Floor Tile with Adhesive	Conference room and south entrance	ND	NA
17	1-FT2-2	12” X 12” Grey Vinyl Floor Tile with Adhesive	Conference room and south entrance	ND	NA
18	1-FT2-3	12” X 12” Grey Vinyl Floor Tile with Adhesive	Conference room and south entrance	ND	NA
19	1-CBM2-1	Grey Cove Base with Mastic	Conference room and south entrance	ND	NA
20	1-CBM2-2	Grey Cove Base with Mastic	Conference room and south entrance	ND	NA
21	1-CBM2-3	Grey Cove Base with Mastic	Conference room and south entrance	ND	NA
22	1-DWJC-1	Drywall and Joint Compound	Throughout top floor and basement	ND	NA
23	1-DWJC-2	Drywall and Joint Compound	Throughout top floor and basement	ND	NA
24	1-DWJC-3	Drywall and Joint Compound	Throughout top floor and basement	ND	NA

TABLE 1 (Continued)

SUMMARY OF SUSPECT ACM LABORATORY ANALYSIS
ELKEM CARBIDE – KEOKUK, IOWA

Figure Key	Sample ID	Material Description	Material Locations	Analytical Result (% ACM*)	Quantity**
25	1-PLSC-1	Plaster and Skim Coat	Top floor ceiling and basement ceiling (above drop ceiling)	ND	NA
26	1-PLSC-2	Plaster and Skim Coat	Top floor ceiling and basement ceiling (above drop ceiling)	ND	NA
27	1-PLSC-3	Plaster and Skim Coat	Top floor ceiling and basement ceiling (above drop ceiling)	ND	NA
28	1-GP-1	Glue Puck	Top floor ceiling and basement ceiling	ND	NA
29	1-GP-2	Glue Puck	Top floor ceiling and basement ceiling	ND	NA
30	1-GP-3	Glue Puck	Top floor ceiling and basement ceiling	ND	NA
31	1-FT3-1	9” X 9” Brown Vinyl Floor Tile with Adhesive	East office, closet, and bathroom	ND	NA
32	1-FT3-2	9” X 9” Brown Vinyl Floor Tile with Adhesive	East office, closet, and bathroom	ND	NA
33	1-FT3-3	9” X 9” Brown Vinyl Floor Tile with Adhesive	East office, closet, and bathroom	ND	NA
34	1-FT4-1	9” X 9” Grey Vinyl Floor Tile with Adhesive	East office, closet, and bathroom	ND	NA
35	1-FT4-2	9” X 9” Grey Vinyl Floor Tile with Adhesive	East office, closet, and bathroom	ND	NA
36	1-FT4-3	9” X 9” Grey Vinyl Floor Tile with Adhesive	East office, closet, and bathroom	ND	NA
37	1-CA-1	Carpet Adhesive	East office	ND	NA
38	1-CA-2	Carpet Adhesive	East office		
39	1-CA-3	Carpet Adhesive	East office		
40	1-ST2-1	Stair Tread	South entrance	ND	NA
41	1-ST2-2	Stair Tread	South entrance		
42	1-ST2-3	Stair Tread	South entrance		
43	1-FT5-1	12” X 12” Orange Vinyl Floor Tile with Adhesive	Kitchen	ND	NA
44	**1-FT6-1**	**12” X 12” Orange Patterned Vinyl Floor Tile with Adhesive**	**Kitchen**	**Floor Tile: 5% Chry;** Adhesive: ND	**110 SF**
45	1-CT3-1	2’ X 2’ Pinhole/Fissure Ceiling Tile	Kitchen	ND	NA
46	1-CT3-2	2’ X 2’ Pinhole/Fissure Ceiling Tile	Kitchen	ND	NA
47	1-CT3-3	2’ X 2’ Pinhole/Fissure Ceiling Tile	Kitchen	ND	NA
48	1-CBM3-1	White Cove Base with Mastic	Basement	ND	NA
49	1-CBM3-2	White Cove Base with Mastic	Basement	ND	NA

TABLE 1 (Continued)

SUMMARY OF SUSPECT ACM LABORATORY ANALYSIS
ELKEM CARBIDE – KEOKUK, IOWA

Figure Key	Sample ID	Material Description	Material Locations	Analytical Result (% ACM*)	Quantity**
50	1-CBM3-3	White Cove Base with Mastic	Basement	ND	NA
51	1-CT4-1	2' X 4' Pinhole Ceiling Tile	Basement	ND	NA
52	1-CT4-2	2' X 4' Pinhole Ceiling Tile	Basement	ND	NA
53	1-CT4-3	2' X 4' Pinhole Ceiling Tile	Basement	ND	NA
54	1-PW-1	Partial Wall Panel	Throughout	ND	NA
55	1-PW-2	Partial Wall Panel	Throughout	ND	NA
56	1-PW-3	Partial Wall Panel	Throughout	ND	NA
57	1-WC-1	Window Caulk	Exterior wood windows	ND	NA
58	1-WC-2	Window Caulk	Exterior wood windows	ND	NA
59	1-WC-3	Window Caulk	Exterior wood windows	ND	NA
60	**1-FT7-1**	**9" X 9" Brown Vinyl Floor Tile with Adhesive**	**South entrance and conference room**	**Floor Tile: 6% Chry;** Mastic: 0.50% Chry***	**800 SF**
61	**1-FT7-2**	**9" X 9" Brown Vinyl Floor Tile with Adhesive**	**South entrance and conference room**	**Floor Tile: 6% Chry;** Mastic: 0.25% Chry***	
62	**1-FT7-3**	**9" X 9" Brown Vinyl Floor Tile with Adhesive**	**South entrance and conference room**	**Floor Tile: 6% Chry;** Mastic: 0.50% Chry***	
63	1-FP-1	Floor Paper	East office, closet, and bathroom	ND	NA
64	1-FP-2	Floor Paper	East office, closet, and bathroom	ND	NA
65	1-FP-3	Floor Paper	East office, closet, and bathroom	ND	NA
66	1-CBM4-1	Black Cove Base with Mastic	East office, closet, and bathroom	ND	NA
67	1-FT8-1	12" X 12" Brown Vinyl Floor Tile with Adhesive	East half of top floor	ND	NA
68	1-FT8-2	12" X 12" Brown Vinyl Floor Tile with Adhesive	East half of top floor	ND	NA
69	1-FT8-3	12" X 12" Brown Vinyl Floor Tile with Adhesive	East half of top floor	ND	NA
Building 2					
1	2-WG-1	Window Glaze	Exterior windows	ND	NA
2	2-WG-2	Window Glaze	Exterior windows	ND	NA
3	2-WG-3	Window Glaze	Exterior windows	ND	NA

TABLE 1 (Continued)

SUMMARY OF SUSPECT ACM LABORATORY ANALYSIS
ELKEM CARBIDE – KEOKUK, IOWA

Figure Key	Sample ID	Material Description	Material Locations	Analytical Result (% ACM*)	Quantity**
Building 3					
1	3-CT-1	2’ X 4’ Pinhole/Fissure Ceiling Tile	Lab tech offices	ND	NA
2	3-CT-2	2’ X 4’ Pinhole/Fissure Ceiling Tile	Lab tech offices	ND	NA
3	3-CT-3	2’ X 4’ Pinhole/Fissure Ceiling Tile	Lab tech offices	ND	NA
4	3-TSI-1	Thermal Systems Insulation	Locker room duct	ND	NA
5	3-TSI-2	Thermal Systems Insulation	Locker room duct	ND	NA
6	3-TSI-3	Thermal Systems Insulation	Locker room duct	ND	NA
7	**3-WG-1**	**Grey Window Glaze**	**Exterior**	**4% Chry**	**20 LF**
8	**3-WG-2**	**Grey Window Glaze**	**Exterior**		
9	**3-WG-3**	**Grey Window Glaze**	**Exterior**		
10	3-TSI2-1	White Casing around Foam	Lab room duct work	ND	NA
11	3-TSI2-2	White Casing around Foam	Lab room duct work	ND	NA
12	3-TSI2-3	White Casing around Foam	Lab room duct work	ND	NA
Building 4					
1	4-FT-1	12” X 12” Brown Vinyl Floor Tile with Adhesive	Throughout offices	ND	NA
2	4-FT-2	12” X 12” Brown Vinyl Floor Tile with Adhesive	Throughout offices	ND	NA
3	4-FT-3	12” X 12” Brown Vinyl Floor Tile with Adhesive	Throughout offices	ND	NA
4	4-CT-1	2’ X 4’ Pinhole/Fissure Ceiling Tile	Throughout	ND	NA
5	4-CT-2	2’ X 4’ Pinhole/Fissure Ceiling Tile	Throughout	ND	NA
6	4-CT-3	2’ X 4’ Pinhole/Fissure Ceiling Tile	Throughout	ND	NA
7	4-DWJC-1	Drywall and Joint Compound	Throughout	<0.25% Chry***	NA
8	4-DWJC-2	Drywall and Joint Compound	Throughout	<0.25% Chry***	
9	4-DWJC-3	Drywall and Joint Compound	Throughout	0.25% Chry***	
10	4-CBM-1	4” Brown Cove Base with Mastic	Throughout	ND	NA
11	4-CBM-2	4” Brown Cove Base with Mastic	Throughout	ND	NA
12	4-CBM-3	4” Brown Cove Base with Mastic	Throughout	ND	NA
13	4-FT2-1	12” X 12” Brick Red Vinyl Floor Tile	Entrance hallway and custodian closet	ND	NA
14	4-FT2-2	12” X 12” Brick Red Vinyl Floor Tile	Entrance hallway and custodian closet	ND	NA
15	4-FT2-3	12” X 12” Brick Red Vinyl Floor Tile	Entrance hallway and custodian closet	ND	NA
16	**4-WM-1**	**Wall Mastic**	**Behind wood paneling in offices**	**12% Chry**	**800 SF**
17	**4-WM-2**	**Wall Mastic**	**Behind wood paneling in offices**		
18	**4-WM-3**	**Wall Mastic**	**Behind wood paneling in offices**		

TABLE 1 (Continued)

SUMMARY OF SUSPECT ACM LABORATORY ANALYSIS
ELKEM CARBIDE – KEOKUK, IOWA

Figure Key	Sample ID	Material Description	Material Locations	Analytical Result (% ACM*)	Quantity**
Building 6					
1	6-WG-1	Window Glaze	Exterior	ND	NA
2	6-WG-2	Window Glaze	Exterior	ND	NA
3	6-WG-3	Window Glaze	Exterior	ND	NA
4	6-CT-1	2’ X 4’ Pinhole/Fissure Ceiling Tile	Office	ND	NA
5	6-CT-2	2’ X 4’ Pinhole/Fissure Ceiling Tile	Office	ND	NA
6	6-CT-3	2’ X 4’ Pinhole/Fissure Ceiling Tile	Office	ND	NA
Building 8					
1	8-TSI-1	Thermal Systems Insulation	Boiler	ND	NA
2	8-TSI-2	Thermal Systems Insulation	Boiler	ND	NA
3	8-TSI-3	Thermal Systems Insulation	Boiler	ND	NA
4	8-CT-1	2’ X 2’ White Ceiling Tile	Bathroom, hallway, and 2nd floor office	ND	NA
5	8-CT-2	2’ X 2’ White Ceiling Tile	Bathroom, hallway, and 2nd floor office	ND	NA
6	8-CT-3	2’ X 2’ White Ceiling Tile	Bathroom, hallway, and 2nd floor office	ND	NA
7	8-CBM-1	4” Brown Cove Base with Mastic	Bathroom, hallway, and 2nd floor office	ND	NA
8	8-CBM-2	4” Brown Cove Base with Mastic	Bathroom, hallway, and 2nd floor office	ND	NA
9	8-CBM-3	4” Brown Cove Base with Mastic	Bathroom, hallway, and 2nd floor office	ND	NA
10	8-WG-1	Window Glaze	Exterior 2nd floor windows	ND	NA
11	8-WG-2	Window Glaze	Exterior 2nd floor windows	ND	NA
12	8-WG-3	Window Glaze	Exterior 2nd floor windows	ND	NA
13	8-CT2-1	2’ X 4’ White Pinhole/Fissure Ceiling Tile	2nd floor office	ND	NA
14	8-CT2-2	2’ X 4’ White Pinhole/Fissure Ceiling Tile	2nd floor office	ND	NA
15	8-CT2-3	2’ X 4’ White Pinhole/Fissure Ceiling Tile	2nd floor office	ND	NA
16	8-DWJC-1	Drywall and Joint Compound	1st and 2nd floor offices (1 wall in each)	ND	NA
17	8-DWJC-2	Drywall and Joint Compound	1st and 2nd floor offices (1 wall in each)	ND	NA
18	8-DWJC-3	Drywall and Joint Compound	1st and 2nd floor offices (1 wall in each)	ND	NA
19	8-FT-1	12” X 12” Silver Vinyl Floor Tile	1st and 2nd floor offices	ND	NA
20	8-FT-2	12” X 12” Silver Vinyl Floor Tile	1st and 2nd floor offices	ND	NA
21	8-FT-3	12” X 12” Silver Vinyl Floor Tile	1st and 2nd floor offices	ND	NA
22	8-CTX-1	Ceiling Texture	1st and 2nd floor offices	ND	NA
23	8-CTX-2	Ceiling Texture	1st and 2nd floor offices	ND	NA
24	8-CTX-3	Ceiling Texture	1st and 2nd floor offices	ND	NA

TABLE 1 (Continued)

SUMMARY OF SUSPECT ACM LABORATORY ANALYSIS
ELKEM CARBIDE – KEOKUK, IOWA

Figure Key	Sample ID	Material Description	Material Locations	Analytical Result (% ACM*)	Quantity**
25	8-CBM2-1	4" Black Cove Base with Mastic	1st and 2nd floor offices	ND	NA
26	8-CBM2-2	4" Black Cove Base with Mastic	1st and 2nd floor offices	ND	NA
27	8-CBM2-3	4" Black Cove Base with Mastic	1st and 2nd floor offices	ND	NA
28	8-VER-1	Vermiculite	In cinderblock throughout	0.50% Actinolite/Tremolite ***	NA
29	8-VER-2	Vermiculite	In cinderblock throughout	ND	NA
30	8-VER-3	Vermiculite	In cinderblock throughout	0.75% Actinolite/Tremolite ***	NA
Building 9					
1	9-CT-1	2' X 4' Pinhole/Fissure Ceiling Tile	Office	ND	NA
2	9-CT-2	2' X 4' Pinhole/Fissure Ceiling Tile	Office	ND	NA
3	9-CT-3	2' X 4' Pinhole/Fissure Ceiling Tile	Office	ND	NA
4	9-DW-1	Drywall	Office	ND	NA
5	9-DW-2	Drywall	Office	ND	NA
6	9-DW-3	Drywall	Office	ND	NA
7	**9-TR-1**	**Transite Panel**	**North side of building**	**20% Chry**	**10,000 SF**
8	**9-TR-2**	**Transite Panel**	**North side of building**		
9	**9-TR-3**	**Transite Panel**	**North side of building**		

Notes:

Bolded results indicate that ACM was detected.

* AHERA defines ACM as any material or product that contains more than 1 percent asbestos.

** This is only an estimated quantity of this material and should not be used for bidding purposes. Tetra Tech recommends any contractor bidding on removal of this material visually verify the quantity.

*** AHERA defines ACM as greater than 1% asbestos. These materials contain <1% asbestos; therefore, the material is not regulated for disposal purposes. However, the material does contain asbestos, so if the material is disturbed, OSHA regulations must be followed and personal protective equipment must be used.

%	Percent	LF	Linear feet
ACM	Asbestos containing material	NA	Not applicable
AHERA	Asbestos Hazard and Emergency Response Act of 1986	ND	Not detected
ID	Identification	SF	Square feet
Chry	Chrysotile		
EPA	U.S. Environmental Protection Agency		
OSHA	Occupational Safety and Health Administration		

7.0 LBP FINDINGS

Results of XRF screening at the subject property are summarized in Table 2 below.

TABLE 2

SUMMARY OF LBP SCREENING
ELKEM CARBIDE – KEOKUK, IOWA

Paint Color	Location	Component	Substrate	XRF Reading (mg/cm^2)	Damaged*	Quantity**
Building 1						
White	West Entry	Wall Border	Wood	0.00	NA	NA
White	West Entry	Wall	Concrete	0.78	NA	NA
Varnish	Traffic Office	Door	Wood	0.03	NA	NA
White	Traffic Office	Door Frame	Wood	0.00	NA	NA
Varnish	Traffic Office	Wall	Wood	0.05	NA	NA
White	Southeast Reception	Wall	Drywall	0.00	NA	NA
Varnish	Northwest Office	Wall	Wood	0.04	NA	NA
White	North Central Office	Wall	Drywall	0.00	NA	NA
White	North Central Office	Wall	Wood	0.00	NA	NA
White	North Central Office	Window Frame	Wood	0.00	NA	NA
White	North Windows	Window Frame	Wood	0.00	NA	NA
White	**Northeast Open Area**	**Walls (Original)**	**Concrete**	**>5.00**	**No**	**1,200 SF (exposed)**
Varnish	Northeast Office	Wall	Wood	0.00	NA	NA
Varnish	Northeast Office	Door	Wood	0.00	NA	NA
Varnish	Northeast Office	Door Frame	Wood	0.00	NA	NA
White	Northeast Office	Door Frame	Wood	0.00	NA	NA
Varnish	Southeast Office	Door Frame	Wood	0.00	NA	NA
Varnish	Southeast Office	Wall	Wood	0.00	NA	NA
White	Bathrooms	Door Frame	Wood	0.00	NA	NA
White	Bathrooms	Walls	Drywall	0.00	NA	NA
White	South Offices	Window Frame	Wood	0.00	NA	NA
White	South Entry	Wall	Cinderblock	0.02	NA	NA
White	**South Entry**	**Wall**	**Concrete**	**>5.00**	**No**	**500 SF**
White	Conference Room	Wall	Drywall	0.00	NA	NA
Off-White	**Bottom of Stairs**	**Ceiling**	**Plaster**	**>5.00**	**Yes**	**1,800 SF**
White	Bottom of Stairs	Wall	Drywall	0.00	NA	NA
Green	**Bottom of Stairs**	**Wall**	**Concrete**	**>5.00**	**No**	**400 SF (exposed)**
White	**Bottom of Stairs**	**Wall**	**Concrete**	**>5.00**	**No**	**20 SF (exposed)**

TABLE 2 (Continued)

SUMMARY OF LBP SCREENING
ELKEM CARBIDE – KEOKUK, IOWA

Paint Color	Location	Component	Substrate	XRF Reading (mg/cm^2)	Damaged*	Quantity**
Tan	North East Office	Door Frame	Wood	0.00	NA	NA
Grey	North East Office	Floor	Concrete	0.06	NA	NA
White	North East Office	Window Frame	Wood	0.00	NA	NA
Tan	Engineering	Door Frame	Wood	0.00	NA	NA
Tan	Engineering	Support Pole	Metal	0.00	NA	NA
White	Engineering	Wall	Cinderblock	0.00	NA	NA
White	Engineering	Trim	Wood	0.00	NA	NA
Red	**Kitchen**	**Door**	**Metal**	**>5.00**	**No**	**10 SF**
Tan	Kitchen	Door Frame	Wood	0.00	NA	NA
Tan	Exterior	Wall	Cinderblock	0.00	NA	NA
Brown	Exterior	Window Trim	Wood	0.00	NA	NA
Brown	Exterior	Support Beam	Metal	0.00	NA	NA
Brown	Exterior	Hand Railing	Metal	0.00	NA	NA
Brown	Covered Parking	Wall	Wood	0.00	NA	NA
Tan	**Covered Parking**	**Support Pole**	**Metal**	**2.69**	**No**	**50 SF**
Tan	Covered Parking	Wall	Wood	0.02	NA	NA
Building 2						
Grey	**Warehouse**	**Support Beam**	**Metal**	**>5.00**	**Yes**	**3,000 SF**
Yellow	Warehouse	Post	Concrete	0.00	NA	NA
Yellow	**Warehouse**	**Floor**	**Concrete**	**2.65**	**Yes**	**50 SF**
Light Brown	Warehouse	Post	Concrete	0.00	NA	NA
Yellow	**South Garage Door**	**Door Frame**	**Metal**	**>5.00**	**Yes**	**10 SF**
Building 3						
Green	North Office	Door	Metal	0.00	NA	NA
Green	North Office	Door Frame	Metal	0.00	NA	NA
Green	North Office	Wall	Concrete	0.00	NA	NA
White	North Office	Wall	Concrete	0.00	NA	NA
Green	North Office	Radiator	Metal	0.07	NA	NA
Green	North Office	Window Frame	Wood	0.74	NA	NA
Green	North Office	Door Frame	Wood	0.00	NA	NA
Green	North Office	Wall Panel	Wood	0.00	NA	NA
White	North Office	Pipe	Wood	0.04	NA	NA
Tan	**Locker Room**	**Wall**	**Brick**	**>5.00**	**No**	**800 SF**

TABLE 2 (Continued)

SUMMARY OF LBP SCREENING
ELKEM CARBIDE – KEOKUK, IOWA

Paint Color	Location	Component	Substrate	XRF Reading (mg/cm^2)	Damaged*	Quantity**
White	**Locker Room**	**Wall**	**Brick**	**>5.00**	**No**	**1,000 SF**
White	Locker Room	Ceiling	Concrete	0.00	NA	NA
Tan	**Locker Room**	**Pillar**	**Concrete**	**>5.00**	**No**	**100 SF**
White	**Locker Room**	**Pillar**	**Concrete**	**>5.00**	**No**	**100 SF**
Tan	**Locker Room**	**Wall**	**Ceramic**	**>1.00**	**No**	**800 SF**
Tan	**Locker Room**	**Wall**	**Wood**	**>5.00**	**No**	**200 SF**
Brown	Locker Closet	Door	Wood	0.00	NA	NA
White	Locker Closet	Door Frame	Metal	0.00	NA	NA
Yellow	Locker Closet	Wall	Cinderblock	0.08	NA	NA
Grey	Locker Closet	Wall	Cinderblock	0.05	NA	NA
Yellow	Locker Closet	Pipe	Metal	0.00	NA	NA
Yellow	Locker Closet	Wall	Brick	0.00	NA	NA
Grey	Locker Closet	Pipe	Metal	0.00	NA	NA
Tan	Hallway	Wall	Cinderblock	0.00	NA	NA
Off-White	Hallway	Wall	Cinderblock	0.00	NA	NA
Brown	**Entryway**	**Wall**	**Ceramic**	**>1.00**	**No**	**100 SF**
Beige	**Entryway**	**Wall**	**Ceramic**	**>1.00**	**No**	**100 SF**
Brown	Entryway	Door	Wood	0.00	NA	NA
Brown	Entryway	Door Frame	Wood	0.00	NA	NA
Brown	Entryway	Wall	Drywall	0.00	NA	NA
Off-White	Entryway	Wall	Drywall	0.00	NA	NA
Brown	Entryway	Wall	Cinderblock	0.00	NA	NA
Brown	Entryway	Wall	Cinderblock	0.00	NA	NA
Brown	**Entryway**	**Pillar**	**Concrete**	**>5.00**	**No**	**20 SF**
White	**Entryway**	**Pillar**	**Concrete**	**>5.00**	**No**	**20 SF**
Blue	**Entryway**	**Ceiling**	**Concrete**	**>5.00**	**No**	**500 SF**
Brown	Entryway	Window Frame	Wood	0.00	NA	NA
Brown	**Entryway**	**Wall**	**Brick**	**>5.00**	**No**	**1,200 SF**
Tan	**Entryway**	**Wall**	**Brick**	**>5.00**	**No**	**100 SF**
Brown	Hallway	Door	Metal	0.00	NA	NA
Brown	Hallway	Door Frame	Metal	0.00	NA	NA
Yellow	Locker Room	Wall Tile	Ceramic	0.04	NA	NA
Yellow	Locker Room	Wall	Brick	0.00	NA	NA

TABLE 2 (Continued)

SUMMARY OF LBP SCREENING
ELKEM CARBIDE – KEOKUK, IOWA

Paint Color	Location	Component	Substrate	XRF Reading (mg/cm^2)	Damaged*	Quantity**
Tan	Exterior	Door	Metal	0.00	NA	NA
Brown	Exterior	Door Frame	Wood	0.00	NA	NA
Brown	**Exterior**	**Window**	**Wood**	**>5.00**	**No**	**12 SF**
Blue	West Side	Door	Metal	0.00	NA	NA
Blue	West Side	Door Frame	Metal	0.01	NA	NA
Blue	**West Side**	**Wall**	**Brick**	**>5.00**	**No**	**1,000 SF**
White	**Lab Side**	**Wall**	**Brick**	**>5.00**	**No**	**1,000 SF**
White	**Lab Side**	**Wall**	**Wood**	**>5.00**	**No**	**800 SF**
Blue	**Lab Side**	**Wall**	**Wood**	**>5.00**	**No**	**800 SF**
White	Lab Side	Wall	Cinderblock	0.00	NA	NA
Blue	Lab Side	Door	Wood	0.00	NA	NA
Blue	Lab Side	Door Frame	Wood	0.00	NA	NA
Blue	Lab Side	Wall	Cinderblock	0.00	NA	NA
Blue	Lab Side	Window Frame	Wood	0.00	NA	NA
Black	**West Lab Exterior**	**Door**	**Wood**	**>5.00**	**Yes**	**20 SF**
Brown	**West Lab Exterior**	**Screen Door**	**Wood**	**>5.00**	**Yes**	**10 SF**
White	West Lab Exterior	Wall	Cinderblock	0.00	NA	NA
Brown	West Lab Exterior	Wall	Brick	0.00	NA	NA
Brown	West Lab Exterior	Window	Wood	0.00	NA	NA
Brown	West Lab Exterior	Door Frame	Wood	0.00	NA	NA
Tan	Exterior	Wall	Brick	0.00	NA	NA
Tan	Exterior	Wall	Cinderblock	0.00	NA	NA
Light Brown	**Exterior**	**Support Beam**	**Metal**	**>5.00**	**No**	**100 SF**
Light Brown	**Exterior**	**Wood Overhang**	**Wood**	**1.62**	**No**	**1,000 SF**
Tan	**Exterior**	**Window Frame**	**Wood**	**>5.00**	**No**	**12 SF**
Building 4						
White	Conference Room	Wall	Drywall	0.00	NA	NA
Brown	Conference Room	Door Frame	Wood	0.00	NA	NA
Grey	Conference Room	Door Frame	Metal	0.00	NA	NA
Grey	Conference Room	Door	Metal	0.00	NA	NA
Off-White	Offices	Wall	Drywall	0.00	NA	NA
Varnish	Offices	Door	Wood	0.00	NA	NA
Varnish	Offices	Window Frame	Wood	0.00	NA	NA

TABLE 2 (Continued)

SUMMARY OF LBP SCREENING
ELKEM CARBIDE – KEOKUK, IOWA

Paint Color	Location	Component	Substrate	XRF Reading (mg/cm^2)	Damaged*	Quantity**
Beige	Offices	Wall	Drywall	0.00	NA	NA
Brown	Offices	Wall	Drywall	0.00	NA	NA
Off-White	Offices	Interior Wall	Cinderblock	0.00	NA	NA
Yellow	Bathroom	Wall	Concrete	0.06	NA	NA
Green	Bathroom	Ceiling	Concrete	0.02	NA	NA
Brown	Bathroom	Door	Metal	0.04	NA	NA
Brown	Bathroom	Door Frame	Metal	0.00	NA	NA
Yellow	Exterior	Wall	Cinderblock	0.02	NA	NA
Yellow	Exterior	Wall	Metal	0.12	NA	NA
Brown	Exterior	Wall	Concrete	0.00	NA	NA
Building 5						
Tan	Interior	Wall	Cinderblock	0.00	NA	NA
Tan	Interior	Door	Metal	0.00	NA	NA
Tan	Interior	Door Frame	Metal	0.00	NA	NA
Grey	Interior	Door Frame	Metal	0.00	NA	NA
Grey	Interior	Door	Metal	0.00	NA	NA
Yellow	Interior	Wood	Cinderblock	0.12	NA	NA
Beige	Exterior	Wall	Cinderblock	0.00	NA	NA
Building 6						
Yellow	Exterior	Wall	Brick	0.00	NA	NA
Yellow	Exterior	Wall	Cinderblock	0.00	NA	NA
Silver	Exterior	Door Frame	Metal	0.00	NA	NA
Grey	**Exterior (East Side)**	**Door**	**Metal**	**>5.00**	**No**	**20 SF**
Grey	**Exterior (East Side)**	**Door Frame**	**Metal**	**>5.00**	**No**	**5 SF**
White	Interior	Wall	Brick	0.00	NA	NA
White	Interior	Door Frame	Metal	0.00	NA	NA
White	Interior	Door	Metal	0.00	NA	NA
Blue	Stock Room	Beam	Metal	0.00	NA	NA
Black	Stock Room	Door	Metal	0.00	NA	NA
Black	Stock Room	Door Frame	Metal	0.00	NA	NA
White	Stock Room	Door	Metal	0.00	NA	NA
White	Stock Room	Door Frame	Metal	0.00	NA	NA
White	Stock Room	Wall	Cinderblock	0.00	NA	NA

TABLE 2 (Continued)

SUMMARY OF LBP SCREENING
ELKEM CARBIDE – KEOKUK, IOWA

Paint Color	Location	Component	Substrate	XRF Reading (mg/cm^2)	Damaged*	Quantity**
White	Stock Room	Ceiling Beams	Metal	0.00	NA	NA
Yellow	**Storage Room**	**Stair Rail**	**Metal**	**4.70**	**No**	**30 SF**
Brown/Red	**Storage Room**	**Stair Rail**	**Metal**	**>5.00**	**No**	**10 SF**
White	**Storage Room**	**Ceiling**	**Concrete**	**>5.00**	**NA**	**1,200 SF**
White	Storage Room	Pipe	Metal	0.00	No	NA
Red/Brown	**2nd Floor Storage Room**	**Support Beam**	**Metal**	**>5.00**	**No**	**30 SF**
White	Garage	Stairs	Metal	0.00	NA	NA
Yellow	Bathroom	Wall Tile	Ceramic	0.03	NA	NA
Grey	Bathroom	Door	Metal	0.00	NA	NA
White	Bathroom	Door Frame	Metal	0.00	NA	NA
Grey	Garage	Support Beam	Metal	0.02	NA	NA
White	Garage	Door	Metal	0.01	NA	NA
White	Garage	Wall	Metal	0.00	NA	NA
Brown	Hall to Office	Door Frame	Wood	0.00	NA	NA
White	**Hall to Storage Room**	**Door**	**Metal**	**4.44**	**No**	**10 SF**
White	Hall to Storage Room	Door Frame	Metal	0.11	NA	NA
Brown	Hall to Office	Window Frame	Wood	0.06	NA	NA
Brown	Hall to Office	Door	Wood	0.10	NA	NA
Orange	Office	Wall	Brick	0.08	NA	NA
Blue	Office	Door Frame	Wood	0.00	NA	NA
Blue	Office	Door	Wood	0.12	NA	NA
Blue	Office	Window	Wood	0.16	NA	NA
White	Hall to Office	Ceiling	Wood	0.06	NA	NA
Building 7						
Yellow	**Building 7**	**Support Beam**	**Metal**	**2.17**	**Yes**	**20 SF**
Silver	Building 7	Support Beam	Metal	0.00	NA	NA
Silver	Building 7	Siding	Metal	0.00	NA	NA
Building 8						
Yellow	**Main Warehouse**	**Support Beam**	**Metal**	**1.47**	**Yes**	**12,000 SF**
Yellow	Main Warehouse	Post	Concrete	0.45	NA	NA
Yellow	**East/Center Stairwell**	**Support Beams and Railings**	**Metal**	**1.56**	**Yes**	**200 SF**
Yellow	East Stairwell	Steps	Metal	0.00	NA	NA

TABLE 2 (Continued)

SUMMARY OF LBP SCREENING
ELKEM CARBIDE – KEOKUK, IOWA

Paint Color	Location	Component	Substrate	XRF Reading (mg/cm^2)	Damaged*	Quantity**
White	Main Warehouse Upper Offices	Wall	Drywall	0.00	NA	NA
Grey	Main Warehouse Upper Offices	Window Frame	Wood	0.00	NA	NA
Grey	Main Warehouse Upper Offices	Door Frame	Wood	0.00	NA	NA
White	Main Warehouse Upper Offices	Ceiling	Drywall	0.00	NA	NA
Grey	Main Warehouse Lower Offices	Door	Metal	0.00	NA	NA
Yellow	**Southeast**	**Door Frame**	**Metal**	**2.19**	**Yes**	**200 SF**
White	Southeast	Door	Metal	0.87	NA	NA
Red	**North Office Area**	**Door**	**Metal**	**1.13**	**No**	**500 SF**
Red	**North Office Area**	**Door Frame**	**Metal**	**1.30**	**No**	**200 SF**
Tan	North Office Area	Wall	Cinderblock	0.00	NA	NA
White	North Office Area	Wall	Cinderblock	0.00	NA	NA
Teal	North Office Area	Wall	Cinderblock	0.00	NA	NA
Beige	North Bathroom	Wall Tile	Ceramic	0.00	NA	NA
White	North Bathroom	Ceiling	Drywall	0.00	NA	NA
White	**Outer Area**	**Support Beam**	**Metal**	**2.11**	**No**	**3,000 SF**
White	Exterior	Wall	Cinderblock	0.00	NA	NA
Off-White	Exterior	Wall	Metal	0.06	NA	NA
Tan	North Central 2nd Floor Offices	Window Frame	Wood	0.00	NA	NA
Building 9						
Yellow	**Main Plant (NE)**	**Post**	**Concrete**	**1.90**	**Yes**	**30 SF**
Yellow	**South Garage**	**Door**	**Metal**	**1.90**	**Yes**	**10 SF**
Grey	South Side	Support Beam	Metal	0.00	NA	NA
Brown/Red	South Side	Support Beam	Metal	0.00	NA	NA
Yellow	Main Plant	Support Beam	Metal	0.00	NA	NA
Yellow	Main Plant	Support Column	Concrete	0.00	NA	NA
Yellow	Main Plant	Guard Rail	Metal	0.00	NA	NA
Grey	North Plant	Support Beam	Metal	0.24	NA	NA
Grey	North Plant	Door	Metal	0.00	NA	NA
Grey	North Plant	Door Frame	Metal	0.00	NA	NA
Yellow	**North Plant**	**Stair Railing**	**Metal**	**1.91**	**No**	**10 SF**
Grey	North Plant	Wall	Cinderblock	0.04	NA	NA
Yellow	**North Plant**	**Guard Post**	**Concrete**	**3.58**	**Yes**	**10 SF**
Blue	North Plant	Exterior Wall	Cinderblock	0.00	NA	NA

TABLE 2 (Continued)

SUMMARY OF LBP SCREENING
ELKEM CARBIDE – KEOKUK, IOWA

Paint Color	Location	Component	Substrate	XRF Reading (mg/cm^2)	Damaged*	Quantity**
Blue	**North Plant**	**Guard Post**	**Metal**	**3.73**	**Yes**	**10 SF**
Yellow	**North Garage**	**Door**	**Metal**	**1.42**	**No**	**10 SF**
Blue	North Plant	Door Frame	Metal	0.00	NA	NA
Red	Exterior North	Support Beam	Metal	0.04	NA	NA
Blue	Northeast Side	Wall	Cinderblock	0.00	NA	NA
Blue	Northwest Side	Wall	Cinderblock	0.00	NA	NA
Black	Northwest Office	Door	Metal	0.00	NA	NA

Notes:

Bolded results indicate positive identification of LBP (>1 mg/cm^2).

* This column identifies LBP surfaces that are damaged. If no damage is present prior to demolition activities, preliminary removal of chipping and peeling paint is not necessary.

** This is only an estimated quantity of this material and should not be used for bidding purposes. Tetra Tech recommends any contractor bidding on removal of this material visually verify the quantity.

>	Greater than
mg/cm^2	Milligrams per square centimeter
LBP	Lead-based paint
NA	Not applicable
SF	Square feet
XRF	X-ray fluorescence

8.0 HAZARDOUS MATERIALS INVENTORY FINDINGS

The HHW and hazardous materials inventory is summarized in Tables 3A-3I below.

TABLE 3A

SUMMARY OF HAZARDOUS MATERIALS INVENTORY – BUILDING 1
ELKEM CARBIDE – KEOKUK, IOWA

Type of Household Hazardous Waste	Assessed Quantity
Lamps	
Fluorescent	360
Compact Fluorescent (CFL)	
Neon	
Non-PCB Ballasts	
Fluorescent	
Compact Fluorescent (CFL)	
Neon	
Batteries	
Smoke Detectors	
Exit Signs	
Automobile	
Heating Ventilation and Air Conditioning	
Thermostats	12
Boilers, Furnaces, Water Heaters, and Tanks	
Mercury flame sensor (adjacent to pilot lights)	
Control Switches	
Other	1 Water Heater
Polychlorinated Biphenyls (PCB): transformers, light ballasts	
Transformers	
PCB Ballasts	180
Non-PCB Ballasts	
Chlorofluorocarbons (CFC) and Hydrochlorofluorocarbons (HCFC) Refrigerants	
Air Conditioners	
Water Fountains	1
Fire Extinguishers	2
Other: misc. hazardous wastes, household hazardous wastes, oils	
Computers	6
Other electronic recyclables	3 Printers
Oils, containers	
Paints	
Solvents	2 – latex
Hydraulic lifts	
Tanks (aboveground, underground)	

TABLE 3B

SUMMARY OF HAZARDOUS MATERIALS INVENTORY – BUILDING 2
ELKEM CARBIDE – KEOKUK, IOWA

Type of Household Hazardous Waste	Assessed Quantity
Lamps	
Fluorescent	
Compact Fluorescent (CFL)	
Neon	
Non-PCB Ballasts	
Fluorescent	
Compact Fluorescent (CFL)	
Neon	
Batteries	
Smoke Detectors	
Exit Signs	
Automobile	
Heating Ventilation and Air Conditioning	
Thermostats	
Boilers, Furnaces, Water Heaters, and Tanks	
Mercury flame sensor (adjacent to pilot lights)	
Control Switches	
Polychlorinated Biphenyls (PCB): transformers, light ballasts	
Transformers	
PCB Ballasts	
Non-PCB Ballasts	
Chlorofluorocarbons (CFC) and Hydrochlorofluorocarbons (HCFC)	
Air Conditioners	
Water Fountains	
Fire Extinguishers	2
Other: misc. hazardous wastes, household hazardous wastes, oils	
Computers	
Other electronic recyclables	
Oils, containers	21: 55-gallon drums
Paints	
Solvents	
Hydraulic lifts	
Tanks (aboveground, underground)	

TABLE 3C

SUMMARY OF HAZARDOUS MATERIALS INVENTORY – BUILDING 3
ELKEM CARBIDE – KEOKUK, IOWA

Type of Household Hazardous Waste	Assessed Quantity
Lamps	
Fluorescent	60
Compact Fluorescent (CFL)	
Neon	
Non-PCB Ballasts	
Fluorescent	
Compact Fluorescent (CFL)	
Neon	
Batteries	
Smoke Detectors	
Exit Signs	
Automobile	
Heating Ventilation and Air Conditioning	
Thermostats	
Boilers, Furnaces, Water Heaters, and Tanks	
Mercury flame sensor (adjacent to pilot lights)	
Control Switches	
Polychlorinated Biphenyls (PCB): transformers, light ballasts	
Transformers	
PCB Ballasts	30
Non-PCB Ballasts	
Chlorofluorocarbons (CFC) and Hydrochlorofluorocarbons (HCFC)	
Air Conditioners	1
Water Fountains	1
Fire Extinguishers	1
Other: misc. hazardous wastes, household hazardous wastes, oils	
Computers	
Other electronic recyclables	1 ISCO sampler
Oils, containers	
Paints	3: 1-gallon cans
Solvents	1 gallon dimethylformamide
Hydraulic lifts	
Tanks (aboveground, underground)	
Other	2.5 liters ammonium hydroxide; x-ray equipment; lab equipment

TABLE 3D

SUMMARY OF HAZARDOUS MATERIALS INVENTORY – BUILDING 4
ELKEM CARBIDE – KEOKUK, IOWA

Type of Household Hazardous Waste	Assessed Quantity
Lamps	
Fluorescent	120
Compact Fluorescent (CFL)	
Neon	
Non-PCB Ballasts	
Fluorescent	
Compact Fluorescent (CFL)	
Neon	
Batteries	
Smoke Detectors	
Exit Signs	
Automobile	
Heating Ventilation and Air Conditioning	
Thermostats	
Boilers, Furnaces, Water Heaters, and Tanks	
Mercury flame sensor (adjacent to pilot lights)	
Control Switches	
Polychlorinated Biphenyls (PCB): transformers, light ballasts	
Transformers	
PCB Ballasts	60
Non-PCB Ballasts	
Chlorofluorocarbons (CFC) and Hydrochlorofluorocarbons (HCFC)	
Air Conditioners	
Water Fountains	1
Fire Extinguishers	
Other: misc. hazardous wastes, household hazardous wastes, oils	
Computers	
Other electronic recyclables	
Oils, containers	
Paints	
Solvents	
Hydraulic lifts	
Tanks (aboveground, underground)	

TABLE 3E

SUMMARY OF HAZARDOUS MATERIALS INVENTORY – BUILDING 5
ELKEM CARBIDE – KEOKUK, IOWA

Type of Household Hazardous Waste	Assessed Quantity
Lamps	
Fluorescent	
Compact Fluorescent (CFL)	
Neon	
Non-PCB Ballasts	
Fluorescent	
Compact Fluorescent (CFL)	
Neon	
Batteries	
Smoke Detectors	
Exit Signs	
Automobile	
Heating Ventilation and Air Conditioning	
Thermostats	
Boilers, Furnaces, Water Heaters, and Tanks	
Mercury flame sensor (adjacent to pilot lights)	
Control Switches	
Polychlorinated Biphenyls (PCB): transformers, light ballasts	
Transformers	
PCB Ballasts	
Non-PCB Ballasts	
Chlorofluorocarbons (CFC) and Hydrochlorofluorocarbons (HCFC)	
Air Conditioners	
Water Fountains	
Fire Extinguishers	1
Other: misc. hazardous wastes, household hazardous wastes, oils	
Computers	
Other electronic recyclables	
Oils, containers	
Paints	
Solvents	
Hydraulic lifts	
Tanks (aboveground, underground)	

TABLE 3F

SUMMARY OF HAZARDOUS MATERIALS INVENTORY – BUILDING 6
ELKEM CARBIDE – KEOKUK, IOWA

Type of Household Hazardous Waste	Assessed Quantity
Lamps	
Fluorescent	64
Compact Fluorescent (CFL)	
Neon	
Other	10 halogen
Non-PCB Ballasts	
Fluorescent	
Compact Fluorescent (CFL)	
Neon	
Other	10 halogen
Batteries	
Smoke Detectors	
Exit Signs	
Automobile	1 tractor
Heating Ventilation and Air Conditioning	
Thermostats	
Boilers, Furnaces, Water Heaters, and Tanks	
Mercury flame sensor (adjacent to pilot lights)	
Control Switches	
Polychlorinated Biphenyls (PCB): transformers, light ballasts	
Transformers	
PCB Ballasts	32
Non-PCB Ballasts	
Chlorofluorocarbons (CFC) and Hydrochlorofluorocarbons (HCFC)	
Air Conditioners	
Water Fountains	
Fire Extinguishers	3
Other: misc. hazardous wastes, household hazardous wastes, oils	
Computers	
Other electronic recyclables	
Oils, containers	Four 1-gallon oil; one 2-gallon oil; three 55-gallon oil; two 5-gallon oil
Paints	Two 1-gallon primer
Solvents	55-gallon Aqua-Sol
Hydraulic lifts	2
Tanks (aboveground, underground)	3 propane tanks
Other	Three 1-gallon antifreeze; one 55-gallon antifreeze; one 5-gallon waterproofing sealer; harvesting lubricant; one 5-gallon transmission fluid

TABLE 3G

SUMMARY OF HAZARDOUS MATERIALS INVENTORY – BUILDING 7
ELKEM CARBIDE – KEOKUK, IOWA

Type of Household Hazardous Waste	Assessed Quantity
Lamps	
Fluorescent	
Compact Fluorescent (CFL)	
Neon	
Non-PCB Ballasts	
Fluorescent	
Compact Fluorescent (CFL)	
Neon	
Batteries	
Smoke Detectors	
Exit Signs	
Automobile	
Heating Ventilation and Air Conditioning	
Thermostats	
Boilers, Furnaces, Water Heaters, and Tanks	
Mercury flame sensor (adjacent to pilot lights)	
Control Switches	
Polychlorinated Biphenyls (PCB): transformers, light ballasts	
Transformers	
PCB Ballasts	
Non-PCB Ballasts	
Chlorofluorocarbons (CFC) and Hydrochlorofluorocarbons (HCFC)	
Air Conditioners	
Water Fountains	
Fire Extinguishers	
Other: misc. hazardous wastes, household hazardous wastes, oils	
Computers	
Other electronic recyclables	
Oils, containers	55-gallon oil; 2-gallon gasoline; motor with oil
Paints	
Solvents	
Hydraulic lifts	
Tanks (aboveground, underground)	
Other	6 unlabeled drums

TABLE 3H

SUMMARY OF HAZARDOUS MATERIALS INVENTORY – BUILDING 8
ELKEM CARBIDE – KEOKUK, IOWA

Type of Household Hazardous Waste	Assessed Quantity
Lamps	
Fluorescent	22
Compact Fluorescent (CFL)	
Neon	
Other	40 halogen
Non-PCB Ballasts	
Fluorescent	
Compact Fluorescent (CFL)	
Neon	
Other	40 halogen
Batteries	
Smoke Detectors	
Exit Signs	
Automobile	
Heating Ventilation and Air Conditioning	
Thermostats	
Boilers, Furnaces, Water Heaters, and Tanks	
Mercury flame sensor (adjacent to pilot lights)	
Control Switches	
Polychlorinated Biphenyls (PCB): transformers, light ballasts	
Transformers	
PCB Ballasts	9
Non-PCB Ballasts	
Chlorofluorocarbons (CFC) and Hydrochlorofluorocarbons (HCFC)	
Air Conditioners	
Water Fountains	
Fire Extinguishers	
Other: misc. hazardous wastes, household hazardous wastes, oils	
Computers	
Other electronic recyclables	
Oils, containers	Two 5-gallon oil; one 55-gal oil
Paints	
Solvents	
Hydraulic lifts	
Tanks (aboveground, underground)	

TABLE 3I

SUMMARY OF HAZARDOUS MATERIALS INVENTORY – BUILDING 9
ELKEM CARBIDE – KEOKUK, IOWA

Type of Household Hazardous Waste	Assessed Quantity
Lamps	
Fluorescent	
Compact Fluorescent (CFL)	
Neon	
Other	59 halogen
Non-PCB Ballasts	
Fluorescent	
Compact Fluorescent (CFL)	
Neon	
Other	59 halogen
Batteries	
Smoke Detectors	
Exit Signs	
Automobile	
Heating Ventilation and Air Conditioning	
Thermostats	
Boilers, Furnaces, Water Heaters, and Tanks	
Mercury flame sensor (adjacent to pilot lights)	
Control Switches	
Polychlorinated Biphenyls (PCB): transformers, light ballasts	
Transformers	
PCB Ballasts	
Non-PCB Ballasts	
Chlorofluorocarbons (CFC) and Hydrochlorofluorocarbons (HCFC)	
Air Conditioners	
Water Fountains	
Fire Extinguishers	1
Other: misc. hazardous wastes, household hazardous wastes, oils	
Computers	
Other electronic recyclables	
Oils, containers	
Paints	
Solvents	
Hydraulic lifts	
Tanks (aboveground, underground)	1 aboveground storage tank (AST), 3 air compressors; 1 South LeRoi compressor
Other	13 tires, 55-gallon drum (1/3 full) unlabeled

9.0 RECOMMENDATIONS

Based on survey observations and sample analytical results, Tetra Tech recommends the following actions before remodeling or demolition of the subject property buildings:

9.1 ACM

- Regulated ACM was identified within Building 1 on the subject property in approximately 110 ft^2 of 12" X 12" orange patterned floor tile in the kitchen. The floor tile was represented by sample 1-FT6-1. Laboratory results indicated that the floor tile contained 5-percent chrysotile asbestos. Because of asbestos in the floor tile, it should be removed by a licensed asbestos abatement contractor before any renovation or demolition disturbs the material. The removed waste must be transported to a disposal site able to accept non-friable ACM. If the material is not to be disturbed, it may remain in place.

- Regulated ACM was identified within Building 1 on the subject property in approximately 800 ft^2 of 9" X 9" brown floor tile in the south entrance and conference room. The floor tile was represented by samples 1-FT7-1, -2, and -3. Laboratory results indicated that the floor tile contained 6-percent chrysotile asbestos. Because of asbestos in the floor tile, it should be removed by a licensed asbestos abatement contractor before any renovation or demolition disturbs the material. The removed waste must be transported to a disposal site able to accept non-friable ACM. If the material is not to be disturbed, it may remain in place.

- Regulated ACM was identified on the exterior windows of Building 3 on the subject property in approximately 20 linear feet of window glaze. The window glaze was represented by samples 3-WG-1, -2, and -3. Laboratory results indicated that the window glaze contained 4-percent chrysotile asbestos. Because of asbestos in the window glaze, it should be removed by a licensed asbestos abatement contractor before any renovation or demolition disturbs the material. The removed waste must be transported to a disposal site able to accept non-friable ACM. If the material is not to be disturbed, it may remain in place.

- Regulated ACM was identified within Building 4 on the subject property in approximately 800 ft^2 of wall mastic behind paneling in the offices. The wall mastic was represented by samples 4-WM-1, -2, and -3. Laboratory results indicated that the wall mastic contained 12-percent chrysotile asbestos. Because of asbestos in the wall mastic, it should be removed by a licensed asbestos abatement contractor before any renovation or demolition disturbs the material. The removed waste must be transported to a disposal site able to accept non-friable ACM. If the material is not to be disturbed, it may remain in place.

- Regulated ACM was identified within Building 9 on the subject property in approximately 10,000 ft^2 of transite paneling. The transite paneling was represented by samples 9-TR-1, -2, and -3. Laboratory results indicated that the transite paneling contained 20-percent chrysotile asbestos. Because of asbestos in the transite paneling, it should be removed by a licensed asbestos abatement contractor before any renovation or demolition disturbs the material. The removed waste must be transported to a disposal site able to accept non-friable ACM. If the material is not to be disturbed, it may remain in place.

9.2 LBP

- The Department of Housing and Urban Development (HUD) considers LBP as paint with lead levels above 1.0 mg/cm2. If the LBP surfaces are impacted during the renovations, or if the buildings are going to be demolished, Tetra Tech recommends the contractor conducting the renovation/demolition, comply with the Occupational Safety and Health Administration (OSHA) Lead in Construction Standard, Title 29 of Code of Federal Regulations (CFR), Part 1926.62. In addition, Tetra Tech recommends a sample be collected from the debris pile for a Toxicity Characteristic Leaching Procedure (TCLP) analysis (Title 40 CFR 261.24) prior to transport to the landfill. A representative sample should be collected and analyzed for all eight metals specified in 40 CFR Part 261.24 (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver). This would allow determination of the proper method of disposal of the materials. Of the 224 XRF readings from painted surfaces, 43 lead concentrations exceeded 1.0 mg/cm^2. The following is a summary of those positive readings:

    - LBP was identified in Building 1 on white concrete walls in the northeast open area and south entry; off-white plaster ceiling, green wall concrete, and white wall concrete at the bottom of the stairs; red metal door in the kitchen; and tan support pole in the covered parking area totaling approximately 3,980 square feet (ft^2).

    - LBP was identified in Building 2 on grey metal support beams; yellow concrete floor; and yellow metal door frame on the south garage door totaling approximately 3,060 ft^2.

    - LBP was identified in Building 3 on tan and white brick walls, tan and white concrete pillars, tan ceramic walls, and tan wood walls in the locker room; brown and beige ceramic wall tile, brown and white concrete pillars, blue concrete ceiling, and brown and tan brick walls in the entryway; brown wood exterior windows; blue brick walls on the west side; white brick walls and blue and white wood walls on the lab side; black wood door and brown wood screen door on the exterior west lab; light brown metal support beam, light brown wood overhand, and tan wood window frames on the exterior totaling approximately 9,794 square ft^2.

    - LBP was identified in Building 6 on grey metal doors and door frames on the exterior east side; yellow and brown/red metal stair railing and white concrete ceiling in the storage room; red/brown metal support beams in the 2nd floor storage room; and white metal door in the hall to the storage room totaling approximately 1,295 ft^2.

    - LBP was identified in Building 7 on yellow metal support beams totaling approximately 20 ft^2.

    - LBP was identified in Building 8 on yellow metal support beams in the main warehouse; yellow metal support beams and railings in the east/center stairwell; yellow metal door frame on the southeast side; red metal door and door frame in the north office area; and white metal support beams in the outer area totaling approximately 16,100 ft^2.

    - LBP was identified in Building 9 on yellow concrete post in the main plant, yellow metal door in the south garage, yellow metal stair railing and concrete guard post in the north plant, blue metal guard post in the north plant, and yellow metal door in the north garage totaling approximately 80 ft^2.

9.3 HHW

HHW and hazardous materials were inventoried during the survey. Tetra Tech recommends proper disposal of the materials based on their characteristics prior to demolition of the subject property buildings.

10.0 ASSUMPTIONS AND DEVIATIONS

All subject property buildings were visually surveyed for suspect ACM and LBP. Because of limitations on destructive sampling methods, additional suspect materials may be present but not detected in the walls, voids, or other concealed areas. An inventory of all HHW and other potentially hazardous materials was also performed. Standing water in the basements of Buildings 3 and 6 rendered the areas inaccessible. All other areas were accessible and inspected.

11.0 REFERENCES

Agency for Toxic Substance and Disease Registry (ATSDR). 2008. Asbestos: Health Effects. Accessed February 10, 2014. http://www.atsdr.cdc.gov/asbestos/asbestos/health_effects/

Terracon Consultants, Inc. (Terracon). 2009. Phase I Environmental Site Assessment. Former Elkem Carbide.

Tetra Tech Inc. (Tetra Tech). 2016. *Quality Assurance Project Plan for Phase II Targeted Brownfields Assessment, Former Elkem Carbide*. March.

U.S. Department of Housing and Urban Development (HUD). 1997. *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing*.

APPENDIX A

INSPECTOR CERTIFICATIONS

M·E·T·A

Mayhew Environmental Training Associates

INCORPORATED

Certificate # MEEDA6BDC5FDED467

Kaitlyn Bahr

has on 6/16/2016, in Lawrence, KS
completed the requirements for asbestos accreditation under Section 206 of TSCA Title II, 15 USC 2646

4-hr. Asbestos Building Inspector Refresher

as approved by MO & the US EPA under 40 CFR 763 (AHERA) from 6/16/2016 to 6/16/2016
and
passed the associated exam on 6/16/2016 with a score of at least 70%

KANSAS MAYHEW INC. 1987 EST. 1985 ENVIRONMENTAL TRAINING ASSOCIATES SAFETY IN GOD ALONE

Dean Althage
Instructor

Thomas Mayhew
President

SSN: XXX-XX-7582
Expiration: 6/16/2017

P.O. Box 4693 - Lawrence, KS. 66047 - 800.444.6382
www.metaenvironmental.net

M·E·T·A

Mayhew Environmental Training Associates

INCORPORATED

Certificate # MED5E1B3A730C34CD

Joann R. Jeplawy

has on 1/6/2016, in Lawrence, KS
completed the requirements for asbestos accreditation under Section 206 of TSCA Title II, 15 USC 2646

3-day Asbestos Building Inspector Initial

as approved by MO & the US EPA under 40 CFR 763 (AHERA) from 1/4/2016 to 1/6/2016
and
passed the associated exam on 1/6/2016 with a score of at least 70%

KANSAS MAYHEW INC. 1987 EST. 1985 ENVIRONMENTAL TRAINING ASSOCIATES SAFETY IN GOD ALONE

Bob Baer
Instructor

Thomas Mayhew
President

SSN: XXX-XX-2734
Expiration: 1/6/2017

P.O. Box 4693 - Lawrence, KS. 66047 - 800.444.6382
www.metaenvironmental.net

M·E·T·A

Mayhew Environmental Training Associates

INCORPORATED

Certificate # ME321F4A260641424

Jeffrey Mitchell

has on 1/27/2016, in Lawrence, KS
completed the requirements for asbestos accreditation under Section 206 of TSCA Title II, 15 USC 2646

4-hr. Asbestos Building Inspector Refresher

as approved by MO & the US EPA under 40 CFR 763 (AHERA) from 1/27/2016 to 1/27/2016
and
passed the associated exam on 1/27/2016 with a score of at least 70%

KANSAS MAYHEW INC. 1987 ENVIRONMENTAL TRAINING ASSOCIATES SAFETY IN GOD ALONE EST. 1985

Thomas Mayhew
Instructor

Thomas Mayhew
President

SSN: XXX-XX-1403
Expiration: 1/27/2017

P.O. Box 4693 - Lawrence, KS. 66047 - 800.444.6382
www.metaenvironmental.net

JEFFREY MITCHELL

DOB: 04-05-1977

Issued: 02-01-2016

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	16-5894	01-27-2017

DIVISION OF IOWA LABOR

Asbestos

Michael A. Mauro
Labor Commissioner

M·E·T·A

Mayhew Environmental Training Associates

INCORPORATED

Certificate # MEB25263C06FCF4CA

Thomas Rebecchi

has on 8/12/2015, in Lawrence, KS
completed the requirements for asbestos accreditation under Section 206 of TSCA Title II, 15 USC 2646

3-day Asbestos Building Inspector Initial

as approved by MO & the US EPA under 40 CFR 763 (AHERA) from 8/10/2015 to 8/12/2015
and
passed the associated exam on 8/12/2015 with a score of at least 70%

Dean Althage
Instructor

Thomas Mayhew
President

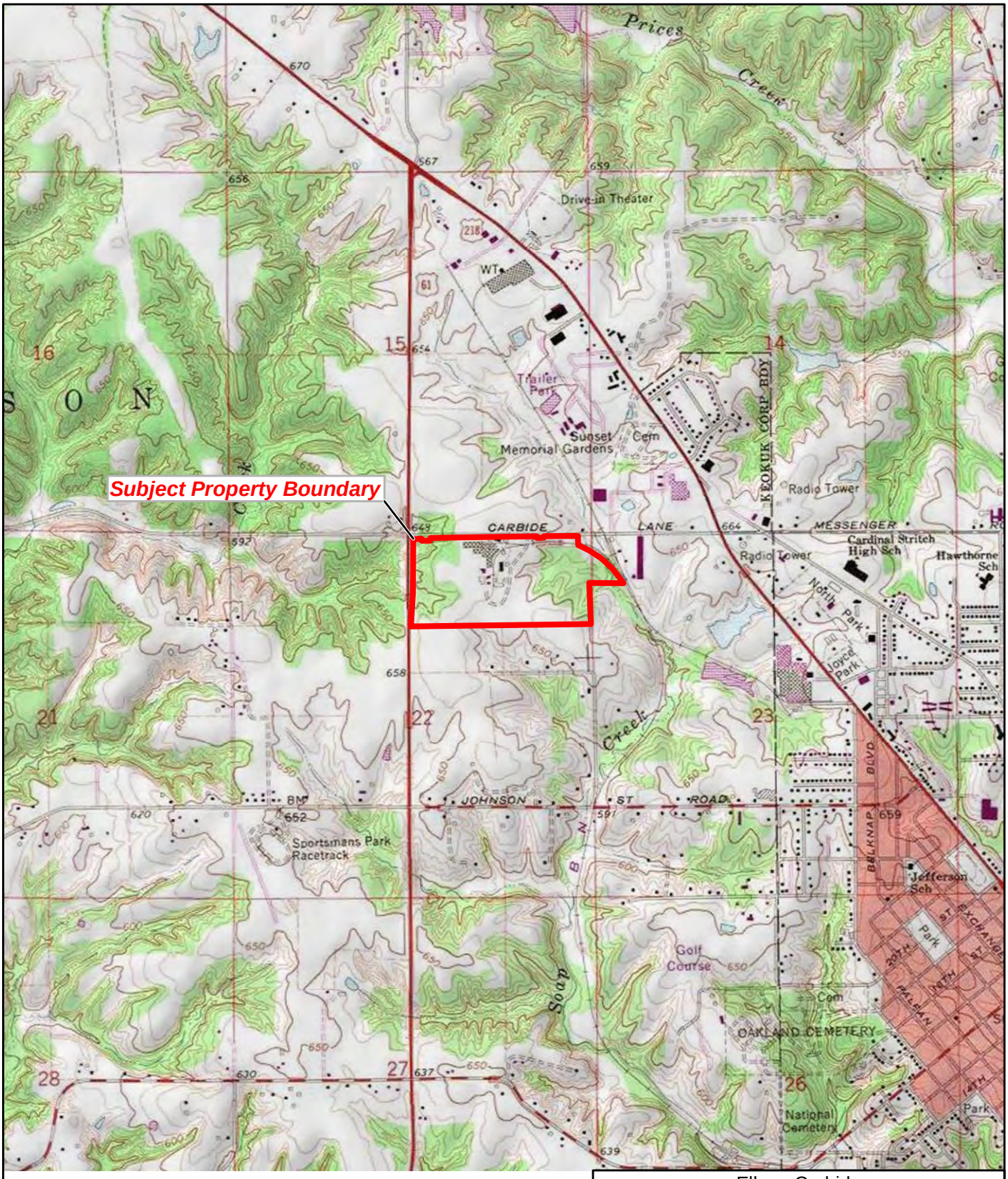
KANSAS MAYHEW INC. 1987 EST. 1985 ENVIRONMENTAL TRAINING ASSOCIATES SAFETY IN GOD ALONE

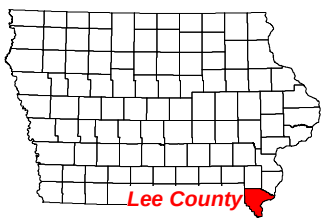
SSN: XXX-XX-4202
Expiration: 8/12/2016

P.O. Box 4693 - Lawrence, KS. 66047 - 800.444.6382
www.metaenvironmental.net

APPENDIX B

FIGURES





N

0 1,000 2,000

Feet

Source: USGS Keokuk, IA 7.5 Minute Topo Quad, 1977

Elkem Carbide
365 Carbide Lane
Keokuk, Iowa

Figure 1
Site Location Map

TETRA TECH

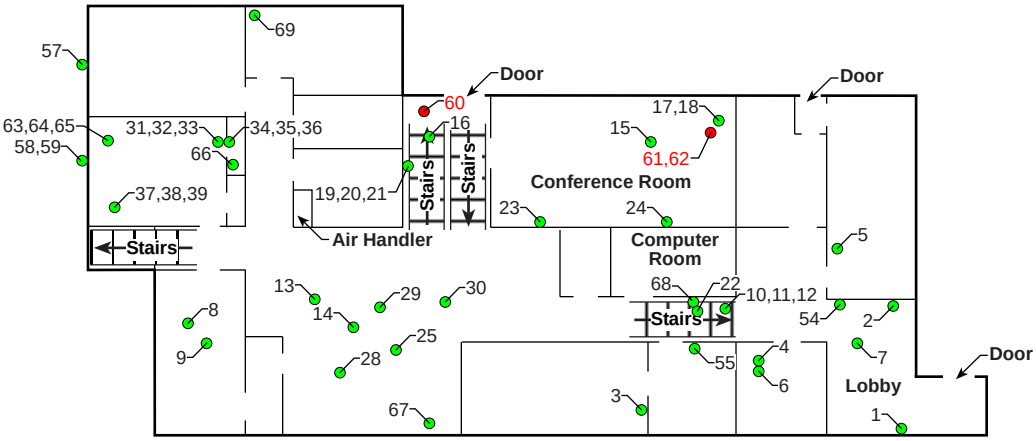
Date: 1/20/2016 Drawn By: Nick Wiederholt Project No: X9025.14.0002.019.017

X:\GIS\9025\0002\2019\017\Projects\mxd\Figure1.mxd

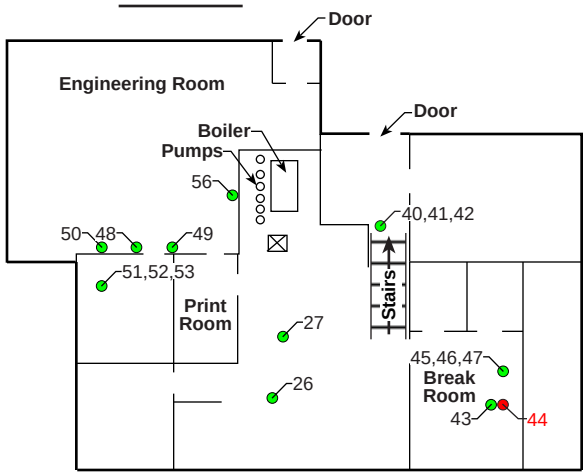
Sample Key Table

Key	Sample No.
Asbestos	
1	1-CBM-1
2	1-CBM-2
3	1-CBM-3
4	1-FT-1
5	1-FT-2
6	1-FT-3
7	1-CT-1
8	1-CT-2
9	1-CT-3
10	1-ST-1
11	1-ST-2
12	1-ST-3
13	1-CT2-1
14	1-CT2-2
15	1-CT2-3
16	1-FT2-1
17	1-FT2-2
18	1-FT2-3
19	1-CBM2-1
20	1-CBM2-2
21	1-CBM2-3
22	1-DWJC-1
23	1-DWJC-2
24	1-DWJC-3
25	1-PLSC-1
26	1-PLSC-2
27	1-PLSC-3
28	1-GP-1
29	1-GP-2
30	1-GP-3
31	1-FT3-1
32	1-FT3-2
33	1-FT3-3
34	1-FT4-1
35	1-FT4-2
36	1-FT4-3
37	1-CA-1
38	1-CA-2
39	1-CA-3
40	1-ST2-1
41	1-ST2-2
42	1-ST2-3
43	1-FT5-1
44	1-FT6-1
45	1-CT3-1
46	1-CT3-2
47	1-CT3-3
48	1-CBM3-1
49	1-CBM3-2
50	1-CBM3-3
51	1-CT4-1
52	1-CT4-2
53	1-CT4-3
54	1-PW-1
55	1-PW-2
56	1-PW-3
57	1-WC-1
58	1-WC-2
59	1-WC-3
60	1-FT7-1
61	1-FT7-2
62	1-FT7-3
63	1-FP-1
64	1-FP-2
65	1-FP-3
66	1-CBM4-1
67	1-FT8-1
68	1-FT8-2
69	1-FT8-3

Main Floor



Basement



Legend

- Asbestos Containing Material Sample Location
- Non-asbestos Containing Material Sample Location

Note: Refer to Sample Key Table for corresponding sample numbers.

N

NOT TO SCALE

Elkem Carbide
365 Carbide Lane
Keokuk, Iowa

Figure 2a

Asbestos Sample Location Map - Building 1

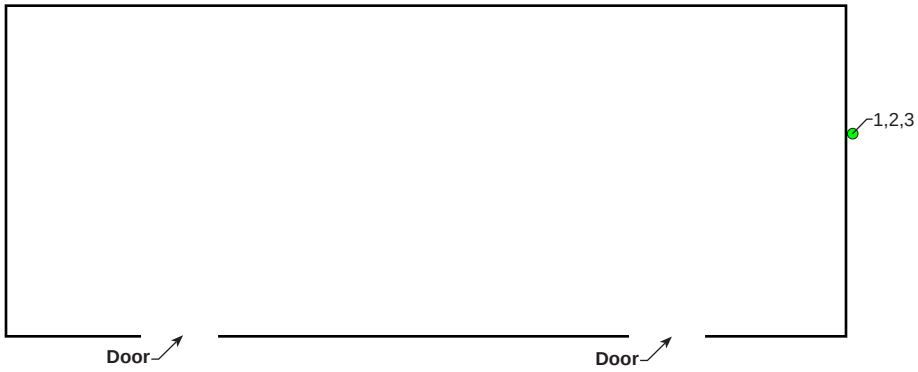
TETRA TECH

Date: 8/8/16 | Drawn By: Nick Wiederholt | Project No: X9025.14.0002.019.017

X:\G\9025\0002\019\017\RH10\Figure2a RH10

Sample Key Table

Key	Sample No.
Asbestos	
1	2-WG-1
2	2-WG-2
3	2-WG-3



Legend

- Non-asbestos Containing Material Sample Location

NOT TO SCALE

Note: Refer to Sample Key Table for corresponding sample numbers.

Elkem Carbide
365 Carbide Lane
Keokuk, Iowa

Figure 2b
Asbestos Sample Location Map - Building 2

TETRA TECH

Date: 8/8/16 | Drawn By: Nick Wiederholt | Project No: X9025.14.0002.019.017

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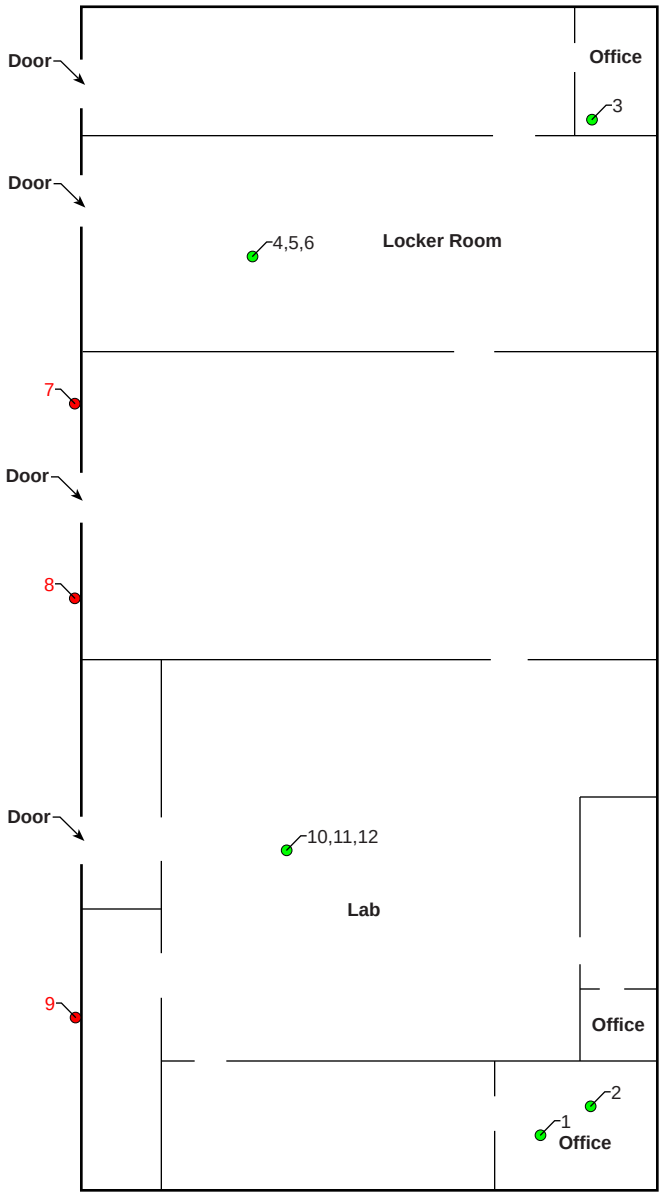
Sample Key Table

Key	Sample No.
Asbestos	
1	3-CT-1
2	3-CT-2
3	3-CT-3
4	3-TSI-1
5	3-TSI-2
6	3-TSI-3
7	3-WG-1
8	3-WG-2
9	3-WG-3
10	3-TSI2-1
11	3-TSI2-2
12	3-TSI2-3



Legend

- Asbestos Containing Material Sample Location
- Non-asbestos Containing Material Sample Location

NOT TO SCALE

Note: Refer to Sample Key Table for corresponding sample numbers.

Elkem Carbide
365 Carbide Lane
Keokuk, Iowa

Figure 2c
Asbestos Sample Location Map - Building 3

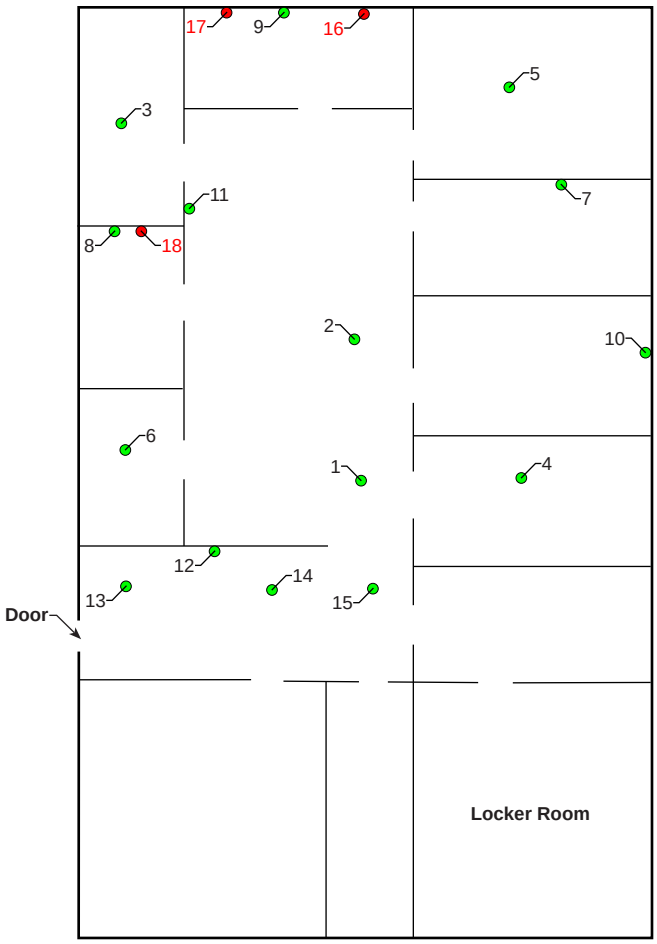
TETRA TECH

Date: 8/8/16 Drawn By: Nick Wiederholt Project No: X9025.14.0002.019.017

X:\G\9025\0002\019\017\FH10\Figure2c.FH10

Sample Key Table

Key	Sample No.
Asbestos	
1	4-FT-1
2	4-FT-2
3	4-FT-3
4	4-CT-1
5	4-CT-2
6	4-CT-3
7	4-DWJC-1
8	4-DWJC-2
9	4-DWJC-3
10	4-CBM-1
11	4-CBM-2
12	4-CBM-3
13	4-FT2-1
14	4-FT2-2
15	4-FT2-3
16	4-WM-1
17	4-WM-2
18	4-WM-3



Legend

- Asbestos Containing Material Sample Location
- Non-asbestos Containing Material Sample Location

Note: Refer to Sample Key Table for corresponding sample numbers.

N

NOT TO SCALE

Elkem Carbide
365 Carbide Lane
Keokuk, Iowa

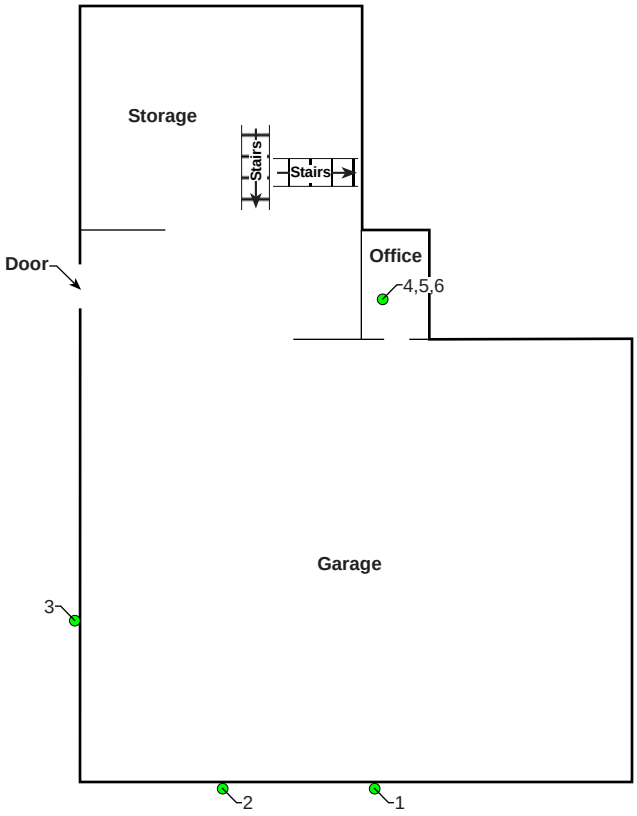
Figure 2d
Asbestos Sample Location Map - Building 4

TETRA TECH

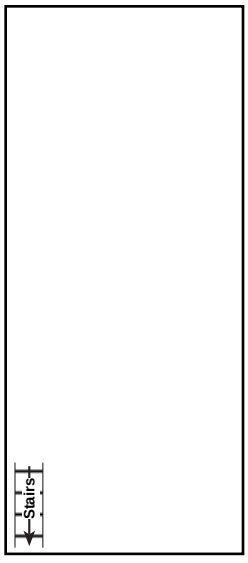
Date: 8/8/16 | Drawn By: Nick Wiederholt | Project No: X9025.14.0002.019.017

X:\G\9025\0002\2019\017\FH10\Figure2d FH10

First Floor



Second Floor



Sample Key Table

Key	Sample No.
Asbestos	
1	6-WG-1
2	6-WG-2
3	6-WG-3
4	6-CT-1
5	6-CT-2
6	6-CT-3

Legend

- Non-asbestos Containing Material Sample Location

Note: Refer to Sample Key Table for corresponding sample numbers.

N

NOT TO SCALE

Elkem Carbide
365 Carbide Lane
Keokuk, Iowa

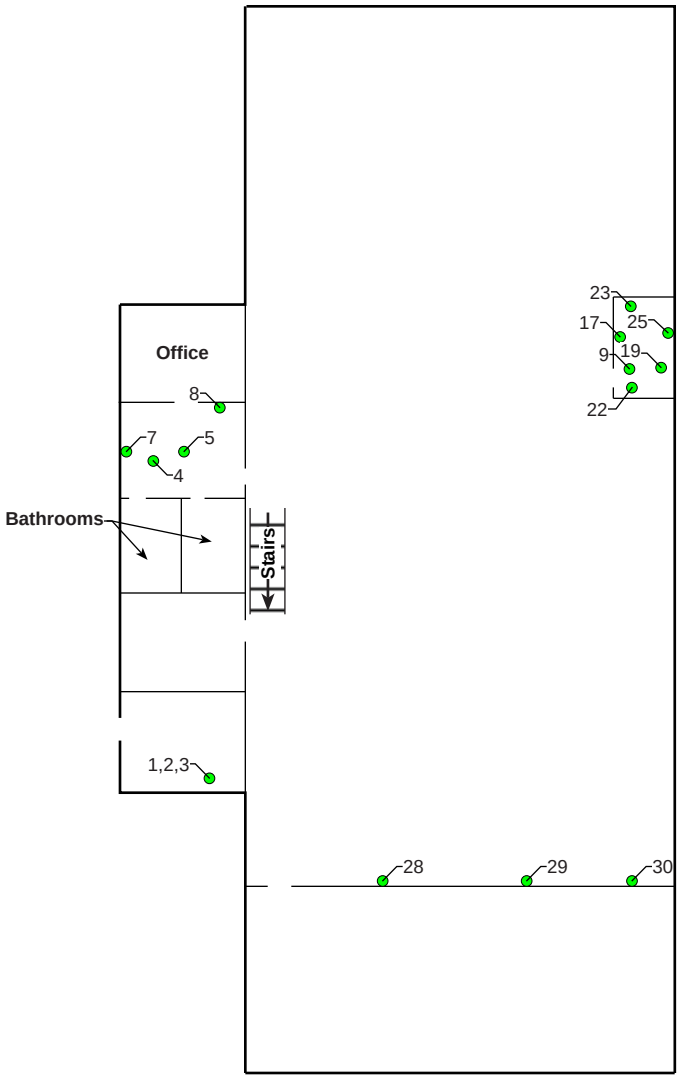
Figure 2e
Asbestos Sample Location Map - Building 6

TETRA TECH

Date: 8/8/16 | Drawn By: Nick Wiederholt | Project No: X9025.14.0002.019.017

X:\G\9025\0002\019\017\RH10\Figure2e RH10

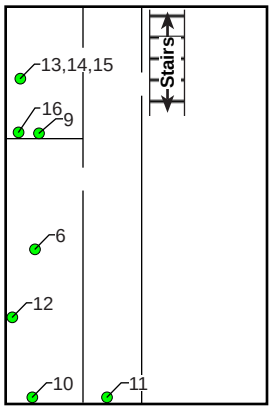
First Floor

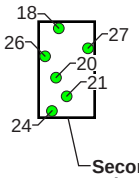


Sample Key Table

Key	Sample No.
Asbestos	
1	8-TSI-1
2	8-TSI-2
3	8-TSI-3
4	8-CT-1
5	8-CT-2
6	8-CT-3
7	8-CBM-1
8	8-CBM-2
9	8-CBM-3
10	8-WG-1
11	8-WG-2
12	8-WG-3
13	8-CT2-1
14	8-CT2-2
15	8-CT2-3
16	8-DWJC-1
17	8-DWJC-2
18	8-DWJC-3
19	8-FT-1
20	8-FT-2
21	8-FT-3
22	8-CTX-1
23	8-CTX-2
24	8-CTX-3
25	8-CBM2-1
26	8-CBM2-2
27	8-CBM2-3
28	8-VER-1
29	8-VER-2
30	8-VER-3

Second Floor - Office Area





Legend

- Non-asbestos Containing Material Sample Location

NOT TO SCALE

Note: Refer to Sample Key Table for corresponding sample numbers.

Elkem Carbide
365 Carbide Lane
Keokuk, Iowa

Figure 2f
Asbestos Sample Location Map - Building 8

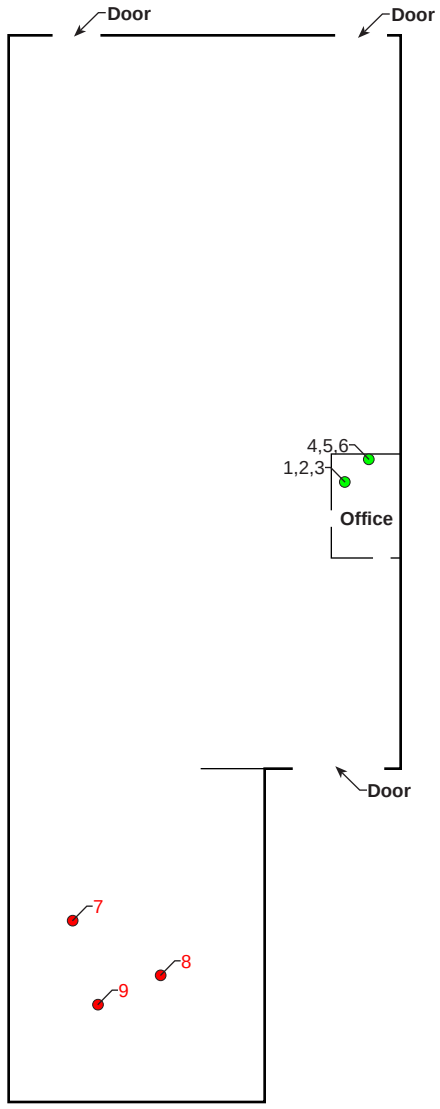
TETRA TECH

Date: 8/8/16 | Drawn By: Nick Wiederholt | Project No: X9025.14.0002.019.017

X:\G\9025\0002\019\017\FH10\Figure2f FH10

Sample Key Table

Key	Sample No.
Asbestos	
1	9-CT-1
2	9-CT-2
3	9-CT-3
4	9-DW-1
5	9-DW-2
6	9-DW-3
7	9-TR-1
8	9-TR-2
9	9-TR-3



Legend

- Asbestos Containing Material Sample Location
- Non-asbestos Containing Material Sample Location

NOT TO SCALE

Note: Refer to Sample Key Table for corresponding sample numbers.

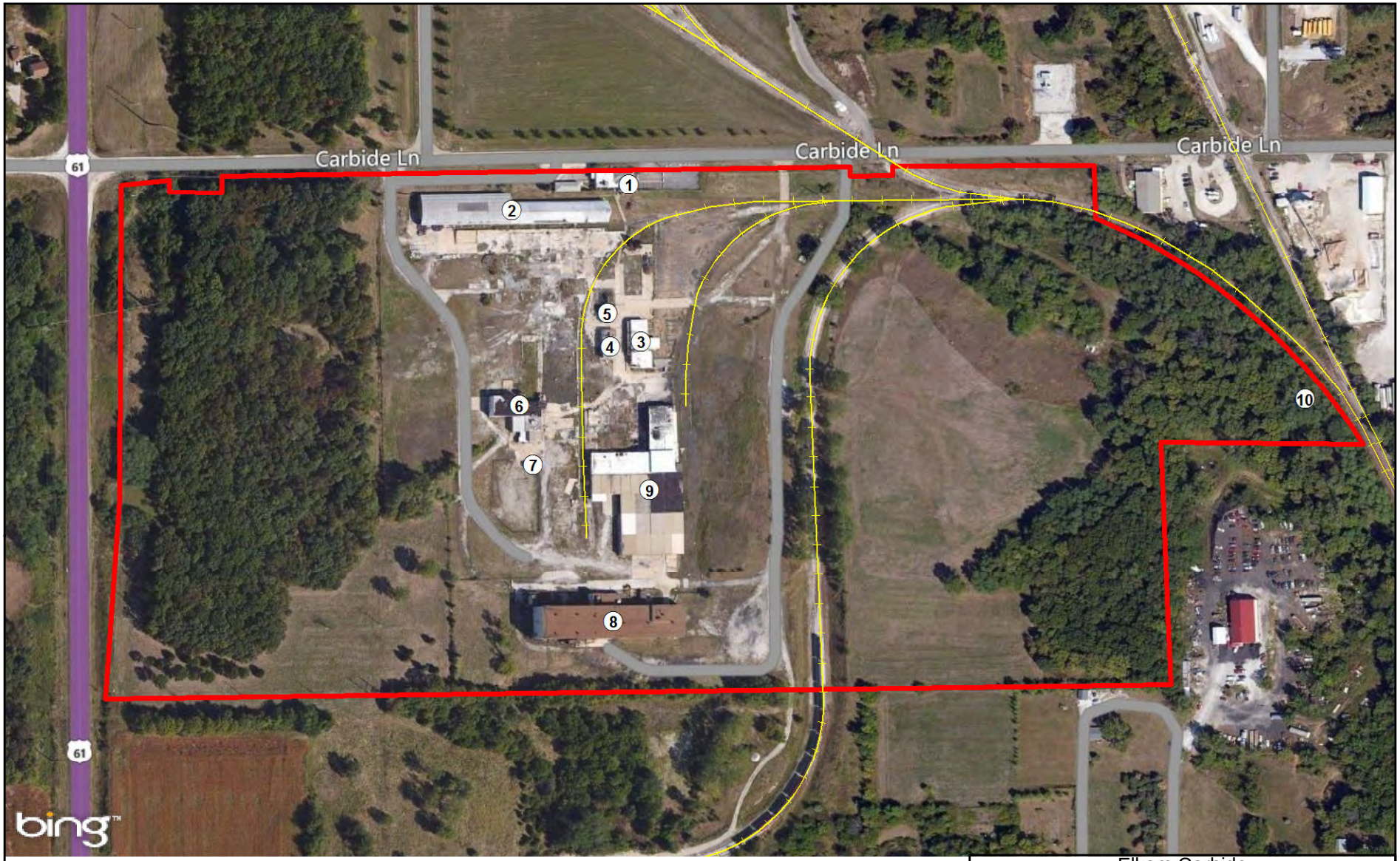
Elkem Carbide
365 Carbide Lane
Keokuk, Iowa

Figure 2g
Asbestos Sample Location Map - Building 9

TETRA TECH

Date: 8/8/16 Drawn By: Nick Wiederholt Project No: X9025.14.0002.019.017

X:\G\9025\0002\2019\017\FH10\Figure2g FH10



Legend

② Building ID

Railroad

Subject property boundary

N

0 175 350

Feet

Source: ESRI, ArcGIS Online, Bing Maps Hybrid, 2011; Lee County Iowa, Web Mapping Application, 2016

Elkem Carbide
365 Carbide Lane
Keokuk, Iowa

Figure 3
Building Location Map

TETRA TECH

Date: 2/12/2016 Drawn By: Nick Wiederholt Project No: X9025.14.0002.019.017

X:\G\9025\0002\019017\Projects\mxd\Figure3.mxd

APPENDIX C

ACM ANALYTICAL RESULTS AND CHAIN-OF-CUSTODY FORMS

2033 Heritage Park Dr, Oklahoma City, OK 73120 | 1.800.822.1650

Polarized Light Microscopy Asbestos Analysis Report

QuanTEM Lab No. 265857
Account Number: B229
Date Received: 07/01/2016
Received By: Peyton Awbrey
Date Analyzed: 07/08/2016
Analyzed By: Dee Ammerman
Methodology: EPA/600/R-93/116

Client: Tetra Tech EM, Inc
Jeff Mitchell
415 Oak Street
Kansas City, MO 64106

Project: Elkem Carbide Bldg 1
Project Location: Keokuk, IA
Project Number: N/A

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
001	1-CBM-1	Layered	Brown Cove Base	Asbestos Not Present	NA	CaCO3 Vinyl
001a		Layered	Yellow Mastic	Asbestos Not Present	NA	Glue
002	1-CBM-2	Layered	Brown Cove Base	Asbestos Not Present	NA	CaCO3 Vinyl
002a		Layered	Yellow Mastic	Asbestos Not Present	NA	Glue
003	1-CBM-3	Layered	Brown Cove Base	Asbestos Not Present	NA	CaCO3 Vinyl
003a		Layered	Yellow Mastic	Asbestos Not Present	NA	Glue
004	1-FT-1	Layered	Red Floor Tile	Asbestos Not Present	NA	CaCO3 Vinyl

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

2033 Heritage Park Dr, Oklahoma City, OK 73120 | 1.800.822.1650

Polarized Light Microscopy Asbestos Analysis Report

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Methodology: EPA/600/R-93/116

Client: Tetra Tech EM, Inc
Jeff Mitchell
415 Oak Street
Kansas City, MO 64106

Project: Elkem Carbide Bldg 1
Project Location: Keokuk, IA
Project Number: N/A

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
004a		Layered	Yellow Mastic	Asbestos Not Present	NA	Glue CaCO3
005	1-FT-2	Layered	Red Floor Tile	Asbestos Not Present	NA	CaCO3 Vinyl
005a		Layered	Yellow Mastic	Asbestos Not Present	NA	Glue CaCO3
006	1-FT-3	Layered	Red Floor Tile	Asbestos Not Present	NA	CaCO3 Vinyl
006a		Layered	Yellow Mastic	Asbestos Not Present	NA	Glue CaCO3
007	1-CT-1	Homogeneous	White Ceiling Tile	Asbestos Not Present	Cellulose 40 Glass Fiber 40	Paint

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Methodology: EPA/600/R-93/116

Client: Tetra Tech EM, Inc
Jeff Mitchell
415 Oak Street
Kansas City, MO 64106

Project: Elkem Carbide Bldg 1
Project Location: Keokuk, IA
Project Number: N/A

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
008	1-CT-2	Homogeneous	White Ceiling Tile	Asbestos Not Present	Cellulose 40 Glass Fiber 40	Paint
009	1-CT-3	Homogeneous	White Ceiling Tile	Asbestos Not Present	Cellulose 40 Glass Fiber 40	Paint
010	1-ST-1	Layered	Pink Stair Tread	Asbestos Not Present	NA	Vinyl CaCO3
010a		Layered	Yellow Mastic	Asbestos Not Present	NA	Glue
011	1-ST-2	Layered	Pink Stair Tread	Asbestos Not Present	NA	Vinyl CaCO3
011a		Layered	Yellow Mastic	Asbestos Not Present	NA	Glue
012	1-ST-3	Layered	Pink Stair Tread	Asbestos Not Present	NA	Vinyl CaCO3

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Polarized Light Microscopy Asbestos Analysis Report

QuanTEM Lab No. 265857
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Methodology: EPA/600/R-93/116

Client: Tetra Tech EM, Inc
Jeff Mitchell
415 Oak Street
Kansas City, MO 64106

Project: Elkem Carbide Bldg 1
Project Location: Keokuk, IA
Project Number: N/A

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
012a		Layered	Yellow Mastic	Asbestos Not Present	NA	Glue
013	1-CT2-1	Homogeneous	White Ceiling Tile	Asbestos Not Present	Cellulose 50 Glass Fiber 30	Perlite Paint
014	1-CT2-2	Homogeneous	White Ceiling Tile	Asbestos Not Present	Cellulose 50 Glass Fiber 30	Perlite Paint
015	1-CT2-3	Homogeneous	White Ceiling Tile	Asbestos Not Present	Cellulose 50 Glass Fiber 30	Perlite Paint
016	1-FT2-1	Layered	Gray Floor Tile	Asbestos Not Present	NA	CaCO3 Vinyl
016a		Layered	Yellow Mastic	Asbestos Not Present	NA	Glue

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

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Polarized Light Microscopy Asbestos Analysis Report

QuanTEM Lab No. 265857
Account Number: B229
Date Received: 07/01/2016
Received By: Peyton Awbrey
Date Analyzed: 07/08/2016
Analyzed By: Dee Ammerman
Methodology: EPA/600/R-93/116

Client: Tetra Tech EM, Inc
Jeff Mitchell
415 Oak Street
Kansas City, MO 64106

Project: Elkem Carbide Bldg 1
Project Location: Keokuk, IA
Project Number: N/A

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
017	1-FT2-2	Layered	Gray Floor Tile	Asbestos Not Present	NA	CaCO3 Vinyl
017a		Layered	Yellow Mastic	Asbestos Not Present	NA	Glue
018	1-FT2-3	Layered	Gray Floor Tile	Asbestos Not Present	NA	CaCO3 Vinyl
018a		Layered	Yellow Mastic	Asbestos Not Present	NA	Glue
019	1-CBM2-1	Layered	Gray Cove Base	Asbestos Not Present	NA	CaCO3 Vinyl
019a		Layered	Yellow Mastic	Asbestos Not Present	NA	Glue CaCO3
020	1-CBM2-2	Layered	Gray Cove Base	Asbestos Not Present	NA	CaCO3 Vinyl

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2033 Heritage Park Dr, Oklahoma City, OK 73120 | 1.800.822.1650

Polarized Light Microscopy Asbestos Analysis Report

QuanTEM Lab No. 265857
Account Number: B229
Date Received: 07/01/2016
Received By: Peyton Awbrey
Date Analyzed: 07/08/2016
Analyzed By: Dee Ammerman
Methodology: EPA/600/R-93/116

Client: Tetra Tech EM, Inc
Jeff Mitchell
415 Oak Street
Kansas City, MO 64106

Project: Elkem Carbide Bldg 1
Project Location: Keokuk, IA
Project Number: N/A

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
020a		Layered	Yellow Mastic	Asbestos Not Present	NA	Glue CaCO3
021	1-CBM2-3	Layered	Gray Cove Base	Asbestos Not Present	NA	CaCO3 Vinyl
021a		Layered	Yellow Mastic	Asbestos Not Present	NA	Glue CaCO3
022	1-DWJC-1	Layered	White Joint Compound	Asbestos Not Present	NA	CaCO3
022a		Layered	White Sheetrock	Asbestos Not Present	Cellulose 15	Gypsum
023	1-DWJC-2	Layered	White Joint Compound	Asbestos Not Present	NA	CaCO3

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

2033 Heritage Park Dr, Oklahoma City, OK 73120 | 1.800.822.1650

Polarized Light Microscopy Asbestos Analysis Report

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Account Number: B229
Date Received: 07/01/2016
Received By: Peyton Awbrey
Date Analyzed: 07/08/2016
Analyzed By: Dee Ammerman
Methodology: EPA/600/R-93/116

Client: Tetra Tech EM, Inc
Jeff Mitchell
415 Oak Street
Kansas City, MO 64106

Project: Elkem Carbide Bldg 1
Project Location: Keokuk, IA
Project Number: N/A

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)		Non Fibrous
023a		Layered	White Sheetrock	Asbestos Not Present	Cellulose	15	Gypsum
024	1-DWJC-3	Layered	White Joint Compound	Asbestos Not Present	NA		CaCO3
024a		Layered	White Sheetrock	Asbestos Not Present	Cellulose	15	Gypsum
025	1-PLSC-1	Layered	Tan Skim Coat	Asbestos Not Present	NA		CaCO3 Sand
025a		Layered	Gray Plaster	Asbestos Not Present	Hair	2	CaCO3 Sand
026	1-PLSC-2	Layered	Tan Skim Coat	Asbestos Not Present	NA		CaCO3 Sand
026a		Layered	Gray Plaster	Asbestos Not Present	Hair	2	CaCO3 Sand

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

2033 Heritage Park Dr, Oklahoma City, OK 73120 | 1.800.822.1650

Polarized Light Microscopy Asbestos Analysis Report

QuanTEM Lab No. 265857
Account Number: B229
Date Received: 07/01/2016
Received By: Peyton Awbrey
Date Analyzed: 07/08/2016
Analyzed By: Dee Ammerman
Methodology: EPA/600/R-93/116

Client: Tetra Tech EM, Inc
Jeff Mitchell
415 Oak Street
Kansas City, MO 64106

Project: Elkem Carbide Bldg 1
Project Location: Keokuk, IA
Project Number: N/A

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
027	1-PLSC-3	Layered	Tan Skim Coat	Asbestos Not Present	NA	CaCO3 Sand
027a		Layered	Gray Plaster	Asbestos Not Present	Hair 2	CaCO3 Sand
028	1-GP-1	Homogeneous	Brown Mastic	Asbestos Not Present	NA	Glue
029	1-GP-2	Homogeneous	Brown Mastic	Asbestos Not Present	NA	Glue
030	1-GP-3	Homogeneous	Brown Mastic	Asbestos Not Present	NA	Glue
031	1-FT3-1	Layered	Brown Floor Tile	Asbestos Not Present	NA	Vinyl CaCO3

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Polarized Light Microscopy Asbestos Analysis Report

QuanTEM Lab No. 265857
Account Number: B229
Date Received: 07/01/2016
Received By: Peyton Awbrey
Date Analyzed: 07/08/2016
Analyzed By: Dee Ammerman
Methodology: EPA/600/R-93/116

Client: Tetra Tech EM, Inc
Jeff Mitchell
415 Oak Street
Kansas City, MO 64106

Project: Elkem Carbide Bldg 1
Project Location: Keokuk, IA
Project Number: N/A

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
031a		Layered	Brown Mastic	Asbestos Not Present	NA	Glue
031b		Layered	Black Paper	Asbestos Not Present	Cellulose 90	Tar
032	1-FT3-2	Layered	Brown Floor Tile	Asbestos Not Present	NA	Vinyl CaCO3
032a		Layered	Brown Mastic	Asbestos Not Present	NA	Glue
032b		Layered	Black Paper	Asbestos Not Present	Cellulose 90	Tar
033	1-FT3-3	Layered	Brown Floor Tile	Asbestos Not Present	NA	Vinyl CaCO3
033a		Layered	Brown Mastic	Asbestos Not Present	NA	Glue

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

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Polarized Light Microscopy Asbestos Analysis Report

QuanTEM Lab No. 265857
Account Number: B229
Date Received: 07/01/2016
Received By: Peyton Awbrey
Date Analyzed: 07/08/2016
Analyzed By: Dee Ammerman
Methodology: EPA/600/R-93/116

Client: Tetra Tech EM, Inc
Jeff Mitchell
415 Oak Street
Kansas City, MO 64106

Project: Elkem Carbide Bldg 1
Project Location: Keokuk, IA
Project Number: N/A

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
033b		Layered	Black Paper	Asbestos Not Present	Cellulose 90	Tar
034	1-FT4-1	Layered	Gray Floor Tile	Asbestos Not Present	NA	Vinyl CaCO3
034a		Layered	Brown Mastic	Asbestos Not Present	NA	Glue
035	1-FT4-2	Layered	Gray Floor Tile	Asbestos Not Present	NA	Vinyl CaCO3
035a		Layered	Brown Mastic	Asbestos Not Present	NA	Glue
036	1-FT4-3	Layered	Gray Floor Tile	Asbestos Not Present	NA	Vinyl CaCO3

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

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Polarized Light Microscopy Asbestos Analysis Report

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Date Analyzed: 07/08/2016
Analyzed By: Dee Ammerman
Methodology: EPA/600/R-93/116

Client: Tetra Tech EM, Inc
Jeff Mitchell
415 Oak Street
Kansas City, MO 64106

Project: Elkem Carbide Bldg 1
Project Location: Keokuk, IA
Project Number: N/A

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
036a		Layered	Brown Mastic	Asbestos Not Present	NA	Glue
037	1-CA-1	Homogeneous	Yellow Mastic	Asbestos Not Present	NA	Glue CaCO3
038	1-CA-2	Homogeneous	Yellow Mastic	Asbestos Not Present	NA	Glue CaCO3
039	1-CA-3	Homogeneous	Yellow Mastic	Asbestos Not Present	NA	Glue CaCO3
040	1-ST2-1	Layered	Gray Stair Tread	Asbestos Not Present	NA	Vinyl CaCO3
040a		Layered	Brown Mastic	Asbestos Not Present	NA	Glue CaCO3
041	1-ST2-2	Layered	Gray Stair Tread	Asbestos Not Present	NA	Vinyl CaCO3

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2033 Heritage Park Dr, Oklahoma City, OK 73120 | 1.800.822.1650

Polarized Light Microscopy Asbestos Analysis Report

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Account Number: B229
Date Received: 07/01/2016
Received By: Peyton Awbrey
Date Analyzed: 07/08/2016
Analyzed By: Dee Ammerman
Methodology: EPA/600/R-93/116

Client: Tetra Tech EM, Inc
Jeff Mitchell
415 Oak Street
Kansas City, MO 64106

Project: Elkem Carbide Bldg 1
Project Location: Keokuk, IA
Project Number: N/A

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
041a		Layered	Brown Mastic	Asbestos Not Present	NA	Glue CaCO3
042	1-ST2-3	Layered	Gray Stair Tread	Asbestos Not Present	NA	Vinyl CaCO3
042a		Layered	Brown Mastic	Asbestos Not Present	NA	Glue CaCO3
043	1-FT5-1	Layered	Orange Floor Tile	Asbestos Not Present	NA	CaCO3 Vinyl
043a		Layered	Yellow Mastic	Asbestos Not Present	NA	Glue CaCO3
044	1-FT6-1	Layered	Brown Floor Tile	Asbestos Present Chrysotile 5	NA	CaCO3 Vinyl

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

2033 Heritage Park Dr, Oklahoma City, OK 73120 | 1.800.822.1650

Polarized Light Microscopy Asbestos Analysis Report

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Account Number: B229
Date Received: 07/01/2016
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Methodology: EPA/600/R-93/116

Client: Tetra Tech EM, Inc
Jeff Mitchell
415 Oak Street
Kansas City, MO 64106

Project: Elkem Carbide Bldg 1
Project Location: Keokuk, IA
Project Number: N/A

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
044a		Layered	Yellow Mastic	Asbestos Not Present	NA	Glue CaCO3
045	1-CT3-1	Homogeneous	White Ceiling Tile	Asbestos Not Present	Cellulose 50 Glass Fiber 30	Perlite Paint
046	1-CT3-2	Homogeneous	White Ceiling Tile	Asbestos Not Present	Cellulose 50 Glass Fiber 30	Perlite Paint
047	1-CT3-3	Homogeneous	White Ceiling Tile	Asbestos Not Present	Cellulose 50 Glass Fiber 30	Perlite Paint
048	1-CBM3-1	Layered	White Cove Base	Asbestos Not Present	NA	Vinyl CaCO3
048a		Layered	Brown Mastic	Asbestos Not Present	NA	Glue CaCO3
049	1-CBM3-2	Layered	White Cove Base	Asbestos Not Present	NA	Vinyl CaCO3

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

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Jeff Mitchell
415 Oak Street
Kansas City, MO 64106

Project: Elkem Carbide Bldg 1
Project Location: Keokuk, IA
Project Number: N/A

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)		Non Fibrous
049a		Layered	Brown Mastic	Asbestos Not Present	NA		Glue CaCO3
050	1-CBM3-3	Layered	White Cove Base	Asbestos Not Present	NA		Vinyl CaCO3
050a		Layered	Brown Mastic	Asbestos Not Present	NA		Glue CaCO3
051	1-CT4-1	Homogeneous	White Ceiling Tile	Asbestos Not Present	Cellulose	90	Paint
052	1-CT4-2	Homogeneous	White Ceiling Tile	Asbestos Not Present	Cellulose	90	Paint
053	1-CT4-3	Homogeneous	White Ceiling Tile	Asbestos Not Present	Cellulose	90	Paint

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Analyzed By: Dee Ammerman
Methodology: EPA/600/R-93/116

Client: Tetra Tech EM, Inc
Jeff Mitchell
415 Oak Street
Kansas City, MO 64106

Project: Elkem Carbide Bldg 1
Project Location: Keokuk, IA
Project Number: N/A

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
054	1-PW-1	Homogeneous	White Wallboard	Asbestos Not Present	Cellulose 70	CaCO3
055	1-PW-2	Homogeneous	White Wallboard	Asbestos Not Present	Cellulose 70	Binder
056	1-PW-3	Homogeneous	White Wallboard	Asbestos Not Present	Cellulose 70	Binder
057	1-WC-1	Homogeneous	White Caulk	Asbestos Not Present	NA	CaCO3 Binder
058	1-WC-2	Homogeneous	White Caulk	Asbestos Not Present	NA	CaCO3 Binder
059	1-WC-3	Homogeneous	White Caulk	Asbestos Not Present	NA	CaCO3 Binder
060	1-FT7-1	Layered	Brown Floor Tile	Asbestos Present Chrysotile 6	NA	CaCO3 Vinyl

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

2033 Heritage Park Dr, Oklahoma City, OK 73120 | 1.800.822.1650

Polarized Light Microscopy Asbestos Analysis Report

QuanTEM Lab No. 265857
Account Number: B229
Date Received: 07/01/2016
Received By: Peyton Awbrey
Date Analyzed: 07/08/2016
Analyzed By: Dee Ammerman
Methodology: EPA/600/R-93/116

Client: Tetra Tech EM, Inc
Jeff Mitchell
415 Oak Street
Kansas City, MO 64106

Project: Elkem Carbide Bldg 1
Project Location: Keokuk, IA
Project Number: N/A

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
060a		Layered	Black Mastic	Asbestos Present Chrysotile 2	NA	Tar
061	1-FT7-2	Layered	Brown Floor Tile	Asbestos Present Chrysotile 6	NA	CaCO3 Vinyl
061a		Layered	Black Mastic	Asbestos Present Chrysotile 2	NA	Tar
062	1-FT7-3	Layered	Brown Floor Tile	Asbestos Present Chrysotile 6	NA	CaCO3 Vinyl
062a		Layered	Black Mastic	Asbestos Present Chrysotile 2	NA	Tar
063	1-FP-1	Homogeneous	Black Paper	Asbestos Not Present	Cellulose 70	Tar

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

2033 Heritage Park Dr, Oklahoma City, OK 73120 | 1.800.822.1650

Polarized Light Microscopy Asbestos Analysis Report

QuanTEM Lab No. 265857
Account Number: B229
Date Received: 07/01/2016
Received By: Peyton Awbrey
Date Analyzed: 07/08/2016
Analyzed By: Dee Ammerman
Methodology: EPA/600/R-93/116

Client: Tetra Tech EM, Inc
Jeff Mitchell
415 Oak Street
Kansas City, MO 64106

Project: Elkem Carbide Bldg 1
Project Location: Keokuk, IA
Project Number: N/A

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
064	1-FP-2	Layered	Black Paper	Asbestos Not Present	Cellulose 70	Tar
064a		Layered	Tan Mastic	Asbestos Not Present	NA	Glue
065	1-FP-3	Layered	Black Paper	Asbestos Not Present	Cellulose 70	Tar
065a		Layered	Tan Mastic	Asbestos Not Present	NA	Glue
066	1-CB34-1	Layered	Brown Cove Base	Asbestos Not Present	NA	Vinyl CaCO3
066a		Layered	Brown Mastic	Asbestos Not Present	NA	Glue
067	1-FT8-1	Layered	Brown Floor Tile	Asbestos Not Present	NA	CaCO3 Vinyl

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

2033 Heritage Park Dr, Oklahoma City, OK 73120 | 1.800.822.1650

Polarized Light Microscopy Asbestos Analysis Report

QuanTEM Lab No. 265857
Account Number: B229
Date Received: 07/01/2016
Received By: Peyton Awbrey
Date Analyzed: 07/08/2016
Analyzed By: Dee Ammerman
Methodology: EPA/600/R-93/116

Client: Tetra Tech EM, Inc
Jeff Mitchell
415 Oak Street
Kansas City, MO 64106

Project: Elkem Carbide Bldg 1
Project Location: Keokuk, IA
Project Number: N/A

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
067a		Layered	Yellow Mastic	Asbestos Not Present	NA	Glue
068	1-FT8-2	Layered	Brown Floor Tile	Asbestos Not Present	NA	CaCO3 Vinyl
068a		Layered	Yellow Mastic	Asbestos Not Present	NA	Glue
069	1-FT8-3	Layered	Brown Floor Tile	Asbestos Not Present	NA	CaCO3 Vinyl
069a		Layered	Yellow Mastic	Asbestos Not Present	NA	Glue

Dee Ammerman, Analyst

7/8/2016
Date of Report

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

ASBESTOS CHAIN OF CUSTODY

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LEGAL DOCUMENT - PLEASE PRINT LEGIBLY

For Lab Use Only	
Lab No.	216857
	(Accept) Reject

Contact Information			
Company:	Tetra Tech	Phone:	(816) 412-1773
Contact:	Jeff Mitchell	Cell Phone:	
Account #:		E-mail:	jeffrey.mitchell@tetratech.com
SAMPLED BY:	Name: Jeff Mitchell	Date:	6/28/16

Project Information	
Project Name:	Elkem Carbide Bldg 1
Project Location:	Keokuk, IA
Project ID:	
P.O. Number:	X9025.14.0002.019.017

Report Results (☑ one box)	
☑	QuanTEM Website
☑	Email jeffrey.mitchell@tetratech.com
☐	Other _____

RELINQUISHED BY	DATE & TIME	VIA	RECEIVED BY	DATE & TIME
			[signature]	7/11/16 10:00

REQUESTED SERVICES (Please ☑ the Appropriate Boxes)

PLM	
☑	Bulk Analysis (EPA 600/R-93/116)
☐	400 Point Count
☐	1000 Point Count
☐	Gravimetric Preparation
☐	Particle ID

PLM	
☐	Vermiculite Attic Insulation (EPA 600/R-04/004)
☐	Other

PCM	
☐	NIOSH 7400

TEM	
☐	Air- AHERA
☐	Air- NIOSH 7402
☐	Air- ISO 10312
☐	Drinking Water- EPA 100.2
☐	Waste Water- EPA 600/4-83-043

TEM	
☐	Bulk- Presence / Absence EPA600/R-93/116
☐	Bulk- Quantitative [weight%]- Chatfield
☐	Dust- Presence / Absence
☐	Dust- Quantitative [fibers/sq.cm]- ASTM D5755
☐	Other

TURNAROUND TIME	
☐	Rush
☐	Same Day
☐	24 - Hour
☐	3 - Day
☒	5 - Day ✱

No.	Sample ID (10 Characters Max)	☑ To Be Analyzed	Color	Description	Volume / Area (as applicable)	Comments / Notes
1	1-CBM-1	☑		cove base mastic		
2	↓ -2	☐		↓		
3	↓ -3	☐		↓		
4	1-FT-1	☐		floor tile		
5	↓ -2	☐		↓		
6	↓ -3	☐		↓		
7	1-CT-1	☐		ceiling tile		
8	↓ -2	☐		↓		
9	↓ -3	☐		↓		
10	1-ST-1	☑		stair tread		

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✱ per J. Mitchell 7/11/16 ps

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LEGAL DOCUMENT - PLEASE PRINT LEGIBLY

For Lab Use Only
Lab No. 205857
Accept Reject

Project Information

Company: Tetra Tech | Project Name: Elkem Carbide | Project Location: Keokuk, IA

No.	Sample ID (10 Characters Max)	☑ To Be Analyzed	Color	Description	Volume / Area (as applicable)	Comments / Notes
11	1-ST-2	☑		stair tread		
12	↓ -3	☐		↓		
13	1-CT2-1	☐		ceiling tile		
14	↓ -2	☐		↓		
15	↓ -3	☐		↓		
16	1-FT2-1	☐		floor tile		
17	↓ -2	☐		↓		
18	↓ -3	☐		↓		
19	1-CBM2-1	☐		cove base mastic		
20	↓ -2	☐		↓		
21	↓ -3	☐		↓		
22	1-DWJC-1	☐		drywall / joint compound		
23	↓ -2	☐		↓		
24	↓ -3	☐		↓		
25	1-PLSC-1	☐		plaster/skim coat		
26	↓ -2	☐		↓		
27	↓ -3	☐		↓		
28	1-GP-1	☐		glue puck		
29	↓ -2	☐		↓		
30	↓ -3	☑		↓		

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LEGAL DOCUMENT - PLEASE PRINT LEGIBLY

For Lab Use Only
Lab No. 2105857
(Accept) Reject

Project Information

Company: Tetra Tech | Project Name: Elkem Carbide | Project Location: Keokuk, IA

No.	Sample ID (10 Characters Max)	☑ To Be Analyzed	Color	Description	Volume / Area (as applicable)	Comments / Notes
31	1-FT3-1	☑		floor tile		
32	↓ -2	☐		↓		
33	↓ -3	☐		↓		
34	1-FT4-1	☐		↓		
35	↓ -2	☐		↓		
36	↓ -3	☐		↓		
37	1-CA-1	☐		carpet adhesive		
38	↓ -2	☐		↓		
39	↓ -3	☐		↓		
40	1-ST2-1	☐		stair tread		
41	↓ -2	☐		↓		
42	↓ -3	☐		↓		
43	1-FT5-1	☐		floor tile		
44	1-FT6-1	☐		↓		
45	1-CT3-1	☐		ceiling tile		
46	↓ -2	☐		↓		
47	↓ -3	☐		↓		
48	1-CBM3-1	☐		cove base mastic		
49	↓ -2	☐		↓		
50	↓ -3	☑		↓		

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LEGAL DOCUMENT - PLEASE PRINT LEGIBLY

For Lab Use Only
Lab No. 210857
Accept Reject

Project Information

Company: Tetra Tech | Project Name: Elkem Carbide | Project Location: Keokuk, IA

No.	Sample ID (10 Characters Max)	☑ To Be Analyzed	Color	Description	Volume / Area (as applicable)	Comments / Notes
51	1-CTH-1	☑		ceiling tile		
52	↓ -2	☐		↓		
53	↓ -3	☐		↓		
54	1-PW-1	☐		wall panel		
55	↓ -2	☐		↓		
56	↓ -3	☐		↓		
57	1-WC-1	☐		caulk		
58	↓ -2	☐		↓		
59	↓ -3	☐		↓		
60	1-FT7-1	☐		floor tile		
61	↓ -2	☐		↓		
62	↓ -3	☐		↓		
63	1-FP-1	☐		floor paper		
64	↓ -2	☐		↓		
65	↓ -3	☐		↓		
66	1-CBM4-1	☐		cove base mastic		
67	1-FT8-1	☐		floor tile		
68	↓ -2	☐		↓		
69	↓ -3	☑		↓		
70		☐				

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Polarized Light Microscopy Asbestos Analysis Report

QuanTEM Lab No. 265852
Account Number: B229
Date Received: 07/01/2016
Received By: Peyton Awbrey
Date Analyzed: 07/11/2016
Analyzed By: Dee Ammerman
Methodology: EPA/600/R-93/116

Client: Tetra Tech EM, Inc
Jeff Mitchell
415 Oak Street
Kansas City, MO 64106

Project: Elkem Carbide Bldg 2
Project Location: Keokuk, IA
Project Number: N/A

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
001	2-WG-1	Homogeneous	Pink Window Glazing	Asbestos Not Present	NA	CaCO3 Binder
002	2-WG-2	Homogeneous	Pink Window Glazing	Asbestos Not Present	NA	CaCO3 Binder
003	2-WG-3	Homogeneous	Pink Window Glazing	Asbestos Not Present	NA	CaCO3 Binder

Dee Ammerman, Analyst

7/11/2016
Date of Report

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

ASBESTOS CHAIN OF CUSTODY

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LEGAL DOCUMENT - PLEASE PRINT LEGIBLY

For Lab Use Only	
Lab No.	205852
	Accept Reject

Contact Information			
Company:	Tetra Tech	Phone:	(816) 412-1773
Contact:	Jeff Mitchell	Cell Phone:	
Account #:		E-mail:	jeffrey.mitchell@tetratech.com
SAMPLED BY: Name:	Kaitlyn Bahr	Date:	6/27/16

Project Information	
Project Name:	Elkem Carbide Bldg 2
Project Location:	Keokuk, IA
Project ID:	
P.O. Number:	X9025.14.0002.019.017

Report Results (☑ one box)	
☑	QuanTEM Website
☑	Email jeffrey.mitchell@tetratech.com
☐	Other _____

RELINQUISHED BY	DATE & TIME	VIA	RECEIVED BY	DATE & TIME
				7/11/16 10:00

REQUESTED SERVICES (Please ☑ the Appropriate Boxes)

PLM	
☑	Bulk Analysis (EPA 600/R-93/116)
☐	400 Point Count
☐	1000 Point Count
☐	Gravimetric Preparation
☐	Particle ID

PLM	
☐	Vermiculite Attic Insulation (EPA 600/R-04/004)
☐	Other

PCM	
☐	NIOSH 7400

TEM	
☐	Air- AHERA
☐	Air- NIOSH 7402
☐	Air- ISO 10312
☐	Drinking Water- EPA 100.2
☐	Waste Water- EPA 600/4-83-043

TEM	
☐	Bulk- Presence / Absence EPA600/R-93/116
☐	Bulk- Quantitative [weight%]- Chatfield
☐	Dust- Presence / Absence
☐	Dust- Quantitative [fibers/sq.cm]- ASTM D5755
☐	Other

TURNAROUND TIME	
☐	Rush
☐	Same Day
☐	24 - Hour
☐	3 - Day
☒	5 - Day

No.	Sample ID (10 Characters Max)	☑ To Be Analyzed	Color	Description	Volume / Area (as applicable)	Comments / Notes
1	2-WG-1	☑		window glaze		
2	-2	☐		↓		
3	-3	☑		↓		
4		☐				
5		☐				
6		☐				
7		☐				
8		☐				
9		☐				
10		☐				

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per J. Mitchell 7/11/16

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Polarized Light Microscopy Asbestos Analysis Report

QuanTEM Lab No. 265853
Account Number: B229
Date Received: 07/01/2016
Received By: Peyton Awbrey
Date Analyzed: 07/11/2016
Analyzed By: Carter Cox
Methodology: EPA/600/R-93/116

Client: Tetra Tech EM, Inc
Jeff Mitchell
415 Oak Street
Kansas City, MO 64106

Project: Elkem Carbide Bldg 3
Project Location: Keokuk, IA
Project Number: N/A

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)		Non Fibrous
001	3-CT-1	Homogeneous	White Ceiling Tile	Asbestos Not Present	Cellulose Glass Fiber	30 30	Perlite Paint
002	3-CT-2	Homogeneous	White Ceiling Tile	Asbestos Not Present	Cellulose Glass Fiber	30 30	Perlite Paint
003	3-CT-3	Homogeneous	White Ceiling Tile	Asbestos Not Present	Cellulose Glass Fiber	30 30	Perlite Paint
004	3-TSI-1	Layered	White Wrap	Asbestos Not Present	Cellulose Glass Fiber	20 30	CaCO3 Binder Foil
004a		Layered	Pink Insulation	Asbestos Not Present	Glass Fiber	100	
005	3-TSI-2	Layered	White Wrap	Asbestos Not Present	Cellulose Glass Fiber	20 30	CaCO3 Binder Foil
005a		Layered	Pink Insulation	Asbestos Not Present	Glass Fiber	100	

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

2033 Heritage Park Dr, Oklahoma City, OK 73120 | 1.800.822.1650

Polarized Light Microscopy Asbestos Analysis Report

QuanTEM Lab No. 265853
Account Number: B229
Date Received: 07/01/2016
Received By: Peyton Awbrey
Date Analyzed: 07/11/2016
Analyzed By: Carter Cox
Methodology: EPA/600/R-93/116

Client: Tetra Tech EM, Inc
Jeff Mitchell
415 Oak Street
Kansas City, MO 64106

Project: Elkem Carbide Bldg 3
Project Location: Keokuk, IA
Project Number: N/A

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
006	3-TSI-3	Layered	White Wrap	Asbestos Not Present	Cellulose 20 Glass Fiber 30	CaCO3 Binder Foil
006a		Layered	Pink Insulation	Asbestos Not Present	Glass Fiber 100	
007	3-WG-1	Layered	Black Caulk	Asbestos Not Present	NA	CaCO3 Binder
007a		Layered	Gray Window Glazing	Asbestos Present Chrysotile 4	NA	CaCO3
008	3-WG-2	Homogeneous	Gray Window Glazing	Asbestos Present Chrysotile 4	NA	CaCO3
009	3-WG-3	Layered	Black Caulk	Asbestos Not Present	NA	CaCO3 Binder

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

2033 Heritage Park Dr, Oklahoma City, OK 73120 | 1.800.822.1650

Polarized Light Microscopy Asbestos Analysis Report

QuanTEM Lab No. 265853
Account Number: B229
Date Received: 07/01/2016
Received By: Peyton Awbrey
Date Analyzed: 07/11/2016
Analyzed By: Carter Cox
Methodology: EPA/600/R-93/116

Client: Tetra Tech EM, Inc
Jeff Mitchell
415 Oak Street
Kansas City, MO 64106

Project: Elkem Carbide Bldg 3
Project Location: Keokuk, IA
Project Number: N/A

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
009a		Layered	Gray Window Glazing	Asbestos Present Chrysotile 4	NA	CaCO3
010	3-TSI2-1	Layered	White Coating	Asbestos Not Present	Cellulose 2	Sand Gypsum Paint
010a		Layered	Yellow Insulation	Asbestos Not Present	NA	Foam
011	3-TSI2-2	Layered	White Coating	Asbestos Not Present	Cellulose 2	Sand Gypsum Paint
011a		Layered	Yellow Insulation	Asbestos Not Present	NA	Foam
012	3-TSI2-3	Layered	White Coating	Asbestos Not Present	Cellulose 2	Sand Gypsum Paint

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

2033 Heritage Park Dr, Oklahoma City, OK 73120 | 1.800.822.1650

Polarized Light Microscopy Asbestos Analysis Report

QuanTEM Lab No. 265853
Account Number: B229
Date Received: 07/01/2016
Received By: Peyton Awbrey
Date Analyzed: 07/11/2016
Analyzed By: Carter Cox
Methodology: EPA/600/R-93/116

Client: Tetra Tech EM, Inc
Jeff Mitchell
415 Oak Street
Kansas City, MO 64106

Project: Elkem Carbide Bldg 3
Project Location: Keokuk, IA
Project Number: N/A

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
012a		Layered	Yellow Insulation	Asbestos Not Present	NA	Foam

Carter Cox

Carter W. Cox, Analyst

7/11/2016

Date of Report

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

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LEGAL DOCUMENT - PLEASE PRINT LEGIBLY

For Lab Use Only
Lab No. _____
Accept Reject

Project Information

Company: Tetra Tech | Project Name: Elkem Carbide | Project Location: Keokuk, IA

No.	Sample ID (10 Characters Max)	☑ To Be Analyzed	Color	Description	Volume / Area (as applicable)	Comments / Notes
1	3-TSI2-2	☑		insulation		
2	↓ -3	☑		↓		
3		☐				
4		☐				
5		☐				
6		☐				
7		☐				
8		☐				
9		☐				
0		☐				
1		☐				
2		☐				
3		☐				
4		☐				
5		☐				
6		☐				
7		☐				
8		☐				
9		☐				
0		☐				

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2033 Heritage Park Dr, Oklahoma City, OK 73120 | 1.800.822.1650

Polarized Light Microscopy Asbestos Analysis Report

QuanTEM Lab No. 265854
Account Number: B229
Date Received: 07/01/2016
Received By: Peyton Awbrey
Date Analyzed: 07/08/2016
Analyzed By: Cristal Veech
Methodology: EPA/600/R-93/116

Client: Tetra Tech EM, Inc
Jeff Mitchell
415 Oak Street
Kansas City, MO 64106

Project: Elkem Carbide Bldg 4
Project Location: Keokuk, IA
Project Number: N/A

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
001	4-FT-1	Layered	Tan Floor Tile	Asbestos Not Present	NA	Vinyl CaCO3
001a		Layered	Yellow Mastic	Asbestos Not Present	NA	Glue
002	4-FT-2	Layered	Tan Floor Tile	Asbestos Not Present	NA	Vinyl CaCO3
002a		Layered	Yellow Mastic	Asbestos Not Present	NA	Glue
003	4-FT-3	Layered	Tan Floor Tile	Asbestos Not Present	NA	Vinyl CaCO3
003a		Layered	Yellow Mastic	Asbestos Not Present	NA	Glue
004	4-CT-1	Homogeneous	White Ceiling Tile	Asbestos Not Present	Cellulose 30 Glass Fiber 30	Perlite Paint

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

QUANTEM LABORATORIES
2033 HERITAGE PARK DR, OKLAHOMA CITY, OK 73120 | 1.800.822.1650

Polarized Light Microscopy Asbestos Analysis Report

QuanTEM Lab No. 265854
Account Number: B229
Date Received: 07/01/2016
Received By: Peyton Awbrey
Date Analyzed: 07/08/2016
Analyzed By: Cristal Veech
Methodology: EPA/600/R-93/116

Client: Tetra Tech EM, Inc
Jeff Mitchell
415 Oak Street
Kansas City, MO 64106

Project: Elkem Carbide Bldg 4
Project Location: Keokuk, IA
Project Number: N/A

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
005	4-CT-2	Homogeneous	White Ceiling Tile	Asbestos Not Present	Cellulose 30 Glass Fiber 30	Perlite Paint
006	4-CT-3	Homogeneous	White Ceiling Tile	Asbestos Not Present	Cellulose 30 Glass Fiber 30	Perlite Paint
007	4-DWJC-1	Composite	White Joint Compound / Sheetrock	Asbestos Present Chrysotile <1	NA	CaCO3 Gypsum
008	4-DWJC-2	Composite	White Joint Compound / Sheetrock	Asbestos Present Chrysotile <1	NA	CaCO3 Gypsum
009	4-DWJC-3	Composite	White Joint Compound / Sheetrock	Asbestos Present Chrysotile <1	NA	CaCO3 Gypsum
010	4-CBM-1	Layered	Dark Brown Cove Base	Asbestos Not Present	NA	Vinyl CaCO3

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

2033 Heritage Park Dr, Oklahoma City, OK 73120 | 1.800.822.1650

Polarized Light Microscopy Asbestos Analysis Report

QuanTEM Lab No. 265854
Account Number: B229
Date Received: 07/01/2016
Received By: Peyton Awbrey
Date Analyzed: 07/08/2016
Analyzed By: Cristal Veech
Methodology: EPA/600/R-93/116

Client: Tetra Tech EM, Inc
Jeff Mitchell
415 Oak Street
Kansas City, MO 64106

Project: Elkem Carbide Bldg 4
Project Location: Keokuk, IA
Project Number: N/A

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
010a		Layered	Brown Cove Base Mastic	Asbestos Not Present	NA	Glue
011	4-CBM-2	Layered	Brown Cove Base	Asbestos Not Present	NA	Vinyl CaCO3
011a		Layered	Brown Cove Base Mastic	Asbestos Not Present	NA	Glue
012	4-CBM-3	Layered	Dark Brown Cove Base	Asbestos Not Present	NA	Vinyl CaCO3
012a		Layered	Brown Cove Base Mastic	Asbestos Not Present	NA	Glue
013	4-FT2-1	Layered	Orange Floor Tile	Asbestos Not Present	NA	Vinyl CaCO3

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

2033 Heritage Park Dr, Oklahoma City, OK 73120 | 1.800.822.1650

Polarized Light Microscopy Asbestos Analysis Report

QuanTEM Lab No. 265854
Account Number: B229
Date Received: 07/01/2016
Received By: Peyton Awbrey
Date Analyzed: 07/08/2016
Analyzed By: Cristal Veech
Methodology: EPA/600/R-93/116

Client: Tetra Tech EM, Inc
Jeff Mitchell
415 Oak Street
Kansas City, MO 64106

Project: Elkem Carbide Bldg 4
Project Location: Keokuk, IA
Project Number: N/A

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
013a		Layered	Yellow Mastic	Asbestos Not Present	NA	Glue
014	4-FT2-2	Layered	Orange Floor Tile	Asbestos Not Present	NA	Vinyl CaCO3
014a		Layered	Yellow Mastic	Asbestos Not Present	NA	Glue
015	4-FT2-3	Layered	Orange Floor Tile	Asbestos Not Present	NA	Vinyl CaCO3
015a		Layered	Yellow Mastic	Asbestos Not Present	NA	Glue
016	4-WM-1	Homogeneous	Black Wall Mastic	Asbestos Present Chrysotile 12	NA	Binder
017	4-WM-2	Homogeneous	Black Wall Mastic	Asbestos Present Chrysotile 12	NA	Binder

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

2033 Heritage Park Dr, Oklahoma City, OK 73120 | 1.800.822.1650

Polarized Light Microscopy Asbestos Analysis Report

QuanTEM Lab No. 265854
Account Number: B229
Date Received: 07/01/2016
Received By: Peyton Awbrey
Date Analyzed: 07/08/2016
Analyzed By: Cristal Veech
Methodology: EPA/600/R-93/116

Client: Tetra Tech EM, Inc
Jeff Mitchell
415 Oak Street
Kansas City, MO 64106

Project: Elkem Carbide Bldg 4
Project Location: Keokuk, IA
Project Number: N/A

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
018	4-WM-3	Homogeneous	Black Wall Mastic	Asbestos Present Chrysotile 12	NA	Binder

Cristal Veech

Cristal Veech, Analyst

7/8/2016
Date of Report

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

QuanTEM is a NVLAP accredited PLM laboratory (Lab Code: 101959-0). This report relates only to the specific items tested. NVLAP accreditation applies only to analysis performed utilizing EPA/600/M4-82-020 and EPA/600/R-93/116 methods. This report may not be used to claim product endorsement by NVLAP or any agency of the US Government. This report may not be reproduced except in full, without the written approval of the laboratory.

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2033 Heritage Park Drive, Oklahoma City, OK 73120-7502
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LEGAL DOCUMENT - PLEASE PRINT LEGIBLY

For Lab Use Only	
Lab No.	206854
	Accept / Reject

Contact Information			
Company:	Tetra Tech	Phone:	(816) 412-1773
Contact:	Jeff Mitchell	Cell Phone:	
Account #:		E-mail:	jeffrey.mitchell@tetratech.com
SAMPLED BY: Name:	Kaitlyn Bahr	Date:	6/27/16

Project Information	
Project Name:	Elkem Carbide Bldg 4
Project Location:	Keokuk, IA
Project ID:	
P.O. Number:	X9025.14.0002.019.017

Report Results (☑ one box)	
☑	QuanTEM Website
☑	Email jeffrey.mitchell@tetratech.com
☐	Other _____

RELINQUISHED BY	DATE & TIME	VIA	RECEIVED BY	DATE & TIME
				7/11/16 10:00

REQUESTED SERVICES (Please ☑ the Appropriate Boxes)

PLM	
☑	Bulk Analysis (EPA 600/R-93/116)
☐	400 Point Count
☐	1000 Point Count
☐	Gravimetric Preparation
☐	Particle ID

PLM	
☐	Vermiculite Attic Insulation (EPA 600/R-04/004)
☐	Other

PCM	
☐	NIOSH 7400

TEM	
☐	Air- AHERA
☐	Air- NIOSH 7402
☐	Air- ISO 10312
☐	Drinking Water- EPA 100.2
☐	Waste Water- EPA 600/4-83-043

TEM	
☐	Bulk- Presence / Absence EPA600/R-93/116
☐	Bulk- Quantitative [weight%]- Chatfield
☐	Dust- Presence / Absence
☐	Dust- Quantitative [fibers/sq.cm]- ASTM D5755
☐	Other

TURNAROUND TIME	
☐	Rush
☐	Same Day
☐	24 - Hour
☐	3 - Day
☒	5 - Day ☆

No.	Sample ID (10 Characters Max)	☑ To Be Analyzed	Color	Description	Volume / Area (as applicable)	Comments / Notes
1	4-FT-1	☑		floor tile		
2	↓ -2	☐		↓		
3	↓ -3	☐		↓		
4	4-CT-1	☐		ceiling tile		
5	↓ -2	☐		↓		
6	↓ -3	☐		↓		
7	4-DWJC-1	☐		drywall/joint compound		
8	↓ -2	☐		↓		
9	↓ -3	☐		↓		
10	4-CBM-1	☑		cove base mastic		

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☆ per J. Mitchell 7/11/16 ☆

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For Lab Use Only
Lab No. 205854
~~Accept~~ Reject

Project Information

Company: Tetra Tech | Project Name: Allum Carbide | Project Location: Keokuk, IA

No.	Sample ID (10 Characters Max)	☑ To Be Analyzed	Color	Description	Volume / Area (as applicable)	Comments / Notes
1	4-CBM-2	☐		cove base mastic		
2	↓ -3	☐		↓		
3	4-FT2-1	☐		floor tile		
4	↓ -2	☐		↓		
5	↓ -3	☐		↓		
6	4-WM-1	☐		wall mastic		
7	↓ -2	☐		↓		
8	↓ -3	☐		↓		
9		☐				
0		☐				
1		☐				
2		☐				
3		☐				
4		☐				
5		☐				
6		☐				
7		☐				
8		☐				
9		☐				
0		☐				

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Polarized Light Microscopy Asbestos Analysis Report

QuanTEM Lab No. 265855
Account Number: B229
Date Received: 07/01/2016
Received By: Peyton Awbrey
Date Analyzed: 07/08/2016
Analyzed By: Carter Cox
Methodology: EPA/600/R-93/116

Client: Tetra Tech EM, Inc
Jeff Mitchell
415 Oak Street
Kansas City, MO 64106

Project: Elkern Carbide Bldg 6
Project Location: Keokuk, IA
Project Number: N/A

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
001	6-WG-1	Homogeneous	White Window Glazing	Asbestos Not Present	NA	CaCO3
002	6-WG-2	Homogeneous	White Window Glazing	Asbestos Not Present	NA	CaCO3
003	6-WG-3	Homogeneous	White Window Glazing	Asbestos Not Present	NA	CaCO3
004	6-CT-1	Homogeneous	White Ceiling Tile	Asbestos Not Present	Cellulose 30 Glass Fiber 30	Perlite Paint
005	6-CT-2	Homogeneous	White Ceiling Tile	Asbestos Not Present	Cellulose 30 Glass Fiber 30	Perlite Paint
006	6-CT-3	Homogeneous	White Ceiling Tile	Asbestos Not Present	Cellulose 30 Glass Fiber 30	Perlite Paint

Carter Cox

Carter W. Cox, Analyst

7/8/2016

Date of Report

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

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For Lab Use Only
Lab No. 265855
(Accept) Reject

Contact Information		Project Information	
Company: Tetra Tech	Phone: (816) 412-1773	Project Name: Elkem Carbide Bldg 16	
Contact: Jeff Mitchell	Cell Phone:	Project Location: Keokuk, IA	
Account #:	E-mail: jeffrey.mitchell@tetratech.com	Project ID:	
SAMPLED BY: Name: Kaitlyn Bahr	Date: 6/27/16	P.O. Number: X9025.14.0002.019.017	

Report Results (☑ one box)	
☑	QuanTEM Website
☑	Email jeffrey.mitchell@tetratech.com
☐	Other _____

RELINQUISHED BY	DATE & TIME	VIA	RECEIVED BY	DATE & TIME
				7/11/16 10:00

REQUESTED SERVICES (Please ☑ the Appropriate Boxes)

PLM		PLM		TEM		TEM		TURNAROUND TIME	
☑	Bulk Analysis (EPA 600/R-93/116)	☐	Vermiculite Attic Insulation (EPA 600/R-04/004)	☐	Air- AHERA	☐	Bulk- Presence / Absence EPA600/R-93/116	☐	Rush
☐	400 Point Count	☐	Other	☐	Air- NIOSH 7402	☐	Bulk- Quantitative [weight%]- Chatfield	☐	Same Day
☐	1000 Point Count	PCM		☐	Air- ISO 10312	☐	Dust- Presence / Absence	☐	24 - Hour
☐	Gravimetric Preparation	☐	NIOSH 7400	☐	Drinking Water- EPA 100.2	☐	Dust- Quantitative [fibers/sq.cm]- ASTM D5755	☐	3 - Day
☐	Particle ID			☐	Waste Water- EPA 600/4-83-043	☐	Other	☐	5 - Day

No.	Sample ID (10 Characters Max)	☑ To Be Analyzed	Color	Description	Volume / Area (as applicable)	Comments / Notes
1	6-WG-1	☑		window glaze		
2	↓ -2	☐		↓		
3	↓ -3	☐		↓		
4	6-CT-1	☐		ceiling tile		
5	↓ -2	☐		↓		
6	↓ -3	☑		↓		
7		☐				
8		☐				
9		☐				
10		☐				

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Polarized Light Microscopy Asbestos Analysis Report

QuanTEM Lab No. 265851
Account Number: B229
Date Received: 07/01/2016
Received By: Peyton Awbrey
Date Analyzed: 07/08/2016
Analyzed By: Cristal Veech
Methodology: EPA/600/R-93/116

Client: Tetra Tech EM, Inc
Jeff Mitchell
415 Oak Street
Kansas City, MO 64106

Project: Elkern Carbide Bldg 8
Project Location: Keokuk, IA
Project Number: N/A

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)		Non Fibrous
001	8-TSI-1	Homogeneous	White Insulation	Asbestos Not Present	Glass Fiber	60	Gypsum CaCO3
002	8-TSI-2	Homogeneous	White Insulation	Asbestos Not Present	Glass Fiber	60	Gypsum CaCO3
003	8-TSI-3	Homogeneous	White Insulation	Asbestos Not Present	Glass Fiber	60	Gypsum CaCO3
004	8-CT-1	Homogeneous	White Ceiling Tile	Asbestos Not Present	Cellulose Glass Fiber	30 30	Perlite Paint
005	8-CT-2	Homogeneous	White Ceiling Tile	Asbestos Not Present	Cellulose Glass Fiber	30 30	Perlite Paint
006	8-CT-3	Homogeneous	White Ceiling Tile	Asbestos Not Present	Cellulose Glass Fiber	30 30	Perlite Paint
007	8-CBM-1	Layered	Dark Brown Cove Base	Asbestos Not Present	NA		Vinyl CaCO3

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

2033 Heritage Park Dr, Oklahoma City, OK 73120 | 1.800.822.1650

Polarized Light Microscopy Asbestos Analysis Report

QuanTEM Lab No. 265851
Account Number: B229
Date Received: 07/01/2016
Received By: Peyton Awbrey
Date Analyzed: 07/08/2016
Analyzed By: Cristal Veech
Methodology: EPA/600/R-93/116

Client: Tetra Tech EM, Inc
Jeff Mitchell
415 Oak Street
Kansas City, MO 64106

Project: Elkern Carbide Bldg 8
Project Location: Keokuk, IA
Project Number: N/A

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
007a		Layered	Brown Cove Base Mastic	Asbestos Not Present	NA	Glue
008	8-CBM-2	Layered	Dark Brown Cove Base	Asbestos Not Present	NA	Vinyl CaCO3
008a		Layered	Brown Cove Base Mastic	Asbestos Not Present	NA	Glue
009	8-CBM-3	Layered	Dark Brown Cove Base	Asbestos Not Present	NA	Vinyl CaCO3
009a		Layered	Brown Cove Base Mastic	Asbestos Not Present	NA	Glue
010	8-WG-1	Homogeneous	White Window Glazing	Asbestos Not Present	Talc 2	CaCO3

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

2033 Heritage Park Dr, Oklahoma City, OK 73120 | 1.800.822.1650

Polarized Light Microscopy Asbestos Analysis Report

QuanTEM Lab No. 265851
Account Number: B229
Date Received: 07/01/2016
Received By: Peyton Awbrey
Date Analyzed: 07/08/2016
Analyzed By: Cristal Veech
Methodology: EPA/600/R-93/116

Client: Tetra Tech EM, Inc
Jeff Mitchell
415 Oak Street
Kansas City, MO 64106

Project: Elkern Carbide Bldg 8
Project Location: Keokuk, IA
Project Number: N/A

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)		Non Fibrous
011	8-WG-2	Homogeneous	White Window Glazing	Asbestos Not Present	Talc	2	CaCO3
012	8-WG-3	Homogeneous	White Window Glazing	Asbestos Not Present	Talc	2	CaCO3
013	8-CT2-1	Homogeneous	White Ceiling Tile	Asbestos Not Present	Cellulose Glass Fiber	30 30	Perlite Paint
014	8-CT2-2	Homogeneous	White Ceiling Tile	Asbestos Not Present	Cellulose Glass Fiber	30 30	Perlite Paint
015	8-CT2-3	Homogeneous	White Ceiling Tile	Asbestos Not Present	Cellulose Glass Fiber	30 30	Perlite Paint
016	8-DWJC-1	Homogeneous	White Sheetrock	Asbestos Not Present	Cellulose	20	Gypsum
017	8-DWJC-2	Homogeneous	White Sheetrock	Asbestos Not Present	Cellulose	20	Gypsum Paint

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

2033 Heritage Park Dr, Oklahoma City, OK 73120 | 1.800.822.1650

Polarized Light Microscopy Asbestos Analysis Report

QuanTEM Lab No. 265851
Account Number: B229
Date Received: 07/01/2016
Received By: Peyton Awbrey
Date Analyzed: 07/08/2016
Analyzed By: Cristal Veech
Methodology: EPA/600/R-93/116

Client: Tetra Tech EM, Inc
Jeff Mitchell
415 Oak Street
Kansas City, MO 64106

Project: Elkern Carbide Bldg 8
Project Location: Keokuk, IA
Project Number: N/A

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
018	8-DWJC-3	Layered	White Texture	Asbestos Not Present	NA	CaCO3 Paint
018a		Layered	White Sheetrock	Asbestos Not Present	Cellulose 20	Gypsum
019	8-FT-1	Layered	Black Floor Tile	Asbestos Not Present	NA	Vinyl CaCO3
019a		Layered	Black Mastic	Asbestos Not Present	NA	Tar
020	8-FT-2	Layered	Black Floor Tile	Asbestos Not Present	NA	Vinyl CaCO3
020a		Layered	Black Mastic	Asbestos Not Present	NA	Tar

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

2033 Heritage Park Dr, Oklahoma City, OK 73120 | 1.800.822.1650

Polarized Light Microscopy Asbestos Analysis Report

QuanTEM Lab No. 265851
Account Number: B229
Date Received: 07/01/2016
Received By: Peyton Awbrey
Date Analyzed: 07/08/2016
Analyzed By: Cristal Veech
Methodology: EPA/600/R-93/116

Client: Tetra Tech EM, Inc
Jeff Mitchell
415 Oak Street
Kansas City, MO 64106

Project: Elkern Carbide Bldg 8
Project Location: Keokuk, IA
Project Number: N/A

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
021	8-FT-3	Layered	Black Floor Tile	Asbestos Not Present	NA	Vinyl CaCO3
021a		Layered	Black Mastic	Asbestos Not Present	NA	Tar
022	8-CTX-1	Homogeneous	White Ceiling Texture	Asbestos Not Present	NA	CaCO3 Paint
023	8-CTX-2	Homogeneous	White Ceiling Texture	Asbestos Not Present	NA	CaCO3 Paint
024	8-CTX-3	Homogeneous	White Ceiling Texture	Asbestos Not Present	NA	CaCO3 Paint
025	8-CBM2-1	Layered	Black Cove Base	Asbestos Not Present	NA	Vinyl CaCO3
025a		Layered	Yellow Cove Base Mastic	Asbestos Not Present	NA	Glue

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

2033 Heritage Park Dr, Oklahoma City, OK 73120 | 1.800.822.1650

Polarized Light Microscopy Asbestos Analysis Report

QuanTEM Lab No. 265851
Account Number: B229
Date Received: 07/01/2016
Received By: Peyton Awbrey
Date Analyzed: 07/08/2016
Analyzed By: Cristal Veech
Methodology: EPA/600/R-93/116

Client: Tetra Tech EM, Inc
Jeff Mitchell
415 Oak Street
Kansas City, MO 64106

Project: Elkern Carbide Bldg 8
Project Location: Keokuk, IA
Project Number: N/A

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
025b		Layered	White Texture	Asbestos Not Present	NA	CaCO3 Paint
026	8-CBM2-2	Layered	Black Cove Base	Asbestos Not Present	NA	Vinyl CaCO3
026a		Layered	Yellow Cove Base Mastic	Asbestos Not Present	NA	Glue
026b		Layered	White Texture	Asbestos Not Present	NA	CaCO3 Paint
027	8-CBM2-3	Layered	Black Cove Base	Asbestos Not Present	NA	Vinyl CaCO3
027a		Layered	Yellow Cove Base Mastic	Asbestos Not Present	NA	Glue

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

2033 Heritage Park Dr, Oklahoma City, OK 73120 | 1.800.822.1650

Polarized Light Microscopy Asbestos Analysis Report

QuanTEM Lab No. 265851
Account Number: B229
Date Received: 07/01/2016
Received By: Peyton Awbrey
Date Analyzed: 07/08/2016
Analyzed By: Cristal Veech
Methodology: EPA/600/R-93/116

Client: Tetra Tech EM, Inc
Jeff Mitchell
415 Oak Street
Kansas City, MO 64106

Project: Elkern Carbide Bldg 8
Project Location: Keokuk, IA
Project Number: N/A

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
027b		Layered	White Texture	Asbestos Not Present	NA	CaCO3 Paint
028	8-VER-1	Layered	Gold Insulation	Asbestos Present Actinolite/Tremolite <1	NA	Vermiculite
028a		Layered	Gray Plaster	Asbestos Not Present	NA	Sand CaCO3
029	8-VER-2	Homogeneous	Gold Insulation	Asbestos Not Present	NA	Vermiculite
030	8-VER-3	Homogeneous	Gold Insulation	Asbestos Present Chrysotile <1	NA	Vermiculite

Cristal Veech

Cristal Veech, Analyst

7/8/2016

Date of Report

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

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For Lab Use Only	
Lab No.	210585
Accept	Reject

Contact Information			
Company:	Tetra Tech	Phone:	(816) 412-1773
Contact:	Jeff Mitchell	Cell Phone:	
Account #:		E-mail:	jeffrey.mitchell@tetratech.com
SAMPLED BY:	Name: Kaitlyn Bahr	Date:	6/27/16

Project Information	
Project Name:	Elkem Carbide Bldg 8
Project Location:	Keokuk, IA
Project ID:	
P.O. Number:	X9025.14.0002.019.017

Report Results (☑ one box)	
☑	QuanTEM Website
☑	Email jeffrey.mitchell@tetratech.com
☐	Other _____

RELINQUISHED BY	DATE & TIME	VIA	RECEIVED BY	DATE & TIME
				7/11/16 10:00

REQUESTED SERVICES (Please ☑ the Appropriate Boxes)

PLM	
☑	Bulk Analysis (EPA 600/R-93/116)
☐	400 Point Count
☐	1000 Point Count
☐	Gravimetric Preparation
☐	Particle ID

PLM	
☐	Vermiculite Attic Insulation (EPA 600/R-04/004)
☐	Other

PCM	
☐	NIOSH 7400

TEM	
☐	Air- AHERA
☐	Air- NIOSH 7402
☐	Air- ISO 10312
☐	Drinking Water- EPA 100.2
☐	Waste Water- EPA 600/4-83-043

TEM	
☐	Bulk- Presence / Absence EPA600/R-93/116
☐	Bulk- Quantitative [weight%]- Chatfield
☐	Dust- Presence / Absence
☐	Dust- Quantitative [fibers/sq.cm]- ASTM D5755
☐	Other

TURNAROUND TIME	
☐	Rush
☐	Same Day
☐	24 - Hour
☐	3 - Day
☒	5 - Day ★

No.	Sample ID (10 Characters Max)	☑ To Be Analyzed	Color	Description	Volume / Area (as applicable)	Comments / Notes
1	8-TSI-1	☐		insulation		
2	↓ -2	☐		↓		
3	↓ -3	☐				
4	8-CT-1	☐		ceiling tile		
5	↓ -2	☐		↓		
6	↓ -3	☐				
7	8-CBM-1	☐		cove base mastic		
8	↓ -2	☐		↓		
9	↓ -3	☐				
10	8-WG-1	☐		window glaze		

SATURDAY FEDEX SAMPLE DELIVERY - CALL TO SCHEDULE • Use this address for Saturday Delivery only: 4220 N. Santa Fe Ave., Oklahoma City, OK 73105-8517 • Mark Package "Hold for Saturday Pickup"
Please Note - UPS and USPS are NOT available for Saturday Delivery

★ per J. Mitchell 7/11/16 PA

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LEGAL DOCUMENT - PLEASE PRINT LEGIBLY

For Lab Use Only
Lab No. 1605851
Accept Reject

Project Information

Company: Tetra Tech | Project Name: Elkem Carbide | Project Location: Keokuk, IA

No.	Sample ID (10 Characters Max)	☑ To Be Analyzed	Color	Description	Volume / Area (as applicable)	Comments / Notes
11	8-WG-2	☑		window glaze		
12	↓ -3	☐		↓		
13	8-CT2-1	☐		ceiling tile		
14	↓ -2	☐		↓		
15	↓ -3	☐		↓		
16	8-DWJC-1	☐		drywall/joint compound		
17	↓ -2	☐		↓		
18	↓ -3	☐		↓		
19	8-FT-1	☐		floor tile		
20	↓ -2	☐		↓		
21	↓ -3	☐		↓		
22	8-CTX-1	☐		ceiling texture		
23	↓ -2	☐		↓		
24	↓ -3	☐		↓		
25	8-CBM2-1	☐		cove base mastic		
26	↓ -2	☐		↓		
27	↓ -3	☐		↓		
28	8-VER-1	☐		vermiculite		
29	↓ -2	☐		↓		
30	↓ -3	☑		↓		

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Polarized Light Microscopy Asbestos Analysis Report

QuanTEM Lab No. 265856
Account Number: B229
Date Received: 07/01/2016
Received By: Peyton Awbrey
Date Analyzed: 07/08/2016
Analyzed By: Carter Cox
Methodology: EPA/600/R-93/116

Client: Tetra Tech EM, Inc
Jeff Mitchell
415 Oak Street
Kansas City, MO 64106

Project: Elkern Carbide Bldg 9
Project Location: Keokuk, IA
Project Number: N/A

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)		Non Fibrous
001	9-CT-1	Homogeneous	White Ceiling Tile	Asbestos Not Present	Cellulose Glass Fiber	30 30	Perlite Paint
002	9-CT-2	Homogeneous	White Ceiling Tile	Asbestos Not Present	Cellulose Glass Fiber	30 30	Perlite Paint
003	9-CT-3	Homogeneous	White Ceiling Tile	Asbestos Not Present	Cellulose Glass Fiber	30 30	Perlite Paint
004	9-DW-1	Homogeneous	White Sheetrock	Asbestos Not Present	Cellulose	5	Gypsum
005	9-DW-2	Homogeneous	White Sheetrock	Asbestos Not Present	Cellulose	5	Gypsum
006	9-DW-3	Homogeneous	White Sheetrock	Asbestos Not Present	Cellulose	5	Gypsum
007	9-TR-1	Homogeneous	Gray Transite	Asbestos Present Chrysotile 20	NA		CaCO3

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

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Polarized Light Microscopy Asbestos Analysis Report

QuanTEM Lab No. 265856
Account Number: B229
Date Received: 07/01/2016
Received By: Peyton Awbrey
Date Analyzed: 07/08/2016
Analyzed By: Carter Cox
Methodology: EPA/600/R-93/116

Client: Tetra Tech EM, Inc
Jeff Mitchell
415 Oak Street
Kansas City, MO 64106

Project: Elkern Carbide Bldg 9
Project Location: Keokuk, IA
Project Number: N/A

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
008	9-TR-2	Homogeneous	Gray Transite	Asbestos Present Chrysotile 20	NA	CaCO3
009	9-TR-3	Homogeneous	Gray Transite	Asbestos Present Chrysotile 20	NA	CaCO3

Carter Cox

Carter W. Cox, Analyst

7/8/2016

Date of Report

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

ASBESTOS CHAIN OF CUSTODY

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LEGAL DOCUMENT - PLEASE PRINT LEGIBLY

For Lab Use Only	
Lab No.	1058856
	Accept / Reject

Contact Information			
Company:	Tetra Tech	Phone:	(816) 412-1773
Contact:	Jeff Mitchell	Cell Phone:	
Account #:		E-mail:	jeffrey.mitchell@tetratech.com
SAMPLED BY: Name:	Kaitlyn Bahr	Date:	6/27/16

Project Information	
Project Name:	Elkem Carbide Bldg 9
Project Location:	Keokuk, IA
Project ID:	
P.O. Number:	X9025.14.0002.019.017

Report Results (☑ one box)	
☑	QuanTEM Website
☑	Email jeffrey.mitchell@tetratech.com
☐	Other _____

RELINQUISHED BY	DATE & TIME	VIA	RECEIVED BY	DATE & TIME
			[signature]	7/1/16 10:00

REQUESTED SERVICES (Please ☑ the Appropriate Boxes)

PLM	
☑	Bulk Analysis (EPA 600/R-93/116)
☐	400 Point Count
☐	1000 Point Count
☐	Gravimetric Preparation
☐	Particle ID

PLM	
☐	Vermiculite Attic Insulation (EPA 600/R-04/004)
☐	Other

PCM	
☐	NIOSH 7400

TEM	
☐	Air- AHERA
☐	Air- NIOSH 7402
☐	Air- ISO 10312
☐	Drinking Water- EPA 100.2
☐	Waste Water- EPA 600/4-83-043

TEM	
☐	Bulk- Presence / Absence EPA600/R-93/116
☐	Bulk- Quantitative [weight%]- Chatfield
☐	Dust- Presence / Absence
☐	Dust- Quantitative [fibers/sq.cm]- ASTM D5755
☐	Other

TURNAROUND TIME	
☐	Rush
☐	Same Day
☐	24 - Hour
☐	3 - Day
☒	5 - Day

Jeff requested all 7 bags are 5 day TAT. CV 7/1/16 10:34am

No.	Sample ID (10 Characters Max)	☑ To Be Analyzed	Color	Description	Volume / Area (as applicable)	Comments / Notes
1	9-CT-1	☑		ceiling tile		
2	↓ -2	☐		↓		
3	↓ -3	☐		↓		
4	9-DW-1	☐		drywall		
5	↓ -2	☐		↓		
6	↓ -3	☐		↓		
7	9-TR-1	☐		transite panel		
8	↓ -2	☐		↓		
9	↓ -3	☑		↓		
10		☐				

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Polarized Light Microscopy Asbestos Analysis Report

QuanTEM Lab No. 267547
Account Number: B229
Date Received: 07/29/2016
Received By: Rachel Brooks
Date Analyzed: 08/05/2016
Analyzed By: Dee Ammerman
Methodology: EPA/600/R-93/116

Client: Tetra Tech EM, Inc
Jeff Mitchell
415 Oak Street
Kansas City, MO 64106

Project: Elkern Carbide Bldg 1
Project Location: Keokuk, IA
Project Number: PTCT for 265857

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
001	1-FT7-1	Homogeneous	Black Mastic	Asbestos Present Chrysotile 0.50 400 Point Count	NA	
002	1-FT7-2	Homogeneous	Black Mastic	Asbestos Present Chrysotile 0.25 400 Point Count	NA	
003	1-FT7-3	Homogeneous	Black Mastic	Asbestos Present Chrysotile 0.50 400 Point Count	NA	

Dee Ammerman, Analyst

8/5/2016
Date of Report

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

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LEGAL DOCUMENT - PLEASE PRINT LEGIBLY

For Lab Use Only	
Lab No.	206857
	(Accept) Reject

Contact Information			
Company: Tetra Tech		Phone: (816) 412-1773	
Contact: Jeff Mitchell		Cell Phone:	
Account #:		E-mail: jeffrey.mitchell@tetratech.com	
SAMPLED BY:	Name: Jeff Mitchell	Date: 6/28/16	

Project Information	
Project Name:	Elkem Carbide Bldg 1
Project Location:	Keokuk, IA
Project ID:	
P.O. Number:	X9025.14.0002.019.017

Report Results (☑ one box)	
☑	QuanTEM Website
☑	Email jeffrey.mitchell@tetratech.com
☐	Other _____

RELINQUISHED BY	DATE & TIME	VIA	RECEIVED BY	DATE & TIME
			[signature]	7/11/16 10:00

REQUESTED SERVICES (Please ☑ the Appropriate Boxes)

PLM	PLM	TEM	TEM	TURNAROUND TIME
☑ Bulk Analysis (EPA 600/R-93/116)	☐ Vermiculite Attic Insulation (EPA 600/R-04/004)	☐ Air- AHERA	☐ Bulk- Presence / Absence EPA600/R-93/116	☐ Rush
☐ 400 Point Count	☐ Other	☐ Air- NIOSH 7402	☐ Bulk- Quantitative [weight%]- Chatfield	☐ Same Day
☐ 1000 Point Count	PCM	☐ Air- ISO 10312	☐ Dust- Presence / Absence	☐ 24 - Hour
☐ Gravimetric Preparation	☐ NIOSH 7400	☐ Drinking Water- EPA 100.2	☐ Dust- Quantitative [fibers/sq.cm]- ASTM D5755	☐ 3 - Day
☐ Particle ID		☐ Waste Water- EPA 600/4-83-043	☐ Other	☒ 5 - Day *

No.	Sample ID (10 Characters Max)	☑ To Be Analyzed	Color	Description	Volume / Area (as applicable)	Comments / Notes
1	1-CBM-1	☑		Cove base mastic		
2	↓ -2	☐		↓		
3	↓ -3	☐		↓		
4	1-FT-1	☐		Floor tile		
5	↓ -2	☐		↓		
6	↓ -3	☐		↓		
7	1-CT-1	☐		Ceiling tile		
8	↓ -2	☐		↓		
9	↓ -3	☐		↓		
10	1-ST-1	☑		Stair tread		

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Lab No. 205857
Accept Reject

Project Information

Company: Tetra Tech | Project Name: Silicon Carbide | Project Location: Kotzebue, AK

No.	Sample ID (10 Characters Max)	☑ To Be Analyzed	Color	Description	Volume / Area (as applicable)	Comments / Notes
11	1-ST-2	☑		stair tread		
12	↓ -3	☐		↓		
13	1-CT2-1	☐		ceiling tile		
14	↓ -2	☐		↓		
15	↓ -3	☐		↓		
16	1-FT2-1	☐		floor tile		
17	↓ -2	☐		↓		
18	↓ -3	☐		↓		
19	1-CBM2-1	☐		cove base mastic		
20	↓ -2	☐		↓		
21	↓ -3	☐		↓		
22	1-DWJC-1	☐		drywall / joint compound		
23	↓ -2	☐		↓		
24	↓ -3	☐		↓		
25	1-PLSC-1	☐		polyester / skim coat		
26	↓ -2	☐		↓		
27	↓ -3	☐		↓		
28	1-GP-1	☐		glue puck		
29	↓ -2	☐		↓		
30	↓ -3	☑		↓		

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For Lab Use Only
Lab No. 208857
Accept Reject

Project Information

Company: Tetra Tech | Project Name: Elkem Carbide | Project Location: Alloy, PA

No.	Sample ID (10 Characters Max)	☑ To Be Analyzed	Color	Description	Volume / Area (as applicable)	Comments / Notes
31	1-FT3-1	☑		floor tile		
32	↓ -2	☐		↓		
33	↓ -3	☐		↓		
34	1-FT4-1	☐		↓		
35	↓ -2	☐		↓		
36	↓ -3	☐		↓		
37	1-CA-1	☐		Carpet adhesive		
38	↓ -2	☐		↓		
39	↓ -3	☐		↓		
40	1-ST2-1	☐		Stair tread		
41	↓ -2	☐		↓		
42	↓ -3	☐		↓		
43	1-FT5-1	☐		floor tile		
44	1-FT6-1	☐		↓		
45	1-CT3-1	☐		ceiling tile		
46	↓ -2	☐		↓		
47	↓ -3	☐		↓		
48	1-CBM3-1	☐		cove base mastic		
49	↓ -2	☐		↓		
50	↓ -3	☑		↓		

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For Lab Use Only
Lab No. 1105857
(Accept) Reject

Project Information

Company: Tetra Tech | Project Name: Silicon Carbide | Project Location: Keokuk, IA

No.	Sample ID (10 Characters Max)	☑ To Be Analyzed	Color	Description	Volume / Area (as applicable)	Comments / Notes
51	1-CT4-1	☑		ceiling tile		
52	↓ -2	☐		↓		
53	↓ -3	☐		↓		
54	1-PW-1	☐		wall panel		
55	↓ -2	☐		↓		
56	↓ -3	☐		↓		
57	1-WC-1	☐		caulk		
58	↓ -2	☐		↓		
59	↓ -3	☐		↓		
60	1-FT7-1	☐		floor tile		
61	↓ -2	☐		↓		
62	↓ -3	☐		↓		
63	1-FP-1	☐		floor paper		
64	↓ -2	☐		↓		
65	↓ -3	☐		↓		
66	1-CBM4-1	☐		cove base mastic		
67	1-FT8-1	☐		floor tile		
68	↓ -2	☐		↓		
69	↓ -3	☑		↓		
70		☐				

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Polarized Light Microscopy Asbestos Analysis Report

QuanTEM Lab No. 267549
Account Number: B229
Date Received: 07/29/2016
Received By: Rachel Brooks
Date Analyzed: 08/05/2016
Analyzed By: Carter Cox
Methodology: EPA/600/R-93/116

Client: Tetra Tech EM, Inc
Jeff Mitchell
415 Oak Street
Kansas City, MO 64106

Project: Elkern Carbide Bldg 4
Project Location: Keokuk, IA
Project Number: PTCT for 265854

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
001	4-DWJC-1	Composite	White Joint Compound / Sheetrock	Asbestos Present Chrysotile <0.25 400 Point Count	NA	
002	4-DWJC-2	Composite	White Joint Compound / Sheetrock	Asbestos Present Chrysotile <0.25 400 Point Count	NA	
003	4-DWJC-3	Composite	White Joint Compound / Sheetrock	Asbestos Present Chrysotile 0.25 400 Point Count	NA	

Carter Cox

Carter W. Cox, Analyst

8/5/2016

Date of Report

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

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For Lab Use Only	
Lab No.	205824
	(Accept) Reject

Contact Information			
Company:	Tetra Tech	Phone:	(816) 412-1773
Contact:	Jeff Mitchell	Cell Phone:	
Account #:		E-mail:	jeffrey.mitchell@tetratech.com
SAMPLED BY:	Name: Kaitlyn Bahr	Date:	6/27/16

Project Information	
Project Name:	Elkem Carbide Bldg 4
Project Location:	Keokuk, IA
Project ID:	
P.O. Number:	X9025.14.0002.019.017

Report Results (☑ one box)	
☑	QuanTEM Website
☑	Email jeffrey.mitchell@tetratech.com
☐	Other _____

RELINQUISHED BY	DATE & TIME	VIA	RECEIVED BY	DATE & TIME
				7/11/16 10:00

REQUESTED SERVICES (Please ☑ the Appropriate Boxes)

PLM		PLM		TEM		TEM		TURNAROUND TIME	
☑	Bulk Analysis (EPA 600/R-93/116)	☐	Vermiculite Attic Insulation (EPA 600/R-04/004)	☐	Air- AHERA	☐	Bulk- Presence / Absence EPA600/R-93/116	☐	Rush
☐	400 Point Count	☐	Other	☐	Air- NIOSH 7402	☐	Bulk- Quantitative [weight%]- Chatfield	☐	Same Day
☐	1000 Point Count	PCM		☐	Air- ISO 10312	☐	Dust- Presence / Absence	☐	24 - Hour
☐	Gravimetric Preparation	☐	NIOSH 7400	☐	Drinking Water- EPA 100.2	☐	Dust- Quantitative [fibers/sq.cm]- ASTM D5755	☐	3 - Day
☐	Particle ID			☐	Waste Water- EPA 600/4-83-043	☐	Other	☒	5 - Day *

No.	Sample ID (10 Characters Max)	☑ To Be Analyzed	Color	Description	Volume / Area (as applicable)	Comments / Notes
1	4-FT-1	☑		floor tile		
2	↓ -2	☐		↓		
3	↓ -3	☐		↓		
4	4-CT-1	☐		ceiling tile		
5	↓ -2	☐		↓		
6	↓ -3	☐		↓		
7	4-DWJC-1	☐		drywall joint compound		
8	↓ -2	☐		↓		
9	↓ -3	☐		↓		
10	4-CBM-1	☑		cove base mastic		

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For Lab Use Only
Lab No. 205854
(Accept) Reject

Project Information

Company: Tetra Tech | Project Name: Alum Carbide | Project Location: Keokuk, IA

No.	Sample ID (10 Characters Max)	☑ To Be Analyzed	Color	Description	Volume / Area (as applicable)	Comments / Notes
1	4-CBM-2	☐		cove base mastic		
2	↓ -3	☐		↓		
3	4-FT2-1	☐		floor tile		
4	↓ -2	☐		↓		
5	↓ -3	☐		↓		
6	4-WM-1	☐		wall mastic		
7	↓ -2	☐		↓		
8	↓ -3	☐		↓		
9		☐				
0		☐				
1		☐				
2		☐				
3		☐				
4		☐				
5		☐				
6		☐				
7		☐				
8		☐				
9		☐				
0		☐				

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Polarized Light Microscopy Asbestos Analysis Report

QuanTEM Lab No. 267548
Account Number: B229
Date Received: 07/29/2016
Received By: Rachel Brooks
Date Analyzed: 08/05/2016
Analyzed By: Carter Cox
Methodology: EPA/600/R-93/116

Client: Tetra Tech EM, Inc
Jeff Mitchell
415 Oak Street
Kansas City, MO 64106

Project: Elkern Carbide Bldg 8
Project Location: Keokuk, IA
Project Number: PTCT for 265851

QuanTEM Sample ID	Client Sample ID	Composition	Color / Description	Asbestos (%)	Non-Asbestos Fiber (%)	Non Fibrous
001	8-VER-1	Homogeneous	Gold Insulation	Asbestos Present Actinolite/Tremolite 0.50 400 Point Count	NA	
002	8-VER-3	Homogeneous	Gold Insulation	Asbestos Present Actinolite/Tremolite 0.75 400 Point Count	NA	

Carter Cox

Carter W. Cox, Analyst

8/5/2016

Date of Report

Unless otherwise noted, upon receipt the condition of the sample was acceptable for analysis.

ASBESTOS CHAIN OF CUSTODY

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LEGAL DOCUMENT - PLEASE PRINT LEGIBLY

For Lab Use Only	
Lab No.	210585 1
	Accept Reject

Contact Information			
Company:	Tetra Tech	Phone:	(816) 412-1773
Contact:	Jeff Mitchell	Cell Phone:	
Account #:		E-mail:	jeffrey.mitchell@tetratech.com
Sampled By:	Name: Kaitlyn Bahr	Date:	6/27/16

Project Information	
Project Name:	Elkem Carbide Bldg 8
Project Location:	Keokuk, IA
Project ID:	
P.O. Number:	X9025.14.0002.019.017

Report Results (☑ one box)	
☑	QuanTEM Website
☑	Email jeffrey.mitchell@tetratech.com
☐	Other _____

RELINQUISHED BY	DATE & TIME	VIA	RECEIVED BY	DATE & TIME
			PA	7/11/16 10:00

REQUESTED SERVICES (Please ☑ the Appropriate Boxes)

PLM	
☑	Bulk Analysis (EPA 600/R-93/116)
☐	400 Point Count
☐	1000 Point Count
☐	Gravimetric Preparation
☐	Particle ID

PLM	
☐	Vermiculite Attic Insulation (EPA 600/R-04/004)
☐	Other

PCM	
☐	NIOSH 7400

TEM	
☐	Air- AHERA
☐	Air- NIOSH 7402
☐	Air- ISO 10312
☐	Drinking Water- EPA 100.2
☐	Waste Water- EPA 600/4-83-043

TEM	
☐	Bulk- Presence / Absence EPA600/R-93/116
☐	Bulk- Quantitative [weight%]- Chatfield
☐	Dust- Presence / Absence
☐	Dust- Quantitative [fibers/sq.cm]- ASTM D5755
☐	Other

TURNAROUND TIME	
☐	Rush
☐	Same Day
☐	24 - Hour
☐	3 - Day
☒	5 - Day ★

No.	Sample ID (10 Characters Max)	☑ To Be Analyzed	Color	Description	Volume / Area (as applicable)	Comments / Notes
1	8-TSI-1	☐		insulation		
2	↓ -2	☐		↓		
3	↓ -3	☐		↓		
4	8-CT-1	☐		ceiling tile		
5	↓ -2	☐		↓		
6	↓ -3	☐		↓		
7	8-CBM-1	☐		cove base mastic		
8	↓ -2	☐		↓		
9	↓ -3	☐		↓		
10	8-WG-1	☐		window glaze		

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(800) 822-1650 • (405) 755-7272 • Fax: (405) 755-2058

LEGAL DOCUMENT - PLEASE PRINT LEGIBLY

For Lab Use Only
Lab No. 1105851
Accept Reject

Project Information

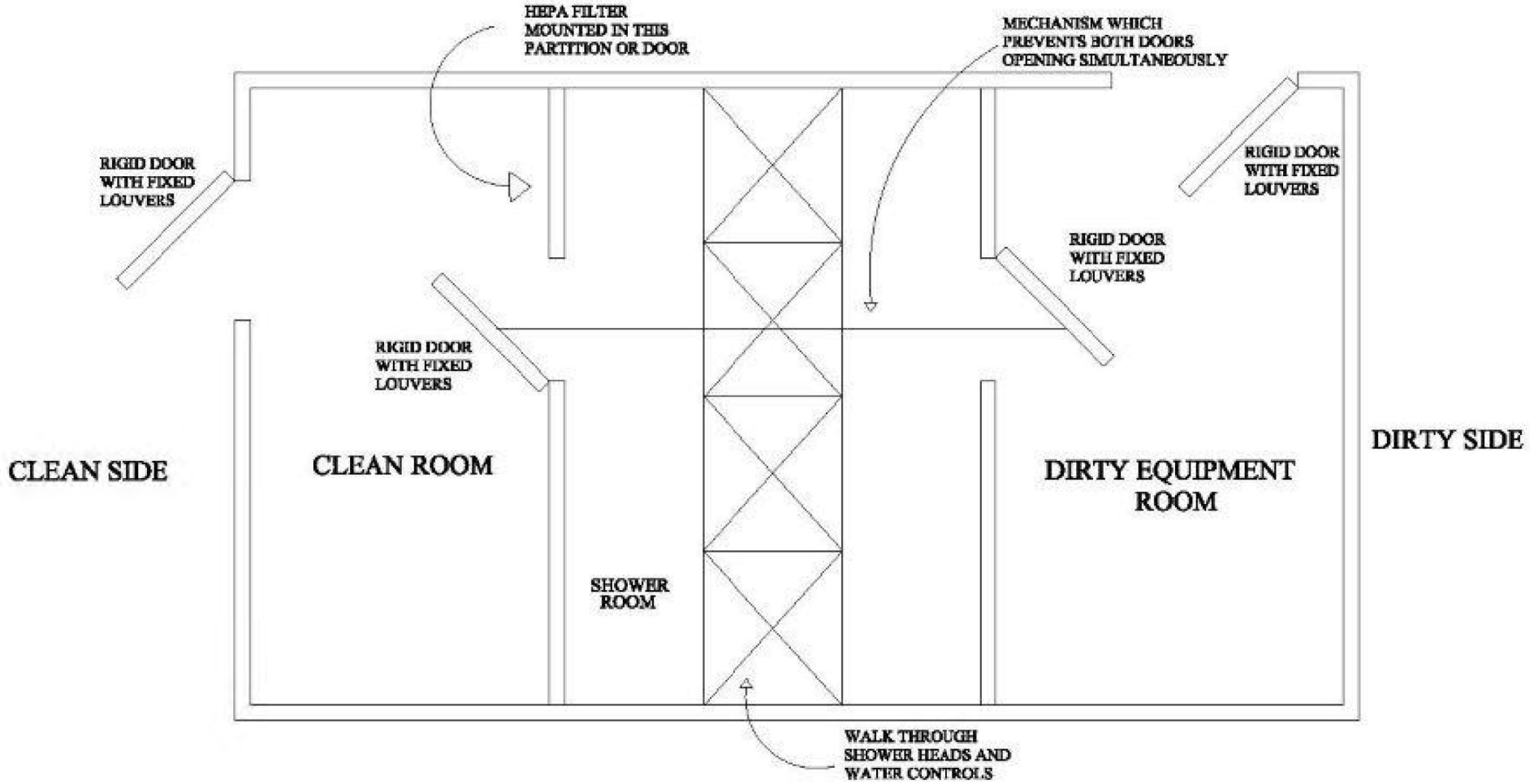
Company: Tetra Tech | Project Name: Elkem Carbide | Project Location: Keokuk, IA

No.	Sample ID (10 Characters Max)	☑ To Be Analyzed	Color	Description	Volume / Area (as applicable)	Comments / Notes
11	S-WG-2	☑		wordow glaze		
12	↓ -3	☐		↓		
13	S-CT2-1	☐		ceiling tile		
14	↓ -2	☐		↓		
15	↓ -3	☐		↓		
16	S-DWJC-1	☐		drywall/joint compound		
17	↓ -2	☐		↓		
18	↓ -3	☐		↓		
19	S-FT-1	☐		floor tile		
20	↓ -2	☐		↓		
21	↓ -3	☐		↓		
22	S-CTX-1	☐		ceiling texture		
23	↓ -2	☐		↓		
24	↓ -3	☐		↓		
25	S-CBM2-1	☐		cove base mastic		
26	↓ -2	☐		↓		
27	↓ -3	☐		↓		
28	S-VER-1	☐		vermiculite		
29	↓ -2	☐		↓		
30	↓ -3	☑		↓		

SATURDAY FEDEX SAMPLE DELIVERY - CALL TO SCHEDULE • Use this address for Saturday Delivery only: 4220 N. Santa Fe Ave., Oklahoma City, OK 73105-8517 • Mark Package "Hold for Saturday Pickup"
Please Note - UPS and USPS are **NOT** available for Saturday Delivery

APPENDIX 2 – Asbestos Diagrams and Field Forms

PERSONNEL DECONTAMINATION UNIT



Certificate of Visual Inspection

Building Name:

Address:

Abatement Company**:**

The contractor and industrial hygienist hereby certify that they have visually inspected the work area (all surfaces including pipes, beams, ledges, walls, ceiling and floor, decontamination unit, sheet plastic, etc.) and have found no dust, debris, or residue to the best of their knowledge.

DATE	REMOVAL AREA	MATERIALS REMOVED	SUPERVISOR NAME & SIGNATURE	HYGIENIST NAME & SIGNATURE
			Print	Print
			Signature	Signature
			Print	Print
			Signature	Signature
			Print	Print
			Signature	Signature
			Print	Print
			Signature	Signature

Notes:

WASTE SHIPMENT RECORD

GENERATOR	1. Work site name and mailing address	Owner's name	Owner's telephone number
	2. Operator's name and address		Operator's telephone number
			Waste Generator Number
	3. Waste disposal site (WDS) name, mailing address, and physical site location		WDS telephone number
	4. Name and address of responsible agency		
	5. Description of materials Asbestos, ID # NA 2212, PACKAGING GROUP 111	6. Containers	7. Total Quantity m^3 (yd^3)
	8. Special handling instructions and additional information		
	9. OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and government regulations.		
	Printed/typed name and title	Signature	Month Day Year
TRANSPORTER	10. Transporter 1 (Acknowledgment of receipt of materials)		
	Printed/typed name and title	Signature	Month Day Year
	Address & telephone number		
	11. Transporter 2 (Acknowledgment of receipt of materials)		
	Printed/typed name and title	Signature	Month Day Year
	Address & telephone number		
DISPOSAL	12. Discrepancy indication space		
	13. Waste disposal site owner or operator: Certification of receipt of asbestos materials covered by this manifest except as noted in item 12.		
	Printed/typed name & title	Signature	Month Day Year

APPENDIX 3 – Iowa DNR 10-Day Notification Form

https://stateofiowa.seamlessdocs.com/f/DIAL_Asbestos_Notification_Form

APPENDIX 4 – Davis Bacon Prevailing Wage Term and Condition

"General Decision Number: IA20250081 01/03/2025

Superseded General Decision Number: IA20240081

State: Iowa

Construction Types: Heavy and Highway

Counties: Adair, Adams, Allamakee, Appanoose, Audubon, Benton, Black Hawk, Boone, Bremer, Buchanan, Buena Vista, Butler, Calhoun, Carroll, Cass, Cedar, Cerro Gordo, Cherokee, Chickasaw, Clarke, Clay, Clayton, Clinton, Crawford, Dallas, Davis, Decatur, Delaware, Des Moines, Dickinson, Dubuque, Emmet, Fayette, Floyd, Franklin, Fremont, Greene, Grundy, Guthrie, Hamilton, Hancock, Hardin, Harrison, Henry, Howard, Humboldt, Ida, Iowa, Jackson, Jasper, Jefferson, Johnson, Jones, Keokuk, Kossuth, Lee, Linn, Louisa, Lucas, Lyon, Madison, Mahaska, Marion, Marshall, Mills, Mitchell, Monona, Monroe, Montgomery, Muscatine, O'Brien, Osceola, Page, Palo Alto, Plymouth, Pocahontas, Polk, Pottawattamie, Poweshiek, Ringgold, Sac, Shelby, Sioux, Story, Tama, Taylor, Union, Van Buren, Wapello, Warren, Washington, Wayne, Webster, Winnebago, Winneshiek, Woodbury, Worth and Wright Counties in Iowa.

HIGHWAY CONSTRUCTION PROJECTS and HEAVY CONSTRUCTION PROJECTS
Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(1).

If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:	Executive Order 14026 generally applies to the contract. The contractor must pay all covered workers at least $17.75 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2025.
If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or	Executive Order 13658 generally applies to the contract. The contractor must pay all

extended on or after January 30, 2022:	covered workers at least $13.30 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours performing on that contract in 2025.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at http://www.dol.gov/whd/govcontracts.

Modification Number Publication Date
0 01/03/2025

SUIA2023-001 02/01/2023

	Rates	Fringes
BRICKLAYER (BRICKLAYER/STONE MASON)		
ZONE 1	$ 34.00	17.62
ZONE 2	$ 34.00	17.62
ZONE 3	$ 34.00	17.62
ZONE 4	$ 32.75	16.09
ZONE 5	$ 29.65	16.09
Carpenter & Piledrivermen		
ZONE 1	$ 31.27	15.83
ZONE 2	$ 29.80	15.98
ZONE 3	$ 29.68	15.98
ZONE 4	$ 29.20	13.30
ZONE 5**	$ 28.15	11.70
CONCRETE FINISHER		
ZONE 1	$ 29.55	13.10
ZONE 2	$ 29.55	13.10
ZONE 3	$ 29.55	13.10
ZONE 4	$ 27.70	9.20
ZONE 5	$ 26.65	9.20
ELECTRICIAN (STREET AND HIGHWAY LIGHTING AND TRAFFIC SIGNALS)		
ZONE 1, 2, AND 3	$ 36.40	14.80

ZONE 4.....$ 35.10 13.80
ZONE 5.....$ 33.45 13.05

IRONWORKER (SETTING OF STRUCTURAL STEEL)
ZONE 1.....$ 32.25 14.85
ZONE 2.....$ 30.16 15.30
ZONE 3.....$ 30.16 15.45
ZONE 4.....$ 28.00 14.50
ZONE 5**.....$ 26.15 13.70

LABORER
ZONE 1, 2 AND 3
GROUP A.....$ 24.82 12.01
GROUP AA.....$ 27.20 12.01
GROUP B.....$ 22.97 12.01
GROUP C.....$ 19.89 12.01
ZONE 4
GROUP A.....$ 23.12 11.32
GROUP AA.....$ 25.12 11.32
GROUP B.....$ 21.55 11.32
GROUP C.....$ 18.92 11.32
ZONE 5
GROUP A.....$ 23.52 9.87
GROUP AA.....$ 25.52 9.87
GROUP B.....$ 20.78 9.87
GROUP C.....$ 19.93 9.87

POWER EQUIPMENT OPERATOR
ZONE 1
GROUP A.....$ 35.50 16.50
GROUP B.....$ 33.95 16.50
GROUP C.....$ 31.45 16.50
GROUP D.....$ 31.45 16.50
ZONE 2
GROUP A.....$ 35.30 16.50
GROUP B.....$ 33.70 16.50
GROUP C.....$ 31.15 16.50
GROUP D.....$ 31.15 16.50
ZONE 3
GROUP A.....$ 32.50 28.20
GROUP B.....$ 30.70 28.20
GROUP C.....$ 29.70 28.20
GROUP D.....$ 29.70 28.20
ZONE 4
GROUP A.....$ 32.85 16.95
GROUP B.....$ 31.71 16.95
GROUP C.....$ 29.63 16.95
GROUP D.....$ 29.63 16.95
ZONE 5
GROUP A.....$ 30.87 13.25
GROUP B.....$ 29.83 13.25
GROUP C.....$ 28.10 13.25
GROUP D.....$ 27.10 13.25

TRUCK DRIVER (AND PAVEMENT MARKING DRIVER/SWITCHPERSON)

ZONE 1	$ 26.26	12.59
ZONE 2	$ 26.26	12.59
ZONE 3	$ 26.26	12.59
ZONE 4	$ 26.26	9.04
ZONE 5	$ 24.50	9.04

ZONE DEFINITIONS

ZONE 1 The Counties of Polk, Warren, and Dallas for all Crafts, and Linn County Carpenters only.

ZONE 2 The Counties of Dubuque for all Crafts and Linn County for all Crafts except Carpenters.

ZONE 3 The Cities of Burlington (including West Burlington), Clinton, Fort Madison, Keokuk, and Middleton (including the Iowa Army Ammunition Plant) and Muscatine (and abutting municipalities of any such cities).

ZONE 4 Story, Black Hawk, Cedar, Jasper, Jones, Jackson, Louisa, Madison, and Marion Counties; Clinton County (except the City of Clinton), Johnson County, Muscatine County (except the City of Muscatine), the City of Council Bluffs, Lee County and Des Moines County.

ZONE 5 All areas of the state not listed above.

LABORER CLASSIFICATIONS - ALL ZONES

GROUP AA - Skilled pipelayer (sewer, water, and conduits) and tunnel laborers; asbestos abatement worker

GROUP A - Carpenter tender on bridges and box culverts; CCTV* sewer inspection operator; curb machine (without a seat); deck hand; diamond & core drills; drill operator on air tracs, wagon drills, and similar drills; form setter/stringman on paving work; gunnite nozzleman; joint sealer kettleman; laser operator; mason tender (brick/stone), powderman tender; powderman/blaster; sign erector; saw operator; {(Zones 4 and 5) Skilled pipelayer (sewer, water, and conduits); tunnel laborer; asbestos abatement worker}. *new labor classification (CCTV: closed circuit television)

GROUP B - Air, gas, electric tool operator; barco hammer; carpenter tender; caulker; chain sawman; compressor (under 400 cfm); concrete finisher tender; concrete processing materials and monitors; cutting torch on demolition; drill tender; dumpmen; electric drills; fence erectors; form line expansion joint assembler; form tamper; general laborer; grade checker; handling and placing metal mesh, dowel bars, reinforcing bars and chairs; hot asphalt laborer; installing temporary traffic control devices; jackhammerman; mechanical grouter; painter (all except stripers); paving breaker; planting trees, shrubs and

flowers; power broom (not self-propelled); power buggyman; rakers; rodman (tying reinforcing steel); sandblaster; seeding and mulching; sewer utility topman/bottom man; spaders; stressor or stretcherman on pre or post tensioned concrete; stringman on re/surfacing/no grade control; swinging stage, tagline, or block and tackle; tampers; timberman; tool room men and checkers; tree climber; tree groundman; underpinning and shoring caissons over twelve feet deep; vibrators; walk behind trencher; walk behind paint stripers; walk behind vibrating compactor; water pumps (under three inch); work from bosun chair.

GROUP C - Scale weigh person; traffic control/flagger, surveillance or monitor; water carrier.

POWER EQUIPMENT OPERATOR CLASSIFICATIONS - ALL ZONES

GROUP A - All terrain (off road) forklift; asphalt breakdown roller (vibratory); asphalt laydown machine; asphalt plant; asphalt screed; bulldozer (finish); central mix plant; concrete pump; crane; crawler tractor pulling scraper; directional drill (60,000 (lbs) pullback and above); dragline and power shovel; dredge engineer; excavator (over cu. yd.); front end loader (4 cy and over); horizontal boring machine; master mechanic; milling machine (over 350 hp); motor grader (finish); push cat; rubber tired backhoe (over cu. yd.); scraper (12 cu. yd. and over or finish); Self-propelled rotary mixer/road reclaimer; sidebroom tractor; slipform portland concrete paver; tow or push boat; trenching machine (Cleveland 80 or similar)

.

GROUP B - Articulated off road hauler, asphalt heater/planer; asphalt material transfer vehicle; asphalt roller; belt loader or similar loader; bulldozer (rough); churn or rotary drill; concrete curb machine; crawler tractor pulling ripper, disk or roller; deck hand/oiler; directional drill (less than 60,000 (lbs) pullback); distributor; excavator (1/2 cu. yd. and under); form riding concrete paver; front end loader (2 to less than 4 cu. yd.); group equipment greaser; mechanic; milling machine (350 hp. and less); paving breaker; portland concrete dry batch plant; rubber tired backhoe (1/2 cu. yd. and under); scraper (under 12 cu. yd.); screening, washing and crushing plant (mobile, portable or stationary); shoulder machine; skid loader (l cu. yd. and over); subgrader or trimmer; trenching machine; water wagon on compaction.

GROUP C - Boom & winch truck; concrete spreader/belt placer; deep wells for dewatering; farm type tractor (over 75 hp.) pulling disc or roller; forklift; front end loader (under 2 cu. yd.); motor grader (rough); pile hammer power unit; pump (greater than three inch diameter); pumps on well points; safety boat; self-propelled roller (other than asphalt); self-propelled sand blaster or shot blaster, water blaster or striping grinder/remover; skid loader

(under 1 cu. yd.); truck mounted post driver.

GROUP D - Boiler; compressor; cure and texture machine; dow box; farm type or utility tractor (under 75 hp.) pulling disk, roller or other attachments; group greaser tender; light plants; mechanic tender; mechanical broom; mechanical heaters; oiler; pumps (under three inch diameter); tree chipping machine; truck crane driver/oiler.

** CARPENTERS AND PILEDRIVERMEN, or IRONWORKERS (ZONE 5)
Setting of structural steel; any welding incidental to bridge or culvert construction; setting concrete beams.

WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at https://www.dol.gov/agencies/whd/government-contracts.

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (iii)).

The body of each wage determination lists the classifications and wage rates that have been found to be prevailing for the type(s) of construction and geographic area covered by the wage determination. The classifications are listed in alphabetical order under rate identifiers indicating whether the particular rate is a union rate (current union negotiated rate), a survey rate, a weighted union average rate, a state adopted rate, or a

supplemental classification rate.

Union Rate Identifiers

A four-letter identifier beginning with characters other than ""SU"", ""UAVG"", ?SA?, or ?SC? denotes that a union rate was prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2024. PLUM is an identifier of the union whose collectively bargained rate prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. The date, 07/01/2024 in the example, is the effective date of the most current negotiated rate.

Union prevailing wage rates are updated to reflect all changes over time that are reported to WHD in the rates in the collective bargaining agreement (CBA) governing the classification.

Union Average Rate Identifiers

The UAVG identifier indicates that no single rate prevailed for those classifications, but that 100% of the data reported for the classifications reflected union rates. EXAMPLE: UAVG-OH-0010 01/01/2024. UAVG indicates that the rate is a weighted union average rate. OH indicates the State of Ohio. The next number, 0010 in the example, is an internal number used in producing the wage determination. The date, 01/01/2024 in the example, indicates the date the wage determination was updated to reflect the most current union average rate.

A UAVG rate will be updated once a year, usually in January, to reflect a weighted average of the current rates in the collective bargaining agreements on which the rate is based.

Survey Rate Identifiers

The ""SU"" identifier indicates that either a single non-union rate prevailed (as defined in 29 CFR 1.2) for this classification in the survey or that the rate was derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As a weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SUFL2022-007 6/27/2024. SU indicates the rate is a single non-union prevailing rate or a weighted average of survey data for that classification. FL indicates the State of Florida. 2022 is the year of the survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 6/27/2024 in the example, indicates the survey completion date

for the classifications and rates under that identifier.

?SU? wage rates typically remain in effect until a new survey is conducted. However, the Wage and Hour Division (WHD) has the discretion to update such rates under 29 CFR 1.6(c)(1).

State Adopted Rate Identifiers

The ""SA"" identifier indicates that the classifications and prevailing wage rates set by a state (or local) government were adopted under 29 C.F.R 1.3(g)-(h). Example: SAME2023-007 01/03/2024. SA reflects that the rates are state adopted. ME refers to the State of Maine. 2023 is the year during which the state completed the survey on which the listed classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 01/03/2024 in the example, reflects the date on which the classifications and rates under the ?SA? identifier took effect under state law in the state from which the rates were adopted.

WAGE DETERMINATION APPEALS PROCESS

1) Has there been an initial decision in the matter? This can be:

a) a survey underlying a wage determination
b) an existing published wage determination
c) an initial WHD letter setting forth a position on a wage determination matter
d) an initial conformance (additional classification and rate) determination

On survey related matters, initial contact, including requests for summaries of surveys, should be directed to the WHD Branch of Wage Surveys. Requests can be submitted via email to davisbaconinfo@dol.gov or by mail to:

Branch of Wage Surveys
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

Regarding any other wage determination matter such as conformance decisions, requests for initial decisions should be directed to the WHD Branch of Construction Wage Determinations. Requests can be submitted via email to BCWD-Office@dol.gov or by mail to:

Branch of Construction Wage Determinations
Wage and Hour Division

U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2) If an initial decision has been issued, then any interested party (those affected by the action) that disagrees with the decision can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Requests for review and reconsideration can be submitted via email to dba.reconsideration@dol.gov or by mail to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210.

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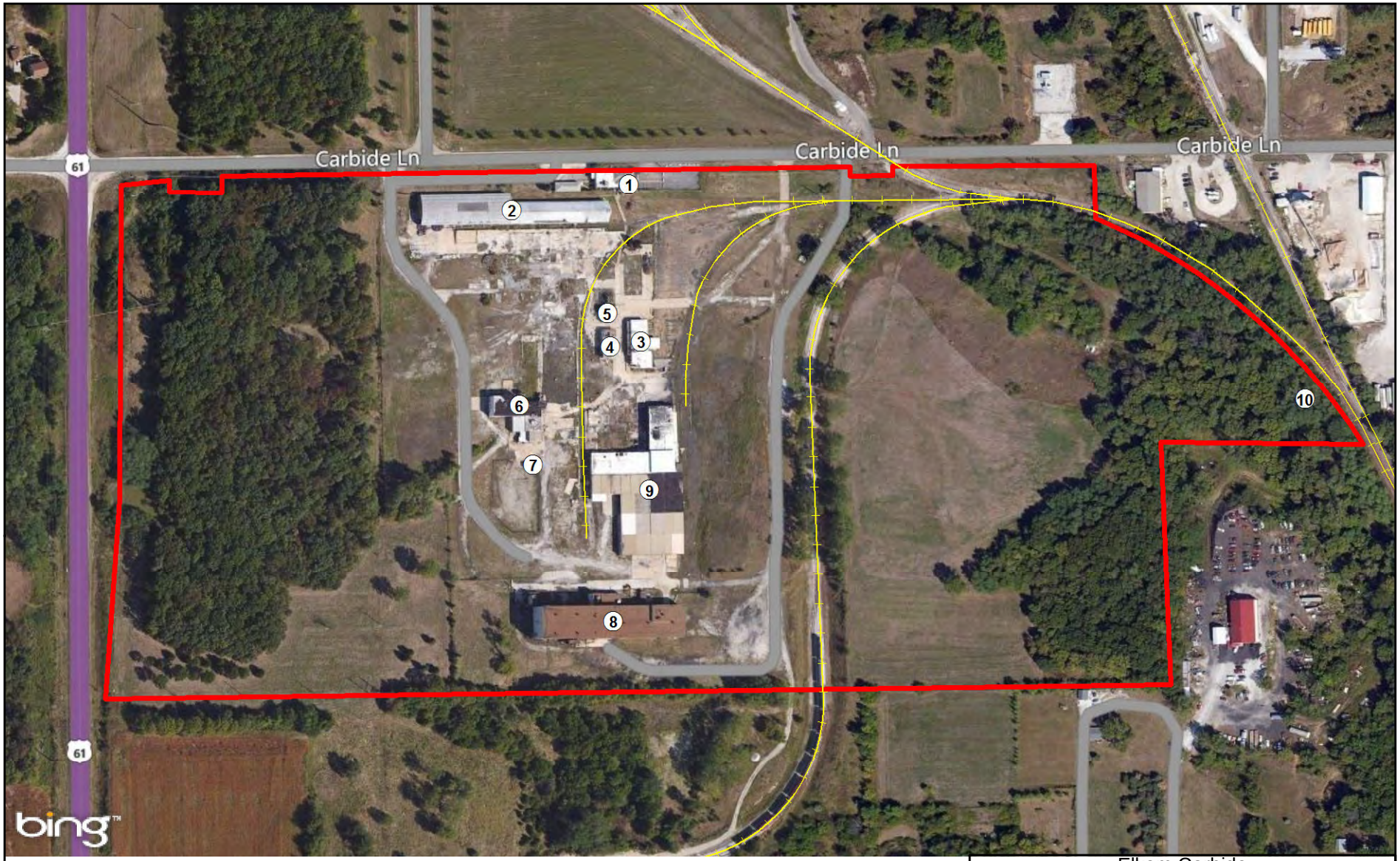
END OF GENERAL DECISION"

APPENDIX 5 – Building Layout Map



Legend

② Building ID

Railroad

Subject property boundary

N

0 175 350

Feet

Source: ESRI, ArcGIS Online, Bing Maps Hybrid, 2011; Lee County Iowa, Web Mapping Application, 2016

Elkem Carbide
365 Carbide Lane
Keokuk, Iowa

Figure 3
Building Location Map

TETRA TECH

Date: 2/12/2016 Drawn By: Nick Wiederholt Project No: X9025.14.0002.019.017

X:\G\9025\0002\019017\Projects\mxd\Figure3.mxd