PROJECT MANUAL

Scruggs Stations Warehouse Complex, Porite Roof Electrical & HVAC Repairs

Fairgrounds Warehouse

Designed By: Custom Engineering/Timberlake Engineering
912 Old Highway 63 South
Columbia, MO 65201

Date Issued: September 14, 2026

Project No.: O2534-01

STATE *of* MISSOURI

OFFICE *of* ADMINISTRATION

Facilities Management, Design and Construction

SECTION 000107 - PROFESSIONAL SEALS AND CERTIFICATIONS

PROJECT NUMBER: O2534-01 Porite Bldg. Cleaning, Updates Repairs, Scruggs Stations Warehouse Complex

THE FOLLOWING DESIGN PROFESSIONALS HAVE SIGNED AND SEALED THE ORIGINAL PLANS AND SPECIFICATIONS FOR THIS PROJECT, WHICH ARE ON FILE WITH THE DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION:

1.1 DESIGN PROFESSIONALS OF RECORD

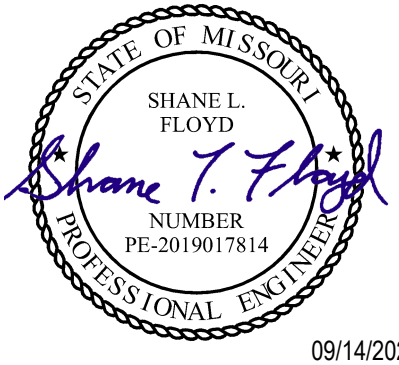
A. Structural Engineer:

1. Crockett Engineering
2. Missouri State Certificate of Authority #2000151304
3. Jared Verslues
4. PE-2017000387
5. Responsible for Division 5



B. Mechanical and Electrical Engineer:

1. Timberlake Engineering A Custom Engineering Company
2. Missouri State Certificate of Authority #000239
3. Shane L. Floyd
4. License #PE-2019017814
5. Responsible for Divisions 23 and 26 as applicable to Mechanical and Electrical Engineering.



SECTION 000107 - PROFESSIONAL SEALS AND CERTIFICATIONS

PROJECT NUMBER: O2534-01

THE FOLLOWING DESIGN PROFESSIONALS HAVE SIGNED AND SEALED THE ORIGINAL PLANS AND SPECIFICATIONS FOR THIS PROJECT, WHICH ARE ON FILE WITH THE DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION:

C. Architect:

1. Office of Administration Facilities Management Design and Construction
2. Missouri State Certificate of Authority A-2009027294
3. Brad M. Schaefer
4. Responsible for Divisions 2, 7, and 9



Brad M. Schaefer - Architect
MO# A-2009027294

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NOTICE TO BIDDERS

The following procurement forms can be found on our website at:
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and shall be submitted with your bid to FMDCBids@oa.mo.gov

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SECTION 000115 – LIST OF DRAWINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract including General and Supplementary Conditions, Bid Form, and other Division 1 Specification Sections apply to this Section.

1.2 SUMMARY

A. This Section provides a comprehensive list of the drawings that comprise the Bid Documents for this project.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

3.1 LIST OF DRAWINGS

A. The following list of drawings is a part of the Bid Documents:

	TITLE	SHEET #
1.	Cover Sheet	G-000
2.	Codes & Sheet List	G-001
3.	Cover Sheet,	
4.	Partial Floor Plan & Detail	S-101
5.	Building Elevations	A-201
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13.	Mechanical & Electrical Plan – Second Floor	ME-200
14.	Mechanical & Electrical Plan - Roof	ME-300
15.	Mechanical & Electrical Details	ME-500
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END OF SECTION 000115

SECTION 001116 - INVITATION FOR BID

1.0 OWNER:

A. The State of Missouri
Office of Administration,
Division of Facilities Management, Design and Construction
Jefferson City, Missouri

2.0 PROJECT TITLE AND NUMBER:

A. Scruggs Stations Warehouse Complex, Porite Roof Electrical & HVAC Repairs
Fairgrounds Warehouse
Jefferson City, Missouri
Project No.: O2534-01

3.0 BIDS WILL BE RECEIVED:

A. Until: 1:30 PM, November 5, 2026

B. **Only electronic bids sent to FMDCBids@oa.mo.gov shall be accepted: (See Instructions to Bidders for further detail)**

4.0 DESCRIPTION:

A. Scope: The project consists of interior and exterior repair work for replacements and upgrades of the existing HVAC systems and control systems. Additionally, the project will consist of installation of new fluid applied roofing membrane on existing metal roof. Remove and install exterior building gutters and downspouts.

B. MBE/WBE/SDVE/HDVE Goals: MBE **0%**, WBE **0%**, and SDVE **3%** or HDVE **3%**. **NOTE: Only MBE/WBE firms certified by the State of Missouri Office of Equal Opportunity as of the date of bid opening, or SDVE(s)/HDVE(s)meeting the requirements of Section 34.069, RSMo, Section 34.074, RSMo and 1 CSR 30-5.010, can be used to satisfy the MBE/WBE/SDVE/HDVE participation goals for this project.**

5.0 PRE-BID MEETING:

A. Place/Time**:** 1:30 PM, October 22, 2026, at 1525 Fairgrounds Rd., Jefferson City, MO. 65109

B. Access to State of Missouri property requires presentation of a photo ID by all persons.

6.0 HOW TO GET PLANS & SPECIFICATIONS:

A. View Only Electronic bid sets are available at no cost or paper bid sets for a **deposit of $100.00** from American Document Solutions (ADS). MAKE CHECKS PAYABLE TO: American Document Solutions. Mail to: American Document Solutions, 1400 Forum Blvd., Suite 7A, Columbia, Missouri 65203. Phone 573-446-7768, Fax 573-355-5433, https://www.adsplanroom.net. NOTE: Prime contractors will be allowed a maximum of two bid sets at the deposit rate shown above. Other requesters will be allowed only one bid set at this rate. Additional bid sets or parts thereof may be obtained by any bidder at the cost of printing and shipping by request to American Document Solutions at the address shown above. Bidder must secure at least one bid set to become a planholder.

B. **Refunds: Return plans and specifications in unmarked condition within 15 working days of bid opening to American Document Solutions, 1400 Forum Blvd., Suite 7A, Columbia, Missouri 65203. Phone 573-446-7768, Fax 573-355-5433. Deposits for plans not returned within 15 working days shall be forfeited.**

C. Information for upcoming bids, including downloadable plans, specifications, Invitation for Bid, bid tabulation, award, addenda, and access to the ADS planholders list, is available on the Division of Facilities Management, Design and Construction's web site: https://oa.mo.gov/facilities/bid-opportunities/bid-listing-electronic-plans.

7.0 POINT OF CONTACT:

A. Project Manager: Andy Carroll, email: Andy.Carroll@oa.mo.gov

8.0 GENERAL INFORMATION:

A. The State reserves the right to reject any and all bids and to waive all informalities in bids. **No bid may be withdrawn for a period of 20 working days** subsequent to the specified bid opening time. The contractor shall pay not less than the prevailing hourly rate of wages for work of a similar character in the locality in which the work is performed, as determined by the Missouri Department of Labor and Industrial Relations and as set out in the detailed plans and specifications.

B. Bid results will be available at https://oa.mo.gov/facilities/bid-opportunities/bid-listing-electronic-plans after it is verified that at least one bid is awardable and affordable.

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SECTION 002113 – INSTRUCTIONS TO BIDDERS

1.0 - SPECIAL NOTICE TO BIDDERS

A. If awarded a contract, the Bidder's employees, and the employees of all subcontractors, who perform the work on the project must adhere to requirements in Section 013513 – Site Security and Health Requirements as applicable per Agency.

B. The Bidder's prices shall include all city, state, and federal sales, excise, and similar taxes that may lawfully be assessed in connection with the performance of work, and the purchased of materials to be incorporated in the work. **THIS PROJECT IS NOT TAX EXEMPT.**

2.0 - BID DOCUMENTS

A. The number of sets obtainable by one (1) party may be limited in accordance with available supply.

B. For the convenience of contractors, subcontractors and suppliers, bidding documents are available on the Owner's website at https://oa.mo.gov/facilities/bid-opportunities/bid-listing-electronic-plans.

3.0 - BIDDERS' OBLIGATIONS

A. Bidders must carefully examine the entire site of the work and shall make all reasonable and necessary investigations to inform themselves thoroughly as to the facilities available as well as to all the difficulties involved in the completion of all work in accordance with the specifications and the plans. Bidders are required to examine all maps, plans and data mentioned in the specifications. No plea of ignorance concerning observable existing conditions or difficulties that may be encountered in the execution of the work under this contract will be accepted as an excuse for any failure or omission on the part of the successful Bidder (contractor) to fulfill every detail of the requirements of the contract, nor accepted as a basis for any claims for extra compensation or time extension.

B. Under no circumstances will Bidders give their plans and specifications to other Bidders. It is highly encouraged, but not required, that all Bidders be on the official planholders list to receive project updates including but not limited to any addenda that are issued during the bidding process.

4.0 - INTERPRETATIONS

A. No Bidder shall be entitled to rely on oral or written representations from any person as to the meaning of the plans and specifications or the acceptability of alternate products, materials, form or type of construction.

B. Bidders shall make all requests for interpretations in writing and submit all requests to the Project Manager identified in Section 007300 – Supplementary Conditions with all necessary supporting documentation no less than five (5) working days before opening of bids. Responses to requests for interpretation will be issued via a written addendum and will be sent as promptly as is practicable to all official planholders and posted on the Owner's website. All such addenda shall become part of the bid and contract documents.

C. Bidders shall make all requests for an "Acceptable Substitution" on the Section 006325 Substitution Request Form. The request shall be emailed to the Project Manager identified in Section 007300 – Supplementary Conditions no less than five (5) working days before opening of bids. Responses to requests for substitutions will be issued via a written addendum and will be sent as promptly as is practicable to all official planholders and posted on the Owner's website. All such addenda shall become part of the bid and contract documents.

D. An "Acceptable Substitution" requested after the award of bid will only be approved if proven to the satisfaction of the Owner and the Designer that the product is acceptable in design, strength, durability, usefulness, and convenience for the purpose intended. Approval of the substitution after award is at the sole discretion of the Owner and all requests of this nature must be submitted in accordance with Article 3.1 of the General Conditions.

5.0 - BIDS AND BIDDING PROCEDURE

A. Bidders shall submit all submission forms and accompanying documents listed in Section 004113 – Bid Form, Article 5.0, Attachments to Bid by the stated time on the bid documents or the bid will be rejected for being non-responsive.

B. Depending on the specific project requirements, **the following is a GENERIC list** of all possible bid forms that may be due with bid submittals. Bidders must verify each specific project's requirements in Section 004113 to ensure they have provided all the required documentation with their submission.

Bid Submittal – due before stated date and time of bid opening (see IFB):

004113	Bid Form (all pages are always required)
004322	Unit Prices Form
004336	Proposed Subcontractors Form
004337	MBE/WBE/SDVE/HDVE Compliance Evaluation Form
004338	MBE/WBE/SDVE/HDVE Eligibility Determination for Joint Ventures
004339	MBE/WBE/SDVE/HDVE GFE Determination
004340	SDVE Business Form
004340.1	HDVE Business Form
004541	Affidavit of Work Authorization
004545	Anti-Discrimination Against Israel Act Certification form

C. The Bidder shall submit its bid on the forms provided by the Owner in the same file format (PDF) with each space fully and properly completed, typewritten or legibly printed, including all amounts required for alternate bids, unit prices, cost accounting data, etc. The Owner will reject bids that are not on the Owner's forms and that do not contain all requested information. All forms can be found on the Owner's website at https://oa.mo.gov/facilities/bid-opportunities/bid-listing-electronic-plans and shall be submitted to FMDCBids@oa.mo.gov.

D. All bids shall be submitted without additional terms and conditions, modifications, or reservations. The completed forms shall not include interlineations, alterations, or erasures. Bids not in compliance with the requirements of this paragraph will be rejected as non-responsive.

E. All bids shall be accompanied by a bid bond executed by the bidder and a duly authorized surety company, certified check, cashier's check or bank draft made payable to the Division of Facilities Management, Design and Construction, State of Missouri, in the amount indicated in the bid documents in Section 004113. Failure of the Bidder to submit the duly authorized bid bond or the full amount required shall be sufficient cause to reject his bid. The Bidder agrees that the proceeds of the check, draft, or bond shall become the property of the State of Missouri, if for any reason the Bidder withdraws his bid after bid closing or if the Bidder, within ten (10) working days after notification of award, refuses or is unable to 1) execute the tendered contract, 2) provide an acceptable performance and payment bond, or 3) provide evidence of required insurance coverage.

F. The bid bond check or draft submitted by the successful Bidder will be returned after the receipt of an acceptable performance and payment bond and execution of the formal contract. Checks or drafts of all other Bidders will be returned within a reasonable time after it is determined that the bid represented by same will receive no further consideration by the State of Missouri.

6.0 - SIGNING OF BIDS

A. A bid shall contain the full and correct legal name of the Bidder. If the Bidder is an entity registered with the Missouri Secretary of State, the Bidder's name on the bid form shall appear as shown in the Secretary of State's records. If the Bidder is an entity organized in a state other than Missouri, the Bidder must provide a Certificate of Authority to do business in the State of Missouri.

B. If the successful Bidder is doing business in the State of Missouri under a fictitious name, the Bidder shall furnish to Owner, attached to the Bid Form, a properly certified copy of the certificate of Registration of Fictitious Name from the State of Missouri, and such certificate shall remain on file with the Owner.

C. A bid from an individual shall be signed as noted on the Bid Form.

D. A bid from a partnership or joint venture shall require only one signature of a partner, an officer of the joint venture authorized to bind the venture, or an attorney-in-fact. If the bid is signed by an officer of a joint venture or an attorney-in-fact, a document evidencing the individual's authority to execute contracts should be included with the bid form.

E. A bid from a limited liability company (LLC) shall be signed by a manager or a managing member of the LLC.

F. A bid from a corporation shall have the correct corporate name thereon and the signature of an authorized officer of the corporation. Title of office held by the person signing for the corporation shall appear, along with typed name of said individual and the corporate license number shall be provided. In addition, for corporate proposals, the President or Vice-President listed per the current filing with the Missouri Secretary of State should sign as the Bidder. If the signatory is other than the corporate president or vice president, the bidder must provide satisfactory evidence that the signatory has the legal authority to bind the corporation.

7.0 - RECEIVING BID SUBMITTALS

A. It is the Bidder's sole responsibility to ensure receipt of the bid submittals by Owner on or before the date and time specified in the Invitation for Bid or as modified via written addenda. Bids received after the date and time specified will not be considered by the Owner.

B. All bids shall be received via email at FMDCBids@oa.mo.gov. A bid submitted through any other means, including hard copies, will not be considered and will be discarded by the Owner unopened.

8.0 - MODIFICATION AND WITHDRAWAL OF BIDS

A. Bidder may withdraw a bid at any time prior to the scheduled closing time for receipt of bids, but no bidder may withdraw his bid for a period of twenty (20) working days after the scheduled closing time for receipt of bids.

B. Bidder may modify a bid until the scheduled closing time by sending a revised bid to FMDCBids@oa.mo.gov with a note in the subject line and body of the email that it is a revised bid. A revised bid sent via any other method will not be considered.

9.0 - AWARD OF CONTRACT

A. The Owner reserves the right to reject any and/or all bids and further to waive all informalities in bidding when deemed in the best interest of the State of Missouri.

B. The Owner reserves the right to let other contracts in connection with the work including, but not limited to, contracts for the furnishing and installation of furniture, equipment, machinery, appliances and other apparatuses.

C. The Owner will award a contract to the lowest, responsive, and responsible Bidder in accordance with Section 8.250, RSMo. No contract will be awarded to any Bidder who has had a contract with the Owner terminated within the preceding twelve months for material breach of contract or who has been suspended or debarred by the Owner.

D. Award of alternates, if any, will be made in numerical order unless all bids received are such that the order of acceptance of alternates does not affect the determination of the lowest, responsive, responsible bidder.

E. No award shall be considered binding upon the Owner until the written contract has been properly executed and the following documentation has been provided: 1) performance and payment bond consistent with Article 6.1 of the General Conditions; 2) proof of the required insurance coverage; 3) an executed Section 004541 - Affidavit of Work Authorization form; and 4) documentation evidence enrollment and participation in a federal work authorization program.

F. Failure to execute and return the contract and associated documents within the prescribed period shall be treated, at the option of the Owner, as a breach of Bidder's obligation and the Owner shall be under no further obligation to Bidder.

G. Transient employers subject to Sections 285.230 and 285.234, RSMo, (out-of-state employers who temporarily transact any business in the State of Missouri) may be required to file a bond with the

Missouri Department of Revenue. No contract will be awarded by the Owner unless the successful Bidder certifies that he has complied with all applicable provisions of Section 285.230-234.

H. Sections 285.525 and 285.530, RSMo, require business entities to enroll and participate in a federal work authorization program in order to be eligible to receive award of any state contract in excess of $5,000. Bidders should submit with their bid an Affidavit of Work Authorization (Section 004541) along with appropriate documentation evidencing such enrollment and participation. Bidders must also submit an E-Verify Memorandum before the Owner may award a contract to the Bidder. Information regarding E-Verify is located at https://www.e-verify.gov/employers/enrolling-in-e-verify. The contractor shall be responsible for ensuring that all subcontractors and suppliers associated with this contract enroll in E-Verify.

I. The successful Bidder must be registered in MissouriBUYS powered by MOVERS at https://missouribuys.mo.gov/supplier-registration# as an approved vendor prior to being issued a contract.

10.0 - CONTRACT SECURITY

A. The successful Bidder shall furnish a performance/payment bond as set forth in General Conditions Article 6.1 prior to the State executing the contract and issuing a notice to proceed.

11.0 - WORKING DAYS

A. Contract duration time is stated in working days and will use the following definition in determining the actual calendar date for contract completion:

1. Working days are defined as all calendar days except Saturdays, Sundays and the following State of Missouri observed holidays: New Year's Day, Martin Luther King, Jr. Day, Lincoln Day, Washington's Birthday, Truman Day, Memorial Day, Juneteenth, Independence Day, Labor Day, Columbus Day, Veterans Day, Thanksgiving Day and Christmas Day.

12.0 - AMERICAN AND MISSOURI - MADE PRODUCTS AND FIRMS

A. By signing the bid form and submitting a bid on this project, the Bidder certifies that it will use American and Missouri products as set forth in Article 1.7 of the General Conditions. Bidders are advised to review those requirements carefully prior to bidding.

B. A preference shall be given to Missouri firms, corporations or individuals, or firms, corporations or individuals that maintain Missouri offices or places of business, when the quality of performance promised is equal or better and the price quoted is the same or less.

C. Pursuant to Section 34.076, RSMo, a contractor or Bidder domiciled outside the boundaries of the State of Missouri shall be required, in order to be successful, to submit a bid the same percent less than the lowest bid submitted by a responsible contractor or Bidder domiciled in Missouri as would be required for such a Missouri domiciled contractor or Bidder to succeed over the bidding contractor or Bidder domiciled outside Missouri on a like contract or bid being let in the Bidder's domiciliary state and, further, the contractor or Bidder domiciled outside the boundaries of Missouri shall be required to submit an audited financial statement as would be required of a Missouri domiciled contractor or Bidder on a like contract or bid being let in the domiciliary state of that contractor or Bidder.

13.0 – ANTI-DISCRIMINATION AGAINST ISRAEL ACT CERTIFICATION:

A. If the Bidder meets the section 34.600, RSMo., definition of a "company" and the Bidder has ten or more employees, the Bidder must certify in writing that the Bidder is not currently engaged in a boycott of goods or services from the State of Israel and shall not engage in a boycott of goods or services from the State of Israel, if awarded a contract, for the duration of the contract. The Bidder is required to complete and submit the applicable portion of Section 004545 - Anti-Discrimination Against Israel Act Certification with its Bid Form. The applicable portion of the exhibit must be submitted prior to execution of a contract by the Owner and issuance of Notice to Proceed.

14.0 - MBE/WBE/SDVE/HDVE INSTRUCTIONS

A. Definitions:

1. **"MBE"** means a Minority Business Enterprise.

2. **"MINORITY"** has the same meaning as set forth in 1 CSR. 10-17.010.

3. **"MINORITY BUSINESS ENTERPRISE"** has the same meaning as set forth in section 37.020, RSMo.

4. **"WBE"** means a Women's Business Enterprise.

5. **"WOMEN'S BUSINESS ENTERPRISE"** has the same meaning as set forth in section 37.020, RSMo.

6. **"SDVE"** means a Service-Disabled Veterans Enterprise.

7. **"SERVICE-DISABLED VETERAN"** has the same meaning as set forth in section 34.074, RSMo.

8. **"SERVICE-DISABLED VETERAN ENTERPRISE"** has the same meaning as "Service-Disabled Veteran Business" set forth in section 34.074, RSMo.

9. **"HDVE" means an Honorably Discharged Veteran Enterprise**

10. **"Honorably Discharged Veteran" has the same meaning as set forth in section 34.069, RSMo.**

11. **"Honorably Discharged Veteran Enterprise"** has the same meaning as "Honorably Discharged Veteran Business" set forth in section 34.069, RSMo.

B. MBE/WBE/SDVE/HDVE General Requirements:

1. For all bids greater than $100,000, the Bidder shall obtain MBE, WBE, SDVE or HDVE participation in an amount equal to or greater than the percentage goals set forth in the Invitation for Bid and the Bid Form, unless the Bidder is granted a Good Faith Effort waiver by the Director of the Division, as set forth below. If the Bidder does not meet the MBE, WBE, SDVE or HDVE goals, or make a good faith effort to do so, the Bidder shall be nonresponsive, and its bid shall be rejected.

2. The Bidder should submit with its bid all the information requested in the MBE/WBE/SDVE/HDVE Compliance Evaluation Form for every MBE, WBE, SDVE, or HDVE subcontractor or material supplier the Bidder intends to use for the contract work. The Bidder is required to submit all MBE/WBE/SDVE/HDVE documentation before the stated time and date set forth in the Invitation for Bid. If the Bidder fails to provide such information by the specified date and time, the Owner shall reject the bid.

3. The Director reserves the right to request additional information from a Bidder to clarify the Bidder's proposed MBE, WBE, SDVE, or HDVE participation. The Bidder shall submit the clarifying information requested by the Owner within two (2) working days of receiving the request for clarification.

4. Pursuant to section 34.069, RSMo and section 34.074, RSMo, a Prime Bidder that qualifies as an SDVE or HDVE shall receive a three-percentage point bonus preference in the contract award evaluation process. The bonus preference will be calculated and applied by reducing the bid amount of the eligible SDVE or HDVE by three percent of the apparent low responsive Bidder's bid. Based on this calculation, if the eligible SDVE's or HDVE's evaluation is less than the apparent low responsive Bidder's bid, the eligible SDVE's or HDVE's bid will become the apparent low responsive bid. This reduction is for evaluation purposes only and will have no impact on the actual amount(s) of the bid or the amount(s) of any contract awarded. In order to be eligible for the SDVE or HDVE preference, the Bidder must complete and submit with its bid the Missouri Service-Disabled Veteran Business Form or the Missouri Honorably Discharged Veterans Business Form, and any information required by the form.

C. Computation of MBE/WBE/SDVE/HDVE Goal Participation:

1. A Bidder who is a MBE, WBE, SDVE, or HDVE may count 100% of the contract towards the MBE, WBE, SDVE, or HDVE goal, less any amounts awarded to another MBE, WBESDVE, or HDVE. (NOTE: a MBE firm that bids as general contractor must obtain WBE and SDVE or HDVE participation; a WBE firm that bids as a general contractor must obtain MBE and SDVE or HDVE participation; and a SDVE or HDVE firm that bids as general contractor must obtain

MBE and WBE participation.) For the remaining contract amount to be counted towards the MBE, WBE or SDVE goal, the Bidder must complete the MBE/WBE/SDVE/HDVE Compliance Evaluation Form (Section 004337) identifying itself as an MBE, WBE, SDVE or HDVE.

2. The total dollar value of the work granted to a certified MBE, WBE, SDVE or HDVE by the Bidder shall be counted towards the applicable goal.

3. Expenditures for materials and supplies obtained from a certified MBE, WBE, SDVE, or HDVE supplier or manufacturer may be counted towards the MBE, WBE, SDVE or HDVE goals, if the MBE, WBE, SDVE, or HDVE assumes the actual and contractual responsibility for the provision of the materials and supplies.

4. The total dollar value of the work granted to a second or subsequent tier subcontractor or a supplier may be counted towards a Bidder's MBE, WBE, SDVE or HDVE goals, if the MBE, WBE, SDVE or HDVE properly assumes the actual and contractual responsibility for the work.

5. The total dollar value of work granted to a certified joint venture equal to the percentage of the ownership and control of the MBE, WBE, SDVE or HDVE partner in the joint venture may be counted towards the MBE/WBE/SDVE/HDVE goals.

6. Only expenditures to a MBE, WBE, SDVE or HDVE that performs a commercially useful function in the work may be counted towards the MBE, WBE, SDVE or HDVE goals. A MBE, WBE, SDVE or HDVE performs a commercially useful function when it is responsible for executing a distinct element of the work and carrying out its responsibilities by performing, managing and supervising the work or providing supplies or manufactured materials.

D. Certification of MBE/WBE/SDVE/HDVE Subcontractors:

1. In order to be counted towards the goals, an MBE or WBE must be certified by the State of Missouri Office of Equal Opportunity and an SDVE/HDVE must be certified by the State of Missouri, Office of Equal Opportunity or by the Federal U.S. Small Business Administration directory.

2. The Bidder may determine the certification status of a proposed MBE or WBE subcontractor or supplier by referring to the Office of Equal Opportunity (OEO)'s online MBE/WBE directory https://apps1.mo.gov/MWBCertifiedFirms/. The Bidder may determine the eligibility of a SDVE/HDVE subcontractor or supplier by referring to the Office of Equal Opportunity online SDVE/HDVE directory at https://oeo.mo.gov/sdve-certification-program/ or the Federal U.S. Small Business Administration directory https://veterans.certify.sba.gov/#search.

3. Additional information, clarifications, or other information regarding the MBE/WBE/SDVE/HDVE listings in the directories may be obtained by contacting the Contract Specialist of record as shown in the Supplementary Conditions (Section 007300).

E. Waiver of MBE/WBE/SDVE/HDVE Participation:

1. If a Bidder has made a good faith effort to secure the required MBE, WBE, SDVE or HDVE participation and has failed, the Bidder shall submit with its bid the information requested in MBE/WBE/SDVE/HDVE Good Faith Effort (GFE) Determination form. The Director will determine if the Bidder made a good faith effort to meet the applicable goals. If the Director determines that the Bidder did not make a good faith effort, the bid shall be rejected as being nonresponsive to the bid requirements. Bidders who demonstrate that they have made a good faith effort to include MBE, WBE, SDVE or HDVE participation will be granted a waiver and will be considered to be responsive to the applicable participation goals, regardless of the percent of actual participation obtained, if the bid is otherwise acceptable.

2. In determining whether a Bidder has made a good faith effort to obtain MBE, WBE, SDVE or HDVE participation, the Director may evaluate the factors set forth in 1 CSR 30-5.010(6)(C) and the following:

   a. The amount of actual participation obtained;

b. How and when the Bidder contacted potential MBE, WBE, SDVE, or HDVE subcontractors and suppliers;

c. The documentation provided by the Bidder to support its contacts, including whether the Bidder provided the names, addresses, phone numbers, and dates of contact for MBE/WBE/SDVE/HDVE firms contacted for specific categories of work;

d. If project information, including plans and specifications, were provided to MBE/WBE/SDVE/HDVE subcontractors;

e. Whether the Bidder made any attempts to follow-up with MBE, WBE, SDVE or HDVE firms prior to bid;

f. Amount of bids received from any of the subcontractors and/or suppliers that the Bidder contacted;

g. The Bidder's stated reasons for rejecting any bids;

F. Contractor MBE/WBE/SDVE/HDVE Obligations

1. If awarded a contract, the Bidder will be contractually required to subcontract with or obtain materials from the MBE, WBE, SDVE, HDVE firms listed in its bid, in amounts equal to or greater than the dollar amount in the bid, unless the amount is modified in writing by the Owner.

2. If the Contractor fails to meet or maintain the participation requirements contained in the Contractor's bid, the Contractor must satisfactorily explain to the Director why it cannot comply with the requirement and why failing meeting the requirement was beyond the Contractor's control. If the Director finds the Contractor's explanation unsatisfactory, the Director may take any appropriate action including, but not limited to:

   a. Declaring the Contractor ineligible to participate in any contracts with the Division for up to twelve (12) months (suspension); and/or

   b. Declaring the Contractor be nonresponsive to the Invitation for Bid, or in breach of contract and rejecting the bid or terminating the contract.

3. If the Contractor replaces an MBE, WBE, SDVE or HDVE during the course of the contract, the Contractor shall replace it with another MBE, WBE, SDVE or HDVE or make a good faith effort to do so. All MBE, WBE, SDVE or HDVE substitutions must be approved by the Director in writing.

4. The Contractor shall provide the Owner with regular reports on its progress in meeting its MBE/WBE/SDVE/HDVE obligations. At a minimum, the Contractor shall report the dollar-value of work completed by each MBE, WBE, SDVE or HDVE during the preceding month and the cumulative total of work completed by each MBE, WBE, SDVE or HDVE to date with each monthly application for payment. The Contractor shall also make a final report, which shall include the total dollar-value of work completed by each MBE, WBE, SDVE or HDVE during the entire contract.

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State of Missouri
Construction Contract

THIS AGREEMENT is made (DATE) by and between:

Contractor Name and Address

hereinafter called the "Contractor," and the **State of Missouri**, hereinafter called the **"Owner"**, represented by the Office of Administration, Division of Facilities Management, Design and Construction.

WITNESSETH, that the Contractor and the Owner, for the consideration stated herein agree as follows:

ARTICLE 1. STATEMENT OF WORK

The Contractor shall furnish all labor and materials and perform all work required for furnishing and installing all labor, materials, equipment and transportation and everything necessarily inferred from the general nature and tendency of the plans and specifications for the proper execution of the work for:

Project Name: **Scruggs Stations Warehouse Complex,**
Porite Roof Electrical & HVAC Repairs
Fairgrounds Warehouse
Jefferson City, Missouri

Project Number: **O2534-01**

in strict accordance with the Contract Documents as enumerated in Article 7, all of which are made a part hereof.

ARTICLE 2. TIME OF COMPLETION

The contract performance time is **120 working days** from the transmittal date of this agreement. The contract completion date is **MONTH, DAY, YEAR**. This time includes ten (10) working days for the Contractor to receive, sign and return the contract form along with required bonding and insurance certificates. Failure of the Contractor to provide correct bonding and insurance within the ten (10) working days shall not be grounds for a time extension. Receipt of proper bonding and insurance is a condition precedent to the formation of the contract and if not timely received, may result in forfeiture of the Contractor's bid security. Work may not commence until the Owner issues a written Notice to Proceed and must commence within seven (7) working days thereafter.

ARTICLE 3. LIQUIDATED DAMAGES

Whenever time is mentioned in this contract, time shall be and is of the essence of this contract. The Owner would suffer a loss should the Contractor fail to have the work embraced in this contract fully completed on or before the time above specified. THEREFORE, the parties hereto realize in order to adjust satisfactorily the damages on account of such failure that it might be impossible to compute accurately or estimate the amount of such loss or damages which the Owner would sustain by reason of failure to complete fully said work within the time required by this contract. The Contractor hereby covenants and agrees to pay the Owner, as and for **liquidated damages, the sum of $1,000** per day for each and every day, Sunday and legal holidays excepted, during which the work remains incomplete and unfinished. Any sum which may be due the Owner for such damages shall be deducted and retained by the Owner from any balance which may be due the Contractor when said work shall have been finished and accepted. But such provisions shall not release the Bond of the Contractor from liability according to its terms. In case of failure to complete, the Owner will be under no obligation to show or prove any actual or specific loss or damage.

SAMPLE

ARTICLE 4. CONTRACT SUM

The Owner shall pay the Contractor for the prompt, faithful and efficient performance of the conditions and undertakings of this contract, subject to additions, and deductions as provided herein, in current funds the sum of:

Base Bid: $

Accepted Alternates, if applicable to the Project and accepted by the Owner.

TOTAL CONTRACT AMOUNT: ($CONTRACT AMOUNT)

UNIT PRICES: The Owner accepts the following Unit Prices:

For changing specified quantities of work from those indicated by the contract drawings and specifications, upon written instructions of Owner, the following unit prices shall prevail. The unit prices include all labor, overhead and profit, materials, equipment, appliances, bailing, shoring, shoring removal, etc., to cover the finished work of the several kinds of work called for. Only a single unit price shall be given and it shall apply for either MORE or LESS work than that shown on the drawings and called for in the specifications or included in the Base Bid. In the event of more or less units than so indicated or included, change orders may be issued for the increased or decreased amount.

ARTICLE 5. PREVAILING WAGE RATE

MISSOURI PREVAILING WAGE LAW (Sections 290.210 to 290.340, RSMo): The Contractor shall pay not less than the specified hourly rate of wages, as set out in the wage order attached to and made part of the specifications for work under this contract, to all workers performing work under the contract, in accordance with sections 290.210 to 290.340, RSMo. The Contractor shall forfeit a penalty to the Owner of one hundred dollars per day (or portion of a day) for each worker that is paid less than the specified rates for any work done under the contract by the Contractor or by any subcontractor, in accordance with section 290.250, RSMo.

DAVIS-BACON ACT: If this Project is financed in whole or in part from Federal funds (as indicated in the Instructions to Bidders or other bid or contract documents for this Project), then this contract shall be subject to all applicable federal labor statutes, rules and regulations, including provisions of the Davis-Bacon Act, 40 U.S.C. §3141 et seq., and the "Federal Labor Standards Provisions," as further set forth in Section 007333 – Supplementary General Conditions for Federally Funded/Assisted Construction Projects, which is incorporated into the contract by reference. Where the Missouri Prevailing Wage Law and the Davis-Bacon Act require payment of different wages for work performed under this contract, the Contractor and all Subcontractors shall pay the greater of the wages required under either law, on a classification-by-classification basis.

ARTICLE 6. MINORITY/WOMEN/SERVICE DISABLED VETERAN BUSINESS ENTERPRISE PARTICIPATION

The Contractor has been granted a waiver of the 0% MBE, 0% WBE, and 3% SDVE or HDVE 3% participation goals. The Contractor agrees to secure the MBE/WBE/SDVE/HDVE participation amounts for this project as follows: (OR)

The Contractor has met the MBE/WBE/SDVE/HDVE participation goals and agrees to secure the MBE/WBE/SDVE/HDVE participation amounts for this project as follows:

MBE/WBE/SDVE/HDVE Firm: Subcontract Amt:$
MBE/WBE/SDVE/HDVE Firm: Subcontract Amt:$
MBE/WBE/SDVE/HDVE Firm: Subcontract Amt:$
Total $

MBE/WBE/SDVE/HDVE assignments identified above shall not be changed without a contract change signed by the Owner.

The Director of the Division of Facilities Management, Design and Construction or his Designee shall be the final authority to resolve disputes and disagreements between the Contractor and the MBE/WBE/SDVE/HDVE firms listed above when such disputes impact the subcontract amounts shown above.

SAMPLE

ARTICLE 7. CONTRACT DOCUMENTS

The following documents are hereby incorporated into this contract by reference (all division/section numbers and titles are as utilized in the Project Manual published by the Owner for this Project):

1. Division 0 – Procurement and Contracting Information, including, but not limited to:
    a. Invitation for Bid (Section 001116)
    b. Instructions to Bidders (Section 002113)
    c. Supplementary Instructions to Bidders (if applicable) (Section 002213)
    d. The following documents as completed and executed by the Contractor and accepted by the Owner, if applicable:
        i. Bid Form (Section 004113)
        ii. Unit Prices (Section 004322)
        iii. Proposed Contractors Form (Section 004336)
        iv. MBE, WBE, SDVE, HDVE Compliance Evaluation Form(s) (Section 004337)
        v. MBE, WBE, SDVE, HDVE Eligibility Determination Form for Joint Ventures (Section 004338)
        vi. MBE, WBE, SDVE, HDVE Good Faith Effort (GFE) Determination Form (Section 004339)
        vii. Missouri Service-Disabled Veteran Business Form (Section 004340)
        viii. Missouri Honorably Discharged Veteran Business Form (Section 004340.1)
        ix. Affidavit of Work Authorization (Section 004541)
    e. Performance and Payment Bond, completed and executed by the Contractor and surety (Section 006113)
    f. General Conditions (Section 007213)
    g. Supplementary Conditions (Section 007300)
    h. Supplementary General Conditions for Federally Funded/Assisted Construction Projects (Section 007333), if applicable
    i. Wage Rate(s) (Section 007346)
2. Division 1 – General Requirements
3. All Drawings identified in the Project Manual
4. All Technical Specifications included in the Project Manual
5. Addenda, if applicable

ARTICLE 8 – CERTIFICATION

By signing this contract, the Contractor hereby re-certifies compliance with all legal requirements set forth in Section 6.0, Bidder's Certifications of the Bid Form.

By signature below, the parties hereby execute this contract document.

APPROVED:

_____
Crystal Wessing, Interim Director
Division of Facilities Management,
Design and Construction

_____
Contractor's Authorized Signature

I, Corporate Secretary, certify that I am Secretary of the corporation named above and that (CONTRACTOR NAME), who signed said contract on behalf of the corporation, was then (TITLE) of said corporation and that said contract was duly signed for and in behalf of the corporation by authority of its governing body, and is within the scope of its corporate powers.

_____
Corporate Secretary

SAMPLE

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Bond No._____

SECTION 006113 - PERFORMANCE AND PAYMENT BOND FORM

KNOW ALL MEN BY THESE PRESENTS, THAT we _____

as principal, and _____

_____as Surety, are held and firmly bound unto the

STATE OF MISSOURI. in the sum of _____ Dollars ($)

for payment whereof the Principal and Surety bind themselves, their heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

WHEREAS, the Principal has, by means of a written agreement dated the _____

day of_____, 20_____, enter into a contract with the State of Missouri for

_____

_____

_____

(Insert Project Title and Number)

NOW, THEREFORE, if the Principal shall faithfully perform and fulfill all the undertakings, covenants, terms, conditions and agreements of said contract during the original term of said contract and any extensions thereof that may be granted by the State of Missouri, with or without notice to the Surety and during the life of any guaranty required under the contract; and shall also faithfully perform and fulfill all undertakings, covenants, terms, conditions and agreements of any and all duly authorized modifications of said contract that may hereafter be made with or without notice to the Surety; and shall also promptly make payment for materials incorporated, consumed or used in connection with the work set forth in the contract referred to above, and all insurance premiums, both compensation and all other kinds of insurance, on said work, and for all labor performed on such work, whether by subcontractor or otherwise, at not less than the prevailing hourly rate of wages for work of a similar character (exclusive of maintenance work) in the locality in which the work is performed and not less than the prevailing hourly rate of wages for legal holiday and overtime work (exclusive of maintenance work) in the locality in which the work is performed both as determined by the Department of Labor and Industrial Relations or determined by the Court of Appeal, as provided for in said contract and in any and all duly authorized modifications of said contract that may be hereafter made, with or without notice to the Surety, then, this obligation shall be void and of no effect, but it is expressly understood that if the Principal should make default in or should fail to strictly, faithfully and efficiently do, perform and comply with any or more of the covenants, agreements, stipulations, conditions, requirements or undertakings, as specified in or by the terms of said contract, and with the time therein named, then this obligation shall be valid and binding upon each of the parties hereto and this bond shall remain in full force and effect; and the same may be sued on at the instance of any material man, laborer, mechanic, subcontractor, individual, or otherwise to whom such payment is due, in the name of the State of Missouri, to the use of any such person.

AND, IT IS FURTHER specifically provided that any modifications which may hereinafter be made in the terms of the contract or in the work to be done under it or the giving by the Owner of any extension of the time for the performance of the contract or any other forbearance on the part of either the Owner or the Principal to the other, shall not in any way release the Principal and the Surety, or either or any of them, their heirs, executors, administrators and successors, from their liability hereunder, notice to the Surety of any such extension, modifications or forbearance being hereby waived.

IN WITNESS WHEREOF, the above bounden parties have executed the within instrument this _____ day of _____, 20 ____.

AS APPLICABLE:

AN INDIVIDUAL

Name: _____

Signature: _____

A PARTNERSHIP

Name of Partner: _____

Signature of Partner: _____

Name of Partner: _____

Signature of Partner: _____

CORPORATION

Firm Name: _____

Signature of President: _____

SURETY

Surety Name: _____

Attorney-in-Fact: _____

Address of Attorney-in-Fact: _____

_____

Telephone Number of Attorney-in-Fact: _____

Signature Attorney-in-Fact: _____

NOTE: Surety shall attach Power of Attorney

STATE OF MISSOURI
OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION

PRODUCT SUBSTITUTION REQUEST

PROJECT NUMBER

PROJECT TITLE AND LOCATION

CHECK APPROPRIATE BOX

☐ SUBSTITUTION PRIOR TO BID OPENING
(Minimum of (5) working days prior to receipt of Bids as per Article 4 – Instructions to Bidders)

☐ SUBSTITUTION FOLLOWING AWARD
(Maximum of (20) working days from Notice to Proceed as per Article 3 – General Conditions)

FROM: BIDDER/CONTRACTOR (PRINT COMPANY NAME)

TO: ARCHITECT/ENGINEER (PRINT COMPANY NAME)

Bidder/Contractor hereby requests acceptance of the following product or systems as a substitution in accordance with provisions of Division One of the Bidding Documents:

SPECIFIED PRODUCT OR SYSTEM

SPECIFICATION SECTION NO.

SUPPORTING DATA

☐ Product data for proposed substitution is attached (include description of product, standards, performance, and test data)

☐ Sample ☐ Sample will be sent, if requested

QUALITY COMPARISON

	SPECIFIED PRODUCT	SUBSTITUTION REQUEST
NAME, BRAND		
CATALOG NO.		
MANUFACTURER		
VENDOR		

PREVIOUS INSTALLATIONS

PROJECT	ARCHITECT/ENGINEER	
LOCATION		DATE INSTALLED

SIGNIFICANT VARIATIONS FROM SPECIFIED PRODUCT

REASON FOR SUBSTITUTION

DOES PROPOSED SUBSTITUTION AFFECT OTHER PARTS OF WORK?

☐ YES ☐ NO

IF YES, EXPLAIN

SUBSTITUTION REQUIRES DIMENSIONAL REVISION OR REDESIGN OF STRUCTURE OR A/E WORK

☐ YES ☐ NO

BIDDER'S/CONTRACTOR'S STATEMENT OF CONFORMANCE OF PROPOSED SUBSTITUTION TO CONTRACT REQUIREMENT:

We have investigated the proposed substitution. We believe that it is equal or superior in all respects to specified product, except as stated above; that it will provide the same Warranty as specified product; that we have included complete implications of the substitution; that we will pay redesign and other costs caused by the substitution which subsequently become apparent; and that we will pay costs to modify other parts of the Work as may be needed, to make all parts of the Work complete and functioning as a result of the substitution.

BIDDER/CONTRACTOR	DATE

REVIEW AND ACTION

☐ Resubmit Substitution Request with the following additional information:

☐ Substitution is accepted.

☐ Substitution is accepted with the following comments:

☐ Substitution is not accepted.

ARCHITECT/ENGINEER	DATE

STATE OF MISSOURI
OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION

FINAL RECEIPT OF PAYMENT AND RELEASE

PROJECT NUMBER

KNOW ALL MEN BY THESE PRESENT THAT: hereinafter called "Subcontractor" who heretofore entered into an agreement with hereinafter called "Contractor", for the performance of work and/or furnishing of material for the construction of the project entitled

(PROJECT TITLE, PROJECT LOCATION, AND PROJECT NUMBER)

at

(ADDRESS OF PROJECT)

for the State of Missouri (Owner) which said subcontract is by this reference incorporated herein, in consideration of such final payment by Contractor.

DOES HEREBY:

1. ACKNOWLEDGE that they have been **PAID IN FULL** all sums due for work and materials contracted or done by their Subcontractors, Material Vendors, Equipment and Fixture Suppliers, Agents and Employees, or otherwise in the performance of the Work called for by the aforesaid Contract and all modifications or extras or additions thereto, for the construction of said project or otherwise.
2. RELEASE and fully, finally, and forever discharge the Owner from any and all suits, actions, claims, and demands for payment for work performed or materials supplied by Subcontractor in accordance with the requirements of the above referenced Contract.
1. REPRESENT that all of their Employees, Subcontractors, Material Vendors, Equipment and Fixture Suppliers, and everyone else has been **paid in full** all sums due them, or any of them, in connection with performance of said Work, or anything done or omitted by them, or any of them in connection with the construction of said improvements, or otherwise.

DATED this day of , 20 .

NAME OF SUBCONTRACTOR

BY (TYPED OR PRINTED NAME)

SIGNATURE

TITLE

ORIGINAL: FILE/Closeout Documents

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STATE OF MISSOURI
OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT,
DESIGN AND CONSTRUCTION

PAY APP NO.	PROJECT NUMBER
CHECK IF FINAL ☐**FINAL**	DATE

MBE/WBE/SDVE/HDVE PROGRESS REPORT

Remit with **ALL** Progress and Final Payments

(Please check appropriate box) ☐CONSULTANT ☐CONSTRUCTION

PROJECT TITLE	
PROJECT LOCATION	
FIRM	
ORIGINAL CONTRACT SUM (Same as Line Item 1. on Form A of Application for Payment) **$**	TOTAL CONTRACT SUM TO DATE (Same as Line Item 3. on Form A of Application for Payment) **$**

THE TOTAL MBE/WBE/SDVE/HDVE PARTICIPATION DOLLAR AMOUNT OF THIS PROJECT AS INDICATED IN THE ORIGINAL CONTRACT: **$**

SELECT MBE, WBE, SDVE, HDVE	ORIGINAL CONTRACT PARTICIPATION AMOUNT	PARTICIPATION AMOUNT PAID-TO-DATE (includes approved contract changes)	CONSULTANT/SUBCONSULTANT OR CONTRACTOR/SUBCONTRACTOR/SUPPLIER COMPANY NAME
☐ MBE ☐ WBE ☐ SDVE ☐ HDVE	$	$	
☐ MBE ☐ WBE ☐ SDVE ☐ HDVE	$	$	
☐ MBE ☐ WBE ☐ SDVE ☐ HDVE	$	$	
☐ MBE ☐ WBE ☐ SDVE ☐ HDVE	$	$	
☐ MBE ☐ WBE ☐ SDVE ☐ HDVE	$	$	
☐ MBE ☐ WBE ☐ SDVE ☐ HDVE	$	$	

INSTRUCTIONS FOR MBE/WBE/SDVE/HDVE PROGRESS REPORT

CONTRACTOR OR CONSULTANT TO FILL OUT AND REMIT WITH EACH PAY APPLICATION:

The MBE/WBE/SDVE/HDVE Progress Report for the project is issued with the contract comprising values reported in the consultant's Proposal or on the successful contractor's Section 004337 Compliance Evaluation Forms.

At Initial Pay Application fill in the following:

1. Pay App No. Start with 1.
2. Fill in the Project Number and Date.
3. Enter Project Title, Project Location, and Firm.
4. Fill in the "Original Contract Sum" and "Total Contract Sum To Date" (Reference applicable Line Items on Form A of Application for Payment).
5. Indicate the Total Participation Dollar Amount from the Original Contract.
6. Select MBE, WBE, SDVE, or HDVE for each Consultant/Subconsultant or Contractor/Subcontractor/Supplier.
7. Enter the "Total Amount of Subcontract", "$ Amount (Paid-To-Date)", and Company Name.

For all subsequent Pay Applications fill in the following:

1. Pay App No.
2. If Final Pay App, check box.
3. Fill in the Project Number and Date.
4. Enter Project Title, Project Location, and Firm
5. At each Pay App fill in the "Original Contract Sum" and "Total Contract Sum To Date" (reference applicable Line Items on Form A of Application for Payment).
6. Indicate the Total Participation Dollar Amount from the Original Contract.
7. Select MBE, WBE, SDVE, or HDVE for each Consultant/Subconsultant or Contractor/Subcontractor/Supplier
8. Enter the "Total Amount of Subcontract", "$ Amount (Paid-To-Date)", and Company Name.

STATE OF MISSOURI
OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES MANAGEMENT, DESIGN AND CONSTRUCTION
AFFIDAVIT – COMPLIANCE WITH PREVAILING WAGE LAW

PROJECT NUMBER

Before me, the undersigned Notary Public, in and for the County of _____

State of _____ personally came and appeared _____
(NAME)

_____ of the _____
(POSITION) (NAME OF THE COMPANY)

(a corporation) (a partnership) (a proprietorship) and after being duly sworn did depose and say that all provisions and requirements set out in Chapter 290, Sections 290.210 through and including 290.340, Missouri Revised Statutes, pertaining to the payment of wages to workmen employed on public works project have been fully satisfied and there has been no exception to the full and completed compliance with said provisions and requirements and with Wage Determination No: _____ issued by the Department of Labor and Industrial Relations, State of Missouri on the _____ day of _____ 20 __ in carrying out the contract and working in connection with _____
(NAME OF PROJECT)

Located at _____ in _____ County
(NAME OF THE INSTITUTION)

Missouri, and completed on the _____ day of _____ 20 __

SIGNATURE

NOTARY INFORMATION

NOTARY PUBLIC EMBOSSER OR BLACK INK RUBBER STAMP SEAL	STATE		COUNTY (OR CITY OF ST. LOUIS)
	SUBSCRIBED AND SWORN BEFORE ME, THIS DAY OF YEAR		**USE RUBBER STAMP IN CLEAR AREA BELOW**
	NOTARY PUBLIC SIGNATURE	MY COMMISSION EXPIRES	
	NOTARY PUBLIC NAME (TYPED OR PRINTED)		

FILE: Closeout Documents

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GENERAL CONDITIONS

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ARTICLE:

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7.1. For Site Conditions

7.2. For Cause

7.3. For Convenience

A. These General Conditions apply to each section of these specifications. The Contractor is subject to the provisions contained herein.

B. The General Conditions are intended to define the relationship of the Owner, the Designer and the Contractor thereby establishing certain rules and provisions governing the operation and performance of the work so that the work may be performed in a safe, orderly, expeditious and workmanlike manner.

ARTICLE 1 – GENERAL PROVISIONS

ARTICLE 1.1 - DEFINITIONS

As used in these contract documents, the following terms shall have the meanings and refer to the parties designated in these definitions.

1. **"COMMISSIONER":** The Commissioner of the Office of Administration.
2. **"CONSTRUCTION DOCUMENTS":** The "Construction Documents" shall consist of the Project Manual, Drawings and Addenda.
3. **"CONSTRUCTION REPRESENTATIVE:"** Whenever the term "Construction Representative" is used, it shall mean the Owner's Representative at the work site.
4. **"CONTRACTOR"**: Party or parties who have entered into a contract with the Owner to furnish work under these specifications and drawings.
5. **"DESIGNER"**: When the term "Designer" is used herein, it shall refer to the Architect, Engineer, or Consultant of Record specified and defined in Paragraph 2.0 of the Supplemental Conditions, or his duly authorized representative. The Designer may be either a consultant or state employee.
6. **"DIRECTOR"**: Whenever the term "Director" is used, it shall mean the Director of the Division of Facilities Management, Design and Construction or his Designee, representing the Office of Administration, State of Missouri. The Director is the agent of the Owner.
7. **"DIVISION":** Shall mean the Division of Facilities Management, Design and Construction, State of Missouri.
8. **"INCIDENTAL JOB BURDENS":** Shall mean those expenses relating to the cost of work, incurred either in the home office or on the job-site, which are necessary in the course of doing business but are incidental to the job. Such costs include office supplies and equipment, postage, courier services, telephone expenses including long distance, water and ice and other similar expenses.
9. **"JOINT VENTURE"**: An association of two (2) or more businesses to carry out a single business enterprise for profit for which purpose they combine their property, capital, efforts, skills and knowledge.
10. **"OWNER"**: Whenever the term "Owner" is used, it shall mean the State of Missouri. Acting by and through the Office of Administration, Division of Facilities Management, Design and Construction.
11. **"PROJECT"**: Wherever the term "Project" is used, it shall mean the work required to be completed by the construction contract.
12. **"PROJECT MANUAL"**: The "Project Manual" shall consist of Introductory Information, Invitation for Bid, Instructions to Bidders, Bid Documents, Additional Information, Standard Forms, General Conditions, Supplemental General Conditions, General Requirements and Technical Specifications.
13. **"SUBCONTRACTOR"**: Party or parties who contract under, or for the performance of part or this entire Contract between the Owner and Contractor. The subcontract may or may not be direct with the Contractor.
14. **"WORK"**: All supervision, labor, materials, tools, supplies, equipment, and any incidental operations and/or activities required by or reasonably inferable from the Contract Documents necessary to construct the Project and to produce the results intended by the Contract Documents in a safe, expeditious, orderly, and workmanlike manner so that the project shall be complete and finished in the best manner known to each respective trade.
15. "**WORKING DAYS**": are all calendar days except Saturdays, Sundays and the following holidays: New Year's Day, Martin Luther King, Jr. Day, Lincoln Day, Washington's Birthday (observed), Truman Day, Memorial Day, Juneteenth, Independence Day, Labor Day, Columbus Day, Veterans Day (observed), Thanksgiving Day, Christmas Day.

ARTICLE 1.2 DRAWINGS AND SPECIFICATIONS

A. In case of discrepancy between drawings and specifications, specifications shall govern. Should discrepancies in architectural drawings, structural drawings and mechanical drawings occur, architectural drawings shall govern and, in case of conflict between structural and mechanical drawings, structural drawings shall govern.

B. Specifications are separated into titled divisions for convenience of reference only and to facilitate letting of contracts and subcontracts. The Contractor is responsible for establishing the scope of work for subcontractors, which may cross titled divisions. Neither the Owner nor Designer will establish limits and jurisdiction of subcontracts.

C. Figured dimensions take precedence over scaled measurements and details over smaller scale general drawings. In the event of conflict between any of the documents contained within the contract, the documents shall take precedence and be controlling in the following sequence: addenda, supplementary general conditions, general conditions, division 1 specifications, technical division specifications, drawings, bid form and instructions to bidders.

D. Anything shown on drawings and not mentioned in these specifications or vice versa, as well as any incidental work which is obviously necessary to complete the project within the limits established by the drawings and specifications, although not shown on or described therein, shall be performed by the Contractor at no additional cost as a part of his contract.

E. Upon encountering conditions differing materially from those indicated in the contract documents, the Contractor shall promptly notify the Designer and Construction Representative in writing before such conditions are disturbed. The Designer shall promptly investigate said conditions and report to the Owner, with a recommended course of action**.** If conditions do materially differ and cause an increase or decrease in contract cost or time required for completion of any portion of the work, a contract change will be initiated as outlined in Article 4 of these General Conditions.

E. Only work included in the contract documents is authorized, and the Contractor shall do no work other than that described therein or in accordance with appropriately authorized and approved contract changes.

ARTICLE 1.3 - COMPLIANCE WITH LAWS, PERMITS, REGULATIONS AND INSPECTIONS

A. Since the Owner is the State of Missouri, municipal or political subdivisions, zoning ordinances, construction codes (other than licensing of trades), and other like ordinances are not applicable to construction on Owner's property, and Contractor will not be required to submit drawings and specifications to any municipal or political subdivision, authority, obtain construction permits or any other licenses (other than licensing of trades) or permits from or submit to inspections by any municipality or political subdivision relating to the construction for this project. All permits or licenses required by municipality or political subdivision for operation on property not belonging to Owner shall be obtained by and paid for by Contractor. Each Contractor shall comply with all applicable laws, ordinances, rules and regulations that pertain to the work of this contract.

B. Contractors, subcontractors and their employees engaged in the businesses of electrical, mechanical, plumbing, carpentry, sprinkler system work, and other construction related trades shall be licensed to perform such work by the municipal or political subdivision where the project is located, if such licensure is required by local code. Local codes shall dictate the level (master, journeyman, and apprentice) and the number, type and ratio of licensed tradesmen required for this project within the jurisdiction of such municipal or political subdivision.

C. Equipment and controls manufacturers and their authorized service and installation technicians that do not maintain an office within the jurisdiction of the municipal or political subdivision but are a listed or specified contractor or subcontractor on this project are exempt from Paragraph 1.3 B above.

D. The Contractor shall post a copy of the wage determination issued for the project and included as a part of the contract documents, in a prominent and easily accessible location at the site of construction for the duration of the project.

E. Any contractor or subcontractor to such contractor at any tier signing a contract to work on this project shall provide a ten-hour Occupational Safety and Health Administration (OSHA) construction safety program for their on-site employees which includes a course in construction safety and health approved by OSHA or a similar program approved by the Department of Labor and Industrial Relations which is at least as stringent as an approved OSHA program. The contractor shall forfeit as a penalty to the public body on whose

behalf the contract is made or awarded, two thousand five hundred dollars plus one hundred dollars for each employee employed by the contractor or subcontractor, for each calendar day, or portion thereof, such employee is employed without the required training.

ARTICLE 1.4 - NONDISCRIMINATION IN EMPLOYMENT

A. The Contractor and his subcontractors will not discriminate against individuals based on race, color, religion, national origin, sex, disability, or age, but may use restrictions which relate to bona fide occupational qualifications. Specifically, the Contractor and his subcontractors shall not discriminate:

1. Against recipients of service on the basis of race, color, religion, national origin, sex, disability or age.
2. Against any employee or applicant, for employment on the basis of race, color, religion, national origin, sex or otherwise qualified disability status.
3. Against any applicant for employment or employee on the basis of age, where such applicant or employee is between ages 40 and 70 and where such Contractor employs at least 20 persons.
4. Against any applicant for employment or employee on the basis of that person's status as a disabled or Vietnam-era veteran.

The Contractor and his Subcontractors will ensure applicants for employment and employees are treated equally without regard to race, color, religion, national origin, sex, disability, or age. Such action shall include, but not be limited to, the following: employment, upgrading, demotion and transfer; recruitment or recruitment advertising; and selection for training, including apprenticeship. The Contractor and his Subcontractors will give written notice of their commitments under this clause to any labor union with which they have bargaining or other agreements under this clause to any labor union with which they have bargaining or other agreements.

B. In the event of the Contractor's or his subcontractor's noncompliance with any provisions of this Article of the Contract, the Owner may cancel this contract in whole or in part or require the Contractor to terminate his contract with the subcontractor.

ARTICLE 1.5 - ANTI-KICKBACK

No employee of the division, shall have or acquire any pecuniary interest, whether direct or indirect, in this contract or in any part hereof. No officer, employee, designer, attorney, or administrator of or for the Owner who is authorized in such capacity and on behalf of the Owner to exercise any legislative, executive, supervisory or other similar functions in connection with the construction of the project, shall have or acquire any pecuniary interest, whether direct or indirect, in this contract, any material supply contract, subcontract, insurance contract, or any other contract pertaining to the project.

ARTICLE 1.6 - PATENTS AND ROYALTIES

A. The Contractor shall hold and save the Owner and its officers, agents, servants, and employees harmless from liabilities of any nature or kind, including cost and expenses, for, or on account of, any patented or unpatented invention, process, article or appliance manufactured or used in the performance of this contract, including its use by the Owner, unless otherwise specifically stipulated in the contract documents.

B. If the Contractor uses any design, device or materials covered by letters, patent or copyright, the Contractor shall provide for such use by suitable agreement with the Owner of such patented or copyrighted design, device or material. It is mutually agreed and understood, without exception, that the contract prices shall include all royalties or costs arising from the use of such design, device or materials, in any way involved in the work. The Contractor and/or his sureties shall indemnify and save harmless the Owner of the project from any and all claims for infringement by reason of the use of such patented or copyrighted design, device or materials or any trademark or copyright in connection with work agreed to be performed under this contract and shall indemnify the Owner for any cost, expense or damage it may be obliged to pay by reason of such infringement at any time during the prosecution of the work or after completion of the work.

ARTICLE 1.7 - PREFERENCE FOR AMERICAN AND MISSOURI PRODUCTS AND SERVICES

A. By virtue of statutory authority a preference will be given to Missouri labor and to products of mines, forests and quarries of the state of Missouri when they are found in marketable quantities in the state, and all such materials shall be of the best quality and suitable character that can be obtained at reasonable market prices, all as provided for in Section 8.280, Missouri Revised Statutes and Cumulative Supplements.

B. Furthermore, pursuant to Section 34.076 Missouri Revised Statutes and Cumulative Supplements, a preference shall be given to those persons doing business as Missouri firms, corporations, or individuals, or which maintain Missouri offices or places of business, when the quality of performance promised is equal or better and the price quoted is the same or less. In addition, in order for a non-domiciliary bidder to be successful, his bid must be that same percentage lower than a domiciliary Missouri bidder's bid, as would be required for a Missouri bidder to successfully bid in the non-domiciliary state.

C In accordance with the Missouri Domestic Products Procurement Act Section 34.350 RSMo and Cumulative Supplements any manufactured goods or commodities used or supplied in the performance of this contract or any subcontract thereto shall be manufactured, assembled or produced in the United States, unless the specified products are not manufactured, assembled or produced in the United States in sufficient quantities to meet the agency's requirements or cannot be manufactured, assembled or produced in the United States within the necessary time in sufficient quantities to meet the contract requirements, or if obtaining the specified products manufactured, assembled or produced in the United States would increase the cost of this contract for purchase of the product by more than ten percent.

ARTICLE 1.8 - COMMUNICATIONS

A. All notices, requests, instructions, approvals, and claims must be in writing and shall be delivered to the Designer and copied to the Construction Representative for the project except as required by Article 1.12 Disputes and Disagreements, or as otherwise specified by the Owner in writing as stated in Section 012600. Any such notice shall be deemed to have been given as of the time of actual receipt.

B. The Contractor shall attend on-site progress and coordination meetings, as scheduled by the Construction Representative, no less than once a month.

C. The Contractor shall ensure that major subcontractors and suppliers shall attend monthly progress meetings as necessary to coordinate the work, and as specifically requested by the Construction Representative.

ARTICLE 1.9 - SEPARATE CONTRACTS AND COOPERATION

A. The Owner reserves the right to let other contracts in connection with this work. The Contractor shall afford other contractors reasonable opportunity for the introduction and storage of their materials and the execution of their work and shall properly connect and coordinate his work with theirs.

B. The Contractor shall consult the drawings for all other contractors in connection with this work. Any work conflicting with the above shall be brought to the attention of the Owner’s Representative before the work is performed. If the Contractor fails to do this, and constructs any work which interferes with the work of another contractor, the Contractor shall remove any part so conflicting and rebuild same, as directed by the Owner’s Representative at no additional cost to the Owner.

C. Each contractor shall be required to coordinate his work with other contractors so as to afford others reasonable opportunity for execution of their work. No contractor shall delay any other contractor by neglecting to perform contract work at the proper time. If any contractor causes delay to another, they shall be liable directly to that contractor for such delay in addition to any liquidated damages which might be due the Owner.

D. Should the Contractor or project associated subcontractors refuse to cooperate with the instructions and reasonable requests of other Contractors or other subcontractors in the overall coordinating of the work, the Owner may take such appropriate action and issue directions, as required, to avoid unnecessary and unwarranted delays.

E. Each Contractor shall be responsible for damage done to Owner's or other Contractor's property by him/her or workers in his employ through their fault or negligence.

F. Should a Contractor sustain any damage through any act or omission of any other Contractor having a contract with the Owner, the Contractor so damaged shall have no claim or cause of action against the Owner for such damage, but shall have a claim or cause of action against the other Contractor to recover any and all damages sustained by reason of the acts or omissions of such Contractor. The phrase "acts or omissions" as used in this section shall be defined to include, but

not be limited to, any unreasonable delay on the part of any such contractors.

ARTICLE 1.10 - ASSIGNMENT OF CONTRACT

A. No assignment by Contractor of any amount or any part of this contract or of the funds to be received there under will be recognized unless such assignment has had the written approval of the Director and the surety has been given due notice of such assignment and has furnished written consent thereto. In addition to the usual recitals in assignment contracts, the following language must be set forth: "It is agreed that the funds to be paid to the assignee under this assignment are subject to performance by the Contractor of this contract and to claims or liens for services rendered or materials supplied for the performance of the work called for in said contract in favor of all persons, firms or corporations rendering such services or supplying such materials."

ARTICLE 1.11 - INDEMNIFICATION

A. Contractor agrees to indemnify and save harmless Owner and its respective commissioners, officers, officials, agents, consultants and employees and Designer, their agents, servants and employees, from and against any and all liability for damage arising from injuries to persons or damage to property occasioned by any acts or omissions of Contractor, any subcontractors, agents, servants or employees, including any and all expense, legal or otherwise, which may be incurred by Owner or Designer, its agents, servants or employees, in defense of any claim, action or suit.

B. The obligations of the Contractor under this paragraph shall not extend to the liability of the Designer, his agents or employees, arising out of (1) the preparation or approval of maps, drawings, opinions, reports, surveys, contract changes, design or specifications, or (2) giving of or the failure to give directions or instructions by the Designer, his agents or employees as required by this contract documents provided such giving or failure to give is the primary cause of the injury or damage.

ARTICLE 1.12 - DISPUTES AND DISAGREEMENTS

It is hereby expressly agreed and understood that in case any controversy or difference of opinion arises during construction, best efforts will be given to resolution at the field level. Should those efforts be unsuccessful, the Contractor has the right to appeal in writing, the decision of the Director's Designee to the Director at Room 730 Truman Building, P.O. Box 809, Jefferson City, Missouri 65102. The decision of the Director shall be final and binding on all parties.

ARTICLE 2 -- OWNER/DESIGNER RESPONSIBILITIES

A. The Owner shall give all orders and directions contemplated under this contract relative to the execution of the work. During progress of work the Owner will be represented at the project site by the Construction Representative and/or Designer, whose responsibilities are to see that this contract is properly fulfilled.

B. The Owner shall at all times have access to the work whenever it is in preparation or progress. The Contractors shall provide proper facilities for such access and for inspection and supervision.

C. All materials and workmanship used in the work shall be subject to the inspection of the Designer and Construction Representative, and any work which is deemed defective shall be removed, rebuilt or made good immediately upon notice. The cost of such correction shall be borne by the Contractor. Contractor shall not be entitled to an extension of the contract completion date in order to remedy defective work. All rejected materials shall be immediately removed from the site of the work.

D. If the Contractor fails to proceed at once with the correction of rejected defective materials or workmanship, the Owner may, by separate contract or otherwise, have the defects remedied or rejected. Materials removed from the site and charge the cost of the same against any monies which may be due the Contractor, without prejudice to any other rights or remedies of the Owner.

E. Failure or neglect on the part of Owner to observe faulty work, or work done which is not in accordance with the drawings and specifications shall not relieve the Contractor from responsibility for correcting such work without additional compensation.

F. The Owner shall have the right to direct the Contractor to uncover any completed work.

1. If the Contractor fails to adequately notify the Construction Representative and/or Designer of an inspection as required by the Contract Documents, the Contractor shall, upon written request, uncover the work. The Contractor shall bear all costs associated with uncovering and again covering the work exposed.

2. If the Contractor is directed to uncover work, which was not otherwise required by the Contract Documents to be inspected, and the work is found to be defective in any respect, no compensation shall be allowed for this work. If, however, such work is found to meet

the requirements of this contract, the actual cost of labor and material necessarily involved in the examination and replacement plus 10% shall be allowed the Contractor.

G. The Designer shall give all orders and directions contemplated under this contract relative to the scope of the work and shall give the initial interpretation of the contract documents.

H. The Owner may file a written notice to the Contractor to dismiss immediately any subcontractors, project managers, superintendents, foremen, workers, watchmen or other employees whom the Owner may deem incompetent, careless or a hindrance to proper or timely execution of the work. The Contractor shall comply with such notice as promptly as practicable without detriment to the work or its progress.

I. If in the Owner's judgment it becomes necessary at any time to accelerate work, when ordered by the Owner in writing, the Contractor shall redirect resources to such work items and execute such portions of the work as may be required to complete the work within the current approved contract schedule.

ARTICLE 3 -- CONTRACTOR RESPONSIBILITIES

The Contractor shall register and utilize the Owner's eBuilder digital project management system for submission of documents described in the following sections. This includes but is not limited to submittals as required by designer, payment applications, Request for Information (RFI), construction change orders, Request for Proposals (RFP), Designer Supplemental Instructions (DSI), etc.

ARTICLE 3.1 -- ACCEPTABLE SUBSTITUTIONS

A. The Contractor may request use of any article, device, product, material, fixture, form or type of construction which in the judgment of the Owner and Designer is equal in all respects to that named. Standard products of manufacturers other than those specified will be accepted when, prior to the ordering or use thereof, it is proven to the satisfaction of the Owner and Designer that they are equal in design, strength, durability, usefulness and convenience for the purpose intended.

B. Any changes required in the details and dimensions indicated on the drawings for the substitution of products other than those specified shall be properly made at the expense of the Contractor requesting the substitution or change.

C. The Contractor shall submit a request for such substitutions in writing to the Owner and Designer within twenty (20) working days after the date of the "Notice to Proceed." Thereafter no consideration will be given to alternate forms of accomplishing the work. This Article does not preclude the Owner from exercising the provisions of Article 4 hereof.

D. Any request for substitution by the Contractor shall be submitted in accordance with SECTION 002113 - INSTRUCTIONS TO BIDDERS.

E. When a material has been approved, no change in brand or make will be permitted unless:

1. Written verification is received from the manufacturer stating they cannot make delivery on the date previously agreed, or
2. Material delivered fails to comply with contract requirements.

ARTICLE 3.2 -- SUBMITTALS

A. The Contractor's submittals must be submitted with such promptness as to allow for review and approval so as not to cause delay in the work. The Contractor shall coordinate preparation and processing of submittals with performance of construction activities.

Coordinate each submittal with fabrication, = purchasing, testing, delivery, other submittals, and related activities that require sequential activity.

Submit four (4) copies to the Designer and additional copies as required for the subcontractors and material suppliers. Also provide copies to meet the requirements for maintenance manuals.

B. All subcontractors' shop drawings and schedules shall be submitted by the Contractor and shall bear evidence that Contractor has received, reviewed, and approved them. Any shop drawings and schedules submitted without this evidence will be returned to the Contractor for resubmission.

C. The Contractor shall include with the shop drawing, a letter indicating any and all deviations from the drawings and/or specifications. Failure to notify the Designer of such deviations will be grounds for subsequent rejection of the related work or materials. If, in the opinion of the Designer, the deviations are not acceptable, the Contractor will be required to furnish the item as specified and indicated on the drawings.

D. The Designer shall check shop drawings and schedules with reasonable promptness and approve them only if they conform to the design concept of the project and comply with the information given in the contract documents. The approval shall not relieve the Contractor from the responsibility to comply with the drawings and specifications, unless the Contractor has called the Designer's attention to the deviation, in writing, at the time of

submission and the Designer has knowingly approved thereof. An approval of any such modification will be given only under the following conditions:

1. It is in the best interest of the Owner
2. It does not increase the contract sum and/or completion time
3. It does not deviate from the design intent
4. It is without prejudice to any and all rights under the surety bond.

E. No extension of time will be granted because of the Contractor's failure to submit shop drawings and schedules in ample time to allow for review, possible resubmission, and approval. Fabrication of work shall not commence until the Contractor has received approval. The Contractor shall furnish prints of approved shop drawings and schedules to all subcontractors whose work is in any way related to the work under this contract. Only prints bearing this approval will be allowed on the site of construction

F. The Contractor shall maintain a complete file on-site of approved shop drawings available for use by the Construction Representative.

ARTICLE 3.3 – AS-BUILT DRAWINGS

A. The Contractor shall update a complete set of the construction drawings, shop drawings and schedules of all work monthly by marking changes, and at the completion of their work (prior to submission of request for final payment) note all changes and turn the set over to the Construction Representative. The updates shall show all addenda, all field changes that were made to adapt to field conditions, changes resulting from contract changes or supplemental instructions, and all locations of structures, buried installations of piping, conduit, and utility services. All buried and concealed items both inside and outside shall be accurately located as to depth and referenced to permanent features such as interior or exterior wall faces and dimensions shall be given in a neat and legible manner in a contrasting colored pencil or ink. If approved by the Designer, an electronic file format may be provided.

ARTICLE 3.4 – GUARANTY AND WARRANTIES

A. General Guaranty

1. Neither the final certificate of payment nor any provision in the contract documents nor partial use or occupancy of the premises by the Owner shall constitute an acceptance of work not done in accordance with contract requirements.
2. The Contractor or surety shall remedy any defects in the work and pay for any damage to property resulting there from which shall appear within a period of one (1) year from the date of substantial completion unless a longer period is otherwise specified or a differing guaranty period has been established in the substantial completion certificate. The Owner will give notice of observed defects with reasonable promptness.
3. In case of default on the part of the Contractor in fulfilling this part of this contract, the Owner may correct the work or repair the damage and the cost and expense incurred in such event shall be paid by or recoverable from the Contractor or surety.
4. The work will be free from defects not inherent in the quality required or permitted, and that the Work will conform to the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. The Contractor's guaranty excludes remedy for damage or defect caused by abuse, modifications not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear under normal usage. If required by the Owner, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment

B. Extended Warranty

Manufacturer's certificates of warranty shall be obtained for all major equipment. Warranty shall be obtained for at least one year. Where a longer period is offered at no additional cost or called for in the specific equipment specifications, the longer period shall govern.

ARTICLE 3.5 -- OPERATION AND MAINTENANCE MANUALS

A. Immediately after equipment submittals are approved and no later than ten (10) working days prior to the substantial completion inspection, the Contractor shall provide to the Designer three (3) copies of operating instructions and service manuals, containing the following:

1. Start-up and Shut-down Procedures: Provide a step-by-step write up of all major equipment. When manufacturer’s printed start-up, trouble shooting and shut-down procedures are available; they may be incorporated into the operating manual for reference.

2. Operating Instructions: Written operating instructions shall be included for the efficient and safe operation of all equipment.

3. Equipment List: List of all major equipment as installed shall be prepared to include model number, capacities, flow rate, name place data, shop drawings and air and water balance reports.

4. Service Instructions: Provide the following information for all pieces of equipment.

    a. Recommended spare parts including catalog number and name of local supplier or factory representative.

    b. Belt sizes, types, and lengths.

    c. Wiring diagrams.

5. Manufacturer's Certificate of Warranty as described in Article 3.4.

6. Prior to the final payment, furnish to the Designer three (4) copies of parts catalogs for each piece of equipment furnished by him/her on the project with the components identified by number for replacement ordering.

B. Submission of operating instructions shall be done in the following manner.

1. Manuals shall be in quadruplicate, and all materials shall be bound into volumes of standard 8½" x 11" hard binders. Large drawings too bulky to be folded into 8½" x 11" shall be separately bound or folded and in envelopes, cross referenced and indexed with the manuals.

2. The manuals shall identify project name, project number, and include the name and address of the Contractor, subcontractors and manufacturers who were involved with the activity described in that particular manual.

3. Internally subdivide the binder contents with permanent page dividers, logically organized with tab titles clearly printed under reinforced laminated plastic tabs.

4. Contents: Prepare a Table of Contents for each volume, with each product or system description identified.

ARTICLE 3.6 – OTHER CONTRACTOR RESPONSIBILITIES

A. The Contractor shall keep on site, during progress of the work, a competent superintendent satisfactory to the Construction Representative. The superintendent shall represent the Contractor and all agreements made by the superintendent shall be binding. The superintendent shall carefully study and compare all drawings, specifications and other instructions and shall promptly notify the Construction Representative and Designer, in writing, any error, inconsistency or omission which may be discovered. The superintendent shall coordinate all work on the project. Any change of the superintendent shall be approved by the Construction Representative.

B. Contractor shall, at all times, enforce strict discipline and good order among his employees, and shall not employ on the work any unfit person or anyone not skilled in the work assigned to him/her.

C. The Contractor shall supply sufficient labor, material, plant and equipment and pay when due any laborer, subcontractor or supplier for supplies furnished and otherwise prosecute the work with diligence to prevent work stoppage and ensure completion thereof within the time specified.

D. The Contractor and each of his subcontractors shall submit to the Construction Representative, through the Designer such schedules of quantities and costs, progress schedules, payrolls, reports, estimates, records and other data as the Owner may request concerning work performed or to be performed under this contract.

E. The Contractor, subcontractors, and material suppliers shall upon written request, give the Owner access to all time cards, material invoices, payrolls, estimates, profit and loss statements, and all other direct or indirect costs related to this work.

F. The Contractor shall be responsible for laying out all contract work such as layout of architectural, structural, mechanical and electrical work, which shall be coordinated with layouts of subcontractors for general construction work. The Contractor is also responsible for unloading, uncrating and handling of all materials and equipment to be erected or placed by him/her, whether furnished by Contractor or others. No extra charges or compensation will be allowed as a result of failure to verify dimensions before ordering materials or fabricating items.

G. The Contractor must notify the Construction Representative at least one working day before placing concrete or burying underground utilities, pipelines, etc.

H. Contractors shall prearrange time with the Construction Representative for the interruption of any facility operation. Unless otherwise specified in these documents, all connections, alterations or relocations as well as all other portions of the work will be performed during normal working hours.

I. The Contractor shall coordinate all work so there will not be prolonged interruptions of existing equipment operation. Any existing plumbing, heating, ventilating, air conditioning or electrical disconnections necessary for the project, which affect portions of this construction or building or any other building must be scheduled with the Construction Representative to minimize or avoid any disruption of facility operations. In no case, unless previously approved in writing by the Construction Representative, shall utilities be left disconnected at the end of a work day or over a weekend. Any interruption of utilities either intentionally or accidentally shall not relieve the Contractor responsible for the interruption from the responsibility to repair and restore the utility to normal service. Repairs and restoration shall be made before the workers responsible for the repair and restoration leave the job.

J. Contractors shall limit operations and storage of materials to the area within the project, except as necessary to connect to existing utilities, and shall not encroach on neighboring property. The Contractor shall be responsible for repair of their damage to property on or off the project site occurring during construction of project. All such repairs shall be made to the satisfaction of the property owner.

K. Unless otherwise permitted, all materials shall be new and both workmanship and materials shall be of the best quality.

L. Unless otherwise provided and stipulated within these specifications, the Contractor shall furnish, construct, and/or install and pay for materials, devices, mechanisms, equipment, all necessary personnel, utilities including, but not limited to water, heat, light and electric power, transportation services, applicable taxes of every nature, and all other facilities necessary for the proper execution and completion of the work.

M. Contractor shall carefully examine the plans and drawings and shall be responsible for the proper fitting of his material, equipment and apparatus into the building.

N. The Contractor or subcontractors shall not overload, or permit others to overload, any part of any structure during the performance of this contract.

O. All temporary shoring, bracing, etc., required for the removal of existing work and/or for the installation of new work shall be included in this contract. The Contractor shall make good, at no cost to the Owner, any damage caused by improper support or failure of shoring in any respect. Each Contractor shall be responsible for shoring required to protect his work or adjacent property and improvements of Owner and shall be responsible for shoring or for giving written notice to adjacent property owners. Shoring shall be removed only after completion of permanent supports.

P. The Contractor shall provide at the proper time such material as is required for support of the work. If openings are required, whether shown on drawings or not, the Contractor shall see that they are properly constructed.

Q. During the performance of work the Contractor shall be responsible for providing and maintaining warning signs, lights, signal devices, barricades, guard rails, fences and other devices appropriately located on site which will give proper and understandable warning to all persons of danger of entry onto land, structure or equipment.

R. The Contractor shall be responsible for protection, including weather protection, and proper maintenance of all equipment and materials.

S. The Contractor shall be responsible for care of the finished work and shall protect same from damage or defacement until substantial completion by the Owner. If the work is damaged by any cause, the Contractor shall immediately begin to make repairs in accordance with the drawings and specifications. Contractor shall be liable for all damage or loss unless attributable to the acts or omissions of the Owner or Designer. Any claim for reimbursement shall be submitted in accordance with Article 4. After substantial completion the Contractor will only be responsible for damage resulting from acts or omissions of the Contractor or subcontractors through final warranty.

T. In the event the Contractor encounters an unforeseen hazardous material, the Contractor shall immediately stop work in the area affected and report the condition to the Owner and Designer in writing. The Contractor shall not be required, pursuant to Article 4, to perform, any work relating to hazardous materials.

U. In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 4.

V. Before commencing work, Contractors shall confer with the Construction Representative and facility representative and review any facility rules and regulations which may affect the conduct of the work.

W. Project signs will only be erected on major projects and only as described in the specifications. If no sign is specified, none shall be erected.

ARTICLE 3.7 -- SUBCONTRACTS

A. Subcontractor assignments as identified in the bid form shall not be changed without written approval of the Owner. The Owner will not approve changes of a listed subcontractor unless the Contractor documents, to the satisfaction of the Owner that the subcontractor cannot or will not perform the work as specified.

B. The Contractor is fully responsible to the Owner for the acts and omissions of all subcontractors and of persons either directly or indirectly employed by them.

C. Every subcontractor shall be bound by the applicable terms and provisions of these contract documents, but no contractual relationship shall exist between any subcontractor and the Owner unless the right of the Contractor to proceed with the work is suspended or this contract is terminated as herein provided, and the Owner in writing elects to assume the subcontract.

D. The Contractor shall upon receipt of "Notice to Proceed" and prior to submission of the first payment request, notify the Designer and Construction Representative in writing of the names of any subcontractors to be used in addition to those identified in the bid form and all major material suppliers proposed for all parts of the work.

ARTICLE 4 -- CHANGES IN THE WORK

4.1 CHANGES IN THE WORK

A. The Construction Representative, without giving notice to the surety and without invalidating this contract, may order extra work or make changes by altering, adding to or deducting from the work, this contract sum being adjusted accordingly. All such work shall be executed under the conditions of the original contract. A claim for extension of time caused by any change must be adjusted at the time of ordering such change. No future request for time will be considered.

B. Each Contract Change shall include all costs required to perform the work including all labor, material, equipment, overheads and profit, delay, disruptions, or other miscellaneous expenses. No subsequent requests for additional compensation including claims for delay, disruption, or reduced efficiency as a result of each change will be considered. Values from the Schedule of Values will not be binding as a basis for additions to or deductions from the contract price.

C. The amount of any adjustment in this contract price for authorized changes shall be agreed upon before such changes become effective and shall be determined, through submission of a request for proposal, as follows:

1. By an acceptable fixed price proposal from the Contractor. Breakdowns shall include all takeoff sheets of each Contractor and subcontractor. Breakdown shall include a listing of each item of material with unit prices and number of hours of labor for each task. Labor costs per hour shall be included with labor burden identified, which shall be not less than the prevailing wage rate, etc. Overhead and profit shall be shown separately for each subcontractor and the Contractor.

2. By a cost-plus-fixed-fee (time and material) basis with maximum price, total cost not to exceed said maximum. Breakdown shall include a listing of each item of material with unit prices and number of hours of labor for each task. Labor costs per hour shall be included with labor burden identified, which shall be not less than the prevailing wage rate, etc. Overhead and profit shall be shown separately for each subcontractor and the Contractor.

3. By unit prices contained in Contractor's original bid form and incorporated in the construction contract.

D. Overhead and Profit on Contract Changes shall be applied as follows:

1. The overhead and profit charge by the Contractor and all subcontractors shall be considered to include, but is not limited to: incidental job burdens, small truck (under 1 ton) expense, mileage, small hand tools, warranty costs, company benefits and general office overhead. Project supervision including field supervision and job site office expense shall be considered a part of overhead and profit unless a compensable time extension is granted.

2. The percentages for overhead and profit charged on Contract Changes shall be subject to the following limits: (a) the percentage mark-up for the Contractor shall be limited to the Contractor’s fee: (b) fifteen percent (15%) maximum for Work directly performed by employees of a subcontractor, or sub-subcontractor; (c) five percent (5%) maximum for the Work performed or passed through to the Owner by the Contractor; (d) five percent (5%) maximum subcontractor’s mark-up for

Work performed by a sub-subcontractor and passed through to the Owner by the subcontractor and Contractor; and (e) in no case shall the total overhead and profit paid by the Owner on any Contract Changes exceed twenty-five percent (25%) of the cost of materials, labor and equipment (exclusive of Contractor or any Subcontractor overhead and profit) necessary to put the contract change work in place.

3. The Contractor will be allowed to add the cost of Contractor's payment and performance bonding, builder's risk insurance, and general liability insurance to their cost of work. The above listed bonding and insurance cost shall not exceed two percent (2%) and shall be allowed on the total cost of the added work, including overhead and profit.

4. On proposals covering both increases and decreases in the amount of this contract, the application of overhead and profit shall be on the net change in the cost of the work.

5. The percentage(s) for overhead and profit to be credited to the Owner on Contract Changes that are solely decreases in the quantity of work or materials shall be the same as those for additive Contract Changes provided above.

E. No claim for an addition to this contract sum shall be valid unless authorized as aforesaid in writing by the Owner. In the event that none of the foregoing methods are agreed upon, the Owner may order the Contractor to perform work on a time and material basis. The cost of such work shall be determined by the Contractor's actual labor and material cost to perform the work plus overhead and profit as outlined herein. The Designer and Construction Representative shall approve the Contractor's daily time and material invoices for the work involved.

F. If the Contractor claims that any instructions involve extra cost under this contract, the Contractor shall give the Owner's Representative written notice thereof within a reasonable time after the receipt of such instructions, and in any event before proceeding to execute the work. No such claim shall be valid unless so made and authorized by the Owner, in writing.

G. In an emergency affecting the safety of life or of the structure or of adjoining property, the Contractor, without special instruction or authorization from the Construction Representative, is hereby permitted to act at their discretion to prevent such threatened loss or injury. The Contractor shall submit a claim for compensation for such emergency work in writing to the Owner's Representative.

ARTICLE 4.2 – CHANGES IN COMPLETION TIME

A. Extension of the number of work days stipulated in the Contract for completion of the work with compensation may be made when:

1. The contractor documents that proposed Changes in the work, as provided in Article 4.1, extends construction activities critical to contract completion date, OR

2. The Owner suspends all work for convenience of the Owner as provided in Article 7.3, OR

3. An Owner caused delay extends construction activities critical to contract completion (except as provided elsewhere in these General Conditions). The Contractor is to review the work activities yet to begin and evaluate the possibility of rescheduling the work to minimize the overall project delay.

B. Extension of the number of work days stipulated in the Contract for completion of the work <u>without</u> compensation may be made when:

1. Weather-related delays occur, subject to provisions for the inclusion of a specified number of "bad weather" days when provided for in Section 012100-Allowances, OR

2. Labor strikes or acts of God occur, OR

3. The work of the Contractor is delayed on account of conditions which were beyond the control of the Contractor, subcontractors or suppliers, and were not the result of their fault or negligence.

C. No time extension or compensation will be provided for delays caused by or within the control of the Contractor, subcontractors or suppliers and for concurrent delays caused by the Owner.

D. The Contractor shall notify the Owner promptly of any occurrence or conditions which in the Contractor's opinion results in a need for an extension of time. The notice shall be in writing and shall include all necessary supporting materials with details of any resultant costs and be submitted in time to permit full investigation and evaluation of the Contractor's claim. The Owner shall promptly acknowledge the Contractor's notice and, after recommendation from the Owner's Representative and/or Designer, shall provide a decision to the Contractor. Failure on the part of the Contractor to provide such notice and to detail the costs shall constitute a waiver by the Contractor of any claim. Requests for extensions of time shall be for working days only.

ARTICLE 5 - CONSTRUCTION AND COMPLETION

ARTICLE 5.1 – CONSTRUCTION COMMENCEMENT

A. Upon receipt of the "Intent to Award" letter, the Contractor must submit the following properly executed instruments to the Owner:

1. Contract;
2. Performance/payment bond as described in Article 6.1;
3. Certificates of Insurance, or the actual policies themselves, showing that the Contractor has obtained the insurance coverage required by Article 6.2.

Above referenced items must be received by the Owner within ten (10) working days after the effective date of the contract. If not received, the Owner may treat the failure to timely submit them as a refusal by the Contractor to accept a contract for this work and may retain as liquidated damages the Contractor's bid bond, cashier's check or certified check as provided in the Instructions to Bidders. Upon receipt the Owner will issue a "Notice to Proceed" with the work to the Contractor.

B. Within the time frame noted in Section 013200 - Schedules, following receipt of the "Notice to Proceed", the Contractor shall submit to the Owner a progress schedule and schedule of values, showing activities through the end of the contract period. Should the Contractor not receive written notification from the Owner of the disapproval of the schedule of values within fifteen (15) working days, the Contractor may consider it approved for purpose of determining when the first monthly Application and Certification for Payment may be submitted.

C. The Contractor may commence work upon receipt of the Division of Facilities Management, Design and Construction's "Notice to Proceed" letter. Contractor shall prosecute the work with faithfulness and energy, and shall complete the entire work on or before the completion time stated in the contract documents or pay to the Owner the damages resulting from the failure to timely complete the work as set out within Article 5.4.

ARTICLE 5.2 -- PROJECT CONSTRUCTION

A. Each Contractor shall submit for the Owner's approval, in reproducible form, a progress schedule showing the rate of progress and the order of the work proposed to carry on various phases of the project. The schedule shall be in conformance with the requirements outlined in Section 013200 – Schedules.

B. Contractor shall employ and supply a sufficient force of workers, material, and equipment and shall pay when due, any worker, subcontractor or supplier and otherwise prosecute the work with such diligence so as to maintain the rate of progress indicated on the progress schedule, prevent work stoppage, and insure completion of the project within the time specified.

ARTICLE 5.3 -- PROJECT COMPLETION

A. Substantial Completion. A Project is substantially complete when construction is essentially complete and work items remaining to be completed can be done without interfering with the Owner's ability to use the Project for its intended purpose.

1. Once the Contractor has reached what they believe is Substantial Completion, the Contractor shall notify the Designer and the Construction Representative of the following:
   a. That work is essentially complete with the exception of certain listed work items. The list shall be referred to as the "Contractor's Punch."
   b. That all Operation and Maintenance Manuals have been assembled and submitted in accordance with Article 3.5A.
   c. That the Work is ready for inspection by the Designer and Construction Representative. The Owner shall be entitled to a minimum of ten working days notice before the inspection shall be performed.
2. If the work is acceptable, the Owner shall issue a Certificate of Substantial Completion, which shall set forth the responsibilities of the Owner and the Contractor for utilities, security, maintenance, damage to the work and risk of loss. The Certificate shall also identify those remaining items of work to be performed by the Contractor. All such work items shall be complete within 30 working days of the date of the Certificate, unless the Certificate specifies a different time. If the Contractor shall be required to perform tests that must be delayed due to climatic conditions, it is understood that such tests and affected equipment will be identified on the Certificate and shall be accomplished by the Contractor at the earliest possible date. Performance of the tests may not be required before Substantial Completion can be issued. The date of the issuance of the Certificate of

Substantial Completion shall determine whether or not the work was completed within the contract time and whether or not Liquidated Damages are due.

3. If the work is not acceptable, and the Owner does not issue a Certificate of Substantial Completion, the Owner shall be entitled to charge the Contractor with the Designer's and Owner's costs of re-inspection, including time and travel.

B. Partial Occupancy. Contractor agrees that the Owner shall be permitted to occupy and use any completed or partially completed portions of the Project, when such occupancy and use is in the Owner's best interest. Owner shall notify Contractor of its desire and intention to take Partial Occupancy as soon as possible but at least ten (10) working days before the Owner intends to occupy. If the Contractor believes that the portion of the work the Owner intends to occupy is not ready for occupancy, the Contractor shall notify the Owner immediately. The Designer shall inspect the work in accordance with the procedures above. If the Contractor claims increased cost of the project or delay in completion as a result of the occupancy, he shall notify the Owner immediately but in all cases before occupancy occurs.

C. Final Completion. The Project is finally complete when the Certificate of Substantial Completion has been issued and all work items identified therein as incomplete have been completed, and when all administrative items required by the contract have been completed. Final Completion entitles the Contractor to payment of the outstanding balance of the contract amount including all change orders and retainage. Within five (5) working days of the date of the Certificate of Substantial Completion, the Contractor shall identify the cost to complete any outstanding items of work. The Designer shall review the Contractor's estimate and either approve it or provide an independent estimate for all such items. If the Contractor fails to complete the remaining items within the time specified in the Certificate, the Owner may terminate the contract and go to the surety for project completion in accordance with Article 7.2 or release the contract balance to the Contractor less 150% of the approved estimate to complete the outstanding items. Upon completion of the outstanding items, when a final cost has been established, any monies remaining shall be paid to the Contractor. Failure to complete items of work does not relieve the Contractor from the obligation to complete the administrative requirements of the contract, such as the provisions of Article 5.3 FAILURE TO COMPLETE ALL ITEMS OF WORK UNDER THE CONTRACT SHALL BE CONSIDERED A DEFAULT AND BE GROUNDS FOR CONTRACT TERMINATION AND DEBARMENT.

D. Liquidated Damages. Contractor agrees that the Owner may deduct from the contract price and retain as liquidated damages, and not as penalty or forfeiture, the sum stipulated in this contract for each work day after the Contract Completion Day on which work is not Substantially Complete. Assessment of Liquidated Damages shall not relieve the Contractor or the surety of any responsibility or obligation under the Contract. In addition, the Owner may, without prejudice to any other rights, claims, or remedies the Owner may have including the right to Liquidated Damages, charge the Contractor for all additional expenses incurred by the Owner and/or Designer as the result of the extended contract period through Final Completion. Additional Expenses shall include but not be limited to the costs of additional inspections.

E. Early Completion. The Contractor has the right to finish the work before the contract completion date; however, the Owner assumes no liability for any hindrances to the Contractor unless Owner caused delays result in a time extension to the contract completion date. The Contractor shall not be entitled to any claims for lost efficiencies or for delay if a Certificate of Substantial Completion is given on or before the Contract Completion Date.

ARTICLE 5.4 -- PAYMENT TO CONTRACTOR

A. Payments on account of this contract will be made monthly in proportion to the work which has been completed. Request for payment must be submitted on the Owner's forms. No other pay request will be processed. Supporting breakdowns must be in the same format as Owner's forms and must provide the same level of detail. The Designer will, within 5 working days from receipt of the contractor's request for payment either issue a Certificate for Payment to the Owner, for such amount as the Designer determines is properly due, or notify the Contractor in writing of reasons for withholding a Certificate. The Owner shall make payment within 30 calendar days after the "Application and Certification for Payment" has been received and certified by the Designer. The following items are to be attached to the contractor's pay request:

1. Updated construction schedule
2. Certified payrolls consisting of name, home addresses of all workers, occupation and craft, number of hours worked and actual wages paid for each individual employee, of the Contractor and all subcontractors working on the project

B. The Owner shall retain 5 percent of the amount of each such payment application, except as allowed by Article 5.4, until final completion and acceptance of all work covered by this contract.

C. Each payment made to Contractor shall be on account of the total amount payable to Contractor and all material and work covered by paid partial payment shall thereupon become the sole property of Owner. This provision shall not be construed as relieving Contractor from sole responsibility for care and protection of materials and work upon which payments have been made or restoration of any damaged work or as a waiver of the right of Owner to require fulfillment of all terms of this contract.

D. Materials delivered to the work site and not incorporated in the work will be allowed in the Application and Certification for Payment on the basis of one hundred (100%) percent of value, subject to the 5% retainage providing that they are suitably stored on the site or in an approved warehouse in accordance with the following requirements:

1. Material has previously been approved through submittal and acceptance of shop drawings conforming to requirements of Article 3.2 of General Conditions.

2. Delivery is made in accordance with the time frame on the approved schedule.

3. Materials, equipment, etc., are properly stored and protected from damage and deterioration and remain so - if not, previously approved amounts will be deleted from subsequent pay applications.

4. The payment request is accompanied by a breakdown identifying the material equipment, etc. in sufficient detail to establish quantity and value.

E. The Contractor shall be allowed to include in the Application and Certification for Payment, one hundred (100%) of the value, subject to retainage, of major equipment and material stored off the site if all of the following conditions are met:

1. The request for consideration of payment for materials stored off site is made at least 15 working days prior to submittal of the Application for Payment including such material. Only materials inspected will be considered for inclusion on Application for Payment requests.

2. Materials stored in one location off site are valued in excess of $25,000.

3. That a Certificate of Insurance is provided indicating adequate protection from loss, theft conversion or damage for materials stored off site. This Certificate shall show the State of Missouri as an additional insured for this loss.

4. The materials are stored in a facility approved and inspected, by the Construction Representative.

5. Contractor shall be responsible for, Owner costs to inspect out of state facilities, and any delays in the completion of the work caused by damage to the material or for any other failure of the Contractor to have access to this material for the execution of the work.

F. The Owner shall determine the amount, quality and acceptability of the work and materials which are to be paid for under this contract. In the event any questions shall arise between the parties, relative to this contract or specifications, determination or decision of the Owner or the Construction Representative and the Designer shall be a condition precedent to the right of the Contractor to receive any money or payment for work under this contract affected in any manner or to any extent by such question.

G. Payments Withheld: The Owner may withhold or nullify in whole or part any certificate to such extent as may be necessary to protect the Owner from loss on account of:

1. Defective work not remedied. When a notice of noncompliance is issued on an item or items, corrective action shall be undertaken immediately. Until corrective action is completed, no monies will be paid and no additional time will be allowed for the item or items. The cost of corrective action(s) shall be borne by the Contractor.

2. A reasonable doubt that this contract can be completed for the unpaid balance.

3. Failure of the Contractor to update as-built drawings monthly for review by the Construction Representative.

4. Failure of the Contractor to update the construction schedule.

When the Construction Representative is satisfied the Contractor has remedied above deficiencies, payment shall be released.

H. Final Payment: Upon receipt of written notice from the Contractor to the Designer and Project Representative that the work is ready for final inspection and acceptance, the Designer and Project Representative, with the Contractor, shall promptly make such inspection. If the work is acceptable and the contract fully performed, the Construction Representative shall complete a final acceptance report and the Contractor will be

directed to submit a final Application and Certification for Payment. If the Owner approves the same, the entire balance shall be due and payable, with the exception of deductions as provided for under Article 5.4.

1. Where the specifications provide for the performance by the Contractor of (certain tests for the purpose of balancing and checking the air conditioning and heating equipment and the Contractor shall have furnished and installed all such equipment in accordance with the specifications, but said test cannot then be made because of climatic conditions, such test shall may be considered as required under the provisions of the specifications, Section 013300 and this contract may be substantial Full payment will not be made until the tests have been made and the equipment and system is finally accepted. If the tests are not completed when scheduled, the Owner may deduct 150% of the value of the tests from the final payment.
2. The final payment shall not become due until the Contractor delivers to the Construction Representative:

    a) A complete file of releases, on the standard form included in the contract documents as "Final Receipt of Payment and Release Form", from subcontractors and material suppliers evidencing payment in full for services, equipment and materials, as the case may require, if the Owner approves, or a consent from the Surety to final payment accepting liability for any unpaid amounts.

    b) An Affidavit of Compliance with Prevailing Wage Law, in the form as included in this contract specifications, properly executed by each subcontractor, and the Contractor

    c) Certified copies of all payrolls

    d) As-built drawings

3. If any claim remains unsatisfied after all payments are made, the Contractor shall refund to the Owner all monies that the latter may be compelled to pay in discharging such a claim including all costs and a reasonable attorney's fee.
4. Missouri statute requires prompt payment from the Owner to the Contractor within thirty calendar days and from the Contractor to his subcontractors within fifteen calendar days. Failure to make payments within the required time frame entitles the receiving party to charge interest at the rate of one and one half percent per month calculated from the expiration of the statutory time period until paid.
5. The value of all unused unit price allowances and/or 150% of the value of the outstanding work items, and/or liquidated damages may be deducted from the final pay request without executing a Contract Change. Any unit price items which exceed the number of units in the contract may be added by Contract Change.

ARTICLE 6 -- INSURANCE AND BONDS

ARTICLE 6.1 -- BOND

A. Contractor shall furnish a performance/payment bond in an amount equal to 100% of the contract price to guarantee faithful performance of the contract and 100% of the contract price to guarantee the payment of all persons performing labor on the project and furnishing materials in connection therewith under this contract as set forth in the standard form of performance and payment bond included in the contract documents. The surety on such bond shall be issued by a surety company authorized by the Missouri Department of Insurance to do business in the state of Missouri.

B. All Performance/Payment Bonds furnished in response to this provision shall be provided by a bonding company with a rating of B+ or higher as established by A.M. Best Company, Inc. in their most recent publication.

ARTICLE 6.2 – INSURANCE

A. The successful Contractor shall procure and maintain for the duration of the contract issued a policy or policies of insurance for the protection of both the Contractor and the Owner and their respective officers, officials, agents, consultants and employees. The Owner requires certification of insurance coverage from the Contractor prior to commencing work.

B. Minimum Scope and Extent of Coverage

1. General Liability

Commercial General Liability, ISO coverage form number or equivalent CG 00 01 ("occurrence" basis), or I-SO coverage form number CG 00 02, or ISO equivalent.

If ISO equivalent or manuscript general liability coverage forms are used, minimum coverage will be as follows: Premises/Operations; Independent Contractors; Products/Completed Operations; personal Injury; Broad Form Property Damage including Completed Operations; Broad Form Contractual Liability Coverage to include Contractor's obligations under Article 1.11 Indemnification and any other Special Hazards required by the work of the contract.

2. Automobile Liability

Business Automobile Liability Insurance, ISO Coverage form number or equivalent CA 00 01 covering automobile liability, code 1 "ANY AUTO".

3. Workers' Compensation and Employer's Liability

Statutory Workers' Compensation Insurance for Missouri and standard Employer's Liability Insurance, or the authorization to self-insure for such liability from the Missouri Division of Workers' Compensation.

4. Builder's Risk or Installation Floater Insurance

Insurance upon the work and all materials, equipment, supplies, temporary structures and similar items which may be incident to the performance of the work and located at or adjacent to the site, against loss or damage from fire and such other casualties as are included in extended coverage in broad "All Risk" form, including coverage for Flood and Earthquake, in an amount not less than the replacement cost of the work or this contact price, whichever is greater, with loss payable to Contractor and Owner as their respective interests may appear.

Contractor shall maintain sufficient insurance to cover the full value of the work and materials as the work progresses, and shall furnish Owner copies of all endorsements. If Builder's Risk Reporting- Form of Endorsement is used, Contractor shall make all reports as required therein so as to keep in force an amount of insurance which will equal the replacement cost of the work, materials, equipment, supplies, temporary structures, and other property covered thereby; and if, as a result of Contractor's failure to make any such report, the amount of insurance so recoverable shall be less than such replacement cost, Contractor's interest in the proceeds of such insurance, if any, shall be subordinated to Owner's interest to the end that Owner may receive full reimbursement for its loss.

C. Minimum Limits of Insurance

1. General Liability

Contractor

$2,000,000	combined single limit per occurrence for bodily injury, personal injury, and property damage
$2,000,000	annual aggregate

2. Automobile Liability

$2,000,000	combined single limit per occurrence for bodily injury and property damage

3. Workers' Compensation and Employers Liability

Workers' Compensation limits as required by applicable State Statutes (generally unlimited) and minimum of $1,000,000 limit per accident for Employer's Liability.

General Liability and Automobile Liability insurance may be arranged under individual policies for the full limits required or by a combination of underlying policies with the balance provided by a form-following Excess or Umbrella Liability policy.

D. Deductibles and Self-Insured Retentions

All deductibles, co-payment clauses, and self-insured retentions must be declared to and approved by the Owner. The Owner reserves the right to request the reduction or elimination of unacceptable deductibles or self-insured retentions, as they would apply to the Owner, and their respective officers, officials, agents, consultants and employees. Alternatively, the Owner may request Contractor to procure a bond guaranteeing

payment of losses and related investigations, claims administration, and defense expenses.

E. Other Insurance Provisions and Requirements

The respective insurance policies and coverage, as specified below, must contain, or be endorsed to contain the following conditions or provisions:

1. General Liability

The Owner, and its respective commissioners, officers, officials, agents, consultants and employees shall be endorsed as additional insured's by ISO form CG 20 26 Additional Insured - Designated Person or Organization. As additional insured's, they shall be covered as to work performed by or on behalf of the Contractor or as to liability which arises out of Contractor's activities or resulting from the performance of services or the delivery of goods called for by the Contract.

Contractor's insurance coverage shall be primary with respect to all additional insured's. Insurance of self-insurance programs maintained by the designated additional -insured's shall be excess of the Contractor's insurance and shall not contribute with it.

Additionally, the Contractor and Contractor's general liability insurer shall agree to waive all rights of subrogation against the Owner and any of their respective officers, officials, agents, consultants or employees for claims, losses, or expenses which arise out of Contractor's activities or result from the performance of services or the delivery of goods called for by the Contract.

Contractor's failure to comply with the terms and conditions of these insurance policies shall not affect or abridge coverage for the Owner, or for any of their officers, officials, agents, consultants or employees.

2. Automobile Insurance

The Owner, and their respective officers, officials, agents, consultants and employees shall be endorsed as additional insured's by ISO form CG 20 26 - Additional Insured Designated Person or Organization. As additional insured's, they shall be covered as to work performed by or on behalf of the Contractor or as to liability which arises out of Contractor's activities or resulting from the performance of services or the delivery of goods called for by the Contract.

Contractor's insurance coverage shall be primary with respect to all additional insured's. Insurance or self-insurance programs maintained by the designated additional insured's shall be in excess of the Contractor's insurance and shall not contribute with it.

Additionally, the Contractor and Contractor's automobile insurer shall agree to waive all rights of subrogation against the Owner and any of their respective officers, officials, agents, consultants or employees for claims, losses, or expenses which arise out of Contractor's activities or result from the performance of services or the delivery of goods called for by the Contract.

Contractor's failure to comply with the terms and conditions of these insurance policies shall not affect or abridge coverage for the Owner or for any of its officers, officials, agents, consultants or employees.

3. Workers' Compensation/Employer's Liability

Contractor's workers' compensation insurance shall be endorsed with NCCI form WC 00 03 01 A - Alternative Employer Endorsement. The Alternative Employer Endorsement shall designate the Owner as "alternate employers."

4. All Coverages

Each insurance policy required by this section of the Contract shall contain a stipulation, endorsed if necessary, that the Owner will receive a minimum of a thirty (30) calendar day advance notice of any policy cancellation. Ten (10) calendar days advance notice is required for policy cancellation due to non-payment of premium.

F. Insurer Qualifications and Acceptability

Insurance required hereunder shall be issued by an A.M. Best, "B+" rated, Class IX insurance company approved to conduct insurance business in the state of Missouri.

G. Verification of Insurance Coverage

Prior to Owner issuing a Notice to Proceed, the Contractor-shall furnish the Owner with Certificate(s) of Insurance and with any applicable original endorsements evidencing the required insurance coverage. The insurance certificates and endorsements are to be signed by a person authorized by that insurer to bind coverage on its behalf. All certificates and endorsements received by the Owner are subject to review and approval by the Owner. The Owner reserves the right to require certified copies of all required policies at any time. If the scope of this contract will exceed one (1) year - or, if any of Contractor's applicable insurance coverage expires prior to completion of the work or services required under this contract -

the Contractor will provide a renewal or replacement certificate before continuing work or services hereunder. If the Contractor fails to provide documentation of required insurance coverage, the Owner may issue a stop work order and no additional contract completion time and/or compensation shall be granted as a result thereof.

ARTICLE 7 – SUSPENSION OR TERMINATION OF CONTRACT

ARTICLE 7.1 - FOR SITE CONDITIONS

When conditions at the site of the proposed work are considered by the Owner to be unsatisfactory for prosecution of the work, the Contractor may be ordered in writing to suspend the work or any part thereof until reasonable conditions exist. When such suspension is not due to fault or negligence of the Contractor, time allowed for completion of such suspended work will be extended by a period of time equal to that lost due to delay occasioned by ordered suspension. This will be a no cost time extension.

ARTICLE 7.2 - FOR CAUSE

A. Termination or Suspension for Cause:

1. If the Contractor shall file for bankruptcy, or should make a general assignment for the benefit of the creditors, or if a receiver should be appointed on account of insolvency, or if the contractor should persistently or repeatedly refuse or fail to supply enough properly skilled workers or proper materials, or if the contractor should fail to make prompt payment to subcontractors or for material or labor, or persistently disregard laws, ordinances or the instructions of the Owner, or otherwise be guilty of a substantial violation of any provision of this contract, then the Owner may serve notice on the Contractor and the surety setting forth the violations and demanding compliance with this contract. Unless within ten (10) consecutive calendar days after serving such notice, such violations shall cease and satisfactory arrangements for correction be made, the Owner may suspend the Contractor's right to proceed with the work or terminate this contract.

2. In the event the Owner suspends Contractor's right to proceed with the work or terminates the contract, the Owner may demand that the Contractor's surety take over and complete the work on this contract, after the surety submits a written proposal to the Owner and receives written approval and upon the surety's failure or refusal to do so within ten (10) consecutive calendar days after demand therefore, the Owner may take over the work and prosecute the same to completion by bid or negotiated contract, or the Owner may elect to take possession of and utilize in completing the work such materials, supplies, appliances and plant as may be on the site of the work, and all subcontractors, if the Owner elects, shall be bound to perform their contracts.

B. The Contractor and its surety shall be and remain liable to the Owner for any excess cost or damages occasioned to the Owner as a result of the actions above set forth.

C. The Contractor in the event of such suspension or termination shall not be entitled to receive any further payments under this contract until the work is wholly finished. Then if the unpaid balance under this contract shall exceed all expenses of the Owner as certified by the Director, such excess shall be paid to the Contractor; but, if such expenses shall exceed the unpaid balance as certified by the Director, the Contractor and their surety shall be liable for and shall pay the difference and any damages to the Owner.

D. In exercising Owner's right to secure completion of the work under any of the provisions hereof, the Director shall have the right to exercise Owner's sole discretion as to the manner, methods and reasonableness of costs of completing the work.

E. The rights of the Owner to suspend or terminate as herein provided shall be cumulative and not exclusive and shall be in addition to any other remedy provided by law.

F. The Contractor in the event of such suspension or termination may be declared ineligible for Owner contracts for a minimal period of twelve (12) months. Further, no contract will be awarded to any Contractor who lists in their bid form any subcontractor whose prior performance has contributed, as determined by the Owner, to a breach of a contract. In order to be considered for state-awarded contracts after this period, the Contractor/subcontractor will be required to forward acceptance reports to the Owner regarding successful completion of non-state projects during the intervening twelve (12) months from the date of default. No contracts will be awarded to a subcontractor/Contractor until the ability to perform responsibly in the private sector has been proven to the Owner.

ARTICLE 7.3 -- FOR CONVENIENCE

A. The Owner may terminate or suspend the Contract or any portion of the Work without cause at any time, and at the Owner's convenience. Notification of a termination or suspension shall be in writing

and shall be given to the Contractor and their surety. If the Contract is suspended, the notice will contain the anticipated duration of the suspension or the conditions under which work will be permitted to resume. If appropriate, the Contractor will be requested to demobilize and re-mobilize and will be reimbursed time and costs associated with the suspension.

B. Upon receipt of notification, the Contractor shall:

1. Cease operations when directed.

2. Take actions to protect the work and any stored materials.

3. Place no further subcontracts or orders for material, supplies, services or facilities except as may be necessary to complete the portion of the Contract that has not been terminated. No claim for payment of materials or supplies ordered after the termination date shall be considered.

4. Terminate all existing subcontracts, rentals, material, and equipment orders.

5. Settle all outstanding liabilities arising from termination with subcontractors and suppliers.

6. Transfer title and deliver to the Owner, work in progress, completed work, supplies and other material produced or acquire for the work terminated, and completed or partially completed plans, drawings information and other property that, if the Contract had been completed, would be required to be furnished to the Owner.

C. For termination without cause and at the Owner's convenience, in addition to payment for work completed prior to date of termination, the Contractor may be entitled to payment of other documented costs directly associated with the early termination of the contract. Payment for anticipated profit and unapplied overhead will not be allowed.

SECTION 007300 - SUPPLEMENTARY CONDITIONS

1.0 GENERAL:

A. These Supplementary General Conditions clarify, add, delete, or otherwise modify standard terms and conditions of DIVISION 00, BIDDING AND CONTRACTING REQUIREMENTS.

2.0 CONTACTS:

Project Manager:

Andy Carroll
Division of Facilities Management, Design and Construction
301 West High Street, Room 730
Jefferson City, MO 65101
Telephone: 573-291-6086
Email: Andy.Carroll@oa.mo.gov

Construction Representative:

Carl Haley
Missouri National Guard-CFMO Office
6819A North Boundary Road
Jefferson City, MO 65101
Telephone: 573-645-7834
Email: Carl.Haley@oa.mo.gov

3.0 NOTICE: ALL BID MATERIALS ARE DUE AT THE TIME OF BID SUBMITTAL. THERE IS NO SECOND SUBMITTAL FOR THIS PROJECT.

4.0 FURNISHING CONSTRUCTION DOCUMENTS:

A. The Owner will furnish the Contractor with approximately 3 complete sets of drawings and specifications at no charge.

B. The Owner will furnish the Contractor with approximately 3 sets of explanatory or change drawings at no charge.

C. The Contractor may make copies of the documents as needed with no additional cost to the Owner.

5.0 SAFETY REQUIREMENTS

Contractor and subcontractors at any tier shall comply with RSMo 292.675 and Article 1.3, E, of Section 007213, General Conditions.

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Missouri
Division of Labor Standards
WAGE AND HOUR SECTION

MIKE KEHOE, Governor

Annual Wage Order No. 33

Section 026
COLE COUNTY

In accordance with Section 290.262 RSMo 2000, within thirty (30) days after a certified copy of this Annual Wage Order has been filed with the Secretary of State as indicated below, any person who may be affected by this Annual Wage Order may object by filing an objection in triplicate with the Labor and Industrial Relations Commission, P.O. Box 599, Jefferson City, MO 65102-0599. Such objections must set forth in writing the specific grounds of objection. Each objection shall certify that a copy has been furnished to the Division of Labor Standards, P.O. Box 449, Jefferson City, MO 65102-0449 pursuant to 8 CSR 20-5.010(1). A certified copy of the Annual Wage Order has been filed with the Secretary of State of Missouri.

Original Signed by
Logan Hobbs, Director
Division of Labor Standards

Filed With Secretary of State: **March 10, 2026**

Last Date Objections May Be Filed: **April 9, 2026**

Prepared by Missouri Department of Labor and Industrial Relations

COLE COUNTY

OCCUPATIONAL TITLE	**Prevailing Hourly Rate
Asbestos Worker	$61.67
Boilermaker	$33.76*
Bricklayer - Stone Mason	$56.40
Carpenter	$58.06
Lather	
Linoleum Layers & Cutter	
Millwright	
Pile Driver	
Cement Mason	$51.32
Plasterer	
Communication Technician	$64.69
Electrician (Inside Wireman)	$64.92
Electrician (Outside Lineman)	$33.76*
Outside - Groundman	
Outside - Groundman Tree Trimmer	
Outside - Lineman Operator	
Outside - Lineman Tree Trimmer	
Elevator Constructor	$33.76*
Glazier	$33.76*
Iron Worker	$74.57
Laborer	$46.86
Laborer - First Semi-Skilled	
Laborer - General	
Laborer - Second Semi-Skilled	
Laborer - Skilled	
Mason	$60.77
Marble Finisher	
Marble Mason	
Terrazzo Finisher	
Terrazzo Worker	
Tile Finisher	
Tile Setter	
Operating Engineer	$70.55
Operating Engineer - Group I	
Operating Engineer - Group II	
Operating Engineer - Group III	
Operating Engineer - Group III - A	
Operating Engineer - Group IV	
Operating Engineer - Group V	
Painter	$45.79
Plumber	$75.59
Pipe Fitter	
Roofer/WaterProofer	$57.87
Sheet Metal Worker	$62.18
Sprinkler Fitter - Fire Protection	$72.88
Truck Driver	$33.76*
Truck Control Service Driver	
Truck Driver, Teamsters Group I	
Truck Driver, Teamsters Group II	
Truck Driver, Teamsters Group III	
Truck Driver, Teamsters Group IV	

*** The Division of Labor Standards received fewer than 1,000 reportable hours for this occupational title. The public works contracting minimum wage is established for this occupational title using data provided by Missouri Economic Research and Information Center.**

****The Prevailing Hourly Rate includes any applicable fringe benefit amounts for each occupational title as defined in RSMo Section 290.210.**

COLE COUNTY

OCCUPATIONAL TITLE	**Prevailing Hourly Rate
Carpenter	$64.42
Millwright	
Pile Driver	
Electrician (Outside Lineman)	$87.78
Outside - Groundman	
Outside - Groundman Tree Trimmer	
Outside - Lineman Operator	
Outside - Lineman Tree Trimmer	
Laborer	$55.27
Laborer - General	
Laborer - Skilled	
Operating Engineer	$70.85
Operating Engineer - Group I	
Operating Engineer - Group II	
Operating Engineer - Group III	
Operating Engineer - Group IV	
Truck Driver	$33.76*
Truck Control Service Driver	
Truck Driver, Teamsters Group I	
Truck Driver, Teamsters Group II	
Truck Driver, Teamsters Group III	
Truck Driver, Teamsters Group IV	

Use Heavy Construction Rates on Highway and Heavy construction in accordance iwth the classifications of construction work established in 8 CSR 30-3.040(3).

Use Building Construction Rates on Building construction in accordance with the classifications of construction work established in 8 CSR 30-3.040(2).

If a worker is performing work on a heavy construction project within an occupational title that is not listed on the Heavy Construction Rate Sheet, use the rate for that occupational title shown on the Building Construction Rate Sheet.

***The Division of Labor Standards received fewer than 1,000 reportable hours for this occupational title. Public works contracting minimum wage is established for this occupational title using data provided by Missouri Economic Research and Information Center.**

****The Prevailing Hourly Rate includes any applicable fringe benefit amounts for each occupational title.**

OVERTIME
and
HOLIDAYS

OVERTIME

For all work performed on a Sunday or a holiday, not less than twice (2x) the prevailing hourly rate of wages for work of a similar character in the locality in which the work is performed or the public works contracting minimum wage, whichever is applicable, shall be paid to all workers employed by or on behalf of any public body engaged in the construction of public works, exclusive of maintenance work.

For all overtime work performed, not less than one and one-half (1½) the prevailing hourly rate of wages for work of a similar character in the locality in which the work is performed or the public works contracting minimum wage, whichever is applicable, shall be paid to all workers employed by or on behalf of any public body engaged in the construction of public works, exclusive of maintenance work or contractual obligation. For purposes of this subdivision, **"overtime work"** shall include work that exceeds ten hours in one day and work in excess of forty hours in one calendar week; and

A thirty-minute lunch period on each calendar day shall be allowed for each worker on a public works project, provided that such time shall not be considered as time worked.

HOLIDAYS

January first;
The last Monday in May;
July fourth;
The first Monday in September;
November eleventh;
The fourth Thursday in November; and
December twenty-fifth;

If any holiday falls on a Sunday, the following Monday shall be considered a holiday.

SECTION 011000 – SUMMARY OF WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract including General and Supplementary Conditions and Division 1 Specification Sections apply to this Section.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

A. The Project consists of interior and exterior repair work for replacements and upgrades of the existing HVAC systems and control systems. Additionally, the project will consist of installation of new fluid applied roofing membrane on existing metal roof. Remove and install exterior building gutters and downspouts

1. Project Location: 1535 Fairgrounds Rd. Jefferson City, MO. 65109

2. Owner: State of Missouri, Office of Administration, Division of Facilities Management, Design and Construction, Harry S Truman State Office Building, Post Office Box 809, 301 West High Street, Jefferson City, Missouri 65102.

B. Contract Documents dated SEPTEMBER 14, 2026 were prepared for the Project by State of Missouri – Office of Administration Division of Facilities Management Design and Construction (Arch), Custom Engineering (MEP), Crockett Engineering (Structural).

C. The work consists of replacements and upgrades of existing HVAC systems, installation of new gas fired packaged rooftop units, demolition of abandoned electrical systems, installation of new fluid applied roofing membrane on existing metal roof, and replacement of exterior building gutters and downspouts.

D. The Work will be constructed under a single prime contract.

1.3 WORK UNDER OTHER CONTRACTS

A. None

1.4 WORK SEQUENCE

A. The Work will be conducted in one phase.

1.5 CONTRACTOR USE OF PREMISES

A. General: During the construction period the Contractor shall have full use of the premises for construction operations, including use of the site. The Contractor's use of the premises limited only by the Owner's right to perform work or to retain other contractors on portions of the Project.

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

1. Owner Occupancy: Allow for Owner occupancy and use by the public.

2. Driveways and Entrances: Keep driveways and entrances serving the premises clear and available to the Owner, the Owner's employees, and emergency vehicles

at all times. Do not use these areas for parking or storage of materials. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.

C. Use of the Existing Building: Maintain the existing building in a weathertight condition throughout the construction period. Repair damage cause by construction operations. Take all precautions necessary to protect the building and its occupants during the construction period.

1.6 OCCUPANCY REQUIREMENTS

A. Full Owner Occupancy: The Owner will occupy the site and existing building during the entire construction period. Cooperate with the Owner during construction operations to minimize conflicts and facilitate owner usage. Perform the Work so as not to interfere with the Owner's operations.

1.7 MISCELLANEOUS PROVISIONS

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 SCHEDULE OF PRODUCTS ORDERED IN ADVANCE

END OF SECTION 011000

SECTION 012100 – ALLOWANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract including General and Supplementary Conditions and other Division 1 Specification Sections apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements governing allowances.

1. Certain items are specified in the Contract Documents by allowances. Allowances have been established in lieu of additional requirements and to defer selection of actual materials and equipment to a later date when additional information is available for evaluation. If necessary, additional requirements will be issued by Change Order.

B. Types of allowances include the following:

1. Lump-sum allowances.
2. Weather allowances.

C. Related Sections include the following:

1. Division 1 Section "Contract Modification Procedures" for procedures for submitting and handling Change Orders for allowances.

1.3 WEATHER ALLOWANCE

A. Included within the completion period for this project are a specified number of “bad weather” days (see Schedule of Allowances).

B. The Contractor’s progress schedule shall clearly indicate the bad weather day allowance as an “activity” or “activities”. In the event weather conditions preclude performance of critical work activities for 50% or more of the Contractor’s scheduled workday, that day shall be declared unavailable for work due to weather (a “bad weather” day) and charged against the above allowance. Critical work activities will be determined by review of the Contractor’s current progress schedule.

C. The Contractor’s Representative and the Construction Representative shall agree daily on the number of “bad weather” days to be charged against the allowance. This determination will be documented in writing and be signed by the Contractor and the Construction Representatives. If there is a failure to agree on all or part of the “bad weather” days for a particular month, that disagreement shall be noted on this written document and signed by each party’s representative. Failure of the Contractor’s representative to sign the “bad weather” day documentation after it is presented, with or without the notes of disagreement, shall constitute agreement with the “bad weather” day determination contained in that document.

D. There will be no modification to the time of contract performance due solely to the failure to deplete the “bad weather” day allowance.

E. Once this allowance is depleted, a no cost Change Order time extension will be executed for "bad weather" days, as defined above, encountered during the remainder of the Project.

1.4 FACILITY INTERRUPTION ALLOWANCE

A. Included within the completion period for this project are a specified number of "Facility Interruption" days (see Schedule of Allowances).

B. The Contractor's progress schedule shall clearly indicate the facility interruption day allowance as an "activity" or "activities". In the event facility interruptions preclude performance of critical work activities for 50% or more of the Contractor's scheduled workday, that day shall be declared unavailable for work due to facility interruption and charged against the above allowance. Critical work activities will be determined by review of the Contractor's current progress schedule.

C. The Contractor's Representative and the Construction Representative shall agree monthly on the number of "facility interruption" days to be charged against the allowance. This determination will be documented in writing and be signed by the Contractor and the Construction Representatives. If there is a failure to agree on all or part of the "facility interruption" days for a particular month, that disagreement shall be noted on this written document and signed by each party's representative. Failure of the Contractor's representative to sign the "facility interruption" day documentation after it is presented, with or without the notes of disagreement, shall constitute agreement with the "facility interruption" day determination contained in that document.

D. There will be no modification to the time of contract performance due solely to the failure to deplete the "facility interruption" day allowance.

E. Once this allowance is depleted, a no cost Change Order time extension will be executed for "facility interruption days" days, as defined above, encountered during the remainder of the Project.

1.5 SELECTION AND PURCHASE

A. At the earliest practical date after award of the Contract, Designer of the date when final selection and purchase of each product or system described by an allowance must be completed to avoid delaying the Work.

B. At Designer's request, obtain proposals for each allowance for use in making final selections. Include recommendations that are relevant to performing the Work.

C. Purchase products and systems selected by Designer from the designated supplier.

1.6 SUBMITTALS

A. Submit proposals for purchase of products or systems included in allowances, in the form specified for Change Orders.

B. Submit invoices or delivery slips to show actual quantities of materials delivered to the site for use in fulfillment of each allowance.

C. Coordinate and process submittals for allowance items in same manner as for other portions of the Work.

1.7 COORDINATION

A. Coordinate allowance items with other portions of the Work. Furnish templates as required to coordinate installation.

1.8 LUMP-SUM ALLOWANCES

A. Unless otherwise indicated, Contractor's costs for receiving and handling at Project site, labor, installation, overhead and profit, and similar costs related to products and materials selected by Designer under allowance shall be included as part of the Contract Sum and not part of the allowance.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine products covered by an allowance promptly on delivery for damage or defects. Return damaged or defective products to manufacturer for replacement.

3.2 PREPARATION

A. Coordinate materials and their installation for each allowance with related materials and installations to ensure that each allowance item is completely integrated and interfaced with related work.

3.3 SCHEDULE OF ALLOWANCES

A. Weather Allowance: Included within the completion period for this Project ___10____ "bad weather" days.

END OF SECTION 012100

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SECTION 012300 - ALTERNATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, Bid Form and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements governing Alternates.

1.3 DEFINITIONS

A. Definition: An alternate is an amount proposed by bidders and stated on the Bid Form for certain work defined in the Bidding Requirements that may be added to the Base Bid amount if the Owner decides to accept a corresponding change in either the amount of construction to be completed, or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

1. The cost for each alternate is the net addition to the Contract Sum to incorporate the Alternate into the Work. No other adjustments are made to the Contract Sum.

B. No additional time will be allowed for alternate work unless the number of work days is so stated on the bid form.

1.4 PROCEDURES

A. Coordination: Modify or adjust affected adjacent Work as necessary to completely and fully integrate the Alternate Work into the Project.

1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not mentioned as part of the Alternate.

B. Notification: The award of the Contract will indicate whether alternates have been accepted or rejected.

C. Execute accepted alternates under the same conditions as other Work of this Contract.

D. Schedule: A “Schedule of Alternates” is included at the end of this Section. Specification Sections referenced in the Schedule contain requirements for materials necessary to achieve the Work described under each alternate.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

A. Alternate No. 1: Provide and install combination CO / NO2 detectors to be interlocked with existing make-up air fans and roof mounted exhaust fans as indicated by details and alternate #1 key notes on the plan documents.

END OF SECTION 012300

SECTION 012600 – CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract including General and Supplementary Conditions and other Division 1 Specification Sections apply to this Section.

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for handling and processing Contract Modifications.

B. Related Sections include the following:

1. Division 1, Section 012100 "Allowances" for procedural requirements for handling and processing Allowances.
2. Division 1, Section 013115 “Project Management Communications” for administrative requirements for communications.
3. Division 0, Section 007213, Article 3.1 "Acceptable Substitutions" for administrative procedures for handling Requests for Substitutions made after Contract award.
4. Division 0, Section 007213, Article 4.0 "Changes in the Work" for Change Order requirements.

1.3 REQUESTS FOR INFORMATION

A. In the event that the Contractor or Subcontractor, at any tier, determines that some portion of the Drawings, Specifications, or other Contract Documents requires clarification or interpretation, the Contractor shall submit a “Request for Information” (RFI) in writing to the Designer. A RFI may only be submitted by the Contractor and shall only be submitted on the RFI forms provided by the Owner. The Contractor shall clearly and concisely set forth the issue for which clarification or interpretation is sought and why a response is needed. In the RFI, the Contractor shall set forth an interpretation or understanding of the requirement along with reasons why such an understanding was reached.

B. Responses to RFI shall be issued within ten (10) working days of receipt of the Request from the Contractor unless the Designer determines that a longer time is necessary to provide an adequate response. If a longer time is determined necessary by the Designer, the Designer will, within five (5) working days of receipt of the request, notify the Contractor of the anticipated response time. If the Contactor submits a RFI on a time sensitive activity on the current project schedule, the Contractor shall not be entitled to any time extension due to the time it takes the Designer to respond to the request provided that the Designer responds within the ten (10) working days set forth above.

C. Responses from the Designer will not change any requirement of the Contract Documents. In the event the Contractor believes that a response to a RFI will cause a change to the requirements of the Contract Document, the Contractor shall give written notice to the Designer requesting a Change Order for the work. Failure to give such written notice within ten (10) working days, shall waive the Contractor’s right to seek additional time or cost under Article 4, “Changes in the Work” of the General Conditions.

1.4 MINOR CHANGES IN THE WORK

A. Designer will issue supplemental instructions authorizing Minor Changes in the Work, not involving adjustment to the Contract Amount or the Contract Time, on "Designer's Supplemental Instructions" (DSI).

1.5 PROPOSAL REQUESTS

A. The Designer or Owner Representative will issue a detailed description of proposed Changes in the Work that may require adjustment to the Contract Amount or the Contract Time. The proposed Change Description will be issued using the "Request for Proposal" (RFP) form. If necessary, the description will include supplemental or revised Drawings and Specifications.

1. Proposal Requests issued by the Designer or Owner Representative are for information only. Do not consider them instructions either to stop work in progress or to execute the proposed change.

2. Within ten (10) working days after receipt of Proposal Request, submit a proposal for the cost adjustments to the Contract Amount and the Contract Time necessary to execute the Change. The Contractor shall submit his proposal on the appropriate Change Order Detailed Breakdown form. Subcontractors may use the appropriate Change Order Detailed Breakdown form or submit their proposal on their letterhead provided the same level of detail is included. All proposals shall include:

a. A detailed breakdown of costs per Article 4.1 of the General Conditions.

b. If requesting additional time per Article 4.2 of the General Conditions, include an updated Contractor's Construction Schedule that indicates the effect of the Change including, but not limited to, changes in activity duration, start and finish times, and activity relationship.

1.6 CHANGE ORDER PROCEDURES

A. On Owner's approval of a Proposal Request, the Designer or Owner Representative will issue a Change Order for signatures of Owner and Contractor on the "Change Order" form.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012600

SECTION 013100 – COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract including General and Supplementary Conditions and other Division 1 Specification Sections apply to this Section.

1.2 SUMMARY

A. This Section includes administrative provisions for coordinating construction operations on Projects including, but not limited to, the following:

1. Coordination Drawings.
2. Administrative and supervisory personnel.
3. Project meetings.

B. Each Contractor shall participate in coordination requirements. Certain areas of responsibility will be assigned to a specific Contractor.

C. Related Sections include the following:

1. Division 1, Section 013200 "Schedules" for preparing and submitting Contractor's Construction Schedule.
2. Articles 1.8.B and 1.8.C of Section 007213 "General Conditions" for coordinating meetings onsite.
3. Article 5.4.H of Section 007213 "General Conditions" for coordinating Closeout of the Contract.

1.3 COORDINATION

A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations included in different Sections, which depend on each other for proper installation, connection, and operation.

B. Coordination: Each Contractor shall coordinate its construction operations with those of other contractors and entities to ensure efficient and orderly installation of each part of the Work. Each Contractor shall coordinate its operations with operations included in different Sections that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
2. Coordinate installation of different components with other Contractors to ensure maximum accessibility for required maintenance, service, and repair.
3. Make adequate provisions to accommodate items scheduled for later installation.
4. Where availability of space is limited, coordinate installation of different components to ensure maximum performance and accessibility for required

maintenance, service, and repair of all components including mechanical and electrical.

C. Prepare memoranda for distribution to each party involved outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.

1. Prepare similar memoranda for Owner and separate Contractors if coordination of their Work is required.

D. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities and activities of other Contractors to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of Contractor's Construction Schedule.
2. Preparation of the Schedule of Values.
3. Installation and removal of temporary facilities and controls.
4. Delivery and processing of submittals.
5. Progress meetings.
6. Preinstallation conferences.
7. Startup and adjustment of systems.
8. Project Closeout activities.

E. Conservation: Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials.

1. Salvage materials and equipment involved in performance of, but not actually incorporated into, the Work. Refer to other Sections for disposition of salvaged materials that are designated as Owner's property.

1.4 SUBMITTALS

A. Coordination Drawings: Prepare Coordination Drawings if limited space availability necessitates maximum utilization of space for efficient installation of different components or if coordination is required for installation of products and materials fabricated by separate entities.

B. Key Personnel Names: Within fifteen (15) work days of starting construction operations, submit a list of key personnel assignments including superintendent and other personnel in attendance at Project site. Identify individuals and their duties and responsibilities; list addresses and telephone numbers including home and office telephone numbers. Provide names, addresses, and telephone numbers of individuals assigned as standbys in the absence of individuals assigned to Project.

1. Post copies of list in Project meeting room, in temporary field office, and by each temporary telephone. Keep list current at all times.

1.5 PROJECT MEETINGS

A. The Owner’s Construction Representative will schedule a Pre-Construction Meeting prior to beginning of construction. The date, time, and exact place of this meeting will be determined after Contract Award and notification of all interested parties. The

Contractor shall arrange to have the Job Superintendent and all prime Subcontractors present at the meeting. During the Pre-Construction Meeting, the construction procedures and information necessary for submitting payment requests will be discussed and materials distributed along with any other pertinent information.

1. Minutes: Designer will record and distribute meeting minutes.

B. Progress Meetings: The Owner's Construction Representative will conduct Monthly Progress Meetings as stated in Articles 1.8.B and 1.8.C of Section 007213 "General Conditions".

1. Minutes: Designer will record and distribute to Contractor the meeting minutes.

C. Preinstallation Conferences: Contractor shall conduct a preinstallation conference at Project site before each construction activity that requires coordination with other construction.

1. Attendees: Installer and representatives of Manufacturers and Fabricators involved in or affected by the installation and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise Designer and Construction Representative of scheduled meeting dates.

2. Agenda: Review progress of other construction activities and preparations for the particular activity under consideration including requirements for the following:

   a. Contract Documents

   b. Options

   c. Related RFIs

   d. Related Change Orders

   e. Purchases

   f. Deliveries

   g. Submittals

   h. Review of mockups

   i. Possible conflicts

   j. Compatibility problems

   k. Time schedules

   l. Weather limitations

   m. Manufacturer's written recommendations

   n. Warranty requirements

   o. Compatibility of materials

   p. Acceptability of substrates

   q. Temporary facilities and controls

   r. Space and access limitations

   s. Regulations of authorities having jurisdiction

   t. Testing and inspecting requirements

u. Installation procedures

v. Coordination with other Work

w. Required performance results

x. Protection of adjacent Work

y. Protection of construction and personnel

3. Contractor shall record significant conference discussions, agreements, and disagreements including required corrective measures and actions.

4. Reporting: Distribute minutes of the meeting to each party present and to parties who should have been present.

5. Do not proceed with installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of the Work and reconvene the conference at earliest feasible date.

6. Revise paragraph below if Project requires holding progress meetings at different intervals. Insert special intervals such as "every third Tuesday" to suit special circumstances.

7. Project name

8. Name and address of Contractor

9. Name and address of Designer

10. RFI number including RFIs that were dropped and not submitted

11. RFI description

12. Date the RFI was submitted

13. Date Designer's response was received

14. Identification of related DSI or Proposal Request, as appropriate

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100

SECTION 013115 - PROJECT MANAGEMENT COMMUNICATIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract including General and Supplementary Conditions, Bid Form, and other Division 1 Specification Sections apply to this Section.

B. Division 1, Section 013300 - Submittals

C. Division 1, Section 012600 – Contract Modification Procedures

1.2 SUMMARY

A. Project Management Communications: The Contractor shall use the Internet web-based project management communications tool, Trimble Unity Construct® (Formerly eBuilder) ASP software, and protocols included in that software during this project. The use of project management communications as herein described does not replace or change any contractual responsibilities of the participants.
   1. Project management communications is available through Trimble Unity Construct® (Formerly eBuilder) as provided by "Trimble Unity Construct®" in the form and manner required by the Owner.
   2. The project communications database is on-line and fully functional. User registration, electronic and computer equipment, and Internet connections are the responsibility of each project participant. The sharing of user accounts is prohibited

B. Support: Trimble Unity Construct® (Formerly eBuilder) will provide on-going support through on-line help files.

C. Copyrights and Ownership: Nothing in this specification or the subsequent communications supersedes the parties' obligations and rights for copyright or document ownership as established by the Contract Documents. The use of CAD/BIM files, processes or design information distributed in this system is intended only for the project specified herein.

D. Purpose: The intent of using Trimble Unity Construct®(Formerly eBuilder) is to improve project work efforts by promoting timely initial communications and responses. Secondly, to reduce the number of paper documents while providing improved record keeping by creation of electronic document files

E. Authorized Users: Access to the web site will be by individuals who are authorized users.
   1. Individuals shall complete the Trimble Unity Construct (Formerly eBuilder) New Company/User Request Form located at the following web site: https://oa.mo.gov/facilities/vendor-links/contractor-forms. Completed forms shall be emailed to the following email address: OA.FMDCE-BuilderSupport@oa.mo.gov.
   2. Authorized users will be contacted directly and assigned a temporary user password.
   3. Individuals shall be responsible for the proper use of their passwords and access to data as agents of the company in which they are employed.

F. Administrative Users: Administrative users have access and control of user licenses and all posted items. DO NOT POST PRIVATE OR YOUR COMPANY CONFIDENTIAL ITEMS IN THE DATABASE! Improper or abusive language toward any party or repeated posting of items intended to deceive or disrupt the work of the project will not be tolerated and will result in deletion of the offensive items and revocation of user license at the sole discretion of the Administrative User(s).

G. Communications: The use of fax, email and courier communication for this project is discouraged in favor of using Trimble Unity Construct® (Formerly eBuilder) to send messages. Communication functions are as follows:
   1. Document Integrity and Revisions:
      a. Documents, comments, drawings and other records posted to the system shall remain for the project record. The authorship time and date shall be recorded for each document submitted to the system. Submitting a new document or record with a unique ID, authorship, and time stamp shall be the method used to make modifications or corrections.
      b. The system shall make it easy to identify revised or superseded documents and their predecessors.
      c. Server or Client-side software enhancements during the life of the project shall not alter or restrict the content of data published by the system. System upgrades shall not affect access to older documents or software.
   2. Document Security:
      a. The system shall provide a method for communication of documents. Documents shall allow security group assignment to respect the contractual parties communication except for Administrative Users. DO NOT POST PRIVATE OR YOUR COMPANY CONFIDENTIAL ITEMS IN THE DATABASE!
   3. Document Integration:
      a. Documents of various types shall be logically related to one another and discoverable. For example, requests for information, daily field reports, supplemental sketches and photographs shall be capable of reference as related records.
   4. Reporting:
      a. The system shall be capable of generating reports for work in progress, and logs for each document type. Summary reports generated by the system shall be available for team members.
   5. Notifications and Distribution:
      a. Document distribution to project members shall be accomplished both within the extranet system and via email as appropriate. Project document distribution to parties outside of the project communication system shall be accomplished by secure email of outgoing documents and attachments, readable by a standard email client.
   6. Required Document Types:
      a. RFI, Request for Information.
      b. Submittals, including record numbering by drawing and specification section.
      c. Transmittals, including record of documents and materials delivered in hard copy.
      d. Meeting Minutes.
      e. Application for Payments (Draft or Pencil).
      f. Review Comments.
      g. Field Reports.
      h. Construction Photographs.
      i. Drawings.
      j. Supplemental Sketches.
      k. Schedules.

l. Specifications.
m. Request for Proposals
n. Designer's Supplemental Instructions
o. Punch Lists

H. Record Keeping: Except for paper documents, which require original signatures and large format documents (greater than 8½ x 11 inches), all other 8½ x 11 inches documents shall be submitted by transmission in electronic form to the Trimble Unity Construct® (Formerly eBuilder) web site by licensed users.
   a. The Owner and his representatives, the Designer and his consultants, and the Contractor and his Subcontractors and suppliers at every tier shall respond to documents received in electronic form on the web site and consider them as if received in paper document form.
   b. The Owner and his representatives, the Designer and his consultants, and the Contractor and his Subcontractors and suppliers at every tier reserves the right to and shall reply or respond by transmissions in electronic form on the web site to documents actually received in paper document form.
   c. The Owner and his representatives, the Designer and his consultants, and the Contractor and his Subcontractors and suppliers at every tier reserves the right to and shall copy any paper document into electronic form and make same available on the web site.

I. Minimum Equipment and Internet Connection: In addition to other requirements specified in this Section, the Owner and his representatives, the Construction Manager and his representatives, the Architect and his consultants, and the Contractor and his sub-contractors and suppliers at every tier required to have a user license(s) shall be responsible for the follo

J. wing:
   1. Providing suitable computer systems for each licensed user at the users normal work location[1] with high-speed Internet access, i.e. DSL, local cable company's Internet connection, or T1 connection.
   2. Each of the above referenced computer systems shall have the following minimum system[2] and software requirements:
      a. Desktop configuration (Laptop configurations are similar and should be equal to or exceed desktop system.)
         1) Operating System: Windows XP or newer
         2) Internet Browser: Internet Explorer 6.01SP2+ (Recommend IE7.0+)
         3) Minimum Recommend Connection Speed: 256K or above
         4) Processor Speed: 1 Gigahertz and above
         5) RAM: 512 mb
         6) Operating system and software shall be properly licensed.
         7) Internet Explorer version 7 (current version is a free distribution for download). This specification is not intended to restrict the host server or client computers provided that industry standard HTTP clients may access the published content.
         8) Adobe Acrobat Reader (current version is a free distribution for download).
         9) Users should have the standard Microsoft Office Suite (current version must be purchased) or the equivalent.

[1] The normal work location is the place where the user is assigned for more than one-half of his time working on this project.
[2] The minimum system herein will not be sufficient for many tasks and may not be able to process all documents and files stored in the Trimble Unity Construct® (Formerly eBuilder) Documents area.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable.)

END OF SECTION 013115

SECTION 013200 – SCHEDULE – BAR CHART

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract including General and Supplementary Conditions, Bid Form, and other Division 1 Specification Sections apply to this Section.

1.2 SUMMARY

A. This Section includes requirements for a Bar Chart Schedule for the project construction activities, schedule of submittals, and schedule for testing.

PART 2 - PRODUCTS – (Not Applicable)

PART 3 - EXECUTION

3.1 SUBMITTAL PROCEDURES

A. The Contractor shall submit to the Designer, within ten (10) working days following the Notice to Proceed, a Progress Schedule including Schedule of Values showing the rate of progress the Contractor agrees to maintain and the order in which he proposed to carry out the various phases of Work. No payments shall be made to the Contractor until the Progress Schedule has been approved by the Owner.

1. The Schedule of Values must have the following line items included with the value of the item as indicated below:

   a. O&M's (Owner's Manual)

      1) $1,000,000.00 (One million) and under – 2% of the total contract amount

      2) Over $1,000,000.00 (One million) – 1% of the total contract amount

   b. Close Out Documents

      1) $1,000,000.00 (One million) and under – 2% of the total contract amount

      2) Over $1,000,000.00 (One million) – 1% of the total contract amount

   c. General Conditions

      1) No more than 10%

B. The Contractor shall submit an updated Schedule for presentation at each Monthly Progress Meeting. The Schedule shall be updated by the Contractor as necessary to reflect the current Schedule and its relationship to the original Schedule. The updated Schedule shall reflect any changes in the logic, sequence, durations, or completion date. Payments to the Contractor shall be suspended if the Progress Schedule is not adequately updated to reflect actual conditions.

C. The Contractor shall submit Progress Schedules to Subcontractors to permit coordinating their Progress Schedules to the general construction Work. The Contractor shall coordinate preparation and processing of Schedules and reports with performance of other construction activities.

3.2 CONSTRUCTION PROGRESS SCHEDULE – BAR CHART SCHEDULE

A. Bar-Chart Schedule: The Contractor shall prepare a comprehensive, fully developed, horizontal bar chart-type Contractor's Construction Schedule. The Contractor for general construction shall prepare the Construction Schedule for the entire Project. The Schedule shall show the percentage of work to be completed at any time, anticipated monthly payments by Owner, as well as significant dates (such as completion of excavation, concrete foundation work, underground lines, superstructure, rough-ins, enclosure, hanging of fixtures, etc.) which shall serve as check points to determine compliance with the approved Schedule. The Schedule shall also include an activity for the number of "bad" weather days specified in Section 012100 – Allowances.

1. The Contractor shall provide a separate time bar for each significant construction activity. Provide a continuous vertical line to identify the first working day of each week.

    a. If practical, use the same Schedule of Values breakdown for schedule time bars.

2. The Contractor shall provide a base activity time bar showing duration for each construction activity. Each bar is to indicate start and completion dates for the activity. The Contractor is to place a contrasting bar below each original schedule activity time for indicating actual progress and planned remaining duration for the activity.

3. The Contractor shall prepare the Schedule on a minimal number of separate sheets to readily show the data for the entire construction period.

4. Secure time commitments for performing critical elements of the Work from parties involved. Coordinate each element on schedule with other construction activities. Include minor elements involved in the overall sequence of the Work. Show each activity in proper sequence. Indicate graphically the sequences necessary for completion of related portions of the Work.

5. Coordinate the Contractor's Construction Schedule with the Schedule of Values, list of subcontracts, Submittal Schedule, progress reports, payment requests, and other required schedules and reports.

6. Indicate the Intent to Award and the Contract Substantial Completion dates on the schedule.

B. Phasing: Provide notations on the schedule to show how the sequence of the Work is affected by the following:

1. Requirement for Phased completion

2. Work by separate Contractors

3. Work by the Owner

4. Pre-purchased materials

5. Coordination with existing construction

6. Limitations of continued occupancies

7. Un-interruptible services
8. Partial Occupancy prior to Substantial Completion
9. Site restrictions
10. Provisions for future construction
11. Seasonal variations
12. Environmental control

C. Work Stages: Use crosshatched bars to indicate important stages of construction for each major portion of the Work. Such stages include, but are not necessarily limited to, the following:

1. Subcontract awards
2. Submittals
3. Purchases
4. Mockups
5. Fabrication
6. Sample testing
7. Deliveries
8. Installation
9. Testing
10. Adjusting
11. Curing
12. Startup and placement into final use and operation

D. Area Separations: Provide a separate time bar to identify each major area of construction for each major portion of the Work. For the purposes of this Article, a "major area" is a story of construction, a separate building, or a similar significant construction element.

1. Indicate where each construction activity within a major area must be sequenced or integrated with other construction activities to provide for the following:
    a. Structural completion.
    b. Permanent space enclosure
    c. Completion of mechanical installation
    d. Completion of the electrical portion of the Work
    e. Substantial Completion

3.3 SCHEDULE OF SUBMITTALS

A. Upon acceptance of the Construction Progress Schedule, prepare and submit a complete schedule of submittals. Coordinate the submittal schedule with Section 013300 SUBMITTALS, the approved Construction Progress Schedule, list of subcontracts, Schedule of Values and the list of products.

B. Prepare the schedule in chronological order. Provide the following information

1. Scheduled date for the first submittal
2. Related Section number
3. Submittal category
4. Name of the Subcontractor
5. Description of the part of the Work covered
6. Scheduled date for resubmittal
7. Scheduled date for the Designer's final release or approval

C. Distribution: Following the Designer's response to the initial submittal schedule, print and distribute copies to the Designer, Owner, subcontractors, and other parties required to comply with submittal dates indicated.

1. Post copies in the Project meeting room and temporary field office.
2. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned part of the Work and are no longer involved in construction activities.

D. Schedule Updating: Revise the schedule after each meeting or other activity where revisions have been recognized or made. Issue the updated schedule concurrently with the report of each meeting.

3.4 SCHEDULE OF INSPECTIONS AND TESTS

A. Contractor shall prepare a schedule of inspections, tests, and similar services required by the Contract Documents. Submit the schedule with (15) days of the date established for commencement of the Contract Work. The Contractor is to notify the testing agency at least (5) working days in advance of the required tests unless otherwise specified.

B. All testing will be on the contractor to perform.

C. Form: This schedule shall be in tabular form and shall include, but not be limited to, the following:

1. Specification Section number
2. Description of the test
3. Identification of applicable standards
4. Identification of test methods
5. Number of tests required
6. Time schedule or time span for tests
7. Entity responsible for performing tests
8. Requirements for taking samples
9. Unique characteristics of each service

D. Distribution: Distribute the schedule to the Owner, Architect, and each party involved in performance of portions of the Work where inspections and tests are required.

END OF SECTION 013200

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SECTION 013300 – SUBMITTALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract including General and Supplementary Conditions, Bid Form, and other Division 1 Specification Sections apply to this Section.

B. Division 1, Section 013115 “Project Management Communications” for administrative requirements for communications.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for submittals required for performance of the Work including the following:

1. Shop Drawings
2. Product Data
3. Samples
4. Quality Assurance Submittals
5. Construction Photographs
6. Operating and Maintenance Manuals
7. Warranties

B. Administrative Submittals: Refer to General and Supplementary Conditions other applicable Division 1 Sections and other Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to, the following:

1. Construction Progress Schedule including Schedule of Values
2. Performance and Payment Bonds
3. Insurance Certificates
4. Applications for Payment
5. Certified Payroll Reports
6. Partial and Final Receipt of Payment and Release Forms
7. Affidavit – Compliance with Prevailing Wage Law
8. Record Drawings
9. Notifications, Permits, etc.

C. The Contractor is obliged and responsible to check all shop drawings and schedules to assure compliance with contract plans and specifications. The Contractor is responsible for the content of the shop drawings and coordination with other contract work. Shop drawings and schedules shall indicate, in detail, all parts of an Item or Work including erection and setting instructions and integration with the Work of other trades.

D. The Contractor shall at all times make a copy, of all approved submittals, available on site to the Construction Representative.

1.3 SUBMITTAL PROCEDURES

A. The Contractor shall comply with the General and Supplementary Conditions and other applicable sections of the Contract Documents. The Contractor shall submit, with such promptness as to cause no delay in his work or in that of any other contractors, all required submittals indicated in Part 3.1 of this section and elsewhere in the Contract Documents. Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.
2. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination.
    a. The Designer reserves the right to withhold action on a submittal requiring coordination with other submittals until all related submittals are received.

B. Each drawing and/or series of drawings submitted must be accompanied by a letter of transmittal giving a list of the titles and numbers of the drawings. Each series shall be numbered consecutively for ready reference and each drawing shall be marked with the following information:

1. Date of Submission
2. Name of Project
3. Location
4. Section Number of Specification
5. State Project Number
6. Name of Submitting Contractor
7. Name of Subcontractor
8. Indicate if Item is submitted as specified or as a substitution

1.4 SHOP DRAWINGS

A. Comply with the General Conditions, Article 3.2.

B. The Contractor shall submit newly prepared information drawn accurately to scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not a Shop Drawing.

C. Shop Drawings include fabrication and installation drawings, setting diagrams, schedules, patterns, templates, and similar drawings including the following information:

1. Dimensions
2. Identification of products and materials included by sheet and detail number
3. Compliance with specified standards
4. Notation of coordination requirements

5. Notation of dimensions established by field measurement

6. Sheet Size: Except for templates, patterns and similar full-size Drawings, submit Shop Drawings on sheets at least 8½"x11" but no larger than 36"x48".

1.5 PRODUCT DATA

A. The Contractor shall comply with the General Conditions, Article 3.2.

B. The Contractor shall collect Product Data into a single submittal for each element of construction or system. Product Data includes printed information, such as manufacturer's installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams, and performance curves.

1. Mark each copy to show applicable choices and options. Where printed Product Data includes information on several products that are not required, mark copies to indicate the applicable information including the following information:

a. Manufacturer's printed recommendations

b. Compliance with Trade Association standards

c. Compliance with recognized Testing Agency standards

d. Application of Testing Agency labels and seals

e. Notation of dimensions verified by field measurement

f. Notation of coordination requirements

2. Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed.

1.6 SAMPLES

A. The Contractor shall comply with the General Conditions, Article 3.2.

B. The Contractor shall submit full-size, fully fabricated samples, cured and finished as specified, and physically identical with the material or product proposed. Samples include partial sections of manufactured or fabricated components, cuts or containers of materials, color range sets, and swatches showing color, texture, and pattern.

1. The Contractor shall mount or display samples in the manner to facilitate review of qualities indicated. Prepare samples to match the Designer's sample including the following:

a. Specification Section number and reference

b. Generic description of the Sample

c. Sample source

d. Product name or name of the Manufacturer

e. Compliance with recognized standards

f. Availability and delivery time

2. The Contractor shall submit samples for review of size, kind, color, pattern, and texture. Submit samples for a final check of these characteristics with other elements and a comparison of these characteristics between the final submittal and the actual component as delivered and installed.

a. Where variation in color, pattern, texture, or other characteristic is inherent in the material or product represented, submit at least three (3) multiple units that show approximate limits of the variations.

b. Refer to other Specification Sections for requirements for samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation, and similar construction characteristics.

c. Refer to other Sections for samples to be returned to the Contractor for incorporation in the Work. Such samples must be undamaged at time of use. On the transmittal, indicate special requests regarding disposition of sample submittals.

d. Samples not incorporated into the Work, or otherwise designated as the Owner's property, are the property of the Contractor and shall be removed from the site prior to Substantial Completion.

3. Field samples are full-size examples erected onsite to illustrate finishes, coatings, or finish materials and to establish the Project standard.

a. The Contractor shall comply with submittal requirements to the fullest extent possible. The Contractor shall process transmittal forms to provide a record of activity.

1.7 QUALITY ASSURANCE DOCUMENTS

A. The Contractor shall comply with the General Conditions, Article 3.2

B. The Contractor shall submit quality control submittals including design data, certifications, manufacturer's instructions, manufacturer's field reports, and other quality-control submittals as required under other Sections of the Specifications.

C. Certifications: Where other Sections of the Specifications require certification that a product, material, or installation complies with specified requirements, submit a notarized certification from the Manufacturer certifying compliance with specified requirements.

1. Signature: Certification shall be signed by an officer of the Manufacturer or other individual authorized to contractually bind the Company.

D. Inspection and Test Reports: The Contractor shall submit the required inspection and test reports from independent testing agencies as specified in this Section and in other Sections of the Contract Documents.

E. Construction Photographs: The Contractor shall submit record construction photographs as specified in this Section and in other Sections of the Contract Documents.

1. The Contractor shall submit digital photographs. The Construction Administrator shall determine the quantity and naming convention at the preconstruction meeting.

2. The Contractor shall identify each photograph with project name, location, number, date, time, and orientation.

3. The Contractor shall submit progress photographs monthly unless specified otherwise. Photographs shall be taken one (1) week prior to submitting.

4. The Contractor shall take four (4) site photographs from differing directions and a minimum of five (5) interior photographs indicating the relative progress of the Work.

1.8 OPERATING AND MAINTENANCE MANUALS AND WARRANTIES

A. The Contractor shall submit all required manufacturer's operating instructions, maintenance/service manuals, and warranties in accordance with the General Conditions, Article 3.5, and Supplementary Conditions along with this and other Sections of the Contract Documents.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 REQUIRED SUBMITTALS

A. Contractor shall submit the following information for materials and equipment to be provided under this contract.

SPEC SECTION	TITLE	CATEGORY
013200	Schedules	Construction Schedule
013200	Schedules	Schedule of Values
013200	Schedules	List of Subcontractors
013200	As Built Redlines	As-Builts
013513	Site Security and Health Requirements (OA)	Product Data
013513	Site Security and Health Requirements (OA)	Construction Schedule
013513	Site Security and Health Requirements (OA)	List of Subcontractors
071400	Fluid Applied Membrane Roofing	Shop Drawings
071400	Fluid Applied Membrane Roofing	Product Data
071400	Fluid Applied Membrane Roofing	Test Report
071400	Fluid Applied Membrane Roofing	Certification
071400	Fluid Applied Membrane Roofing	Warranty
071400	Fluid Applied Membrane Roofing	Operation / Maintenance Manual
076200	Gutters, Downspouts and curb flashing	Shop Drawings
076200	Gutters, Downspouts and curb flashing	Product Data
076200	Gutters, Downspouts and curb flashing	Operation / Maintenance Manual
076200	Gutters, Downspouts and curb flashing	Warranty
077100	Reglets and Counterflashing	Product Data
077100	Reglets and Counterflashing	Operation / Maintenance Manual
077100	Reglets and Counterflashing	Warranty
079200	Joint Sealants	Product Data
079200	Joint Sealants	Certification
079200	Joint Sealants	Operation / Maintenance Manual
079200	Joint Sealants	Warranty
230500	Common Work Results for HVAC	Product Data
230523.12	Ball Valves for HVAC Piping	Product Data
230529	Hangers and Supports for HVAC Piping and Equipment	Product Data
230553	Identification for HVAC Piping and Equip-	Product Data

	ment	
230593	Testing, Adjusting, and Balancing for HVAC	Shop Drawings
230713	Duct Insulation	Product Data
230713	Duct Insulation	Shop Drawings
230719	HVAC Piping Insulation	Product Data
230923	Direct Digital Controls (DDC) System for HVAC	Product Data
230923	Direct Digital Controls (DDC) System for HVAC	Shop Drawings
230923.12	Control Dampers	Product Data
231123	Facility Natural Gas Piping	Product Data
233113	Metal Ducts	Product Data
233113	Metal Ducts	Shop Drawings
233300	Air Duct Accessories	Product Data
233346	Flexible Ducts	Product Data
233423	HVAC Power Ventilators	Product Data
233713	Diffusers, Registers, and Grilles	Product Data
237416.11	Packaged, Small-Capacity, Rooftop Air-Conditioning Unit	Product Data
260519	Low-Voltage Electrical Power Conductors and Cables	Product Data
260519	Low-Voltage Electrical Power Conductors and Cables	Construction Schedule
260529	Hangers and Supports for Electrical Systems	Product Data
260533	Raceways and Boxes for Electrical Systems	Product Data
260553	Identification for Electrical Systems	Product Data
262816	Enclosed Switches and Circuit Breakers	Product Data
262816	Enclosed Switches and Circuit Breakers	Shop Drawings

END OF SECTION 013300

SECTION 013513.10 - SITE SECURITY AND HEALTH REQUIREMENTS (OA)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract including General and Supplementary Conditions, Bid Form, and other Division 1 Specification Sections apply to this Section.

1.2 SUMMARY

A. This Section includes general Institution rules.

B. This Section includes requirements for environments that employees are domiciled in, or public participation in program activities in or adjacent to the Scope of Work area:

1. The Contractor shall have the applicable measures specified below in-place any time demolition or construction activities occur in occupied or non-occupied project work areas.
2. The Contractor shall complete all specified cleaning procedures and receive clearance from the Construction Representative prior to removing any barriers and other precautionary measures – even for areas that the employees or public do not occupy during construction.

1.3 SUBMITTALS

A. List of required submittals:

1. Materials Safety Data Sheets for all hazardous materials to be brought onsite.
2. Schedule of proposed shutdowns, if applicable.
3. A list of the names of all employees who will submit fingerprints for a background check, and the signed privacy documents identified below for each employee.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 ACCESS TO THE SITE

A. The Contractor shall arrange with Facility Representatives to establish procedures for the controlled entry of workers and materials into the work areas at the Facility.

B. The Contractor shall establish regular working hours with Facility Representatives. The Contractor must report changes in working hours or overtime to Facility Representatives and obtain approval twenty-four (24) hours ahead of time. The Contractor shall report emergency overtime to Facility Representatives as soon as it is evident that overtime is needed. The Contractor must obtain approval from Facility Representatives for all work performed after dark.

C. The Contractor shall provide the name and phone number of the Contractor's employee or agent who is in charge onsite; this individual must be able to be contacted in case of emergency. The Contractor must be able to furnish names and addresses of all employees upon request.

D. All construction personnel shall visibly display issued identification badges.

3.2 FIRE PROTECTION, SAFETY, AND HEALTH CONTROLS

A. The Contractor shall take all necessary precautions to guard against and eliminate possible fire hazards.

1. Onsite burning is prohibited.
2. The Contractor shall store all flammable or hazardous materials in proper containers located outside the buildings or offsite, if possible.
3. During construction, the Contractor shall provide and maintain, in good order, fire extinguishers as required by the National Fire Protection Association. In areas of flammable liquids, asphalt, or electrical hazards, 15-pound carbon dioxide or 20-pound dry chemical extinguishers shall be provided.

B. The Contractor shall not obstruct streets or walks without permission from the Owner's Construction Representative and Facility Representatives.

C. The Contractor's personnel shall not exceed the speed limit of 15 mph while at the Facility unless otherwise posted.

D. The Contractor shall take all necessary, reasonable measures to reduce air and water pollution by any material or equipment used during construction. The Contractor shall keep volatile wastes in covered containers and shall not dispose of volatile wastes or oils in storm or sanitary drains.

E. The Contractor shall keep the project site neat, orderly, and in a safe condition at all times. The Contractor shall immediately remove all hazardous waste and shall not allow rubbish to accumulate. The Contractor shall provide onsite containers for collection of rubbish and shall dispose of it at frequent intervals during the progress of the Work.

F. Fire exits, alarm systems, and sprinkler systems shall remain fully operational at all times, unless written approval is received from the Owner's Construction Representative and the appropriate Facility Representative at least twenty-four (24) hours in advance. The Contractor shall submit a written time schedule for any proposed shutdowns.

G. For all hazardous materials brought onsite, Material Safety Data Sheets shall be on site and readily available upon request at least a day before delivery.

H. Alcoholic beverages, intoxicating substances, or illegal substances shall not be brought upon the Facility premises. The Contractor's workers shall not be under the influence of any intoxicating substances while on the Facility premises.

3.3 SECURITY CLEARANCES AND RESTRICTIONS

A. FMDC CONTRACTOR BACKGROUND AND ID BADGE PROCESS

1. All employees of the Contractor and Subcontractor(s) are required to submit fingerprints to the Missouri State Highway Patrol to enable the Office of Administration (OA), Division of Facilities Management, Design and Construction's (FMDC) Contractor Screening program to enter the interior of a state office building unescorted. If no access to the interior of the building is needed, background screening is not required. FMDC reserves the right to prohibit any employee of the Contractor or Subcontractor(s) from performing work in or on the premises of any facility owned, operated, or utilized by the State of Missouri for any reason.
2. The Contractor, Subcontractor(s), and their employees must comply with the process for background checks and contractor ID badges found on FMDC's website at: https://oa.mo.gov/facilities/facilities-operations/security-information/fmdc-contractor-background-and-id-badge.
3. Effective June 1, 2026, FMDC requires all forms to be submitted via the online application system and will no longer accept any other submission format for these required forms. The Contractor or Subcontractor shall submit a signed Missouri Applicant Fingerprint Privacy Notice, Authorization for Release of Information Confidentiality Oath, State Identification Badge Agreement, and a forward-facing photo with no headwear or face coverings and a solid neutral background for each employee at least 45 days prior to the expected project start date to initiate the background check process via FMDC's website at: https://oa.mo.gov/facilities/facilities-operations/security-information/fmdc-contractor-background-and-id-badge.
4. The Contractor or Subcontractor shall pay for the cost of such background checks.
5. All employees of the Contractor and Subcontractor(s) approved by FMDC to work at a State facility must obtain a contractor ID badge from FMDC prior to beginning work on-site.
6. Pursuant to section 43.540, RSMo, FMDC participates in the Missouri Rap Back and National Rap Back programs as of August 28, 2023. This means that the Missouri State Highway Patrol, Central Records Repository, and the Federal Bureau of Investigation will retain the fingerprints submitted by each of the Contractor's and Subcontractor's employees, and those fingerprints will be searched against other fingerprints on file, including latent fingerprints. While retained, an employee's fingerprints may continue to be compared against other fingerprints submitted or retained by the Federal Bureau of Investigation, including latent fingerprints.
7. As part of the Missouri and National Rap Back programs, FMDC will receive notification if a new arrest is reported for an employee whose fingerprints have been submitted for FMDC after August 28, 2023. If the employee is performing work on a State contract at the time of the arrest notification, FMDC will request and receive the employee's updated criminal history records. If the employee is no longer performing work on a State contract, FMDC will not obtain updated criminal records.
8. The Contractor or Subcontractor shall require its employees to report all arrests or convictions to the contractor immediately, and the contractor shall notify the state agency at FMDCContractorScreenings@oa.mo.gov within five (5) calendar days of the arrest or conviction.
9. Pursuant to section 43.540, RSMo, the Missouri State Highway Patrol will provide the results of the employee's background check directly to FMDC. FMDC may NOT release the results of a background check to the Contractor or Subcontractor or provide the Contractor or Subcontractor any information obtained from a background check, either

verbally or in writing. FMDC will notify the Contractor or Subcontractor only whether an employee is approved to work on State property.

10. The Contractor shall notify FMDC via email to FMDCContractorScreenings@oa.mo.gov if an employee is terminated or resigns from employment with the Contractor or Subcontractor. If the Contractor or Subcontractor does not anticipate performing work on a State contract in the future, the Contractor and Subcontractor must request that FMDC remove its employees from the Rap Back programs. However, if removed from the Rap Back programs, employees will be required to submit new fingerprints should the contractor be awarded another State contract.
11. Upon award of a Contract, the Contractor and Subcontractor(s) should contact FMDC at FMDCContractorScreenings@oa.mo.gov to determine if its employees need to provide a new background check. If a Contractor's or Subcontractor's employee has previously submitted a fingerprint background check to FMDC as part of the Missouri and National Rap Back programs, the employee may not need to submit another fingerprint search, depending upon the circumstances. The Contractor and Subcontractor(s) understand and agree that FMDC may require more frequent background checks without providing any explanation to the Contractor. The fact that an additional background check is requested by FMDC does not indicate that the employee has a criminal record.

3.4 DISRUPTION OF UTILITIES

A. The Contractor shall give a minimum of seventy-two (72) hours written notice to the Construction Representative and the Facility Representative before disconnecting electric, gas, water, fire protection, or sewer service to any building.

B. The Contractor shall give a minimum of seventy-two (72) hours written notice to the Construction Representative and Facility Representative before closing any access drives, and shall make temporary access available, if possible. The Contractor shall not obstruct streets, walks, or parking.

3.5 PROTECTION OF PERSONS AND PROPERTY

A. SAFETY PRECAUTIONS AND PROGRAMS

1. The Contractor shall at all times conduct operations under this Contract in a manner to avoid the risk of bodily harm to persons or risk of damage to any property. The Contractor shall promptly take precautions which are necessary and adequate against conditions created during the progress of the Contractor's activities hereunder which involve a risk of bodily harm to persons or a risk of damage to property. The Contractor shall continuously inspect Work, materials, and equipment to discover and determine any such conditions and shall be solely responsible for discovery, determination, and correction of any such conditions. The Contractor shall comply with applicable safety laws, standards, codes, and regulations in the jurisdiction where the Work is being performed, specifically, but without limiting the generality of the foregoing, with rules regulations, and standards adopted pursuant to the Williams-Steiger Occupational Safety and Health Act of 1970 and applicable amendments.
2. All contractors, Subcontractors and workers on this project are subject to the Construction Safety Training provisions contained in section 292.675 RSMo.
3. In the event the Contractor encounters on the site, material reasonably believed to be

asbestos, polychlorinated biphenyl (PCB), lead, mercury, or other material known to be hazardous, which has not been rendered harmless, the Contractor shall immediately stop Work in the area affected and report the condition to the Owner's Representative and the Architect in writing. The Work in the affected area shall not thereafter be resumed except by written agreement of the Owner's Representative and Contractor if in fact the material is asbestos or polychlorinated biphenyl (PCB) and has not been rendered harmless. The Work in the affected area shall be resumed in the absence of asbestos or polychlorinated biphenyl (PCB), or when it has been rendered harmless by written agreement of the Owner's Representative and the Contractor. “Rendered Harmless” shall mean that levels of such materials are less than any applicable exposure standards, including but limited to OSHA regulations.

B. SAFETY OF PERSONS AND PROPERTY

1. The Contractor shall take reasonable precautions for safety of, and shall provide protection to prevent damage, injury, or loss to:

    a. clients, staff, the public, construction personnel, and other persons who may be affected thereby;
    b. the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor or the Contractor's Subcontractors of any tier; and
    c. other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

2. The Contractor shall give notices and comply with applicable laws, standards, codes, ordinances, rules, regulations, and lawful orders of public authorities bearing on safety of persons or property or their protection from damage, injury, or loss.
3. The Contractor shall erect and maintain, as required by existing conditions and performance of the Contract, safeguards for safety and protection, including, but not limited to, posting danger signs and other warnings against hazards, promulgating safety regulations, and notifying owners and users of adjacent sites and utilities.
4. When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary for execution of the Work, the Contractor shall exercise the highest degree of care and carry on such activities under supervision of properly qualified personnel.
5. The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in this Section caused in whole or in part by the Contractor, a Subcontractor of any tier, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable, and for which the Contractor is responsible under this Section, except damage or loss attributable solely to acts or omissions of Owner or the Architect or anyone directly or indirectly employed by either of them, or by anyone whose acts for which either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's other obligations stated elsewhere in the Contract.
6. The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents, and the maintaining, enforcing and supervising of safety precautions and programs. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner's

Representative and Architect. The Contractor shall hold regularly scheduled safety meetings to instruct Contractor personnel on safety practices, accident avoidance and prevention, and the Project Safety Program. The Contractor shall furnish safety equipment and enforce the use of such equipment by its employees and its Subcontractors of any tier.

7. The Contractor shall not load or permit any part of the construction or site to be loaded so as to endanger its safety.
8. The Contractor shall promptly report in writing to the Owner all accidents arising out of or in connection with the Work which cause death, lost time injury, personal injury, or property damage, giving full details and statements of any witnesses. In addition, if death, serious personal injuries, or serious property damages are caused, the accident shall be reported to Owner immediately.
9. The Contractor shall promptly notify in writing to the Owner of any claims for injury or damage to personal property related to the Work, either by or against the Contractor.
10. The Owner assumes no responsibility or liability for the physical condition or safety of the Work site, or any improvements located on the Work site. The Contractor shall be solely responsible for providing a safe place for the performance of the Work. The Owner shall not be required to make any adjustment in either the Contract Sum or Contract Time concerning any failure by the Contractor or any Subcontractor to comply with the requirements of this Paragraph.
11. In no event shall the Owner have control over, charge of, or any responsibility for construction means, methods, techniques, sequences or procedures or for safety precautions and programs in connection with the Work, notwithstanding any of the rights and authority granted the Owner in the Contract Documents.
12. The Contractor shall maintain at his own cost and expense, adequate, safe and sufficient walkways, platforms, scaffolds, ladders, hoists and all necessary, proper, and adequate equipment, apparatus, and appliances useful in carrying on the Work and which are necessary to make the place of Work safe and free from avoidable danger for clients, staff, the public and construction personnel, and as may be required by safety provisions of applicable laws, ordinances, rules regulations and building and construction codes.

END OF SECTION 013513.10

SECTION 015000 – CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract including General and Supplementary Conditions, Bid Form, and other Division 1 Specification Sections apply to this Section.

1.2 SUMMARY

A. This Section includes requirements for construction facilities and temporary controls including temporary utilities, support facilities, security, and protection.

B. Support facilities include, but are not limited to, the following:

1. Temporary enclosures
2. Temporary project identification signs and bulletin boards
3. Waste disposal services
4. Construction aids and miscellaneous services and facilities

C. Security and protection facilities include, but are not limited to, to following:

1. Temporary fire protection
2. Barricades, warning signs, and lights
3. Sidewalk bridge or enclosure fence for the site
4. Environmental protection

1.3 QUALITY ASSURANCE

A. Regulations: Comply with industry standards and applicable laws and regulations including, but not limited to, the following:

1. Building code requirements
2. Health and safety regulations
3. Utility company regulations
4. Police, fire department, and rescue squad rules
5. Environmental protection regulations

B. Standards: Comply with NFPA 241 “Standard for Safeguarding Construction, Alterations, and Demolition Operations”. ANSI A10 Series standards for “Safety Requirements for Construction and Demolition”, and NECA Electrical Design Library “Temporary Electrical Facilities”.

1. Electrical Service: Comply with NEMA, NECA, and UL standards and regulations for temporary electric service. Install service in compliance with NFPA 70 “National Electric Code”.

C. Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Provide new materials. If acceptable to the Designer, the Contractor may use undamaged, previously used materials in serviceable condition. Provide materials suitable for use intended.

B. Lumber and Plywood: Comply with requirements in Division 6 Section "Rough Carpentry".

1. For job-built temporary office, shops, and sheds within the construction area, provide UL-labeled, fire-treated lumber and plywood for framing, sheathing, and siding.

2. For signs and directory boards, provide exterior-type, Grade B-B high-density concrete form overlay plywood of sized and thicknesses indicated.

3. For fences and vision barriers, provide minimum 3/9" (9.5mm) thick exterior plywood.

4. For safety barriers, sidewalk bridges, and similar uses, provide minimum 5/8" (16mm) thick exterior plywood.

C. Open-Mesh Fencing: Provide 0.120" (3mm) thick, galvanized 2" (50mm) chainlink fabric fencing 6' (2m) high with galvanized steel pipe posts, 1½" (38mm) ID for line posts and 2½" (64mm) ID for corner posts.

2.2 EQUIPMENT

A. General: Provide new equipment. If acceptable to the Designer, the Contractor may use undamaged, previously used equipment in serviceable condition. Provide equipment suitable for use intended.

B. Water Hoses: Provide ¾" (19mm), heavy-duty, abrasion-resistant, flexible rubber hoses 100' (30m) long, with pressure rating greater than the maximum pressure of the water distribution system. Provide adjustable shutoff nozzles at hose discharge.

C. Electrical Outlets: Provide properly configured, NEMA-polarized outlets to prevent insertion of 110 to 120V plugs into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button, and pilot light for connection of power tools and equipment.

D. Electrical Power Cords: Provide grounded extension cords. Use hard-service cords where exposed to abrasion and traffic. Provide waterproof connectors to connect separate lengths of electric cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage rating.

E. Lamps and Light Fixtures: Provide general service incandescent lamps of wattage required for adequate illumination. Provide guard cages or tempered-glass enclosures where exposed to breakage. Provide exterior fixture where exposed to moisture.

F. Fire Extinguishers: Provide hand-carried, portable, UL-rated, Class A fire extinguishers for temporary offices and similar spaces. In other locations, provide hand-carried, portable, UL-rated, Class ABC, dry-chemical extinguishers, or a combination of extinguishers of NFPA-recommended classes for the exposures.

1. Comply with NFPA 10 and NFPA 241 for classification, extinguishing agent, and size required by location and class of fire exposure.

PART 3 - EXECUTION

3.1 SUPPORT FACILITIES INSTALLATION

A. General: Locate field offices, storage sheds, and other temporary construction and support facilities for easy access.

1. Maintain support facilities until near Substantial Completion. Remove prior to Substantial Completion. Personnel remaining after Substantial Completion will be permitted to use permanent facilities, under conditions acceptable to the Owner.

B. Field Offices: Provide insulated, weathertight temporary offices of sufficient size to accommodate required office personnel at the Project site. Keep the office clean and orderly for use for small progress meetings. Furnish and equip office as follows:

1. Furnish with a desk and chairs, a 4-drawer file cabinet, plan table, plan rack, and a 6-shelf bookcase.

2. Equip with a water cooler and private toilet complete with water closet, lavatory, and medicine cabinet unit with a mirror.

C. Storage Facilities: Limited areas for storage of building materials are available onsite. Available storage areas are shown on the drawings. The Contractor shall provide his own security. Specific locations for storage and craning operations will be discussed at the Pre-Bid Meeting and the Pre-Construction Meeting.

D. Construction Parking: Parking at the site will be provided in the areas designated at the Pre-Construction Meeting.

E. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities.

1. Where heat is needed and the permanent building enclosure is not complete, provide temporary enclosures where there is no other provision for containment of heat. Coordinate enclosure with ventilating and materials drying or curing requirements to avoid dangerous conditions and effects.

2. Install tarpaulins securely with incombustible wood framing and other materials. Close openings of 25SqFt (2.3SqM) or less with plywood or similar materials.

3. Close openings through floor or roof decks and horizontal surfaces with load-bearing, wood-framed construction.

4. Where temporary wood or plywood enclosure exceeds 100SqFt (9.2SqM) in area, use UL-labeled, fire-retardant-treated material for framing and main sheathing.

F. Temporary Lifts and Hoists: Provide facilities for hoisting materials and employees. Truck cranes and similar devices used for hoisting materials are considered “tools and equipment” and not temporary facilities.

G. Project Identification and Temporary Signs: Prepare project identification and other signs of size indicated. Install signs where indicated to inform the public and persons seeking entrance to the Project. Support on posts or framing of preservative-treated wood or steel. Do not permit installation of unauthorized signs.

1. Project Identification Signs: Engage an experienced sign painter to apply graphics. Comply with details indicated.

2. Temporary Signs: Prepare signs to provide directional information to construction personnel and visitors.

H. Collection and Disposal of Waste: Collect waste from construction areas and elsewhere daily. Comply with requirements of NFPA 241 for removal of combustible waste material and debris. Enforce requirements strictly. Do not hold materials more than seven (7) days during normal weather or three (3) days when the temperature is expected to rise above 80°F (27°C). Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose of material lawfully.

3.2 SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Except for use of permanent fire protection as soon as available, do not change over from use of temporary security and protection facilities to permanent facilities until Substantial Completion, or longer, as requested by the Designer.

B. Temporary Fire Protection: Until fire-protection needs are supplied by permanent facilities, install and maintain temporary fire-protection facilities of the types needed to protect against reasonable predictable and controllable fire losses. Comply with NFPA 10 “Standard for Portable Fire Extinguishers” and NFPA 241 “Standard for Safeguarding Construction, Alterations, and Demolition Operations”.

1. Locate fire extinguishers where convenient and effective for their intended purpose, but not less than one (1) extinguisher on each floor at or near each usable stairwell.

2. Store combustible materials in containers in fire-safe locations.

3. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire-protection facilities, stairways, and other access routes for fighting fires. Prohibit smoking in hazardous fire-exposure areas.

4. Provide supervision of welding operations, combustion-type temporary heating units, and similar sources of fire ignition.

C. Permanent Fire Protection: At the earliest feasible date in each area of the Project complete installation of the permanent fire-protection facility including connected services and place into operation and use. Instruct key personnel on use of facilities.

D. Barricades, Warning Signs, and Lights: Comply with standards and code requirements for erection of structurally adequate barricades. Paint with appropriate colors, graphics, and warning signs to inform personnel and the public of the hazard being protected against. Where appropriate and needed, provide lighting including flashing red or amber lights.

E. Security Enclosure and Lockup: Install substantial temporary enclosure of partially completed areas of construction. Provide locking entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security.

1. Storage: Where materials and equipment must be stored and are of value or attractive for theft, provide a secure lockup. Enforce discipline in connection with the installation and release of material to minimize the opportunity for theft and vandalism.

F. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations and minimize the possibility that air, waterways, and subsoil might be contaminated or polluted or that other undesirable effects might result. Avoid use of tools and equipment that produce harmful noise. Restrict use of noisemaking tools and equipment to hours that will minimize complaints from persons or firms near the site.

END OF SECTION 015000

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SECTION 017400 – CLEANING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, Bid Form and other Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for cleaning during the Project.

B. Environmental Requirements: Conduct cleaning and waste-disposal operations in compliance with local laws and ordinances. Comply fully with federal and local environmental and anti-pollution regulations.

1. Do not dispose of volatile wastes, such as mineral spirits, oil, or paint thinner, in storm or sanitary drains.
2. Burning or burying of debris, rubbish, or other waste material on the premises is not permitted.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cleaning Agents: Use cleaning materials and agents recommended by the manufacturer or fabricator for the surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property or that might damage finished surfaces.

PART 3 - EXECUTION

3.1 PROGRESS CLEANING

A. General

1. Retain all stored items in an orderly arrangement allowing maximum access, not impending drainage or traffic, and providing the required protection of materials.
2. Do not allow the accumulation of scrap, debris, waste material, and other items not required for construction of this Work.
3. At leasttwice each month, and more often if necessary, completely remove all scrap, debris, and waste material from the job site.
4. Provide adequate storage for all items awaiting removal from the job site, observing all requirements for fire protection and protection of the ecology.

B. Site:

1. Daily, inspect the site and pick up all scrap, debris, and waste material. Remove all such items to the place designated for their storage.
2. Weekly, inspect all arrangements of materials stored on the site. Re-stack, tidy, or otherwise service all material arrangements.
3. Maintain the site in a neat and orderly condition at all times.

C. Structures:

1. Daily, inspect the structures and pick up all scrap, debris, and waste material. Remove all such items to the place designated for their storage.
2. Weekly, sweep all interior spaces clean. "Clean," for the purposes of this paragraph, shall be interpreted as meaning free from dust and other material capable of being removed by use of reasonable effort and handheld broom.
3. In preparation for installation of succeeding materials, clean the structures or pertinent portions thereof to the degree of cleanliness recommended by the manufacturer of the succeeding material, using all equipment and materials required to achieve the required cleanliness.
4. Following the installation of finish floor materials, clean the finish floor daily while work is being performed in the space in which finish materials have been installed. "Clean," for the purposes of this subparagraph, shall be interpreted as meaning free from all foreign material which, in the opinion of the Construction Representative, may be injurious to the finish of the finish floor material.

3.2 FINAL CLEANING

A. General: Provide final cleaning operations when indicated. Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit of Work to the condition expected from a commercial building cleaning and maintenance program. Comply with manufacturer's instructions.

B. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for the entire Project or a portion of the Project.

1. Clean the Project Site, yard and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste material, litter, and foreign substances.
2. Sweep paved areas broom clean. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
3. Remove petrochemical spills, stains, and other foreign deposits.
4. Remove tools, construction equipment, machinery, and surplus material from the site.
5. Remove snow and ice to provide safe access to the building.
6. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
7. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
8. Broom clean concrete floors in unoccupied spaces.
9. Vacuum clean carpet and similar soft surfaces removing debris and excess nap. Shampoo, if required.
10. Clean transparent material, including mirrors and glass in doors and windows. Remove glazing compounds and other substances that are noticeable vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
11. Remove labels that are not permanent labels.
12. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.

    a. Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.

13. Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.
14. Clean plumbing fixtures to a sanitary condition free of stains, including stains resulting from water exposure.
15. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.
16. Clean ducts, blowers, and coils if units were operated without filters during construction
17. Clean, food-service equipment to a sanitary condition, ready and acceptable for its intended use.
18. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned-out bulbs and defective and noisy starters in fluorescent and mercury vapor fixtures.
19. Leave the Project clean and ready for occupancy.

C. Pest Control: Engage an experienced, licensed exterminator to make a final inspection and rid the Project of rodents, insects, and other pests. Comply with regulations of local authorities.

D. Removal of Protection: Remove temporary protection and facilities installed during construction to protect previously completed installations during the remainder of the construction period.

E. Compliances: Comply with governing regulations and safety standards for cleaning operations. Remove waste materials from the site and dispose of lawfully.

1. Where extra materials of value remain after Final Acceptance by the Owner, they become the Owner's property.

END OF SECTION 017400

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SECTION 017900 - DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes administrative and procedural requirements for instructing Owner's personnel, including the following:

1. Demonstration of operation of systems, subsystems, and equipment.
2. Training in operation and maintenance of systems, subsystems, and equipment.
3. Demonstration and training video recordings.

1.3 INFORMATIONAL SUBMITTALS

A. Instruction Program: Submit outline of instructional program for demonstration and training, including a list of training modules and a schedule of proposed dates, times, length of instruction time, and instructors' names for each training module. Include learning objective and outline for each training module.

B. Attendance Record: For each training module, submit list of participants and length of instruction time.

C. Evaluations: For each participant and for each training module, submit results and documentation of performance-based test.

1.4 CLOSEOUT SUBMITTALS

A. Demonstration and Training Video Recordings: Submit two copies within seven days of end of each training module.

1. Identification: On each copy, provide an applied label with the following information:

a. Name of Project.
b. Name and address of videographer.
c. Name of Architect.
d. Name of Construction Manager.
e. Name of Contractor.
f. Date of video recording.

2. Transcript: Prepared in PDF electronic format. Include a cover sheet with same label information as the corresponding video recording and a table of contents with links to corresponding training components. Include name of Project and date of video recording on each page.
3. At completion of training, submit complete training manual(s) for Owner's use in PDF electronic file format on compact disc.

1.5 QUALITY ASSURANCE

A. Facilitator Qualifications: A firm or individual experienced in training or educating maintenance personnel in a training program similar in content and extent to that indicated for this Project, and whose work has resulted in training or education with a record of successful learning performance.

B. Instructor Qualifications: A factory-authorized service representative experienced in operation and maintenance procedures and training.

C. Preinstruction Conference: Conduct conference at Project site to comply with requirements in Section 013100 "Coordination". Review methods and procedures related to demonstration and training including, but not limited to, the following:

1. Inspect and discuss locations and other facilities required for instruction.
2. Review and finalize instruction schedule and verify availability of educational materials, instructors' personnel, audiovisual equipment, and facilities needed to avoid delays.
3. Review required content of instruction.
4. For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

1.6 COORDINATION

A. Coordinate instruction schedule with Owner's operations. Adjust schedule as required to minimize disrupting Owner's operations and to ensure availability of Owner's personnel.

B. Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.

C. Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by Architect.

PART 2 - PRODUCTS

2.1 INSTRUCTION PROGRAM

A. Program Structure: Develop an instruction program that includes individual training modules for each system and for equipment not part of a system, as required by individual Specification Sections.

B. Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following as applicable to the system, equipment, or component:

1. Basis of System Design, Operational Requirements, and Criteria: Include the following:

a. System, subsystem, and equipment descriptions.
b. Performance and design criteria if Contractor is delegated design responsibility.
c. Operating standards.
d. Regulatory requirements.
e. Equipment function.

f. Operating characteristics.
g. Limiting conditions.
h. Performance curves.

2. Documentation: Review the following items in detail:

a. Emergency manuals.
b. Operations manuals.
c. Maintenance manuals.
d. Project record documents.
e. Identification systems.
f. Warranties and bonds.
g. Maintenance service agreements and similar continuing commitments.

3. Emergencies: Include the following, as applicable:

a. Instructions on meaning of warnings, trouble indications, and error messages.
b. Instructions on stopping.
c. Shutdown instructions for each type of emergency.
d. Operating instructions for conditions outside of normal operating limits.
e. Sequences for electric or electronic systems.
f. Special operating instructions and procedures.

4. Operations: Include the following, as applicable:

a. Startup procedures.
b. Equipment or system break-in procedures.
c. Routine and normal operating instructions.
d. Regulation and control procedures.
e. Control sequences.
f. Safety procedures.
g. Instructions on stopping.
h. Normal shutdown instructions.
i. Operating procedures for emergencies.
j. Operating procedures for system, subsystem, or equipment failure.
k. Seasonal and weekend operating instructions.
l. Required sequences for electric or electronic systems.
m. Special operating instructions and procedures.

5. Adjustments: Include the following:

a. Alignments.
b. Checking adjustments.
c. Noise and vibration adjustments.
d. Economy and efficiency adjustments.

6. Troubleshooting: Include the following:

a. Diagnostic instructions.
b. Test and inspection procedures.

7. Maintenance: Include the following:

a. Inspection procedures.
b. Types of cleaning agents to be used and methods of cleaning.
c. List of cleaning agents and methods of cleaning detrimental to product.
d. Procedures for routine cleaning
e. Procedures for preventive maintenance.
f. Procedures for routine maintenance.
g. Instruction on use of special tools.

8. Repairs: Include the following:

a. Diagnosis instructions.
b. Repair instructions.
c. Disassembly; component removal, repair, and replacement; and reassembly instructions.
d. Instructions for identifying parts and components.
e. Review of spare parts needed for operation and maintenance.

PART 3 - EXECUTION

3.1 PREPARATION

A. Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a training manual organized in coordination with requirements in Section 007213 "General Conditions".

B. Set up instructional equipment at instruction location.

3.2 INSTRUCTION

A. Engage qualified instructors to instruct Owner's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.

1. Architect will furnish an instructor to describe basis of system design, operational requirements, criteria, and regulatory requirements.
2. Owner will furnish an instructor to describe Owner's operational philosophy.
3. Owner will furnish Contractor with names and positions of participants.

B. Scheduling: Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide similar instruction at start of each season.

1. Schedule training with Owner with at least seven days' advance notice.

C. Training Location and Reference Material: Conduct training on-site in the completed and fully operational facility using the actual equipment in-place. Conduct training using final operation and maintenance data submittals.

D. Cleanup: Collect used and leftover educational materials and remove from Project site. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

3.3 DEMONSTRATION AND TRAINING VIDEO RECORDINGS

A. General: Engage a qualified commercial videographer to record demonstration and training video recordings. Record each training module separately. Include classroom instructions and demonstrations, board diagrams, and other visual aids, but not student practice.

1. At beginning of each training module, record each chart containing learning objective and lesson outline.

B. Video: Provide minimum 640 x 480 video resolution converted to format file type acceptable to Owner, on electronic media.

1. Electronic Media: Read-only format compact disc acceptable to Owner, with commercial-grade graphic label.
2. File Hierarchy: Organize folder structure and file locations according to project manual table of contents. Provide complete screen-based menu.
3. File Names: Utilize file names based upon name of equipment generally described in video segment, as identified in Project specifications.
4. Contractor and Installer Contact File: Using appropriate software, create a file for inclusion on the Equipment Demonstration and Training DVD that describes the following for each Contractor involved on the Project, arranged according to Project table of contents:

    a. Name of Contractor/Installer.
    b. Business address.
    c. Business phone number.
    d. Point of contact.
    e. E-mail address.

C. Recording: Mount camera on tripod before starting recording, unless otherwise necessary to adequately cover area of demonstration and training. Display continuous running time.

1. Film training session(s) in segments not to exceed 15 minutes.

    a. Produce segments to present a single significant piece of equipment per segment.
    b. Organize segments with multiple pieces of equipment to follow order of Project Manual table of contents.
    c. Where a training session on a particular piece of equipment exceeds 15 minutes, stop filming and pause training session. Begin training session again upon commencement of new filming segment.

D. Light Levels: Verify light levels are adequate to properly light equipment. Verify equipment markings are clearly visible prior to recording.

1. Furnish additional portable lighting as required.

E. Narration: Describe scenes on video recording by audio narration by microphone while video recording is recorded. Include description of items being viewed.

F. Transcript: Provide a transcript of the narration. Display images and running time captured from videotape opposite the corresponding narration segment.

G. Preproduced Video Recordings: Provide video recordings used as a component of training modules in same format as recordings of live training.

END OF SECTION 017900

SECTION 024119 – SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Demolition and removal of selected portions of interior and exterior building elements and materials.

B. Related Requirements:

1. Section 011000 "Summary of Work" for restrictions on the use of the premises, Owner-occupancy requirements, and phasing requirements.

1.3 DEFINITIONS

A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged or removed and reinstalled.

B. Remove and Salvage: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner.

C. Remove and Reinstall: Detach items from existing construction, prepare for reuse, and reinstall where indicated.

D. Existing to Remain: Existing items of construction that are not to be permanently removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.4 MATERIALS OWNERSHIP

A. Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain the Owner's property, demolished materials shall become the Contractor's property and shall be removed from the site with further disposition at the Contractor's option.

1.5 PREINSTALLATION MEETINGS

A. Pre demolition Conference: Conduct conference at Project site

1. Inspect and discuss condition of construction to be selectively demolished.

2. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.

3. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.

4. Review areas where existing construction is to remain and requires protection.

5. Review Project Phasing for Scope of Work.

1.6 SUBMITTALS

A. Proposed Protection Measures: Submit report, including drawings, that indicates the measures proposed for protecting individuals and property for dust control and for noise control. Indicate proposed locations and construction of barriers.

B. Schedule of Selective Demolition Activities: Indicate the following:

1. Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure Owner's on-site operations are uninterrupted.
2. Interruption of utility services. Indicate how long utility services will be interrupted.
3. Coordination for shutoff, capping, and continuation of utility services.
4. Use of elevator and stairs.
5. Coordination of Owner's continuing occupancy of portions of existing building.
6. Locations of proposed dust and noise control temporary partitions and means of egress, including for other tenants affected by selective demolition operations.
7. Means of protection for items to remain and items in path of waste removal from building.

C. Inventory: After selective demolition is complete, submit a list of items that have been removed and salvaged and provide to Owner.

D. Pre demolition Photographs: Show existing conditions of adjoining construction and site improvements, including finish surfaces that might be misconstrued as damage caused by selective demolition operations. Submit before Work begins.

E. Project Closeout Submittals:

1. Inventory: Submit a list of items that have been removed and salvaged
2. Record drawings at Project closeout indication as-built conditions.
3. Identify and accurately locate capped utilities and other subsurface structural, electrical, or mechanical conditions.

1.7 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

B. Standards: Comply with ANSI A10.6 and NFPA 241.

C. Pre-demolition Conference: Conduct conference at Project site. Review methods and procedures related to selective demolition including, but not limited to, the following:

1. Inspect and discuss condition of construction to be selectively demolished.

2. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and avoid delays.

3. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.

1.8 FIELD CONDITIONS

A. Owner will occupy portions of building adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.

B. Owner assumes no responsibility for condition of areas to be selectively demolished.

1. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.

C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.

D. Storage or sale of removed items or materials on-site is not permitted.

E. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

1. Maintain fire-protection facilities in service during selective demolition operations.

1.9 SCHEDULING

A. Arrange selective demolition schedule so as not to interfere with Owner’s on site operations.

1.10 WARRANTY

A. Existing Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties.

PART 2 – PRODUCTS

2.1 PEFORMANCE REQUIREMENTS

A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

B. Standards: Comply with ANSI/ASSE A10.6 and NFPA 241.

2.2 REPAIR MATERIALS

A. Use repair materials identical to existing materials.

1. If identical materials are unavailable or cannot be used for exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible.

2. Use materials whose installed performance equals or surpasses that of existing materials.

B. Comply with material and installation requirements specified in individual Specification Sections.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped before starting selective demolition operations.

B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

C. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Architect.

D. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs.

1. Inventory and record the condition of items to be removed and salvaged. Provide photographs of conditions that might be misconstrued as damage caused by salvage operations.

2. Before selective demolition or removal of existing building elements that will be reproduced or duplicated in final Work, make permanent record of measurements, materials, and construction details required to make exact reproduction.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

A. Existing Services/Systems to Remain: Maintain services/systems indicated to remain and protect them against damage.

1. Comply with requirements for existing services/systems interruptions specified in Section 011000 "Summary of Work."

B. Existing Services/Systems to Be Removed, Relocated, or Abandoned: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.

1. Arrange to shut off indicated utilities with utility companies.

2. If services/systems are required to be removed, relocated, or abandoned, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.

3. Conduit to Be Removed: Remove portion of conduit / piping as necessary for floor restoration and cap or plug remaining piping not to be reused with same or compatible piping material.

4. Equipment to Be Removed: Disconnect and cap services and remove equipment.

3.3 PREPARATION

A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.

1. Provide protection to ensure safe passage of people around selective demolition area and to and from occupied portions of building.
2. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
3. Cover and protect furniture, furnishings, and equipment that have not been removed.

3.4 SELECTIVE DEMOLITION, GENERAL

A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:

1. Proceed with selective demolition systematically, from higher to lower level.
2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
4. Do not use cutting torches.
5. Maintain adequate ventilation.
6. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
7. Dispose of demolished items and materials promptly.

B. Removed and Salvaged Items:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area on-site as designated by Owner.
5. Protect items from damage during transport and storage.

C. Removed and Reinstalled Items:

1. Clean and repair items to functional condition adequate for intended reuse.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.
3. Protect items from damage during transport and storage.

4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during selective demolition and reinstalled in their original locations after selective demolition operations are complete.

3.5 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

A. Floor Coverings: Remove floor coverings and adhesive according to industry standard recommendations. Do not use methods requiring solvent-based adhesive strippers.

3.6 PATCHING AND REPAIRS

A. General: Promptly repair damage to adjacent construction caused by selective demolition operations.

B. Repairs: Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials.

1. Completely fill holes and depressions in existing walls that are to remain with an approved patching material applied according to manufacturer's written recommendations.

3.7 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Except for items or materials indicated to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.

1. Do not allow demolished materials to accumulate on-site.

2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

3. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.

B. Burning: Do not burn demolished materials.

C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.8 CLEANING

A. Clean adjacent surfaces and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION 024119

SECTION 028200.10 – EXISTING HAZARDOUS MATERIAL INFORMATION

PART 1 - GENERAL

1.1 EXISTING HAZARDOUS MATERIAL INFORMATION

A. This Document with its referenced attachments is part of the Procurement and Contracting Requirements for Project. They provide Owner's information for Bidders' convenience and are intended to supplement rather than serve in lieu of Bidders' own investigations. They are made available for Bidders' convenience and information but are not a warranty of existing conditions. This Document and its attachments are not part of the Contract Documents.

B. An existing ACM and LBP Survey Report for this Project, prepared by Professional Environmental Engineers, Inc, dated April 1, 2024, is included in Appendix A in the project manual.

C. An existing Laboratory Bulk Sampling Analytical Report for this Project, prepared by SanAir Technologies Laboratory, dated March 3, 2024, is included in Appendix B in the project manual.

D. Related Requirements:

1. Document 002113 "Instructions to Bidders" for the Bidder's responsibilities for examination of Project site and existing conditions.
2. Section 024119 "Selective Demolition" for notification requirements if materials suspected of containing hazardous materials are encountered.
3. Section 028200.11 “Environmental Guidance” for MDNR guidance publications for building demolition.

END OF DOCUMENT 028200.10

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SECTION 028200.11 – ENVIRONMENTAL GUIDANCE

PART 1 - GENERAL

1.1 REGULATORY COMPLIANCE INFORMATION

A. The preparation, execution and cleanup of this demolition project shall follow all applicable environmental regulations.

B. The information in the following attachment is part of the Contract Requirements for this Project. This publication is made available for Bidders' convenience and information, but compliance based on these publications is not a warranty of regulatory compliance.

1.2 ATTACHMENTS:

A. APPENDIX B - Missouri Department of Natural Resources; “Managing Construction and Demolition Waste” (PUB2045) dated 05/2021 is included in the following pages.

B. APPENDIX C - Missouri Department of Natural Resources, “Environmental Regulations for Demolition” (PUB2374) dated 05/2021 is included in the following pages

END OF DOCUMENT 028200.11

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SECTION 071400 - FLUID-APPLIED MEMBRANE WATERPROOFING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Provide a cold fluid-applied polyurethane waterproofing system on existing metal roof or other substrates.

1. The contractor will provide all labor, materials, and tools as required to prepare and complete the installation with new materials as specified. All workmanship shall conform to the material manufacturer's recommendations and accepted industry standards.

2. Work includes substrate preparation.

3. Work includes bridging and sealing air leakage and water intrusion pathways and gaps including connections of the walls to the roof air barrier, and penetrations of the building envelope including piping, conduit, ducts, and similar items.

4. The installation to include the repair/sealing of metal panel joints, laps and transitions to include but not limited to curbs, penetrations and terminations including walls. All preparatory work will then be encapsulated with the specified type of "fluid applied rubberized type of roof materials and surface wear coating" to include Type 1 Vapor Retarder criteria to complete the work.

B. Related Work: The following items are not included in this Section and are specified under the designated Sections:

1. Section 024119 – SELECTIVE DEMOLITION

2. Section 076200 – SHEET METAL FLASHING AND TRIM

3. Section 077100 – ROOF SPECIALTIES

4. Section 079200 –JOINT SEALANTS.

1.3 PERFORMANCE REQUIREMENTS

A. Cold fluid applied polyurethane waterproofing system is intended to perform as a continuous barrier against liquid water and to flash or discharge to the exterior incidental water. Membrane system shall accommodate movements of building materials as required with accessory sealant materials at locations such as: changes in substrate, perimeter conditions and penetrations. Installed waterproofing membrane system shall not permit the passage of water and will withstand the design pressures calculated in accordance with the most current revision of ASCE 7.

B. Manufacturer shall provide all primary waterproofing materials that are physically and chemically compatible when installed in accordance with manufacturers current application requirements.

1.4 SUBMITTALS

A. Submittals: Comply with project requirements for submittals as specified in Division 01.

B. Product Data: For each product.

C. Shop Drawings: Manufacturer's standard details and shop drawings for the specified system.

D. Installer's Authorization: Installer shall provide written documentation from the manufacturer of their authorization to install the system, and eligibility to obtain the warranty specified in this section.

E. Manufacturer' Certification: Certification showing full time quality control of production facilities and that each batch of material is tested to ensure conformance with the manufacturer's published physical properties.

F. Warranty: Certification of manufacturer approved warranty

1.5 QUALITY ASSURANCE

A. Manufacturer's Qualifications: Manufacturer shall demonstrate qualifications to supply materials of this section by certifying the following:

1. Membrane Manufacturer shall have been producing fluid-applied waterproofing membranes for over 10 years.

2. Certified Contractors with less than 10 years' experience must have a minimum of one manufacturer training personnel on hand during course of project to monitor Contractor installation.

    a. Manufacturer to provide written statement signed by technical services that the repair configuration at the proposed rates of application meets a Type 1 Vapor Retarder <0.15 Classification.

3. Membrane Manufacturer shall have available an in-house technical staff to assist the contractor, when necessary, in the application of the products and site review of the assembly.

B. Installer's Qualifications: The Contractor shall demonstrate qualifications to perform the Work of this Section by submitting certification or license by the waterproofing membrane manufacturer as a trained and authorized applicator of the product the installer intends to use.

C. Source Limitations: All components listed in this section shall be provided by a single manufacturer or approved by the primary waterproofing manufacturer.

D. Materials Compatibility: All materials included in the waterproofing assembly, as well as associated materials adhered to/applied beneath the waterproofing membrane shall have been tested and verified to be compatible.

E. Final Inspection: Manufacturer's representative shall provide to the Architect a comprehensive site visit report after the completion of the waterproofing system.

F. Waterproofing Terminology: Refer to ASTM D1079 and the glossary of the National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual for definitions of waterproofing terms related to this section.

1.6 PRE-INSTALLATION CONFERENCE

A. Prior to scheduled commencement of the waterproofing installation and associated work, conduct a meeting at the project site with the installer, architect/consultant, owner, manufacturer's representative, and any other persons directly involved with the performance of the Work. The main purpose of this meeting is to review foreseeable methods and procedures related to the Work.

1.7 DELIVERY, STORAGE AND HANDLING

A. Deliver all waterproofing materials to the site in original containers, with factory seals intact.

B. Store all pail goods in their original undamaged containers in a clean, dry location within their specified temperature storage range.

C. Do not expose materials to moisture in any form before, during, or after delivery to the site. Reject delivery of materials that show evidence of contact with moisture.

D. Remove manufacturer supplied plastic covers from materials provided with such. Use "breathable" type covers such as canvas tarpaulins to allow venting and protection from weather and moisture. Cover and protect materials at the end of each workday. Do not remove any protective tarpaulins until immediately before the material will be installed.

E. Materials shall be stored above 55°F (12.6°C) a minimum of 24 hours prior to application.

1.8 PROJECT CONDITIONS

A. Weather: Proceed with waterproofing only when existing and forecasted weather conditions permit. Membrane application can proceed when precipitation is imminent. Visual marks in the form of pock marks may occur if uncured membrane is exposed to heavy rainfall but is not considered a limiting factor in the performance of the waterproofing membrane. Ambient/substrate temperatures shall be above 41°F (5°C) when applying the waterproofing system.

B. All surfaces to receive the waterproofing membrane shall be free from visible water, dew, frost, snow, and ice and be 5º F above the dew point. Application of waterproofing membrane shall be conducted in well-ventilated areas.

C. Waterproofing Membrane:

1. Waterproofing membrane is not intended to be exposed or in contact with a constant temperature below -22°F (-30°C) or in excess of 176°F (80°C). See technical data sheets for limitations, i.e., hot pipes and vents or direct steam venting.

2. Specified waterproofing membrane is non-flammable and VOC compliant. Consult container, packaging labels and Material Safety Data Sheets (MSDS) for specific safety information.

3. Specified waterproofing membrane is resistant to gasoline, paraffin, fuel oil, mineral spirits, and moderate solutions of acids and alkalis, acid rain and detergents. Some low molecular weight alcohols can soften. Any exposure to foreign materials or chemical discharges shall be presented to membrane manufacturer for evaluation to determine any impact on the waterproof membrane assembly performance prior to warranty issuance.

D. Contractor shall ensure adequate protection during installation of the waterproofing system.

E. Specified waterproofing membrane may be used as a temporary waterproofing barrier when applied at a wet film thickness of 15-20 mils to a properly prepared deck. When the specified waterproofing membrane is used as a temporary waterproofing barrier the waterproofing membrane does not need to be removed prior to installation of the finished waterproofing system. An approved Primer will need to be applied to the approved deck prior to applying the temporary roofing/waterproofing barrier. Primer will be applied in between the existing temporary roofing/waterproofing barrier and finished roofing/waterproofing system after existing temporary barrier is clean, dry, and sound.

1.9 WARRANTY

A. Warranty: Provide manufacturer's standard warranty. Materials warranty shall be for a minimum of one year starting at the date of Substantial Completion. System warranty shall be for the following duration in accordance with specified system.

1. Warranty Length: 20 years.

PART 2 - PRODUCTS

2.1 MANUFACTURER

A. Basis-of-Design Manufacturer: Sika Corporation - Sikalastic RoofPro WP 20, Premium Reemat (usa.sika.com)

B. Approved Manufacturers:

1. American Weatherstar – Met-A-Sil (americanweatherstar.com)

2. Tremco – (tremcoroofing.com)

3. Johns Manville – (jm.com/en/commercial-roofing)

2.2 WATERPROOFING SYSTEM

A. Fluid-Applied Membrane System, 20 Year Warranty: Basis of Design: Sikalastic RoofPro WP 20, Premium Reemat:

1. Base Layer: Sikalastic 624 WP, 45 mils wet film thickness; 35 sf/gal coverage rate approx.

2. Top Layer: Sikalastic 624 WP, 40 mils wet film thickness; 40 sf/gal coverage rate approx.

2.3 MEMBRANES AND COATINGS

A. Basis of Design is Base embedment coat with Reemat reinforcement shall be Sikalastic 624 WP by Sika Corp, a single component, cold, fluid applied, moisture triggered, aliphatic, polyurethane base coat membrane.

B. Basis of Design is Topcoat with Reemat reinforcement shall be Sikalastic 624 WP by Sika Corp, a single component, cold, fluid applied, moisture triggered, aliphatic, polyurethane topcoat membrane.

C. Liquid Property Requirements:

1. Viscosity, ASTM D2196: 5 to 20 Pa.s (pascal.seconds).

2. Volume Solids, ASTM D2697: 71% minimum.

3. Weight Solids: ASTM D1644: 78% minimum.

4. Sag Resistance, ASTM D4400: No sag at 700 micrometers (0.028 in. / 28 mil)

D. Film Physical Property Requirements:

1. Tensile Strength (Tension): ASTM D412: Minimum 1.86 MPa (270lb/in2)

2. Elongation: ASTM D412 : MIN 200%.

3. Accelerated Weathering FL/UV – 5000 Hours, ASTM G 154, No cracking or checking.

4. Water Vapor Transmission, Permeability / Permeance: ASTM E96: Maximum 8.5 gms/m2/ day (0.033 perm-inches).

5. Flexibility – Mandrel Bend, ASTM D522: Pass, no cracking or flaking.

6. Tear Resistance, ASTM D625: Minimum 5.8 kN/m (33 lbf/in)

7. Indentation Hardness, ASTM D2240: 82 Durometer Units (+/- 5 units)

8. Dynamic Puncture Resistance, ASTM D5635: Minimum 15 joules (357 ft.pounds)

9. Static Puncture Resistance, ASTM D5602: Minimum 20.7 kg. (45.5 lbs.)

2.4 MEMBRANE REINFORCEMENT - FIBERGLASS

A. Basis of Design of Reinforcement for the waterproofing membrane system shall be Sika Reemat Premium by Sika Corp, a conformable, random strand fiberglass mat specifically designed to provide greater impact resistance and greater resistance to excessive thermal and structural movement while maintaining elasticity and membrane film integrity.

B. Basis of Design for Supplemental reinforcement of the waterproofing membrane system shall be Sika Flexitape Heavy by Sika Corp, a nylon mesh specifically designed for local reinforcement of the waterproofing membrane at structural cracks, expansion joints and transitions between dissimilar materials, OR Sika Joint Tape SA by Sika Corp., a self-adhering polymeric rubberized tape with woven polyester facer.

2.5 FILLET BEAD AND PENETRATION SEALANT

A. Basis of Design of Sealant for fillet bead applications and membrane penetrations shall be Sikaflex 11FC by Sika Corp., a one-part polyurethane sealant suitable for fillet bead transition compound to be applied prior to the installation of the membrane system at changes in substrate direction, sealing reglet terminations, cracks in the substrate and penetrations of the waterproofing system.

B. Basis of Design for Exposed finish sealant shall be Sikaflex Hyflex 150 LM by Sika Corp., a one-part low modules hybrid sealant OR Sikasil WS-295. A one-part, low-modulus, weather sealing, silicone sealant suitable for finishing terminations at saw cuts and all UV exposed sealant terminations. SikaHyflex-150 LM is also suitable for fillet bead transition, changes in substrate direction, cracks in the substrate and penetrations of the roof before installation of the RoofPro membrane system.

2.6 PRIMERS / RUST INHIBITOR

A. General: Receiving surfaces may require primer for adhesion of fluid applied system materials. Metal substrates shall be primed with a two-component, cyclo-aliphatic, amine cured material with a high level of corrosion resistance for metal.

B. Rusted Metal: Clean, wire brush all loose rust and apply either aluminum surface wear coating or a rust inhibitor.

1. Aluminum Surface Wear Coating: Has an inherent rust inhibitor and may be used as a rust inhibitor/primer over metal surfaces.
   a. Apply at a minimum rate of 8 dry mil. (3/4) gal. / 100 sq. ft.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that surfaces and conditions are ready to accept the Work of this section. Notify Architect in writing of any discrepancies. Commencement of the Work in an area shall indicate Installer's acceptance of the substrate.

B. Surfaces shall be sound, dry, clean, and free of oil, grease, dirt, excess mortar or other contaminants. Fill voids, gaps, and spalled areas in substrate to provide an even plane. Strike masonry joints full flush.

3.2 SURFACE PREPARATION

A. Verify that the deck is clean and smooth, free of depressions, waves, or projections, and properly sloped to drains, valleys, eaves, scuppers, or gutters. Verify that all openings or penetrations through the intended substrate are secured back to solid blocking. Ensure all preparatory Work is complete prior to applying membrane.

B. Mechanical fasteners used roof decking or penetration flashing and shall be set flush with sheathing and fastened into solid backing.

C. All surfaces shall be blown clean using best methods to remove any remaining loose debris.

D. All cracks and voids greater than 0.040 inches shall be routed and caulked with a polyurethane sealant. Allow to cure per waterproofing membrane manufacturer's technical data sheets prior to over-coating with the specified waterproofing membrane system.

E. At all inside corners, gaps, or voids at the juncture of the deck and penetrations apply a minimum 3/4-inch fillet bead of polyurethane sealant and allow to cure per waterproofing membrane manufacturer's technical data sheets prior to installing the waterproofing membrane system.

F. At all moving cracks, moving joints between dissimilar materials, and similar conditions, create a minimum 1-inch-wide bond break utilizing bond breaker tape, centered over the crack or joint.

G. Membrane terminations shall be established prior to project start-up and documented in shop drawings. Terminations shall occur in raked-out mortar joints, saw cut terminations or under installed counter-flashing materials.

H. Use tape lines to achieve a straight edge detail. Remove tape while application is still wet for clean lines.

3.3 SUBSTRATE PREPARATION

A. Existing substrate is Metal Roof Panels over structural steel.

B. Metal Decking:

1. Metal profile decks shall be sound and secured to purlins, bar joists, etc. A ½" thick thermal barrier shall be installed and secured over all metal profile decks in accordance with wind uplift requirements.

C. Metal Surfaces:

1. Exposed drain bowls, pipes, and other metal surfaces shall be cleaned by power tool cleaning (SSPC SP-3 or SP-11) to remove corrosion deposits and achieve clean, bright metal followed by a solvent wipe with acetone prior to application of the specified primer.

3.4 PRIMING

A. Metal:

1. Apply specified primer for metal drain bowls and other metal surfaces by brush or roller at the application rate shown on the technical data sheet to achieve an overall wet film thickness of 6-8 mils.

2. Allow to cure and dry in accordance with manufacturer's technical data sheets.

3.5 MEMBRANE REINFORCEMENT

A. Reinforcement of Cracks, Base/Curb Flashing Transitions and Dissimilar Materials:

1. For all locations where the specified membrane system is to be applied directly to the substrate surface, provide reinforcement of cracks and joints prior to applying the specified membrane system.

2. For all moving cracks and joints, create a minimum 1-inch-wide bond break centered over the crack or joint by applying bond break tape centered over each crack or joint.

3. For all non-moving cracks and joints, rout and seal with polyurethane sealant.

4. For all horizontal-to-vertical transitions, provide a ¾" x ¾" polyurethane sealant cant.

5. Apply a minimum of a 3-inch-wide strip of joint tape directly and pressure roll for best adhesion. Thereafter apply liquid roofing/waterproofing membrane saturating woven polyester facer. Or apply a minimum 3-inch-wide strip of heavy reinforcement into a bed of liquid roofing/waterproofing membrane at 30 -40 wet mils. Back roll reinforcement to fully embed reinforcement into the wet liquid polyurethane membrane. Add more liquid membrane as needed to fully saturate and embed the reinforcement.

6. Ensure reinforcement is not in tension during embedment.

3.6 COLD FLUID APPLIED MEMBRANE APPLICATION

A. Install waterproofing membrane system in accordance with current technical data sheets and in accordance with warranty guideline requirements.

B. Apply base embedment coat to horizontal deck and vertical wall surfaces by brush or 1/2-inch nap roller to achieve a continuous and uniform minimum wet film thicknesses as specified in warranty guideline requirements. Alternate application methods are notched squeegee and backroll or spray methods.

C. Immediately lay specified conformable reinforcement into the wet base embedment resin coat. Reemat reinforcement is typically torn or precut at flashings/penetrations before or during application; Fleece reinforcement must be precut to fit flashings/penetrations before application.

D. Apply pressure to the membrane reinforcement with a roller to fully embed and saturate the membrane reinforcement into liquid waterproofing material. Remove air pockets from under the membrane by rolling them out.

E. Apply additional liquid material as required to ensure the membrane reinforcement is fully embedded and has conformed to the substrate without tenting or visible pinholes.

F. Overlap sheets of membrane reinforcement a minimum of 2 inches in all directions. Overlap sheets of fleece membrane reinforcement 3 inches at side laps and 6 inches at end laps.

G. Extend membrane reinforcement vertically at adjacent wall surfaces in accordance with project details and specifications.

H. When using fiberglass mat reinforcement, allow the base embedment coat to fully cure dry prior to the placement of top coat or other applications of the specified waterproofing material.

I. Apply topcoat by nap roller, brush, or spray to achieve a continuous and uniform minimum wet film thickness as specified in warranty guideline requirements.

J. Install all flashings in accordance with manufacturer's standard details and job specific details.

3.7 PARAPET AND WALL FLASHINGS

A. Clean, prepare and prime flashing substrate surfaces ready to receive membrane flashing applications.

B. All parapet, wall, and curb flashings shall be provided with a cant bead of sealant cant with tape reinforcement prior to flashing application. Terminate waterproofing membrane system at raked-out mortar joints, termination saw cut joint, or under installed counter-flashing materials. Seal all mortar joints and saw cut joints with polyurethane sealant.

C. Install metal counter flashings in accordance with project details.

3.8 DRIP EDGES AND OTHER METAL FLANGED FLASHING

A. Clean, prepare and prime metal flange surfaces ready to receive membrane flashing applications.

B. Metal flanges are typically encapsulated between two membrane layers, usually by providing membrane flashing as a stripping ply over the metal flange, with the field or flashing membrane extending beneath the metal flange. It is also acceptable to install the stripping ply under the metal flange and extend the field or flashing membrane over the metal flange.

3.9 GUTTERS

A. Clean, prepare and prime surfaces ready to receive membrane applications. Block gutter opening to avoid waterproofing material from entering the drainage system.

B. Extend the liquid waterproofing material and membrane reinforcement directly into the surfaces of the prepared gutters.

C. Remove drain blocks and allow the waterproofing system to fully cure dry prior to re-connecting the gutter assembly.

3.10 PENETRATIONS

A. Clean, prepare and prime surfaces ready to receive membrane flashing applications. Ensure that penetrations are secured to prevent movement.

B. Penetration flashings typically consist of two components. A vertical flashing component extends up the penetration and is torn (if Reemat reinforcement) or finger cut (if fleece reinforcement) at the bottom so that it can be extended horizontally onto the deck/substrate. A horizontal flashing component covers all of the tears/finger cuts and extends vertically up the penetration. The intent is to achieve a 2–3-inch overlap of the two flashing components.

3.11 EXPANSION JOINTS

A. Clean, prepare and prime surfaces ready to receive membrane flashing applications.

B. Expansion joints shall be sealed with a compressible filler such as batt insulation to prevent condensation and to provide support for the flashing bellows.

3.12 APPLICATION OF PENETRATION SEALANT

A. Seal reglet-based membrane terminations, heads of exposed mechanical fasteners, around penetrations, duct work, electrical and other apparatus extending through the waterproofing membrane with specified penetration sealant.

3.13 PROTECTION

A. Protect waterproofing Work from other trades until completion.

B. Stage materials in such a manner that avoids foot traffic over completed waterproofed areas.

C. Provide temporary walkways and platforms to protect completed Work from traffic and point loading during the application process.

D. Provide temporary membrane tie-ins and water-stops at the end of each workday and remove prior to commencement of Work the following day.

3.14 AGGREGATE SURFACING

A. Apply aggregate surfacing as specified for adhesion key or for protective layer. DO NOT BROADCAST SAND INTO TOPCOAT.

B. Apply an additional 15 wet mil layer of resin to cured waterproofing membrane as soon as membrane can be walked on without damage.

C. Non-Skid Finish - Broadcast kiln-dried sand to refusal into the wet resin layer and allow to cure. Remove all loose sand/aggregate. Apply an additional 15 wet mil layer of resin to seal kiln-dried sand.

3.15 CLEAN-UP

A. Work areas are to be kept clean, clear, and free of debris at all times.

B. Do not allow trash, waste, and/or debris to collect on the work area. Trash, waste, and/or debris shall be removed from the work area on a daily basis.

C. All tools and unused materials shall be collected at the end of each workday and stored properly off of the finished waterproofed surface and protected from exposure to the elements.

D. Dispose of or recycle all trash and excess material in a manner conforming to current EPA regulations and local laws.

E. Properly clean the finished deck surface after completion, and make sure the drains and gutters are not clogged.

F. Clean and restore all damaged surfaces to their original condition.

END OF SECTION 071400

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SECTION 076200-SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fabricated sheet metal items, including cap flashings, flashings, counter-flashings, gutters, downspouts, and trim.

B. Sealants for joints within sheet metal fabrications.

1.02 REFERENCE STANDARDS

A. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix); 2022.

B. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.

C. ASTM C920 - Standard Specification for Elastomeric Joint Sealants; 2018.

D. SMACNA (ASMM) - Architectural Sheet Metal Manual; 2012.

1.03 SUBMITTALS

A. Shop Drawings: Indicate material profile, jointing pattern, jointing details, fastening methods, flashings, terminations, and installation details.

1.04 QUALITY ASSURANCE

A. Perform work in accordance with SMACNA (ASMM) and CDA A4050 requirements and standard details, except as otherwise indicated.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Stack material to prevent twisting, bending, and abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.

B. Prevent contact with materials that could cause discoloration or staining.

PART 2 PRODUCTS

2.01 SHEET MATERIALS

A. Pre-Finished Aluminum: ASTM B209/B209M, 3005 alloy, H12 or H14 temper; 18 gauge, 0.040 inch (1.02 mm) thick; plain finish shop pre-coated with fluoropolymer coating.
   1. Fluoropolymer Coating: High performance organic powder coating, AAMA 2604; multiple coat, thermally cured fluoropolymer finish system.
   2. Color: As selected by Architect from manufacturer's standard colors.

2.02 FABRICATION

A. Form sections true to shape, accurate in size, square, and free from distortion or defects.

B. Form pieces in longest possible lengths.

C. Hem exposed edges on underside 1/2 inch (13 mm); miter and seam corners.

D. Form material with flat lock seams, except where otherwise indicated; at moving joints, use sealed lapped, bayonet-type or interlocking hooked seams.

E. Fabricate corners from one piece with minimum 18-inch (450 mm) long legs; seam for rigidity, seal with sealant.

F. Fabricate flashings to allow toe to extend 2 inches (50 mm) over sill or head. Return and brake edges.

2.03 GUTTERS AND DOWNSPOUTS

A. Sill and Head Flashing: SMACNA (ASMM) Angular Pattern with Drip edge.
   1. Anchorage Devices: In accordance with SMACNA (ASMM) requirements.

B. Seal metal joints.

2.04 FLASHING

A. Flashing Panels for Exterior Wall Penetrations: Premanufactured components and accessories as required to preserve integrity of building envelope; suitable for conduits and facade materials to be installed.

2.05 ACCESSORIES

A. Fasteners: Same material and finish as flashing metal, with soft neoprene washers.

B. Primer Type: Zinc chromate.

C. Concealed Sealants: Non-curing butyl sealant.

D. Exposed Sealants: ASTM C920; elastomeric sealant, with minimum movement capability as recommended by manufacturer for substrates to be sealed; color to match adjacent material.

E. Reglets: Surface-mounted type, prefinished aluminum.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify window openings and substrates solidly set and nailing strips located.

B. Verify base flashings are in place, sealed, and secure.

3.02 PREPARATION

A. Install starter and edge strips, and cleats before starting installation.

B. Install surface mounted reglets true to lines and levels, and seal top of reglets with sealant.

C. Back paint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil, 0.015 inch (0.38 mm).

3.03 INSTALLATION

A. Comply with drawing details.

B. Insert flashings into reglets to form tight fit; secure in place with plastic wedges; seal flashings into reglets with sealant.

C. Secure flashings in place using concealed fasteners and use exposed fasteners only where permitted.

D. Fit flashings tight in place; make corners square, surfaces true and straight in planes, and lines accurate to profiles.

END OF SECTION 076200

SECTION 077100 - ROOF SPECIALTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Roof-edge specialties.
2. Roof-edge drainage systems.
3. Reglets and counterflashings.

B. Related Requirements:

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

1.4 INFORMATIONAL SUBMITTALS

A. Sample Warranty: For manufacturer's special warranty.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For roofing specialties to include in maintenance manuals.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Do not store roof specialties in contact with other materials that might cause staining, denting, or other surface damage. Store roof specialties away from uncured concrete and masonry.

B. Protect strippable protective covering on roof specialties from exposure to sunlight and high humidity, except to extent necessary for the period of roof-specialty installation.

1.7 FIELD CONDITIONS

A. Field Measurements: Verify profiles and tolerances of roof-specialty substrates by field measurements before fabrication, and indicate measurements on Shop Drawings.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. General Performance: Roof specialties shall withstand exposure to weather and resist thermally induced movement without failure, rattling, leaking, or fastener disengagement due to defective manufacture, fabrication, installation, or other defects in construction.

B. FM Approvals' Listing: Manufacture and install roof-edge specialties that are listed in FM Approvals' "RoofNav" and approved for windstorm classification, Class 1-90. Identify materials with FM Approvals' markings.

C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, hole elongation, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Provide clips that resist rotation and avoid shear stress as a result of thermal movements. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

2.2 ROOF-EDGE DRAINAGE SYSTEMS

A. Gutters: Manufactured in uniform section lengths not exceeding 12 feet, with matching corner units, ends, outlet tubes, and other accessories. Elevate back edge at least 1 inch above front edge. Furnish flat-stock gutter straps, gutter brackets, expansion joints, and expansion-joint covers fabricated from same metal as gutters.

1. Zinc-Coated Steel: Nominal 26 gauge thickness.

2. Gutter Profile: Box style. 12” Wide.

3. Corners: Factory mitered and mechanically clinched and sealed watertight.

4. Gutter Supports: Gutter brackets, straps, Spikes and ferrules: Manufacturer's standard supports with finish matching the gutters.

5. Gutter Accessories: Continuous screened leaf guard with sheet metal frame.

B. Downspouts: Plain round 6” O.D. complete with mitered elbows, manufactured from the following exposed metal. Furnish with metal hangers, from same material as downspouts, and anchors.

1. Zinc-Coated Steel: Nominal 26 gauge thickness.

C. Accessories:

1. Flexible-Flashing Retainer: Provide resilient plastic or rubber accessory to secure flexible flashing in reglet where clearance does not permit use of standard metal counterflashing or where reglet is provided separate from metal counterflashing.

2. Counterflashing Wind-Restraint Clips: Provide clips to be installed before counterflashing to prevent wind uplift of counterflashing lower edge.

2.3 MISCELLANEOUS MATERIALS

A. Fasteners: Manufacturer's recommended fasteners, suitable for application and designed to meet performance requirements. Furnish the following unless otherwise indicated:

1. Exposed Penetrating Fasteners: Gasketed screws with hex washer heads matching color of sheet metal.

B. Elastomeric Sealant: ASTM C 920, elastomeric silicone polymer sealant of type, grade, class, and use classifications required by roofing-specialty manufacturer for each application.

C. Butyl Sealant: ASTM C 1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type joints with limited movement.

2.4 FINISHES

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Appearance of Finished Work: Noticeable variations in same piece are unacceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions, and other conditions affecting performance of the Work.

B. Examine walls and roof edges for suitable conditions for roof specialties.

C. Verify that substrate is sound, dry, smooth, clean, sloped for drainage where applicable, and securely anchored.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. General: Install roof specialties according to manufacturer's written instructions. Anchor roof specialties securely in place, with provisions for thermal and structural movement. Use fasteners, solder, protective coatings, separators, underlayments, sealants, and other miscellaneous items as required to complete roof-specialty systems.

1. Install roof specialties level, plumb, true to line and elevation; with limited oil-canning and without warping, jogs in alignment, buckling, or tool marks.

2. Provide uniform, neat seams with minimum exposure of solder and sealant.

3. Install roof specialties to fit substrates and to result in weathertight performance. Verify shapes and dimensions of surfaces to be covered before manufacture.

4. Torch cutting of roof specialties is not permitted.

5. Do not use graphite pencils to mark metal surfaces.

B. Metal Protection: Protect metals against galvanic action by separating dissimilar metals from contact with each other or with corrosive substrates by painting contact surfaces with bituminous coating or by other permanent separation as recommended by manufacturer.

C. Expansion Provisions: Allow for thermal expansion of exposed roof specialties.

D. Seal concealed joints with butyl sealant as required by roofing-specialty manufacturer.

E. Seal joints as required for weathertight construction. Place sealant to be completely concealed in joint. Do not install sealants at temperatures below 40 deg F (4 deg C).

3.3 ROOF-EDGE SPECIALITIES INSTALLATION

A. Install cleats, cants, and other anchoring and attachment accessories and devices with concealed fasteners.

B. Anchor roof edgings with manufacturer's required devices, fasteners, and fastener spacing to meet performance requirements.

3.4 ROOF-EDGE DRAINAGE-SYSTEM INSTALLATION

A. General: Install components to produce a complete roof-edge drainage system according to manufacturer's written instructions. Coordinate installation of roof perimeter flashing with installation of roof-edge drainage system.

B. Gutters: Join and seal gutter lengths. Allow for thermal expansion. Attach gutters to firmly anchored gutter supports spaced not more than 30 inches apart. Attach ends with rivets and seal with sealant to make watertight. Slope to downspouts.

C. Downspouts: Join sections with manufacturer's standard telescoping joints. Provide hangers with fasteners designed to hold downspouts securely to walls and 1 inch (25 mm) away from walls; locate fasteners at top and bottom and at approximately 60 inches (1500 mm) o.c.

1. Provide elbows at base of downspouts at grade to direct water away from building.

2. Connect downspouts to underground drainage system indicated.

3.5 CLEANING AND PROTECTION

A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.

B. Clean and neutralize flux materials. Clean off excess solder and sealants.

C. Remove temporary protective coverings and strippable films as roof specialties are installed. On completion of installation, clean finished surfaces, including removing unused fasteners, metal filings, pop rivet stems, and pieces of flashing. Maintain roof specialties in a clean condition during construction.

D. Replace roof specialties that have been damaged or that cannot be successfully repaired by finish touchup or similar minor repair procedures.

END OF SECTION 077100

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SECTION 079200 - JOINT SEALANTS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:
   1. Polyurethane joint sealants.

1.3 ACTION SUBMITTALS

A. Product Data: For each joint-sealant product.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Qualified to perform work specified by reason of experience or training provided by product manufacturer.

1.5 FIELD CONDITIONS

A. Do not proceed with installation of joint sealants under the following conditions:

   1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg.

   2. When joint substrates are wet.

   3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.

   4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver products in original factory packaging bearing identification of product, manufacturer, and batch number.

B. Store products in original, unopened containers in clean, dry area away from heat and direct sunlight.

1.7 PROJECT CONDITIONS

A. Do not use products under conditions of precipitation or in inclement or freezing weather. Verify that substrates are clean, dry, and frost-free. Use appropriate measures for protection and supplementary heating to ensure proper curing conditions in accordance with manufacturer's recommendations if application during inclement weather occurs.

PART 2 - PRODUCTS

2.1 JOINT SEALANTS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.

B. Colors of Exposed Joint Sealants: As selected by Owner from manufacturer's full range.

2.2 POLYURETHANE JOINT SEALANTS

A. One-component, high-performance, non-priming, gun-grade, elastomeric polyurethane sealant.
   1. Acceptable Product: MasterSeal NP 1 (formerly Sonolastic NP 1) by BASF.

2.3 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting performance of the Work.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:

   1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.

   2. Clean porous joint substrate surfaces by brushing, grinding, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining after cleaning operations above by vacuuming or blowing out joints with oil-free compressed air.

B. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.1 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.

1. Do not leave gaps between ends of sealant backings.

2. Do not stretch, twist, puncture, or tear sealant backings.

3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

C. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

D. Install sealants using proven techniques that comply with the following and at the same time backings are installed:

1. Place sealants so they directly contact and fully wet joint substrates.

2. Completely fill recesses in each joint configuration.

3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

E. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.

1. Use dry tooling method. Do not use tooling agents such as soapy water or solvents that have not been approved by sealant manufacturer. Remove excess sealant from surfaces adjacent to joints.

2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.

3. Provide concave joint profile unless otherwise indicated.

a. Use masking tape to protect surfaces adjacent to recessed tooled joints.

3.4 CLEANING

A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of

products in which joints occur.

3.5 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If, despite such protection, damage or deterioration occurs, cut out, remove, and repair damaged or deteriorated joint sealants immediately so installations with repaired areas are indistinguishable from original work.

END OF SECTION 079200

SECTION 099113 – EXTERIOR PAINTING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Surface preparation.

B. Field application of paints.

C. Do Not Paint or Finish the Following Items:

1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.

2. Items indicated to receive other finishes.

3. Items indicated to remain unfinished.

4. Fire rating labels, equipment serial number and capacity labels, and operating parts of equipment.

5. Floors, unless specifically indicated.

6. Glass.

7. Concealed pipes, ducts, and conduits.

1.2 REFERENCE STANDARDS

A. MPI (APSM) - Master Painters Institute Architectural Painting Specification Manual; Current Edition.

1.3 SUBMITTALS

A. Product Data: Provide complete list of products to be used, with the following information for each:

1. Manufacturer's name, product name and/or catalog number, and general product category (e.g. "alkyd enamel").

2. MPI product number (e.g. MPI #47).

3. Cross-reference to specified paint system(s) product is to be used in; include description of each system.

B. Samples: Submit two paper chip samples, 4x4 inch in size illustrating range of colors and textures available for each surface finishing product scheduled.

C. Maintenance Data: Submit data including finish schedule showing where each product/color/finish was used, product technical data sheets, material safety data sheets (MSDS), care and cleaning instructions, touch-up procedures, repair of painted and finished surfaces, and color samples of each color and finish used.

D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.

1. Extra Paint and Finish Materials: 1 gallon of each color and type; from the same product run, store where directed.

2. Label each container with color and type in addition to the manufacturer's label.

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified, with minimum three years documented experience.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

B. Container Label: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

C. Paint Materials: Store at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, and as required by manufacturer's instructions.

1.6 FIELD CONDITIONS

A. Do not apply materials when surface and ambient temperatures are outside the paint product manufacturer's temperature ranges.

B. Follow manufacturer's recommended procedures for producing best results, including testing of substrates, moisture in substrates, and humidity and temperature limitations.

C. Do not apply exterior paint and finishes during rain or snow, or when relative humidity is outside the humidity ranges required by the paint product manufacturer.

D. Minimum Application Temperatures for Latex Paints: 50 degrees F for exterior; unless required otherwise by manufacturer's instructions.

E. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Provide paints and finishes used in any individual system from the same manufacturer; no exceptions.

B. Paints:

1. Behr Paint Company.

2. Diamond Vogel Paints.

3. Dunn-Edwards Corporation.

4. Sherwin-Williams Company.

5. Vista Paint Corporation.

2.2 PAINTS AND FINISHES - GENERAL

A. Paints and Finishes: Ready-mixed, unless required to be a field-catalyzed paint.

1. Provide paints and finishes of a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sags.

2. Provide materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.

3. Supply each paint material in quantity required to complete entire project's work from a single production run.

4. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is described explicitly in manufacturer's product instructions.

B. Flammability: Comply with applicable code for surface burning characteristics.

C. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Architect from the manufacturer's full line.

D. Colors: To be selected from manufacturer's full range of available colors.

1. Selection to be made by Architect after award of contract.

2.3 PAINT SYSTEMS - EXTERIOR

A. Paint E-OP - Exterior Surfaces to be Painted, Unless Otherwise Indicated: Including primed metal and existing headers.

1. Two top coats and one coat primer.

2. Top Coat(s): Exterior Latex, High Performance Architectural.

2.4 ACCESSORY MATERIALS

A. Accessory Materials: Provide primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials as required for final completion of painted surfaces.

B. Patching Material: Latex filler.

C. Fastener Head Cover Material: Latex filler.

PART 3 EXECUTION

3.1 EXAMINATION

A. Do not begin application of paints and finishes until substrates have been properly prepared.

B. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

C. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

D. Test shop-applied primer for compatibility with subsequent cover materials.

3.2 PREPARATION

A. Clean surfaces thoroughly and correct defects prior to application.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

C. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces for finishing.

D. Seal surfaces that might cause bleed through or staining of topcoat.

E. Remove mildew from impervious surfaces by scrubbing with solution of tetra-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

F. Metal Doors to be Painted: Prime metal door top and bottom edge surfaces.

3.3 APPLICATION

A. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual".

B. Do not apply finishes to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

C. Apply each coat to uniform appearance.

D. Vacuum clean surfaces of loose particles. Use tack cloth to remove dust and particles just prior to applying next coat.

E. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.4 CLEANING

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.5 PROTECTION

A. Protect finishes until completion of project.

B. Touch-up damaged finishes after Substantial Completion.

END OF SECTION 099113

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SECTION 230500 - COMMON WORK RESULTS FOR HVAC

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Sleeves without waterstop.
2. Sleeves with waterstop.
3. Stack-sleeve fittings.
4. Sleeve-seal systems.
5. Grout.
6. Silicone sealants.
7. Escutcheons.
8. Pressure gauges, dial type.
9. Gauge attachments.

B. Related Requirements:

1.2 ACTION SUBMITTALS

A. Product data.

1.3 QUALITY ASSURANCE

A. Pipe and Pressure-Vessel Welding Qualifications: Qualify procedures and operators in accordance with 2021 ASME Boiler and Pressure Vessel Code, Section IX.

1.4 COORDINATION

A. Coordinate features of motors, installed units, and accessory devices to be compatible with the following:

1. Motor controllers.
2. Torque, speed, and horsepower requirements of the load.
3. Ratings and characteristics of supply circuit and required control sequence.
4. Ambient and environmental conditions of installation location.

PART 2 - PRODUCTS

2.1 SLEEVES AND SLEEVE SEALS

A. Sleeves without Waterstop:

1. Cast-Iron Pipe Sleeves: Cast or fabricated of cast or ductile iron, with plain ends.

2. Steel Pipe Sleeves: ASTM A53/A53M, Type E, Grade B, Schedule 40, hot-dip galvanized, with plain ends.
3. Steel Sheet Sleeves: ASTM A653/A653M, 24 gauge minimum thickness; hot-dip galvanized, round tube closed with welded longitudinal joint.

B. Sleeves with Waterstop:

1. Description: Manufactured, sleeve-type, waterstop assembly, made for imbedding in concrete slab or wall.

C. Sleeve-Seal Systems:

1. Description: Modular sealing-element unit, designed for field assembly, for filling annular space between piping and sleeve.

    a. Hydrostatic Seal: 20 psig.
    b. Sealing Elements: EPDM-rubber interlocking links shaped to fit surface of pipe. Include type and number required for pipe material and size.
    c. Pressure Plates: Carbon steel.
    d. Connecting Bolts and Nuts: Carbon steel, with zinc coating. ASTM B633 of length required to secure pressure plates to sealing elements.

D. Grout:

1. Description: Nonshrink, for interior and exterior sealing openings in non-fire-rated walls or floors.
2. Standard: ASTM C1107/C1107M, Grade B, post-hardening and volume-adjusting, dry, hydraulic-cement grout.
3. Design Mix: 5000 psi, 28-day compressive strength.
4. Packaging: Premixed and factory packaged.

E. Silicone Sealants:

1. Silicone Sealant, S, NS, 25, NT: Single-component, nonsag, plus 25 percent and minus 25 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant.

    a. Standard: ASTM C920, Type S, Grade NS, Class 25, Use NT.

2. Silicone Sealant, S, P, T, NT: Single-component, 25, pourable, plus 25 percent and minus 25 percent movement capability, traffic- and nontraffic-use, neutral-curing silicone joint sealant.

    a. Standard: ASTM C920, Type S, Grade P, Class 25, Uses T and NT.

2.2 ESCUTCHEONS

A. Escutcheon Types:

1. One-Piece, Steel Type: With polished, chrome-plated finish and setscrew fastener.
2. One-Piece, Deep-Pattern Type: Deep-drawn, box-shaped steel with polished, chrome-plated finish and spring-clip fasteners.
3. One-Piece, Stamped-Steel Type: With polished, chrome-plated finish and spring-clip fasteners.

4. Split-Plate, Stamped-Steel Type: With polished, chrome-plated finish; concealed hinge; and spring-clip fasteners.

B. Floor Plates:

1. Split Floor Plates: Steel with concealed hinge.

2.3 METERS AND GAUGES FOR HVAC PIPING

A. Duct-Thermometer Mounting Brackets:

1. Description: Flanged bracket with screw holes, for attachment to air duct and made to hold thermometer stem.

B. Pressure Gauges, Dial Type - Direct Mounted, Metal Case:

1. Source Limitations: Provide dial-type, direct-mounted, metal-case pressure gauges from single manufacturer.
2. Standard: ASME B40.100.
3. Case: Liquid-filled Solid-front, pressure-relief type(s); cast aluminum or drawn steel; 4-1/2-inch nominal diameter.
4. Pressure-Element Assembly: Bourdon tube.
5. Pressure Connection: Brass, with NPS 1/4 or NPS 1/2, ASME B1.20.1 pipe threads and bottom-outlet type unless back-outlet type is indicated.
6. Movement: Mechanical, with link to pressure element and connection to pointer.
7. Dial: Nonreflective aluminum with permanent scale markings graduated in psi.
8. Pointer: Dark-colored metal.
9. Window: Glass or acrylic plastic.
10. Ring: Metal.
11. Accuracy: Grade A, plus or minus 1 percent of middle half of span.

C. Gauge Attachments:

1. Snubbers: ASME B40.100, brass; with NPS 1/4 or NPS 1/2, ASME B1.20.1 pipe threads and piston-type surge-dampening device. Include extension for use on insulated piping.
2. Siphons: Loop-shaped section of brass pipe with NPS 1/4 or NPS 1/2 pipe threads.
3. Valves: Brass ball, with NPS 1/4 or NPS 1/2, ASME B1.20.1 pipe threads.

PART 3 - EXECUTION

3.1 INSTALLATION OF SLEEVES - GENERAL

A. Install sleeves for piping passing through penetrations in floors, partitions, roofs, and walls.

B. For sleeves that will have sleeve-seal system installed, select sleeves of size large enough to provide 1-inch annular clear space between piping and concrete slabs and walls.

1. Sleeves are not required for core-drilled holes.

C. Install sleeves in concrete floors, concrete roof slabs, and concrete walls as new slabs and walls are constructed.

1. Cut sleeves to length for mounting flush with both surfaces.

    a. Exception: Extend sleeves installed in floors of mechanical equipment areas or other wet areas above finished floor level.

2. Using grout or silicone sealant, seal space outside of sleeves in floors/slabs/walls without sleeve-seal system. Select to maintain fire resistance of floor/slab/wall.

D. Install sleeves for pipes passing through interior partitions.

1. Cut sleeves to length for mounting flush with both surfaces.
2. Install sleeves that are large enough to provide 1/4-inch annular clear space between sleeve and pipe or pipe insulation.
3. Seal annular space between sleeve and piping or piping insulation; use joint sealants that joint sealant manufacturer's literature indicates is appropriate for size, depth, and location of joint.

3.2 INSTALLATION OF SLEEVES WITH WATERSTOP

A. Install sleeve with waterstop as new walls and slabs are constructed.

B. Assemble fitting components of length to be flush with both surfaces of concrete slabs and walls. Position waterstop flange centered across width of concrete slab or wall.

C. Secure nailing flanges to wooden concrete forms.

D. Using grout or silicone sealant, seal space around outside of sleeves.

3.3 INSTALLATION OF SLEEVE-SEAL SYSTEMS

A. Install sleeve-seal systems in sleeves in exterior concrete walls and slabs-on-grade at service piping entries into building, and passing through exterior walls.

B. Select type, size, and number of sealing elements required for piping material and size and for sleeve ID or hole size. Assemble sleeve-seal system components, and install in annular space between piping and sleeve. Tighten bolts against pressure plates that cause sealing elements to expand and make a watertight seal.

3.4 INSTALLATION OF ESCUTCHEONS

A. Install escutcheons for piping penetrations of walls, ceilings, and finished floors.

B. Install escutcheons with ID to closely fit around pipe, tube, and insulation of insulated piping and with OD that completely covers opening.

3.5 INSTALLATION OF METERS AND GAUGES

A. Install duct-thermometer-mounting brackets in walls of ducts. Attach to duct with screws.

B. Install direct-mounted pressure gauges in piping tees with pressure gauge located on pipe at the most readable position.

C. Install remote-mounted pressure gauges on panel.

D. Install valve and snubber in piping for each pressure gauge for fluids (except steam).

E. Install valve and syphon fitting in piping for each pressure gauge for steam.

F. Assemble and install connections, tubing, and accessories between flow-measuring elements and flowmeters according to manufacturer's written instructions.

G. Install permanent indicators on walls or brackets in accessible and readable positions.

H. Install connection fittings in accessible locations for attachment to portable indicators.
   1. Outside-, return-, supply-, and mixed-air ducts.

3.6 CONNECTIONS

A. Install meters and gauges adjacent to machines and equipment to allow space for service and maintenance of meters, gauges, machines, and equipment.

3.7 ADJUSTING

A. After installation, calibrate meters according to manufacturer's written instructions.

B. Adjust faces of meters and gauges to proper angle for best visibility.

3.8 FIELD QUALITY CONTROL

A. Sleeves and Sleeve Seals:

   1. Perform the following tests and inspections:

      a. Leak Test: After allowing for a full cure, test sleeves and sleeve seals for leaks. Repair leaks and retest until no leaks exist.
      b. Sleeves and sleeve seals will be considered defective if they do not pass tests and inspections.

   2. Prepare test and inspection reports.

B. Escutcheons:

   1. Using new materials, replace broken and damaged escutcheons and floor plates.

3.9 SLEEVES APPLICATION

A. Use sleeves and sleeve seals for the following piping-penetration applications:

   1. Exterior Concrete Walls above and below Grade:

a. Sleeves with waterstops.

1) Select sleeve size to allow for 1-inch annular clear space between piping and sleeve for installing sleeve-seal system.

2. Concrete Slabs-on-Grade:

a. Sleeves with waterstops.

1) Select sleeve size to allow for 1-inch annular clear space between piping and sleeve for installing sleeve-seal system.

3. Concrete Slabs above Grade:

a. Sleeves with waterstops.

4. Interior Walls and Partitions:

a. Sleeves without waterstops.

3.10 ESCUTCHEONS APPLICATION

A. Escutcheons for New Piping and Relocated Existing Piping:

1. Piping with Fitting or Sleeve Protruding from Wall: One piece, deep pattern.
2. Chrome-Plated Piping: One piece, steel with polished, chrome-plated finish.
3. Insulated Piping:

a. One piece, steel with polished, chrome-plated finish.

4. Bare Piping at Wall and Floor Penetrations in Finished Spaces:

a. One piece, steel with polished, chrome-plated finish.

5. Bare Piping at Ceiling Penetrations in Finished Spaces:

a. One piece, steel with polished, chrome-plated finish.

B. Escutcheons for Existing Piping to Remain:

1. Chrome-Plated Piping: Split plate, stamped steel with concealed hinge with polished, chrome-plated finish.
2. Insulated Piping: Split plate, stamped steel with concealed hinge with polished, chrome-plated finish.
3. Bare Piping at Wall and Floor Penetrations in Finished Spaces: Split plate, stamped steel with concealed hinge with polished, chrome-plated finish.
4. Bare Piping at Ceiling Penetrations in Finished Spaces: Split plate, stamped steel with concealed hinge with polished, chrome-plated finish.
5. Bare Piping in Unfinished Service Spaces: Split plate, stamped steel with concealed or exposed-rivet hinge with polished, chrome-plated finish.
6. Bare Piping in Equipment Rooms: Split plate, stamped steel with concealed or exposed-rivet hinge with polished, chrome-plated finish.

C. Install floor plates for piping penetrations of equipment-room floors.

D. Install floor plates with ID to closely fit around pipe, tube, and insulation of piping and with OD that completely covers opening.

1. New Piping and Relocated Existing Piping: Split floor plate.
2. Existing Piping to Remain: Split floor plate.

END OF SECTION 230500

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SECTION 230523.12 - BALL VALVES FOR HVAC PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Brass ball valves.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of valve.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. ASME Compliance:

1. ASME B1.20.1 for threads for threaded-end valves.
2. ASME B16.1 for flanges on iron valves.
3. ASME B16.5 for flanges on steel valves.
4. ASME B16.10 and ASME B16.34 for ferrous valve dimensions and design criteria.
5. ASME B16.18 for cast copper solder-joint connections.
6. ASME B16.22 for wrought copper and copper alloy solder-joint connections.
7. ASME B16.34 for flanged and threaded end connections.
8. ASME B31.1 for power piping valves.
9. ASME B31.9 for building services piping valves.

B. Provide bronze valves made with dezincification-resistant materials. Bronze valves made with copper alloy (brass) containing more than 15 percent zinc are not permitted.

C. Valve Pressure-Temperature Ratings: Not less than indicated and as required for system pressures and temperatures.

D. Valve Sizes: Same as upstream piping unless otherwise indicated.

E. Valves in Insulated Piping:

1. Provide 2-inch extended neck stems.
2. Extended operating handles with nonthermal-conductive covering material, and protective sleeves that allow operation of valves without breaking vapor seals or disturbing insulation.
3. Memory stops that are fully adjustable after insulation is applied.

F. Valve Bypass and Drain Connections: MSS SP-45.

2.2 BRASS BALL VALVES

A. Brass Ball Valves, Two Piece with Full Port and Brass Trim, Threaded or Soldered Ends:

1. Standard: MSS SP-110.
2. SWP Rating: 150 psig.
3. CWP Rating: 600 psig.
4. Body Design: Two piece.
5. Body Material: Forged brass.
6. Ends: Threaded or soldered.
7. Seats: PTFE.
8. Stem: Brass.
9. Ball: Chrome-plated brass.
10. Port: Full.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine valve interior for cleanliness, freedom from foreign matter, and corrosion. Remove special packing materials, such as blocks, used to prevent disc movement during shipping and handling.

B. Operate valves in positions from fully open to fully closed. Examine guides and seats made accessible by such operations.

C. Examine threads on valve and mating pipe for form and cleanliness.

D. Examine mating flange faces for conditions that might cause leakage. Check bolting for proper size, length, and material. Verify that gasket is of proper size, that its material composition is suitable for service, and that it is free from defects and damage.

E. Do not attempt to repair defective valves; replace with new valves. Remove defective valves from site.

3.2 INSTALLATION OF VALVES

A. Install valves with unions or flanges at each piece of equipment arranged to allow space for service, maintenance, and equipment removal without system shutdown.

B. Provide support of piping adjacent to valves such that no force is imposed upon valves.

C. Locate valves for easy access.

D. Install valves in horizontal piping with stem at or above center of pipe.

E. Install valves in position to allow full valve actuation movement.

F. Valve Tags: Comply with requirements in Section 230553 "Identification for HVAC Piping and Equipment" for valve tags and schedules.

G. Adhere to manufacturer's written installation instructions. When soldering or brazing valves, do not heat valves above maximum permitted temperature. Do not use solder with melting point temperature above valve manufacturer's recommended maximum.

H. Adjust valve packing after piping systems have been tested and put into service, but before final adjusting and balancing. Replace valves exhibiting leakage.

3.3 GENERAL REQUIREMENTS FOR VALVE APPLICATIONS

A. If valves with specified SWP classes or CWP ratings are unavailable, provide the same types of valves with higher SWP classes or CWP ratings.

END OF SECTION 230523.12

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SECTION 230553 - IDENTIFICATION FOR HVAC PIPING AND EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Equipment labels.
2. Warning signs and labels.
3. Pipe labels.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

PART 2 - PRODUCTS

2.1 EQUIPMENT LABELS

A. Plastic Labels for Equipment:

1. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/16 inch thick, and having predrilled holes for attachment hardware.
2. Letter Color: White.
3. Background Color: Black.
4. Maximum Temperature: Able to withstand temperatures up to 160 deg F.
5. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.
6. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-quarters the size of principal lettering.
7. Fasteners: Stainless-steel rivets or self-tapping screws.
8. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

B. Label Content: Include equipment's Drawing designation or unique equipment number, Drawing numbers where equipment is indicated (plans, details, and schedules), and the Specification Section number and title where equipment is specified.

C. Equipment Filter Access Label:

1. Labels shall be white vinyl or plastic label with black print.
2. Labels shall be no smaller than 12 mm or ½” and no larger than 20mm or ¾”.
3. Font type shall be plain.

2.2 WARNING SIGNS AND LABELS

A. Material and Thickness: Multilayer, multicolor, plastic labels for mechanical engraving, 1/16 inch thick, and having predrilled holes for attachment hardware.

B. Letter Color: White.

C. Background Color: Red.

D. Maximum Temperature: Able to withstand temperatures up to 160 deg F.

E. Minimum Label Size: Length and width vary for required label content, but not less than 2-1/2 by 3/4 inch.

F. Minimum Letter Size: 1/4 inch for name of units if viewing distance is less than 24 inches, 1/2 inch for viewing distances up to 72 inches, and proportionately larger lettering for greater viewing distances. Include secondary lettering two-thirds to three-quarters the size of principal lettering.

G. Fasteners: Stainless-steel rivets or self-tapping screws.

H. Adhesive: Contact-type permanent adhesive, compatible with label and with substrate.

I. Label Content: Include caution and warning information plus emergency notification instructions.

2.3 PIPE LABELS

A. General Requirements for Manufactured Pipe Labels: Preprinted, color-coded, with lettering indicating service, and showing flow direction according to ASME A13.1.

B. Self-Adhesive Pipe Labels: Printed plastic with contact-type, permanent-adhesive backing.

C. Pipe Label Contents: Include identification of piping service using same designations or abbreviations as used on Drawings; also include pipe size and an arrow indicating flow direction.

1. Flow-Direction Arrows: Integral with piping system service lettering to accommodate both directions or as separate unit on each pipe label to indicate flow direction.
2. Lettering Size: At least 1/2 inch for viewing distances up to 72 inches and proportionately larger lettering for greater viewing distances.

PART 3 - EXECUTION

3.1 PREPARATION

A. Clean piping and equipment surfaces of substances that could impair bond of identification devices, including dirt, oil, grease, release agents, and incompatible primers, paints, and encapsulants.

3.2 EQUIPMENT LABEL INSTALLATION

A. Install or permanently fasten labels on each major item of mechanical equipment.

B. Locate equipment labels where accessible and visible.

3.3 PIPE LABEL INSTALLATION

A. Pipe Label Locations: Locate pipe labels where piping is exposed or above accessible ceilings in finished spaces; machine rooms; accessible maintenance spaces such as shafts, tunnels, and plenums; and exterior exposed locations as follows:

1. Near each valve and control device.
2. Near each branch connection, excluding short takeoffs for fixtures and terminal units. Where flow pattern is not obvious, mark each pipe at branch.
3. Near penetrations and on both sides of through walls, floors, ceilings, and inaccessible enclosures.
4. At access doors, manholes, and similar access points that permit view of concealed piping.
5. Near major equipment items and other points of origination and termination.
6. Spaced at maximum intervals of 50 feet along each run. Reduce intervals to 25 feet in areas of congested piping and equipment.
7. On piping above removable acoustical ceilings. Omit intermediately spaced labels.

END OF SECTION 230553

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SECTION 230593 - TESTING, ADJUSTING, AND BALANCING FOR HVAC

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Balancing Air Systems:

a. Constant-volume air systems.

1.2 DEFINITIONS

A. AABC: Associated Air Balance Council.

B. NEBB: National Environmental Balancing Bureau.

C. TAB: Testing, adjusting, and balancing.

D. TABB: Testing, Adjusting, and Balancing Bureau.

E. TAB Specialist: An independent entity meeting qualifications to perform TAB work.

F. TDH: Total dynamic head.

1.3 INFORMATIONAL SUBMITTALS

A. Certified TAB reports.

1.4 QUALITY ASSURANCE

A. TAB Specialists Qualifications: Certified by AABC NEBB or TABB.

1. TAB Field Supervisor: Employee of the TAB specialist and certified by AABC NEBB or TABB.
2. TAB Technician: Employee of the TAB specialist and certified by AABC NEBB or TABB as a TAB technician.

B. Instrumentation Type, Quantity, Accuracy, and Calibration: Comply with requirements in ASHRAE 111, Section 4, "Instrumentation."

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine the Contract Documents to become familiar with Project requirements and to discover conditions in systems designs that may preclude proper TAB of systems and equipment.

B. Examine installed systems for balancing devices, such as test ports, gage cocks, thermometer wells, flow-control devices, balancing valves and fittings, and manual volume dampers. Verify that locations of these balancing devices are applicable for intended purpose and are accessible.

C. Examine the approved submittals for HVAC systems and equipment.

D. Examine design data including HVAC system descriptions, statements of design assumptions for environmental conditions and systems output, and statements of philosophies and assumptions about HVAC system and equipment controls.

E. Examine ceiling plenums and underfloor air plenums used for supply, return, or relief air to verify that they are properly separated from adjacent areas. Verify that penetrations in plenum walls are sealed and fire-stopped if required.

F. Examine equipment performance data including fan curves.

1. Relate performance data to Project conditions and requirements, including system effects that can create undesired or unpredicted conditions that cause reduced capacities in all or part of a system.
2. Calculate system-effect factors to reduce performance ratings of HVAC equipment when installed under conditions different from the conditions used to rate equipment performance. To calculate system effects for air systems, use tables and charts found in AMCA 201, "Fans and Systems," or in SMACNA's "HVAC Systems - Duct Design." Compare results with the design data and installed conditions.

G. Examine system and equipment installations and verify that field quality-control testing, cleaning, and adjusting specified in individual Sections have been performed.

H. Examine test reports specified in individual system and equipment Sections.

I. Examine HVAC equipment and verify that bearings are greased, belts are aligned and tight, filters are clean, and equipment with functioning controls is ready for operation.

J. Examine terminal units, such as variable-air-volume boxes, and verify that they are accessible and their controls are connected and functioning.

K. Examine heat-transfer coils for correct piping connections and for clean and straight fins.

L. Examine operating safety interlocks and controls on HVAC equipment.

M. Report deficiencies discovered before and during performance of TAB procedures. Observe and record system reactions to changes in conditions. Record default set points if different from indicated values.

3.2 PREPARATION

A. Prepare a TAB plan that includes strategies and step-by-step procedures for balancing the systems.

B. Perform system-readiness checks of HVAC systems and equipment to verify system readiness for TAB work. Include, at a minimum, the following:

1. Airside:

a. Duct systems are complete with terminals installed.
b. Volume, smoke, and fire dampers are open and functional.
c. Clean filters are installed.
d. Fans are operating, free of vibration, and rotating in correct direction.
e. Automatic temperature-control systems are operational.
f. Ceilings are installed.
g. Windows and doors are installed.
h. Suitable access to balancing devices and equipment is provided.

3.3 GENERAL PROCEDURES FOR TESTING AND BALANCING

A. Perform testing and balancing procedures on each system according to the procedures contained in SMACNA's "HVAC Systems - Testing, Adjusting, and Balancing" and in this Section.

B. Cut insulation, ducts, pipes, and equipment cabinets for installation of test probes to the minimum extent necessary for TAB procedures.
1. Install and join new insulation that matches removed materials. Restore insulation, coverings, vapor barrier, and finish according to Section 230713 "Duct Insulation,"

C. Mark equipment and balancing devices, including damper-control positions, valve position indicators, fan-speed-control levers, and similar controls and devices, with paint or other suitable, permanent identification material to show final settings.

D. Take and report testing and balancing measurements in inch-pound (IP) units.

3.4 GENERAL PROCEDURES FOR BALANCING AIR SYSTEMS

A. Prepare test reports for both fans and outlets. Obtain manufacturer's outlet factors and recommended testing procedures. Cross-check the summation of required outlet volumes with required fan volumes.

B. Prepare schematic diagrams of systems' "as-built" duct layouts.

C. Determine the best locations in main and branch ducts for accurate duct-airflow measurements.

D. Check airflow patterns from the outdoor-air louvers and dampers and the return- and exhaust-air dampers through the supply-fan discharge and mixing dampers.

E. Locate start-stop and disconnect switches, electrical interlocks, and motor starters.

F. Verify that motor starters are equipped with properly sized thermal protection.

G. Check dampers for proper position to achieve desired airflow path.

H. Check for airflow blockages.

I. Check condensate drains for proper connections and functioning.

J. Check for proper sealing of air-handling-unit components.

K. Verify that air duct system is sealed as specified in Section 233113 "Metal Ducts."

3.5 PROCEDURES FOR CONSTANT-VOLUME AIR SYSTEMS

A. Adjust fans to deliver total indicated airflows within the maximum allowable fan speed listed by fan manufacturer.

1. Measure total airflow.

    a. Set outside-air, return-air, and relief-air dampers for proper position that simulates minimum outdoor-air conditions.
    b. Where duct conditions allow, measure airflow by Pitot-tube traverse. If necessary, perform multiple Pitot-tube traverses to obtain total airflow.
    c. Where duct conditions are not suitable for Pitot-tube traverse measurements, a coil traverse may be acceptable.
    d. If a reliable Pitot-tube traverse or coil traverse is not possible, measure airflow at terminals and calculate the total airflow.

2. Measure fan static pressures as follows:

    a. Measure static pressure directly at the fan outlet or through the flexible connection.
    b. Measure static pressure directly at the fan inlet or through the flexible connection.
    c. Measure static pressure across each component that makes up the air-handling system.
    d. Report artificial loading of filters at the time static pressures are measured.

3. Do not make fan-speed adjustments that result in motor overload. Consult equipment manufacturers about fan-speed safety factors. Modulate dampers and measure fan-motor amperage to ensure that no overload occurs. Measure amperage in full-cooling, full-heating, economizer, and any other operating mode to determine the maximum required brake horsepower.

B. Adjust volume dampers for main duct, submain ducts, and major branch ducts to indicated airflows.

1. Measure airflow of submain and branch ducts.
2. Adjust submain and branch duct volume dampers for specified airflow.
3. Re-measure each submain and branch duct after all have been adjusted.

C. Adjust air inlets and outlets for each space to indicated airflows.

1. Set airflow patterns of adjustable outlets for proper distribution without drafts.
2. Measure inlets and outlets airflow.
3. Adjust each inlet and outlet for specified airflow.
4. Re-measure each inlet and outlet after they have been adjusted.

3.6 TOLERANCES

A. Set HVAC system's airflow rates and water flow rates within the following tolerances:

1. Supply, Return, and Exhaust Fans and Equipment with Fans: Plus or minus 10 percent.
2. Air Outlets and Inlets: Plus or minus 10 percent.

B. Maintaining pressure relationships as designed shall have priority over the tolerances specified above.

3.7 FINAL REPORT

A. General: Prepare a certified written report; tabulate and divide the report into separate sections for tested systems and balanced systems.

1. Include a certification sheet at the front of the report's binder, signed and sealed by the certified testing and balancing engineer.
2. Include a list of instruments used for procedures, along with proof of calibration.
3. Certify validity and accuracy of field data.

B. Final Report Contents: In addition to certified field-report data, include the following:
1. Fan curves.
2. Manufacturers' test data.
3. Field test reports prepared by system and equipment installers.
4. Other information relative to equipment performance; do not include Shop Drawings and Product Data.

C. General Report Data: In addition to form titles and entries, include the following data:

1. Title page.
2. Name and address of the TAB specialist.
3. Project name.
4. Project location.
5. Architect's name and address.
6. Engineer's name and address.
7. Contractor's name and address.
8. Report date.
9. Signature of TAB supervisor who certifies the report.
10. Table of Contents with the total number of pages defined for each section of the report. Number each page in the report.
11. Summary of contents including the following:

    a. Indicated versus final performance.
    b. Notable characteristics of systems.
    c. Description of system operation sequence if it varies from the Contract Documents.

12. Nomenclature sheets for each item of equipment.
13. Data for terminal units, including manufacturer's name, type, size, and fittings.
14. Notes to explain why certain final data in the body of reports vary from indicated values.
15. Test conditions for fans and pump performance forms including the following:

    a. Settings for outdoor-, return-, and exhaust-air dampers.

b. Conditions of filters.
c. Cooling coil, wet- and dry-bulb conditions.
d. Face and bypass damper settings at coils.
e. Fan drive settings including settings and percentage of maximum pitch diameter.
f. Settings for supply-air, static-pressure controller.
g. Other system operating conditions that affect performance.

D. System Diagrams: Include schematic layouts of air and hydronic distribution systems. Present each system with single-line diagram and include the following:

1. Quantities of outdoor, supply, return, and exhaust airflows.
2. Duct, outlet, and inlet sizes.
3. Pipe and valve sizes and locations.
4. Terminal units.
5. Balancing stations.
6. Position of balancing devices.

E. Air-Handling-Unit Test Reports: For air-handling units with coils, include the following:

1. Unit Data:

a. Unit identification.
b. Location.
c. Make and type.
d. Model number and unit size.
e. Manufacturer's serial number.
f. Unit arrangement and class.
g. Discharge arrangement.
h. Sheave make, size in inches, and bore.
i. Center-to-center dimensions of sheave and amount of adjustments in inches.
j. Number, make, and size of belts.
k. Number, type, and size of filters.

2. Motor Data:

a. Motor make, and frame type and size.
b. Horsepower and rpm.
c. Volts, phase, and hertz.
d. Full-load amperage and service factor.
e. Sheave make, size in inches, and bore.
f. Center-to-center dimensions of sheave and amount of adjustments in inches.

3. Test Data (Indicated and Actual Values):

a. Total airflow rate in cfm.
b. Total system static pressure in inches wg.
c. Fan rpm.
d. Discharge static pressure in inches wg.
e. Filter static-pressure differential in inches wg.
f. Cooling-coil static-pressure differential in inches wg.
g. Heating-coil static-pressure differential in inches wg.
h. Outdoor airflow in cfm.
i. Return airflow in cfm.
j. Outdoor-air damper position.

k. Return-air damper position.
l. Vortex damper position.
m. Outdoor-air, wet- and dry-bulb temperatures in deg F.
n. Return-air, wet- and dry-bulb temperatures in deg F.
o. Entering-air, wet- and dry-bulb temperatures in deg F.
p. Leaving-air, wet- and dry-bulb temperatures in deg F.

F. Round, Flat-Oval, and Rectangular Duct Traverse Reports: Include a diagram with a grid representing the duct cross-section and record the following:

1. Report Data:

a. System and air-handling-unit number.
b. Location and zone.
c. Traverse air temperature in deg F.
d. Duct static pressure in inches wg.
e. Duct size in inches.
f. Duct area in sq. ft..
g. Indicated airflow rate in cfm.
h. Indicated velocity in fpm.
i. Actual airflow rate in cfm.
j. Actual average velocity in fpm.
k. Barometric pressure in psig.

G. Air-Terminal-Device Reports:

1. Unit Data:

a. System and air-handling unit identification.
b. Location and zone.
c. Apparatus used for test.
d. Area served.
e. Make.
f. Number from system diagram.
g. Type and model number.
h. Size.
i. Effective area in sq. ft..

2. Test Data (Indicated and Actual Values):

a. Airflow rate in cfm.
b. Air velocity in fpm.
c. Preliminary airflow rate as needed in cfm.
d. Preliminary velocity as needed in fpm.
e. Final airflow rate in cfm.
f. Final velocity in fpm.
g. Space temperature in deg F.

H. Instrument Calibration Reports:

1. Report Data:

a. Instrument type and make.
b. Serial number.

c. Application.
d. Dates of use.
e. Dates of calibration.

SECTION 230713 - DUCT INSULATION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes insulating the following duct services:

1. Indoor, concealed supply air.
2. Outdoor, supply and return air.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.

1. Detail application of protective shields, saddles, and inserts at hangers for each type of insulation and hanger.
2. Detail insulation application at elbows, fittings, dampers, specialties and flanges for each type of insulation.
3. Detail application of field-applied jackets.
4. Detail application at linkages of control devices.

1.3 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

1.4 QUALITY ASSURANCE

A. Surface-Burning Characteristics: For insulation and related materials, as determined by testing identical products according to ASTM E 84, by a testing agency acceptable to authorities having jurisdiction. Factory label insulation and jacket materials and adhesive, mastic, tapes, and cement material containers, with appropriate markings of applicable testing agency.

1. Insulation Installed Indoors: Flame-spread index of 25 or less, and smoke-developed index of 50 or less.
2. Insulation Installed Outdoors: Flame-spread index of 75 or less, and smoke-developed index of 150 or less.

PART 2 - PRODUCTS

2.1 INSULATION MATERIALS

A. Comply with requirements in "Duct Insulation Schedule, General," "Indoor Duct and Plenum Insulation Schedule," and "Aboveground, Outdoor Duct and Plenum Insulation Schedule" articles for where insulating materials shall be applied.

B. Products shall not contain asbestos, lead, mercury, or mercury compounds.

C. Products that come in contact with stainless steel shall have a leachable chloride content of less than 50 ppm when tested according to ASTM C 871.

D. Insulation materials for use on austenitic stainless steel shall be qualified as acceptable according to ASTM C 795.

E. Foam insulation materials shall not use CFC or HCFC blowing agents in the manufacturing process.

F. Mineral-Fiber Blanket Insulation: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 553, Type II and ASTM C 1290, Type III with factory-applied FSK jacket. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

    a. CertainTeed Corporation.
    b. Johns Manville; a Berkshire Hathaway company.
    c. Knauf Insulation.

G. Mineral-Fiber Board Insulation: Mineral or glass fibers bonded with a thermosetting resin. Comply with ASTM C 612, Type IA or Type IB. For duct and plenum applications, provide insulation with factory-applied ASJ. Factory-applied jacket requirements are specified in "Factory-Applied Jackets" Article.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

    a. CertainTeed Corporation.
    b. Johns Manville; a Berkshire Hathaway company.
    c. Knauf Insulation.

2.2 ADHESIVES

A. Materials shall be compatible with insulation materials, jackets, and substrates and for bonding insulation to itself and to surfaces to be insulated unless otherwise indicated.

B. Mineral-Fiber Adhesive: Comply with MIL-A-3316C, Class 2, Grade A.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

    a. Childers Brand; H. B. Fuller Construction Products.
    b. Eagle Bridges - Marathon Industries.
    c. Mon-Eco Industries, Inc.

C. ASJ Adhesive, and FSK Jacket Adhesive: Comply with MIL-A-3316C, Class 2, Grade A for bonding insulation jacket lap seams and joints.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

    a. Childers Brand; H. B. Fuller Construction Products.
    b. Eagle Bridges - Marathon Industries.
    c. Mon-Eco Industries, Inc.

2.3 MASTICS

A. Materials shall be compatible with insulation materials, jackets, and substrates; comply with MIL-PRF-19565C, Type II.

B. Vapor-Barrier Mastic: Water based; suitable for indoor use on below ambient services.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

    a. Childers Brand; H. B. Fuller Construction Products.
    b. Knauf Insulation.
    c. Vimasco Corporation.

2. Water-Vapor Permeance: ASTM E 96/E 96M, Procedure B, 0.013 perm at 43-mil dry film thickness.
3. Service Temperature Range: Minus 20 to plus 180 deg F.
4. Solids Content: ASTM D 1644, 58 percent by volume and 70 percent by weight.
5. Color: White.

C. Breather Mastic: Water based; suitable for indoor and outdoor use on above ambient services.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

    a. Childers Brand; H. B. Fuller Construction Products.
    b. Eagle Bridges - Marathon Industries.
    c. Knauf Insulation.
    d. Mon-Eco Industries, Inc.
    e. Vimasco Corporation.

2. Water-Vapor Permeance: ASTM F 1249, 1.8 perms at 0.0625-inch dry film thickness.
3. Service Temperature Range: Minus 20 to plus 180 deg F.
4. Solids Content: 60 percent by volume and 66 percent by weight.
5. Color: White.

2.4 SEALANTS

A. FSK and Metal Jacket Flashing Sealants:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

    a. Childers Brand; H. B. Fuller Construction Products.
    b. Eagle Bridges - Marathon Industries.
    c. Mon-Eco Industries, Inc.

2. Materials shall be compatible with insulation materials, jackets, and substrates.
3. Fire- and water-resistant, flexible, elastomeric sealant.
4. Service Temperature Range: Minus 40 to plus 250 deg F.
5. Color: Aluminum.

B. ASJ Flashing Sealants, and Vinyl and PVC Jacket Flashing Sealants:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

    a. Childers Brand; H. B. Fuller Construction Products.

2. Materials shall be compatible with insulation materials, jackets, and substrates.
3. Fire- and water-resistant, flexible, elastomeric sealant.
4. Service Temperature Range: Minus 40 to plus 250 deg F.
5. Color: White.

2.5 FACTORY-APPLIED JACKETS

A. Insulation system schedules indicate factory-applied jackets on various applications. When factory-applied jackets are indicated, comply with the following:

1. ASJ: White, kraft-paper, fiberglass-reinforced scrim with aluminum-foil backing; complying with ASTM C 1136, Type I.
2. FSK Jacket: Aluminum-foil, fiberglass-reinforced scrim with kraft-paper backing; complying with ASTM C 1136, Type II.

2.6 TAPES

A. ASJ Tape: White vapor-retarder tape matching factory-applied jacket with acrylic adhesive, complying with ASTM C 1136.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

    a. Compac Corporation.
    b. Ideal Tape Co., Inc., an American Biltrite Company.
    c. Knauf Insulation.

2. Width: 3 inches.
3. Thickness: 11.5 mils.
4. Adhesion: 90 ounces force/inch in width.

5. Elongation: 2 percent.
6. Tensile Strength: 40 lbf/inch in width.
7. ASJ Tape Disks and Squares: Precut disks or squares of ASJ tape.

B. FSK Tape: Foil-face, vapor-retarder tape matching factory-applied jacket with acrylic adhesive; complying with ASTM C 1136.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

   a. Compac Corporation.
   b. Ideal Tape Co., Inc., an American Biltrite Company.
   c. Knauf Insulation.

2. Width: 3 inches.
3. Thickness: 6.5 mils.
4. Adhesion: 90 ounces force/inch in width.
5. Elongation: 2 percent.
6. Tensile Strength: 40 lbf/inch in width.
7. FSK Tape Disks and Squares: Precut disks or squares of FSK tape.

2.7 SECUREMENTS

A. Aluminum Bands: ASTM B 209, Alloy 3003, 3005, 3105, or 5005; Temper H-14, 0.020 inch thick, 1/2 inch wide with wing seal.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

   a. ITW Insulation Systems; Illinois Tool Works, Inc.
   b. RPR Products, Inc.

B. Insulation Pins and Hangers:

1. Metal, Adhesively Attached, Perforated-Base Insulation Hangers: Baseplate welded to projecting spindle that is capable of holding insulation, of thickness indicated, securely in position indicated when self-locking washer is in place. Comply with the following requirements:

   a. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

      1) Gemco.
      2) Hardcast; a Carlisle Company.
      3) Midwest Fasteners, Inc.

   b. Baseplate: Perforated, galvanized carbon-steel sheet, 0.030 inch thick by 2 inches square.
   c. Spindle: Copper- or zinc-coated, low-carbon steel, fully annealed, 0.106-inch-diameter shank, length to suit depth of insulation indicated.

d. Adhesive: Recommended by hanger manufacturer. Product with demonstrated capability to bond insulation hanger securely to substrates indicated without damaging insulation, hangers, and substrates.

2. Nonmetal, Adhesively Attached, Perforated-Base Insulation Hangers: Baseplate fastened to projecting spindle that is capable of holding insulation, of thickness indicated, securely in position indicated when self-locking washer is in place. Comply with the following requirements:

   a. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

      1) Gemco.
      2) Midwest Fasteners, Inc.

   b. Baseplate: Perforated, nylon sheet, 0.030 inch thick by 1-1/2 inches in diameter.
   c. Spindle: Nylon, 0.106-inch-diameter shank, length to suit depth of insulation indicated, up to 2-1/2 inches.
   d. Adhesive: Recommended by hanger manufacturer. Product with demonstrated capability to bond insulation hanger securely to substrates indicated without damaging insulation, hangers, and substrates.

3. Self-Sticking-Base Insulation Hangers: Baseplate welded to projecting spindle that is capable of holding insulation, of thickness indicated, securely in position indicated when self-locking washer is in place. Comply with the following requirements:

   a. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

      1) Gemco.
      2) Hardcast; a Carlisle Company.
      3) Midwest Fasteners, Inc.

   b. Baseplate: Galvanized carbon-steel sheet, 0.030 inch thick by 2 inches square.
   c. Spindle: Copper- or zinc-coated, low-carbon steel, fully annealed, 0.106-inch-diameter shank, length to suit depth of insulation indicated.
   d. Adhesive-backed base with a peel-off protective cover.

4. Insulation-Retaining Washers: Self-locking washers formed from 0.016-inch-thick, galvanized-steel sheet, with beveled edge sized as required to hold insulation securely in place but not less than 1-1/2 inches in diameter.

   a. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

      1) Gemco.
      2) Hardcast; a Carlisle Company.
      3) Midwest Fasteners, Inc.

   b. Protect ends with capped self-locking washers incorporating a spring steel insert to ensure permanent retention of cap in exposed locations.

5. Nonmetal Insulation-Retaining Washers: Self-locking washers formed from 0.016-inch-thick nylon sheet, with beveled edge sized as required to hold insulation securely in place but not less than 1-1/2 inches in diameter.

    a. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

        1) Gemco.
        2) Midwest Fasteners, Inc.

C. Staples: Outward-clinching insulation staples, nominal 3/4-inch-wide, stainless steel or Monel.

D. Wire: 0.062-inch soft-annealed, stainless steel.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

    a. C & F Wire.

PART 3 - EXECUTION

3.1 PREPARATION

A. Surface Preparation: Clean and dry surfaces to receive insulation. Remove materials that will adversely affect insulation application.

3.2 GENERAL INSTALLATION REQUIREMENTS

A. Install insulation materials, accessories, and finishes with smooth, straight, and even surfaces; free of voids throughout the length of ducts and fittings.

B. Install insulation materials, vapor barriers or retarders, jackets, and thicknesses required for each item of duct system as specified in insulation system schedules.

C. Install accessories compatible with insulation materials and suitable for the service. Install accessories that do not corrode, soften, or otherwise attack insulation or jacket in either wet or dry state.

D. Install insulation with longitudinal seams at top and bottom of horizontal runs.

E. Install multiple layers of insulation with longitudinal and end seams staggered.

F. Keep insulation materials dry during application and finishing.

G. Install insulation with tight longitudinal seams and end joints. Bond seams and joints with adhesive recommended by insulation material manufacturer.

H. Install insulation with least number of joints practical.

I. Where vapor barrier is indicated, seal joints, seams, and penetrations in insulation at hangers, supports, anchors, and other projections with vapor-barrier mastic.

1. Install insulation continuously through hangers and around anchor attachments.
2. For insulation application where vapor barriers are indicated, extend insulation on anchor legs from point of attachment to supported item to point of attachment to structure. Taper and seal ends at attachment to structure with vapor-barrier mastic.
3. Install insert materials and install insulation to tightly join the insert. Seal insulation to insulation inserts with adhesive or sealing compound recommended by insulation material manufacturer.

J. Apply adhesives, mastics, and sealants at manufacturer's recommended coverage rate and wet and dry film thicknesses.

K. Install insulation with factory-applied jackets as follows:

1. Draw jacket tight and smooth.
2. Cover circumferential joints with 3-inch-wide strips, of same material as insulation jacket. Secure strips with adhesive and outward clinching staples along both edges of strip, spaced 4 inches o.c.
3. Overlap jacket longitudinal seams at least 1-1/2 inches. Clean and dry surface to receive self-sealing lap. Staple laps with outward clinching staples along edge at 4 inches o.c.

    a. For below ambient services, apply vapor-barrier mastic over staples.

4. Cover joints and seams with tape, according to insulation material manufacturer's written instructions, to maintain vapor seal.
5. Where vapor barriers are indicated, apply vapor-barrier mastic on seams and joints and at ends adjacent to duct flanges and fittings.

L. Cut insulation in a manner to avoid compressing insulation more than 75 percent of its nominal thickness.

M. Finish installation with systems at operating conditions. Repair joint separations and cracking due to thermal movement.

N. Repair damaged insulation facings by applying same facing material over damaged areas. Extend patches at least 4 inches beyond damaged areas. Adhere, staple, and seal patches similar to butt joints.

3.3 PENETRATIONS

A. Insulation Installation at Roof Penetrations: Install insulation continuously through roof penetrations.

1. Seal penetrations with flashing sealant.
2. For applications requiring only indoor insulation, terminate insulation above roof surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
3. Extend jacket of outdoor insulation outside roof flashing at least 2 inches below top of roof flashing.
4. Seal jacket to roof flashing with flashing sealant.

B. Insulation Installation at Aboveground Exterior Wall Penetrations: Install insulation continuously through wall penetrations.

1. Seal penetrations with flashing sealant.
2. For applications requiring only indoor insulation, terminate insulation inside wall surface and seal with joint sealant. For applications requiring indoor and outdoor insulation, install insulation for outdoor applications tightly joined to indoor insulation ends. Seal joint with joint sealant.
3. Extend jacket of outdoor insulation outside wall flashing and overlap wall flashing at least 2 inches.
4. Seal jacket to wall flashing with flashing sealant.

C. Insulation Installation at Interior Wall and Partition Penetrations (That Are Not Fire Rated): Install insulation continuously through walls and partitions.

3.4 INSTALLATION OF MINERAL-FIBER INSULATION

A. Blanket Insulation Installation on Ducts and Plenums: Secure with adhesive and insulation pins.

1. Apply adhesives according to manufacturer's recommended coverage rates per unit area, for 50 percent coverage of duct and plenum surfaces.
2. Apply adhesive to entire circumference of ducts and to all surfaces of fittings and transitions.
3. Install either capacitor-discharge-weld pins and speed washers or cupped-head, capacitor-discharge-weld pins on sides and bottom of horizontal ducts and sides of vertical ducts as follows:

    a. On duct sides with dimensions 18 inches and smaller, place pins along longitudinal centerline of duct. Space 3 inches maximum from insulation end joints, and 16 inches o.c.
    b. On duct sides with dimensions larger than 18 inches, place pins 16 inches o.c. each way, and 3 inches maximum from insulation joints. Install additional pins to hold insulation tightly against surface at cross bracing.
    c. Pins may be omitted from top surface of horizontal, rectangular ducts and plenums.
    d. Do not overcompress insulation during installation.
    e. Impale insulation over pins and attach speed washers.
    f. Cut excess portion of pins extending beyond speed washers or bend parallel with insulation surface. Cover exposed pins and washers with tape matching insulation facing.

4. For ducts and plenums with surface temperatures below ambient, install a continuous unbroken vapor barrier. Create a facing lap for longitudinal seams and end joints with insulation by removing 2 inches from one edge and one end of insulation segment. Secure laps to adjacent insulation section with 1/2-inch outward-clinching staples, 1 inch o.c. Install vapor barrier consisting of factory- or field-applied jacket, adhesive, vapor-barrier mastic, and sealant at joints, seams, and protrusions.

    a. Repair punctures, tears, and penetrations with tape or mastic to maintain vapor-barrier seal.
    b. Install vapor stops for ductwork and plenums operating below 50 deg F at 18-foot intervals. Vapor stops shall consist of vapor-barrier mastic applied in a Z-shaped pattern over insulation face, along butt end of insulation, and over the surface.

Cover insulation face and surface to be insulated a width equal to two times the insulation thickness, but not less than 3 inches.

5. Overlap unfaced blankets a minimum of 2 inches on longitudinal seams and end joints. At end joints, secure with steel bands spaced a maximum of 18 inches o.c.
6. Install insulation on rectangular duct elbows and transitions with a full insulation section for each surface. Install insulation on round and flat-oval duct elbows with individually mitered gores cut to fit the elbow.
7. Insulate duct stiffeners, hangers, and flanges that protrude beyond insulation surface with 6-inch-wide strips of same material used to insulate duct. Secure on alternating sides of stiffener, hanger, and flange with pins spaced 6 inches o.c.

B. Board Insulation Installation on Ducts and Plenums: Secure with adhesive and insulation pins.

1. Apply adhesives according to manufacturer's recommended coverage rates per unit area, for 50 percent coverage of duct and plenum surfaces.
2. Apply adhesive to entire circumference of ducts and to all surfaces of fittings and transitions.
3. Install either capacitor-discharge-weld pins and speed washers or cupped-head, capacitor-discharge-weld pins on sides and bottom of horizontal ducts and sides of vertical ducts as follows:

    a. On duct sides with dimensions 18 inches and smaller, place pins along longitudinal centerline of duct. Space 3 inches maximum from insulation end joints, and 16 inches o.c.
    b. On duct sides with dimensions larger than 18 inches, space pins 16 inches o.c. each way, and 3 inches maximum from insulation joints. Install additional pins to hold insulation tightly against surface at cross bracing.
    c. Pins may be omitted from top surface of horizontal, rectangular ducts and plenums.
    d. Do not overcompress insulation during installation.
    e. Cut excess portion of pins extending beyond speed washers or bend parallel with insulation surface. Cover exposed pins and washers with tape matching insulation facing.

4. For ducts and plenums with surface temperatures below ambient, install a continuous unbroken vapor barrier. Create a facing lap for longitudinal seams and end joints with insulation by removing 2 inches from one edge and one end of insulation segment. Secure laps to adjacent insulation section with 1/2-inch outward-clinching staples, 1 inch o.c. Install vapor barrier consisting of factory- or field-applied jacket, adhesive, vapor-barrier mastic, and sealant at joints, seams, and protrusions.

    a. Repair punctures, tears, and penetrations with tape or mastic to maintain vapor-barrier seal.

5. Install insulation on rectangular duct elbows and transitions with a full insulation section for each surface. Groove and score insulation to fit as closely as possible to outside and inside radius of elbows. Install insulation on round and flat-oval duct elbows with individually mitered gores cut to fit the elbow.
6. Insulate duct stiffeners, hangers, and flanges that protrude beyond insulation surface with 6-inch-wide strips of same material used to insulate duct. Secure on alternating sides of stiffener, hanger, and flange with pins spaced 6 inches o.c.

3.5 FIELD QUALITY CONTROL

A. Perform tests and inspections.

B. Tests and Inspections:

1. Inspect ductwork, randomly selected by Architect, by removing field-applied jacket and insulation in layers in reverse order of their installation. Extent of inspection shall be limited to one location(s) for each duct system defined in the "Duct Insulation Schedule, General" Article.

C. All insulation applications will be considered defective Work if sample inspection reveals noncompliance with requirements.

3.6 DUCT INSULATION SCHEDULE, GENERAL

A. Plenums and Ducts Requiring Insulation:

1. Indoor, concealed supply air.
2. Exterior ductwork between HVAC unit and building

B. Items Not Insulated:

1. Fibrous-glass ducts.
2. Factory-insulated flexible ducts.
3. Factory-insulated plenums and casings.
4. Flexible connectors.
5. Vibration-control devices.
6. Factory-insulated access panels and doors.

3.7 INDOOR DUCT INSULATION SCHEDULE

A. Concealed, Supply-Air Duct: Mineral-fiber blanket, 1.5inches thick and 1.0-lb/cu. ft. nominal density.

B. Concealed, Return-Air Duct: Mineral-fiber blanket, 1.5inches thick and 1.0-lb/cu. ft. nominal density.

C. Concealed, Exhaust-Air Duct: Mineral-fiber blanket, 2 inches thick and 1.0-lb/cu. ft. nominal density.

D. Concealed, Fresh-Air (Conditioned Outside Air): Mineral-fiber blanket, 2 inches thick and 1.0-lb/cu. ft. nominal density.

3.8 Exterior ductwork between HVAC unit and building

A. Exterior Supply-Air Duct: Mineral-fiber blanket, 2inches thick and 1.0-lb/cu. ft. nominal density with field applied aluminum jacket.

B. Exterior, Return-Air Duct: Mineral-fiber blanket, 2inches thick and 1.0-lb/cu. ft. nominal density with field applied aluminum jacket.

END OF SECTION 230713

SECTION 231123 - FACILITY NATURAL-GAS PIPING

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Pipes, tubes, and fittings.
2. Piping specialties.
3. Piping and tubing joining materials.
4. Valves.
5. Pressure regulators.

1.2 PERFORMANCE REQUIREMENTS

A. Minimum Operating-Pressure Ratings:

1. Piping and Valves: 100 psig minimum unless otherwise indicated.
2. Service Regulators: 100 psig minimum unless otherwise indicated.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

1.4 QUALITY ASSURANCE

A. Steel Support Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

B. Pipe Welding Qualifications: Qualify procedures and operators according to ASME Boiler and Pressure Vessel Code.

C. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

PART 2 - PRODUCTS

2.1 PIPES, TUBES, AND FITTINGS

A. Steel Pipe: ASTM A 53/A 53M, black steel, Schedule 40, Type E or S, Grade B.

1. Malleable-Iron Threaded Fittings: ASME B16.3, Class 150, standard pattern.
2. Wrought-Steel Welding Fittings: ASTM A 234/A 234M for butt welding and socket welding.

3. Unions: ASME B16.39, Class 150, malleable iron with brass-to-iron seat, ground joint, and threaded ends.

    a. Joint Cover Kits: Epoxy paint, adhesive, and heat-shrink PE sleeves.

2.2 PIPING SPECIALTIES

A. Appliance Flexible Connectors:

1. Indoor, Fixed-Appliance Flexible Connectors: Comply with ANSI Z21.24.
2. Indoor, Movable-Appliance Flexible Connectors: Comply with ANSI Z21.69.
3. Outdoor, Appliance Flexible Connectors: Comply with ANSI Z21.75.
4. Corrugated stainless-steel tubing with polymer coating.
5. Operating-Pressure Rating: 0.5 psig.
6. End Fittings: Zinc-coated steel.
7. Threaded Ends: Comply with ASME B1.20.1.
8. Maximum Length: 72 inches

B. Quick-Disconnect Devices: Comply with ANSI Z21.41.

1. Copper-alloy convenience outlet and matching plug connector.
2. Nitrile seals.
3. Hand operated with automatic shutoff when disconnected.
4. For indoor or outdoor applications.
5. Adjustable, retractable restraining cable.

C. Weatherproof Vent Cap: Cast- or malleable-iron increaser fitting with corrosion-resistant wire screen, with free area at least equal to cross-sectional area of connecting pipe and threaded-end connection.

2.3 JOINING MATERIALS

A. Joint Compound and Tape: Suitable for natural gas.

B. Welding Filler Metals: Comply with AWS D10.12/D10.12M for welding materials appropriate for wall thickness and chemical analysis of steel pipe being welded.

C. Brazing Filler Metals: Alloy with melting point greater than 1000 deg F complying with AWS A5.8/A5.8M. Brazing alloys containing more than 0.05 percent phosphorus are prohibited.

2.4 MANUAL GAS SHUTOFF VALVES

A. General Requirements for Metallic Valves, NPS 2 and Smaller: Comply with ASME B16.33.

1. CWP Rating: 125 psig.
2. Threaded Ends: Comply with ASME B1.20.1.
3. Dryseal Threads on Flare Ends: Comply with ASME B1.20.3.
4. Listing: Listed and labeled by an NRTL acceptable to authorities having jurisdiction for valves 1 inch and smaller.

5. Service Mark: Valves 1-1/4 inches to NPS 2 shall have initials "WOG" permanently marked on valve body.

B. Two-Piece, Full-Port, Bronze Ball Valves with Bronze Trim: MSS SP-110.

1. Body: Bronze, complying with ASTM B 584.
2. Ball: Chrome-plated bronze.
3. Stem: Bronze; blowout proof.
4. Seats: Reinforced TFE; blowout proof.
5. Packing: Threaded-body packnut design with adjustable-stem packing.
6. Ends: Threaded, flared, or socket as indicated in "Aboveground Manual Gas Shutoff Valve Schedule" Articles.
7. CWP Rating: 600 psig.
8. Listing: Valves NPS 1 and smaller shall be listed and labeled by an NRTL acceptable to authorities having jurisdiction.
9. Service: Suitable for natural-gas service with "WOG" indicated on valve body.

C. Valve Boxes:

1. Cast-iron, two-section box.
2. Top section with cover with "GAS" lettering.
3. Bottom section with base to fit over valve and barrel a minimum of 5 inches in diameter.
4. Adjustable cast-iron extensions of length required for depth of bury.
5. Include tee-handle, steel operating wrench with socket end fitting valve nut or flat head, and with stem of length required to operate valve.

2.5 PRESSURE REGULATORS

A. General Requirements:

1. Single stage and suitable for natural gas.
2. Steel jacket and corrosion-resistant components.
3. Elevation compensator.
4. End Connections: Threaded for regulators NPS 2 and smaller.

B. Line Pressure Regulators: Comply with ANSI Z21.80.

1. Body and Diaphragm Case: Cast iron or die-cast aluminum.
2. Springs: Zinc-plated steel; interchangeable.
3. Diaphragm Plate: Zinc-plated steel.
4. Seat Disc: Nitrile rubber resistant to gas impurities, abrasion, and deformation at the valve port.
5. Orifice: Aluminum; interchangeable.
6. Seal Plug: Ultraviolet-stabilized, mineral-filled nylon.
7. Single-port, self-contained regulator with orifice no larger than required at maximum pressure inlet, and no pressure sensing piping external to the regulator.
8. Pressure regulator shall maintain discharge pressure setting downstream, and not exceed 150 percent of design discharge pressure at shutoff.
9. Overpressure Protection Device: Factory mounted on pressure regulator.
10. Atmospheric Vent: Factory- or field-installed, stainless-steel screen in opening if not connected to vent piping.
11. Maximum Inlet Pressure: 2 psig.

C. Appliance Pressure Regulators: Comply with ANSI Z21.18.

1. Body and Diaphragm Case: Die-cast aluminum.
2. Springs: Zinc-plated steel; interchangeable.
3. Diaphragm Plate: Zinc-plated steel.
4. Seat Disc: Nitrile rubber.
5. Seal Plug: Ultraviolet-stabilized, mineral-filled nylon.
6. Factory-Applied Finish: Minimum three-layer polyester and polyurethane paint finish.
7. Regulator may include vent limiting device, instead of vent connection, if approved by authorities having jurisdiction.
8. Maximum Inlet Pressure: 2 psig.

2.6 DIELECTRIC UNIONS

A. Dielectric Unions:

1. Description:

a. Standard: ASSE 1079.
b. Pressure Rating: 125 psig minimum at 180 deg F.
c. End Connections: Solder-joint copper alloy and threaded ferrous.

PART 3 - EXECUTION

3.1 OUTDOOR PIPING INSTALLATION

A. Comply with the International Fuel Gas Code for installation and purging of natural-gas piping.

B. Steel Piping with Protective Coating:

1. Apply joint cover kits to pipe after joining to cover, seal, and protect joints.
2. Replace pipe having damaged PE coating with new pipe.

C. Install fittings for changes in direction and branch connections.

3.2 INDOOR PIPING INSTALLATION

A. Comply with the International Fuel Gas Code for installation and purging of natural-gas piping.

B. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicated locations and arrangements are used to size pipe and calculate friction loss, expansion, and other design considerations. Install piping as indicated unless deviations to layout are approved on Coordination Drawings.

C. Arrange for pipe spaces, chases, slots, sleeves, and openings in building structure during progress of construction, to allow for mechanical installations.

D. Install piping in concealed locations unless otherwise indicated and except in equipment rooms and service areas.

E. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.

F. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.

G. Locate valves for easy access.

H. Install piping free of sags and bends.

I. Install fittings for changes in direction and branch connections.

J. Verify final equipment locations for roughing-in.

K. Comply with requirements in Sections specifying gas-fired appliances and equipment for roughing-in requirements.

L. Drips and Sediment Traps: Install drips at points where condensate may collect, including service-meter outlets. Locate where accessible to permit cleaning and emptying. Do not install where condensate is subject to freezing.

   1. Construct drips and sediment traps using tee fitting with bottom outlet plugged or capped. Use nipple a minimum length of 3 pipe diameters, but not less than 3 inches long and same size as connected pipe. Install with space below bottom of drip to remove plug or cap.

M. Extend relief vent connections for service regulators, line regulators, and overpressure protection devices to outdoors and terminate with weatherproof vent cap.

N. Conceal pipe installations in walls, pipe spaces, utility spaces, above ceilings, below grade or floors, and in floor channels unless indicated to be exposed to view.

O. Use eccentric reducer fittings to make reductions in pipe sizes. Install fittings with level side down.

P. Connect branch piping from top or side of horizontal piping.

Q. Install unions in pipes NPS 2 and smaller, adjacent to each valve, at final connection to each piece of equipment.

R. Do not use natural-gas piping as grounding electrode.

S. Install sleeves for piping penetrations of walls, ceilings, and floors. Comply with requirements for sleeves specified in Section 230500 "Sleeves and Sleeve Seals for HVAC Piping."

T. Install sleeve seals for piping penetrations of concrete walls and slabs. Comply with requirements for sleeve seals specified in Section 230500 "Sleeves and Sleeve Seals for HVAC Piping."

U. Install escutcheons for piping penetrations of walls, ceilings, and floors. Comply with requirements for escutcheons specified in Section 230500 "Escutcheons for HVAC Piping."

3.3 VALVE INSTALLATION

A. Install manual gas shutoff valve for each gas appliance ahead of corrugated stainless-steel tubing or copper connector.

B. Install regulators and overpressure protection devices with maintenance access space adequate for servicing and testing.

3.4 PIPING JOINT CONSTRUCTION

A. Ream ends of pipes and tubes and remove burrs.

B. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.

C. Threaded Joints:

1. Thread pipe with tapered pipe threads complying with ASME B1.20.1.
2. Cut threads full and clean using sharp dies.
3. Ream threaded pipe ends to remove burrs and restore full inside diameter of pipe.
4. Apply appropriate tape or thread compound to external pipe threads unless dryseal threading is specified.
5. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.

D. Welded Joints:

1. Construct joints according to AWS D10.12/D10.12M, using qualified processes and welding operators.
2. Bevel plain ends of steel pipe.
3. Patch factory-applied protective coating as recommended by manufacturer at field welds and where damage to coating occurs during construction.

E. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," "Pipe and Tube" Chapter.

F. Flared Joints: Cut tubing with roll cutting tool. Flare tube end with tool to result in flare dimensions complying with SAE J513. Tighten finger tight, then use wrench. Do not overtighten.

3.5 HANGER AND SUPPORT INSTALLATION

A. Comply with requirements for pipe hangers and supports specified in Section 230529 "Hangers and Supports for HVAC Piping and Equipment."

B. Install hangers for horizontal steel piping with the following maximum spacing and minimum rod sizes:

1. NPS 1 and Smaller: Maximum span, 96 inches; minimum rod size, 3/8 inch.
2. NPS 1-1/4: Maximum span, 108 inches; minimum rod size, 3/8 inch.
3. NPS 1-1/2 and NPS 2: Maximum span, 108 inches; minimum rod size, 3/8 inch.

3.6 CONNECTIONS

A. Connect to utility's gas main according to utility's procedures and requirements.

B. Install natural-gas piping electrically continuous, and bonded to gas appliance equipment grounding conductor of the circuit powering the appliance according to NFPA 70.

C. Install piping adjacent to appliances to allow service and maintenance of appliances.

D. Connect piping to appliances using manual gas shutoff valves and unions. Install valve within 72 inches of each gas-fired appliance and equipment. Install union between valve and appliances or equipment.

E. Sediment Traps: Install tee fitting with capped nipple in bottom to form drip, as close as practical to inlet of each appliance.

3.7 LABELING AND IDENTIFYING

A. Comply with requirements in Section 230553 "Identification for HVAC Piping and Equipment" for piping and valve identification.

B. Install detectable warning tape directly above gas piping, 12 inches below finished grade, except 6 inches below subgrade under pavements and slabs.

3.8 FIELD QUALITY CONTROL

A. Test, inspect, and purge natural gas according to the International Fuel Gas Code and authorities having jurisdiction.

B. Natural-gas piping will be considered defective if it does not pass tests and inspections.

C. Prepare test and inspection reports.

3.9 OUTDOOR PIPING SCHEDULE

A. Aboveground natural-gas piping shall be one of the following:

1. Steel pipe with malleable-iron fittings and threaded joints.
2. Steel pipe with wrought-steel fittings and welded joints.

B. Containment Conduit: Steel pipe with wrought-steel fittings and welded joints. Coat pipe and fittings with protective coating for steel piping.

3.10 INDOOR PIPING SCHEDULE

A. Aboveground, branch piping NPS 1 and smaller shall be the following:

1. Steel pipe with malleable-iron fittings and threaded joints.

B. Aboveground, distribution piping shall be one of the following:

1. Steel pipe with malleable-iron fittings and threaded joints.
2. Steel pipe with wrought-steel fittings and welded joints.

C. Containment Conduit: Steel pipe with wrought-steel fittings and welded joints. Coat pipe and fittings with protective coating for steel piping.

D. Containment Conduit Vent Piping: Steel pipe with malleable-iron fittings and threaded or wrought-steel fittings with welded joints.

3.11 ABOVEGROUND MANUAL GAS SHUTOFF VALVE SCHEDULE

A. Valves for shall be the following:

1. Two-piece, full-port, bronze ball valves with bronze trim.

END OF SECTION 231123

SECTION 233113 - METAL DUCTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Rectangular ducts and fittings.
2. Round ducts and fittings.
3. Sheet metal materials.
4. Sealant and gaskets.
5. Hangers and supports.

B. Related Sections:

1. Section 230593 "Testing, Adjusting, and Balancing for HVAC" for testing, adjusting, and balancing requirements for metal ducts.
2. Section 233300 "Air Duct Accessories" for dampers, sound-control devices, duct-mounting access doors and panels, turning vanes, and flexible ducts.

1.2 PERFORMANCE REQUIREMENTS

A. Delegated Duct Design: Duct construction, including sheet metal thicknesses, seam and joint construction, reinforcements, and hangers and supports, shall comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" and performance requirements and design criteria indicated in "Duct Schedule" Article.

B. Structural Performance: Duct hangers and supports shall withstand the effects of gravity loads and stresses within limits and under conditions described in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" and ASCE/SEI 7.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated.

B. Shop Drawings:

1. Factory- and shop-fabricated ducts and fittings.
2. Fittings.
3. Reinforcement and spacing.
4. Seam and joint construction.
5. Penetrations through fire-rated and other partitions.
6. Hangers and supports, including methods for duct and building attachment and vibration isolation.

1.4 QUALITY ASSURANCE

A. Welding Qualifications: Qualify procedures and personnel according to AWS D9.1M/D9.1, "Sheet Metal Welding Code," for duct joint and seam welding.

PART 2 - PRODUCTS

2.1 RECTANGULAR DUCTS AND FITTINGS

A. General Fabrication Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" based on indicated static-pressure class unless otherwise indicated.

B. Transverse Joints: Select joint types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 2-1, "Rectangular Duct/Transverse Joints," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

C. Longitudinal Seams: Select seam types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 2-2, "Rectangular Duct/Longitudinal Seams," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

D. Elbows, Transitions, Offsets, Branch Connections, and Other Duct Construction: Select types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 4, "Fittings and Other Construction," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

2.2 ROUND DUCTS AND FITTINGS

A. General Fabrication Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 3, "Round, Oval, and Flexible Duct," based on indicated static-pressure class unless otherwise indicated.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

    a. Linx Industries (formerly Lindab).
    b. McGill AirFlow LLC.
    c. SEMCO LLC.

B. Transverse Joints: Select joint types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-1, "Round Duct Transverse Joints," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

1. Transverse Joints in Ducts Larger Than 60 Inches in Diameter: Flanged.

C. Longitudinal Seams: Select seam types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-2, "Round Duct Longitudinal Seams," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

1. Fabricate round ducts larger Than 90 inches in diameter with butt-welded longitudinal seams.

D. Tees and Laterals: Select types and fabricate according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-5, "90 Degree Tees and Laterals," and Figure 3-6, "Conical Tees," for static-pressure class, applicable sealing requirements, materials involved, duct-support intervals, and other provisions in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."

2.3 SHEET METAL MATERIALS

A. General Material Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for acceptable materials, material thicknesses, and duct construction methods unless otherwise indicated. Sheet metal materials shall be free of pitting, seam marks, roller marks, stains, discolorations, and other imperfections.

B. Galvanized Sheet Steel: Comply with ASTM A 653/A 653M.

1. Galvanized Coating Designation: G60 or G90.
2. Finishes for Surfaces Exposed to View: Mill phosphatized.

C. Carbon-Steel Sheets: Comply with ASTM A 1008/A 1008M, with oiled, matte finish for exposed ducts.

D. Stainless-Steel Sheets: Comply with ASTM A 480/A 480M, Type 304 or 316, as indicated in the "Duct Schedule" Article; cold rolled, annealed, sheet. Exposed surface finish shall be No. 2B, No. 2D, No. 3, or No. 4 as indicated in the "Duct Schedule" Article.

E. Reinforcement Shapes and Plates: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.

1. Where black- and galvanized-steel shapes and plates are used to reinforce aluminum ducts, isolate the different metals with butyl rubber, neoprene, or EPDM gasket materials.

F. Tie Rods: Galvanized steel, 1/4-inch minimum diameter for lengths 36 inches or less; 3/8-inch minimum diameter for lengths longer than 36 inches.

2.4 SEALANT AND GASKETS

A. General Sealant and Gasket Requirements: Surface-burning characteristics for sealants and gaskets shall be a maximum flame-spread index of 25 and a maximum smoke-developed index of 50 when tested according to UL 723; certified by an NRTL.

B. Water-Based Joint and Seam Sealant:

1. Application Method: Brush on.
2. Solids Content: Minimum 65 percent.
3. Shore A Hardness: Minimum 20.
4. Water resistant.
5. Mold and mildew resistant.
6. VOC: Maximum 75 g/L (less water).
7. Maximum Static-Pressure Class: 10-inch wg, positive and negative.
8. Service: Indoor or outdoor.
9. Substrate: Compatible with galvanized sheet steel (both PVC coated and bare), stainless steel, or aluminum sheets.

C. Flanged Joint Sealant: Comply with ASTM C 920.

1. General: Single-component, acid-curing, silicone, elastomeric.
2. Type: S.
3. Grade: NS.
4. Class: 25.
5. Use: O.

D. Flange Gaskets: Butyl rubber, neoprene, or EPDM polymer with polyisobutylene plasticizer.

E. Round Duct Joint O-Ring Seals:

1. Seal shall provide maximum leakage class of 3 cfm/100 sq. ft. at 1-inch wg and shall be rated for10-inch wg static-pressure class, positive or negative.

2.5 HANGERS AND SUPPORTS

A. Hanger Rods for Noncorrosive Environments: Cadmium-plated steel rods and nuts.

B. Hanger Rods for Corrosive Environments: Electrogalvanized, all-thread rods or galvanized rods with threads painted with zinc-chromate primer after installation.

C. Strap and Rod Sizes: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Table 5-1, "Rectangular Duct Hangers Minimum Size," and Table 5-2, "Minimum Hanger Sizes for Round Duct."

D. Steel Cables for Galvanized-Steel Ducts: Galvanized steel complying with ASTM A 603.

E. Steel Cables for Stainless-Steel Ducts: Stainless steel complying with ASTM A 492.

F. Steel Cable End Connections: Cadmium-plated steel assemblies with brackets, swivel, and bolts designed for duct hanger service; with an automatic-locking and clamping device.

G. Duct Attachments: Sheet metal screws, blind rivets, or self-tapping metal screws; compatible with duct materials.

H. Trapeze and Riser Supports:

1. Supports for Galvanized-Steel Ducts: Galvanized-steel shapes and plates.

2. Supports for Stainless-Steel Ducts: Stainless-steel shapes and plates.

PART 3 - EXECUTION

3.1 DUCT INSTALLATION

A. Drawing plans, schematics, and diagrams indicate general location and arrangement of duct system. Indicated duct locations, configurations, and arrangements were used to size ducts and calculate friction loss for air-handling equipment sizing and for other design considerations. Install duct systems as indicated unless deviations to layout are approved on Shop Drawings and Coordination Drawings.

B. Install ducts according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" unless otherwise indicated.

C. Install round ducts in maximum practical lengths.

D. Install ducts with fewest possible joints.

E. Install factory- or shop-fabricated fittings for changes in direction, size, and shape and for branch connections.

F. Unless otherwise indicated, install ducts vertically and horizontally, and parallel and perpendicular to building lines.

G. Install ducts close to walls, overhead construction, columns, and other structural and permanent enclosure elements of building.

H. Install ducts with a clearance of 1 inch, plus allowance for insulation thickness.

I. Route ducts to avoid passing through transformer vaults and electrical equipment rooms and enclosures.

J. Where ducts pass through non-fire-rated interior partitions and exterior walls and are exposed to view, cover the opening between the partition and duct or duct insulation with sheet metal flanges of same metal thickness as the duct. Overlap openings on four sides by at least 1-1/2 inches.

K. Where ducts pass through fire-rated interior partitions and exterior walls, install fire dampers. Comply with requirements in Section 233300 "Air Duct Accessories" for fire and smoke dampers.

L. Protect duct interiors from moisture, construction debris and dust, and other foreign materials. Comply with SMACNA's "IAQ Guidelines for Occupied Buildings Under Construction," Appendix G, "Duct Cleanliness for New Construction Guidelines."

3.2 INSTALLATION OF EXPOSED DUCTWORK

A. Protect ducts exposed in finished spaces from being dented, scratched, or damaged.

B. Trim duct sealants flush with metal. Create a smooth and uniform exposed bead. Do not use two-part tape sealing system.

C. Grind welds to provide smooth surface free of burrs, sharp edges, and weld splatter. When welding stainless steel with a No. 3 or 4 finish, grind the welds flush, polish the exposed welds, and treat the welds to remove discoloration caused by welding.

D. Maintain consistency, symmetry, and uniformity in the arrangement and fabrication of fittings, hangers and supports, duct accessories, and air outlets.

E. Repair or replace damaged sections and finished work that does not comply with these requirements.

3.3 DUCT SEALING

A. Seal ducts to the following seal classes according to SMACNA's "HVAC Duct Construction Standards - Metal and Flexible":

1. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible."
2. Outdoor, Supply-Air Ducts: Seal Class A.
3. Outdoor, Return-Air Ducts: Seal Class A.
4. Conditioned Space, Supply-Air Ducts in Pressure Classes 2-Inch wg and Lower: Seal Class A.
5. Conditioned Space, Supply-Air Ducts in Pressure Classes Higher Than 2-Inch wg: Seal Class A.
6. Conditioned Space, Exhaust Ducts: Seal Class A.
7. Conditioned Space, Return-Air Ducts: Seal Class A.

3.4 HANGER AND SUPPORT INSTALLATION

A. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Chapter 5, "Hangers and Supports."

B. Building Attachments: Concrete inserts, powder-actuated fasteners, or structural-steel fasteners appropriate for construction materials to which hangers are being attached.

1. Where practical, install concrete inserts before placing concrete.
2. Install powder-actuated concrete fasteners after concrete is placed and completely cured.
3. Use powder-actuated concrete fasteners for standard-weight aggregate concretes or for slabs more than 4 inches thick.
4. Do not use powder-actuated concrete fasteners for lightweight-aggregate concretes or for slabs less than 4 inches thick.

C. Hanger Spacing: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Table 5-1, "Rectangular Duct Hangers Minimum Size," and Table 5-2, "Minimum Hanger Sizes for Round Duct," for maximum hanger spacing; install hangers and supports within 24 inches of each elbow and within 48 inches of each branch intersection.

D. Hangers Exposed to View: Threaded rod and angle or channel supports.

E. Support vertical ducts with steel angles or channel secured to the sides of the duct with welds, bolts, sheet metal screws, or blind rivets; support at each floor and at a maximum intervals of 16 feet.

F. Install upper attachments to structures. Select and size upper attachments with pull-out, tension, and shear capacities appropriate for supported loads and building materials where used.

3.5 CONNECTIONS

A. Make connections to equipment with flexible connectors complying with Section 233300 "Air Duct Accessories."

B. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for branch, outlet and inlet, and terminal unit connections.

3.6 START UP

A. Air Balance: Comply with requirements in Section 230593 "Testing, Adjusting, and Balancing for HVAC."

3.7 DUCT SCHEDULE

A. Fabricate ducts with galvanized sheet steel except as otherwise indicated and as follows:

1. Underground Ducts: Concrete-encased, PVC-coated, galvanized sheet steel with thicker coating on duct exterior.

B. Supply Ducts:

1. Ducts Connected to Fan Coil Units, Furnaces, Heat Pumps, and Terminal Units:

    a. Pressure Class: Positive 2-inch wg.
    b. Minimum SMACNA Seal Class: A.
    c. SMACNA Leakage Class for Rectangular: 24.
    d. SMACNA Leakage Class for Round and Flat Oval: 12 .

2. Ducts Connected to Constant-Volume Air-Handling Units:

    a. Pressure Class: Positive 3-inch wg.
    b. Minimum SMACNA Seal Class: B.
    c. SMACNA Leakage Class for Rectangular: 12.
    d. SMACNA Leakage Class for Round and Flat Oval: 6.

3. Ducts Connected to Variable-Air-Volume Air-Handling Units:

    a. Pressure Class: Positive 4-inch wg.
    b. Minimum SMACNA Seal Class: A.
    c. SMACNA Leakage Class for Rectangular: 6.
    d. SMACNA Leakage Class for Round and Flat Oval: 3.

C. Return Ducts:

1. Ducts Connected to Fan Coil Units, Furnaces, Heat Pumps, and Terminal Units:

    a. Pressure Class: Positive or negative 2-inch wg.
    b. Minimum SMACNA Seal Class: C.
    c. SMACNA Leakage Class for Rectangular: 24.
    d. SMACNA Leakage Class for Round and Flat Oval: 12.

2. Ducts Connected to Air-Handling Units:

    a. Pressure Class: Positive or negative 3-inch wg.
    b. Minimum SMACNA Seal Class: B.
    c. SMACNA Leakage Class for Rectangular: 12.
    d. SMACNA Leakage Class for Round and Flat Oval: 6.
    e.

D. Exhaust Ducts:

1. Ducts Connected to Fans Exhausting (ASHRAE 62.1, Class 1 and 2) Air:

    a. Pressure Class: Negative 2-inch wg.
    b. Minimum SMACNA Seal Class: A.
    c. SMACNA Leakage Class for Rectangular: 24.
    d. SMACNA Leakage Class for Round and Flat Oval: 12.

2. Ducts Connected to Commercial Kitchen Hoods: Comply with NFPA 96.

    a. Exposed to View: Type 304, stainless-steel sheet, No. 4 finish.
    b. Concealed: Carbon-steel sheet.
    c. Welded seams and joints.
    d. Pressure Class: Positive or negative 2-inch wg.
    e. Minimum SMACNA Seal Class: Welded seams, joints, and penetrations.
    f. SMACNA Leakage Class: 3.

E. Outdoor-Air (Not Filtered, Heated, or Cooled) Ducts:

1. Ducts Connected to Fan Coil Units, Furnaces, Heat Pumps, and Terminal Units:

    a. Pressure Class: Positive or negative 2-inch wg.
    b. Minimum SMACNA Seal Class: C.
    c. SMACNA Leakage Class for Rectangular: 24.
    d. SMACNA Leakage Class for Round and Flat Oval: 12.

2. Ducts Connected to Air-Handling Units:

    a. Pressure Class: Positive or negative 3-inch wg.
    b. Minimum SMACNA Seal Class: B.
    c. SMACNA Leakage Class for Rectangular: 12.
    d. SMACNA Leakage Class for Round and Flat Oval: 6.

F. Intermediate Reinforcement:

1. Galvanized-Steel Ducts: Galvanized steel.
2. Stainless-Steel Ducts:

a. Exposed to Airstream: Match duct material.
b. Not Exposed to Airstream: Galvanized.

G. Elbow Configuration:

1. Rectangular Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-2, "Rectangular Elbows."

a. Radius Type RE 1 with minimum 1.5 radius-to-diameter ratio.
b. Radius Type RE 3 with minimum 1.0 radius-to-diameter ratio and two vanes.
c. Mitered Type RE 2 with vanes complying with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-3, "Vanes and Vane Runners," and Figure 4-4, "Vane Support in Elbows."

2. Round Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-4, "Round Duct Elbows."

a. Minimum Radius-to-Diameter Ratio and Elbow Segments: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Table 3-1, "Mitered Elbows." Elbows with less than 90-degree change of direction have proportionately fewer segments.

1) Radius-to Diameter Ratio: 1.5.

b. Round Elbows, 12 Inches and Smaller in Diameter: Stamped or pleated.
c. Round Elbows, 14 Inches and Larger in Diameter: Standing seam.

H. Branch Configuration:

1. Rectangular Duct: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 4-6, "Branch Connection."

a. Rectangular Main to Rectangular Branch: 45-degree entry.
b. Rectangular Main to Round Branch: Spin in.

2. Round: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible," Figure 3-5, "90 Degree Tees and Laterals," and Figure 3-6, "Conical Tees." Saddle taps are permitted in existing duct.

a. Velocity 1000 fpm or Lower: 90-degree tap.
b. Velocity 1000 to 1500 fpm: Conical tap.
c. Velocity 1500 fpm or Higher: 45-degree lateral.

END OF SECTION 233113

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SECTION 233300 - AIR DUCT ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Manual volume dampers.
   2. Control dampers.
   3. Turning vanes.
   4. Flexible connectors.
   5. Flexible ducts.
   6. Duct accessory hardware.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.3 CLOSEOUT SUBMITTALS

A. Operation and maintenance data.

PART 2 - PRODUCTS

2.1 ASSEMBLY DESCRIPTION

A. Comply with NFPA 90A, "Installation of Air Conditioning and Ventilating Systems," and with NFPA 90B, "Installation of Warm Air Heating and Air Conditioning Systems."

B. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for acceptable materials, material thicknesses, and duct construction methods unless otherwise indicated. Sheet metal materials shall be free of pitting, seam marks, roller marks, stains, discolorations, and other imperfections.

2.2 MATERIALS

A. Galvanized Sheet Steel: Comply with ASTM A 653/A 653M.

   1. Galvanized Coating Designation: G60.
   2. Exposed-Surface Finish: Mill phosphatized.

B. Reinforcement Shapes and Plates: Galvanized-steel reinforcement where installed on galvanized sheet metal ducts; compatible materials for aluminum and stainless-steel ducts.

C. Tie Rods: Galvanized steel, 1/4-inch minimum diameter for lengths 36 inches or less; 3/8-inch minimum diameter for lengths longer than 36 inches.

2.3 MANUAL VOLUME DAMPERS

A. Standard, Steel, Manual Volume Dampers:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

    a. Flexmaster U.S.A., Inc.
    b. McGill AirFlow LLC.
    c. Nailor Industries Inc.

2. Standard leakage rating, with linkage outside airstream.
3. Suitable for horizontal or vertical applications.
4. Frames:

    a. Frame: Hat-shaped, 0.094-inch-thick, galvanized sheet steel.
    b. Mitered and welded corners.
    c. Flanges for attaching to walls and flangeless frames for installing in ducts.

5. Blades:

    a. Multiple or single blade.
    b. Parallel- or opposed-blade design.
    c. Stiffen damper blades for stability.
    d. Galvanized-steel, 0.064 inch thick.

6. Blade Axles: Nonferrous metal.
7. Bearings:

    a. Molded synthetic.
    b. Dampers in ducts with pressure classes of 3-inch wg or less shall have axles full length of damper blades and bearings at both ends of operating shaft.

8. Tie Bars and Brackets: Galvanized steel.

B. Jackshaft:

1. Size: 1-inch diameter.
2. Material: Galvanized-steel pipe rotating within pipe-bearing assembly mounted on supports at each mullion and at each end of multiple-damper assemblies.
3. Length and Number of Mountings: As required to connect linkage of each damper in multiple-damper assembly.

C. Damper Hardware:

1. Zinc-plated, die-cast core with dial and handle made of 3/32-inch-thick zinc-plated steel, and a 3/4-inch hexagon locking nut.
2. Include center hole to suit damper operating-rod size.
3. Include elevated platform for insulated duct mounting.

2.4 FLANGE CONNECTORS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. CL WARD & Family Inc.
2. Ductmate Industries, Inc.
3. Ward Industries; a brand of Hart & Cooley, Inc.

B. Description: Add-on or roll-formed, factory-fabricated, slide-on transverse flange connectors, gaskets, and components.

C. Material: Galvanized steel.

D. Gage and Shape: Match connecting ductwork.

2.5 TURNING VANES

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. CL WARD & Family Inc.
2. Ductmate Industries, Inc.
3. Ward Industries; a brand of Hart & Cooley, Inc.

B. Manufactured Turning Vanes for Metal Ducts: Curved blades of galvanized sheet steel; support with bars perpendicular to blades set; set into vane runners suitable for duct mounting.

1. Acoustic Turning Vanes: Fabricate airfoil-shaped aluminum extrusions with perforated faces and fibrous-glass fill.

C. General Requirements: Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible"; Figures 4-3, "Vanes and Vane Runners," and 4-4, "Vane Support in Elbows."

D. Vane Construction: Single wall.

2.6 FLEXIBLE CONNECTORS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. CL WARD & Family Inc.
2. Ductmate Industries, Inc.
3. Ward Industries; a brand of Hart & Cooley, Inc.

B. Materials: Flame-retardant or noncombustible fabrics.

C. Coatings and Adhesives: Comply with UL 181, Class 1.

D. Metal-Edged Connectors: Factory fabricated with a fabric strip 3-1/2 inches wide attached to two strips of 2-3/4-inch-wide, 0.028-inch-thick, galvanized sheet steel or 0.032-inch-thick aluminum sheets. Provide metal compatible with connected ducts.

E. Indoor System, Flexible Connector Fabric: Glass fabric double coated with neoprene.

1. Minimum Weight: 26 oz./sq. yd..
2. Tensile Strength: 480 lbf/inch in the warp and 360 lbf/inch in the filling.
3. Service Temperature: Minus 40 to plus 200 deg F.

2.7 FLEXIBLE DUCTS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. Flexmaster U.S.A., Inc.
2. McGill AirFlow LLC.
3. Ward Industries; a brand of Hart & Cooley, Inc.

B. Noninsulated, Flexible Duct: UL 181, Class 1, 2-ply vinyl film supported by helically wound, spring-steel wire.

1. Pressure Rating: 10-inch wg positive and 1.0-inch wg negative.
2. Maximum Air Velocity: 4000 fpm.
3. Temperature Range: Minus 10 to plus 160 deg F.

C. Insulated, Flexible Duct: UL 181, Class 1, aluminum laminate and polyester film with latex adhesive supported by helically wound, spring-steel wire; fibrous-glass insulation; polyethylene vapor-barrier film.

1. Pressure Rating: 10-inch wg positive and 1.0-inch wg negative.
2. Maximum Air Velocity: 4000 fpm.
3. Temperature Range: Minus 20 to plus 210 deg F.
4. Insulation R-value: Comply with ASHRAE/IESNA 90.1.

D. Flexible Duct Connectors:

1. Clamps: Nylon strap in sizes 3 through 18 inches, to suit duct size.

2.8 DUCT ACCESSORY HARDWARE

A. Instrument Test Holes: Cast iron or cast aluminum to suit duct material, including screw cap and gasket. Size to allow insertion of pitot tube and other testing instruments and of length to suit duct-insulation thickness.

B. Adhesives: High strength, quick setting, neoprene based, waterproof, and resistant to gasoline and grease.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install duct accessories according to applicable details in SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for metal ducts and in NAIMA AH116, "Fibrous Glass Duct Construction Standards," for fibrous-glass ducts.

B. Install duct accessories of materials suited to duct materials; use galvanized-steel accessories in galvanized-steel and fibrous-glass ducts, stainless-steel accessories in stainless-steel ducts, and aluminum accessories in aluminum ducts.

C. Install backdraft dampers at inlet of exhaust fans or exhaust ducts as close as possible to exhaust fan unless otherwise indicated.

D. Install volume dampers at points on supply, return, and exhaust systems where branches extend from larger ducts. Where dampers are installed in ducts having duct liner, install dampers with hat channels of same depth as liner, and terminate liner with nosing at hat channel.

1. Install steel volume dampers in steel ducts.

E. Set dampers to fully open position before testing, adjusting, and balancing.

F. Install test holes at fan inlets and outlets and elsewhere as indicated.

G. Install fire dampers according to UL listing.

H. Install duct access doors on sides of ducts to allow for inspecting, adjusting, and maintaining accessories and equipment at the following locations:

1. Adjacent to and close enough to fire or smoke dampers, to reset or reinstall fusible links. Access doors for access to fire or smoke dampers having fusible links shall be pressure relief access doors and shall be outward operation for access doors installed upstream from dampers and inward operation for access doors installed downstream from dampers.
2. Elsewhere as indicated.

I. Install access doors with swing against duct static pressure.

J. Access Door Sizes:

1. One-Hand or Inspection Access: 8 by 5 inches.
2. Two-Hand Access: 12 by 6 inches.
3. Head and Hand Access: 18 by 10 inches.
4. Head and Shoulders Access: 21 by 14 inches.
5. Body Access: 25 by 14 inches.
6. Body plus Ladder Access: 25 by 17 inches.

K. Label access doors according to Section 230553 "Identification for HVAC Piping and Equipment" to indicate the purpose of access door.

L. Install flexible connectors to connect ducts to equipment.

M. Connect terminal units to supply ducts with maximum 12-inch lengths of flexible duct. Do not use flexible ducts to change directions.

N. Connect diffusers or light troffer boots to ducts with maximum 60-inch lengths of flexible duct clamped or strapped in place.

O. Connect flexible ducts to metal ducts with draw bands.

P. Install duct test holes where required for testing and balancing purposes.

3.2 FIELD QUALITY CONTROL

A. Tests and Inspections:

1. Operate dampers to verify full range of movement.
2. Inspect locations of access doors and verify that purpose of access door can be performed.
3. Operate fire and smoke dampers to verify full range of movement and verify that proper heat-response device is installed.
4. Inspect turning vanes for proper and secure installation.

END OF SECTION 233300

SECTION 233346 - FLEXIBLE DUCTS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Flexible duct connectors.

1.2 ACTION SUBMITTALS

A. Product data.

PART 2 - PRODUCTS

2.1 ASSEMBLY DESCRIPTION

A. Comply with NFPA 90A and NFPA 90B.

B. Comply with SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for acceptable materials, material thicknesses, and duct construction methods unless otherwise indicated. Sheet metal materials must be free of pitting, seam marks, roller marks, stains, discolorations, and other imperfections.

C. Comply with the Air Duct Council's (formerly, Air Diffusion Council) "ADC Flexible Air Duct Test Code - FD 72-R1" and "Flexible Duct Performance & Installation Standards."

D. Comply with ASTM E96/E96M.

2.2 FLEXIBLE DUCT CONNECTORS

A. Clamps: Stainless steel band with stainless steel or zinc-plated hex screw to tighten band with a worm-gear action in sizes 3 through 18 inches, to suit duct size.

B. Non-Clamp Connectors: Adhesive.

PART 3 - EXECUTION

3.1 INSTALLATION OF FLEXIBLE DUCTS

A. Install flexible ducts in accordance with applicable details in the following publications:

1. ADC's "Flexible Duct Performance & Installation Standards" for flexible ducts.
2. NAIMA AH116.

3. SMACNA's "HVAC Duct Construction Standards - Metal and Flexible" for metal ducts.
4. SMACNA's "Fibrous Glass Duct Construction Standards" for fibrous-glass ducts.

B. Install in indoor applications only. Do not install flexible duct in locations where it will be exposed to UV lighting.

C. Connect terminal units to supply ducts directly or with maximum 12-inch lengths of flexible duct. Do not use flexible ducts to change directions.

D. Connect diffusers and light troffer boots to ducts directly or with maximum 60-inch lengths of flexible duct clamped or strapped in place.

E. Installation:

1. Install ducts fully extended.
2. Do not bend ducts across sharp corners.
3. Bends of flexible ducting must not exceed a minimum of one-duct diameter.
4. Avoid contact with metal fixtures, water lines, pipes, or conduits.
5. Install flexible ducts in a direct line, without sags, twists, or turns.
6. Install in accordance with ADC instructions.

F. Supporting Flexible Ducts:

1. Support flexible duct at manufacturer's recommended intervals, but at no greater distance than 4 ft.. Provide sufficient support so that maximum centerline sag is 1/2 in. per ft. between supports. A connection to rigid duct or equipment may be considered a support joint.
2. Install extra supports at bends placed approximately one-duct diameter from center line of the bend.
3. Ducts may rest on ceiling joists or truss supports. Spacing between supports must not exceed the maximum spacing in accordance with manufacturer's written installation instructions.
4. Vertically installed ducts must be stabilized by support straps at a maximum of 72 inches o.c.

END OF SECTION 233346

SECTION 233713 - DIFFUSERS, REGISTERS, AND GRILLES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Square ceiling diffusers.
2. Adjustable bar registers and grilles.
3. Fixed face grilles.
4. Diffusers – ceiling-integral plenum slot.

B. Related Sections:

1. Section 233300 "Air Duct Accessories" for fire and smoke dampers and volume-control dampers not integral to diffusers, registers, and grilles.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product indicated, include the following:

1. Data Sheet: Indicate materials of construction, finish, and mounting details; and performance data including throw and drop, static-pressure drop, and noise ratings.
2. Diffuser, Register, and Grille Schedule: Indicate drawing designation, room location, quantity, model number, size, and accessories furnished.

1.3 MANUFACTURERS

A. Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. Hart & Cooley Inc.
2. Price Industries.
3. Titus.

PART 2 - PRODUCTS

2.1 CEILING DIFFUSERS

A. Square Ceiling Diffuser:

1. Material: Aluminum
2. Finish: Baked enamel, white.
3. Face Size: As scheduled.
4. Face Style: Plaque.
5. Mounting: Surface or T-bar as scheduled.

6. Pattern: Fixed.
7. Dampers: Butterfly.
8. Accessories:

    a. Operating rod extension.

2.2 DIFFUSERS - CEILING-INTEGRAL PLENUM SLOT

A. Diffuser - Ceiling-Integral Plenum Slot:
1. Description: Diffuser assembly with integral pattern controller, one or more linear discharge slots, and an integral plenum and duct collar. Assembly is to be installed in modular T-bar and gyp board ceilings.
2. Source Limitations: Obtain from single source from single manufacturer.
3. Material:

    a. Face: Steel
    b. Pattern Controller and Tees: Aluminum.
    c. Plenum: Steel Insulated
    d. Retain "Plenum Insulation" Subparagraph below when using internally insulated plenum.
    e. Plenum Insulation: Comply with UL 181.

4. Finish:

    a. Face and Plenum: Baked enamel, Black
    b. Pattern Controller: Baked enamel, black.
    c. Tees: Baked enamel, Black.

5. Slot Width: 1 inch (25 mm).
6. Number of Slots: One.
7. Length: 48 inches (1200 mm).
8. Fire-Rated Construction: Integral fire damper and fire-rated assembly listing in the Underwriters Laboratory Fire Resistance Directory, tested in accordance with UL 263 and complying with NFPA 90A requirements.

2.3 REGISTERS AND GRILLES

A. Adjustable Bar Register:

1. Material: Aluminum
2. Finish: Baked enamel, per air device schedule on bid documents. Pending wall / ceiling color.
3. Face Blade Arrangement: Parallel to short dimension, spaced 3/4 inch apart.
4. Core Construction: Integral.
5. Rear-Blade Arrangement: Parallel to long dimension spaced 3/4 inch apart.
6. Frame: 1-1/4 inches wide.
7. Mounting: Countersunk screw.
8. Damper Type: Adjustable opposed blade.

B. Adjustable Bar Grille:

1. Material: Aluminum

2. Finish: Baked enamel, per air device schedule on bid documents. Pending wall / ceiling color.
3. Face Blade Arrangement: Parallel to short dimension spaced 3/4 inch apart.
4. Core Construction: Integral.
5. Rear-Blade Arrangement: Parallel to long dimension spaced 3/4 inch apart.
6. Frame: 1-1/4 inches wide.
7. Mounting: Countersunk screw.

C. Fixed Face Grille:

1. Material: Aluminum frame, aluminum core.
2. Finish: Baked enamel, per air device schedule on bid documents. Pending wall / ceiling color.
3. Face Arrangement: 1/2-by-1/2-by-1/2-inch grid core.
4. Core Construction: Integral.
5. Frame: 1-1/4 inches wide.
6. Mounting: Lay in.

2.4 SOURCE QUALITY CONTROL

A. Verification of Performance: Rate diffusers, registers, and grilles according to ASHRAE 70, "Method of Testing for Rating the Performance of Air Outlets and Inlets."

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install diffusers, registers, and grilles level and plumb.

B. Ceiling-Mounted Outlets and Inlets: Drawings indicate general arrangement of ducts, fittings, and accessories. Air outlet and inlet locations have been indicated to achieve design requirements for air volume, noise criteria, airflow pattern, throw, and pressure drop. Make final locations where indicated, as much as practical. For units installed in lay-in ceiling panels, locate units in the center of panel. Where architectural features or other items conflict with installation, notify Architect for a determination of final location.

C. Install diffusers, registers, and grilles with airtight connections to ducts and to allow service and maintenance of dampers, air extractors, and fire dampers.

3.2 ADJUSTING

A. After installation, adjust diffusers, registers, and grilles to air patterns indicated, or as directed, before starting air balancing.

END OF SECTION 233713

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SECTION 237416.11 - PACKAGED, SMALL-CAPACITY, ROOFTOP AIR-CONDITIONING UNITS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes packaged, small-capacity, rooftop air-conditioning units (RTUs) with the following components and accessories:

1. Casings.
2. Fans.
3. Motors.
4. Coils.
5. Refrigerant circuit components.
6. Air filtration.
7. Gas Furnace
8. Dampers.
9. Electrical power connections.
10. Controls.
11. Accessories.
12. Roof curbs.

1.2 ACTION SUBMITTALS

A. Product Data: For each RTU.

1.3 CLOSEOUT SUBMITTALS

A. Operation and maintenance data.

1.4 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of RTUs that fail in materials or workmanship within specified warranty period.

PART 2 - PRODUCTS

2.1 DESCRIPTION

A. AHRI Compliance:

1. Comply with AHRI 210/240 for testing and rating energy efficiencies for RTUs.

B. AMCA Compliance:

1. Comply with AMCA 11 and bear the AMCA-Certified Ratings Seal for air and sound performance according to AMCA 211 and AMCA 311.
2. Damper leakage tested according to AMCA 500-D.
3. Operating Limits: Classify according to AMCA 99.

C. ASHRAE Compliance:

1. Comply with ASHRAE 15 for refrigeration system safety.
2. Comply with ASHRAE 33 for methods of testing cooling and heating coils.

D. NFPA Compliance: Comply with NFPA 90A or NFPA 90B.

E. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

2.2 PERFORMANCE REQUIREMENTS

A. Wind-Restraint Performance:

1. Basic Wind Speed: 120 miles per hour.
2. Building Classification Category: III.
3. Minimum 10 lb/sq. ft. multiplied by the maximum area of the mechanical component projected on a vertical plane that is normal to the wind direction, and 45 degrees either side of normal.

2.3 CASINGS

A. General Fabrication Requirements for Casings: Formed and reinforced double-wall insulated panels, fabricated to allow removal for access to internal parts and components, with joints between sections sealed.

B. Double-Wall Construction: Fill space between walls with 1-inch foam insulation and seal moisture tight for R-7 performance.

C. Exterior Casing Material: Galvanized steel with factory-painted finish, with pitched roof panels and knockouts with grommet seals for electrical and piping connections and lifting lugs.

D. Casing Insulation and Adhesive: Comply with NFPA 90A or NFPA 90B.

1. Materials: ASTM C 1071, Type I.
2. Thickness: 1 inch.
3. Liner materials shall have airstream surface coated with erosion- and temperature-resistant coating or faced with a plain or coated fibrous mat or fabric.
4. Liner Adhesive: Comply with ASTM C 916, Type I.

E. Condensate Drain Pans: Fabricated using stainless-steel sheet 0.025 inch thick, a minimum of 2 inches deep, and complying with ASHRAE 62.1 for design and construction of drain pans.

1. Drain Connections: Threaded nipple.

F. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1.

2.4 FANS

A. Supply-Air Fans: Aluminum or painted-steel wheels, and galvanized- or painted-steel fan scrolls.

1. Direct-Driven Variable speed Supply-Air Fans: Motor shall be resiliently mounted in the fan inlet.

B. Condenser-Coil Fan: Variable-speed propeller, mounted on shaft of permanently lubricated ECM motors.

C. Exhaust-Air Fan: shaft mounted on permanently lubricated motor.

2.5 MOTORS

A. Motor Sizes: Minimum size as indicated. If not indicated, large enough so driven load will not require motor to operate in service factor range above 1.0.

B. Efficiency: Premium efficient.

2.6 COILS

A. Supply-Air Refrigerant Coil:

1. Aluminum-plate fin and seamless copper tube in steel casing with equalizing-type vertical distributor.
2. Coil Split: Interlaced.
3. Coated.

REFRIGERANT CIRCUIT COMPONENTS

B. Compressor: Variable-speed scroll, mounted on vibration isolators; with internal overcurrent and high-temperature protection, internal pressure relief, and crankcase heater.

C. Refrigeration Specialties:

1. Refrigerant: R-454B.
2. Expansion valve with replaceable thermostatic element.
3. Refrigerant filter/dryer.
4. Manual-reset high-pressure safety switch.
5. Automatic-reset low-pressure safety switch.
6. Minimum off-time relay.
7. Automatic-reset compressor motor thermal overload.
8. Brass service valves installed in compressor suction and liquid lines.

2.7 AIR FILTRATION

A. Minimum arrestance and MERV according to ASHRAE 52.2.

2.8 GAS FURNACE

A. Description: Factory assembled, piped, and wired; complying with ANSI Z21.47/CSA 2.3 and NFPA 54.

1. CSA Approval: Designed and certified by and bearing label of CSA.

B. Burners: Stainless steel.

1. Fuel: Natural gas.
2. Ignition: Electronically controlled electric spark or hot-surface igniter with flame sensor.

C. Heat-Exchanger and Drain Pan: Stainless steel.

D. Power Vent: Integral, motorized centrifugal fan interlocked with gas valve.

E. Gas Valve Train: Single-body, regulated, redundant, 24-V ac gas valve assembly containing pilot solenoid valve, pilot filter, pressure regulator, pilot shutoff, and manual shutoff.

2.9 DAMPERS

A. Leakage Rate: Comply with ASHRAE/IES 90.1.

B. Damper Motor: Modulating with adjustable minimum position.

2.10 ELECTRICAL POWER CONNECTIONS

A. RTU shall have a single connection of power to unit with unit-mounted disconnect switch accessible from outside unit and control-circuit transformer with built-in overcurrent protection.

2.11 ACCESSORIES

A. Duplex, 115-V, ground-fault-interrupter outlet with 15-A overcurrent protection. Include transformer. Outlet shall be energized even if the unit main disconnect is open.

B. Filter differential pressure switch with sensor tubing on either side of filter. Set for final filter pressure loss.

C. Safeties:

1. Smoke detector.
2. Condensate overflow switch.
3. Phase-loss protection.
4. High and low pressure control.
5. Gas furnace airflow-proving switch.

D. Coil guards of painted, galvanized-steel wire.

E. Hail guards of galvanized steel, painted to match casing.

F. Door switches to disable heating or reset set point when open.

G. Outdoor-air intake weather hood with moisture eliminator.

H. Oil separator.

2.12 ROOF CURBS

A. 14 inch tall insulated structural roof curbs to provide support for the rooftop air-conditioning unit and provide a weather protected area for terminating and securing the roof membrane, of a design certified by a licensed structural engineer as compliant with ASCE 7.

2.13 PAD MOUNTED RTU ON PLENUM CURB:

A. Min. 20” tall structural plenum curb with field cut option or knockout for return air to be ducted through side of curb and return air into bottom of unit. Curb to provide support for the rooftop air-conditioning unit and provide a weather protected area for terminating and securing to the concrete equipment pad. Entirety of plenum curb shall be open for return air path.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Roof Curb: Install on roof structure, level and secure, according to AHRI Guideline B. Install RTUs on curbs and coordinate roof penetrations and flashing with roof construction specified in Section 077200 "Roof Accessories." Secure RTUs to upper curb rail, and secure curb base to roof framing with anchor bolts.

3.2 CONNECTIONS

A. Comply with duct installation requirements specified in other HVAC Sections. Drawings indicate general arrangement of ducts. The following are specific connection requirements:

1. Install ducts to termination at top of roof curb.
2. Remove roof decking only as required for passage of ducts. Do not cut out decking under entire roof curb.
3. Connect supply ducts to RTUs with flexible duct connectors specified in Section 233300 "Air Duct Accessories."
4. Install return-air duct continuously through roof structure.

B. Install condensate drain, minimum connection size, with trap and indirect connection to nearest roof drain or area drain.

C. Where installing piping adjacent to RTUs, allow space for service and maintenance.

1. Gas Piping: Comply with applicable requirements in Section 231123 "Facility Natural-Gas Piping." Connect gas piping to burner, full size of gas train inlet, and connect with union and shutoff valve with sufficient clearance for burner removal and service.

D. Connect electrical wiring according to Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

E. Install nameplate for each electrical connection indicating electrical equipment designation and circuit number feeding connection.

3.3 FIELD QUALITY CONTROL

A. Perform tests and inspections.

B. Tests and Inspections:

1. After installing RTUs and after electrical circuitry has been energized, test units for compliance with requirements.
2. Inspect for and remove shipping bolts, blocks, and tie-down straps.
3. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
4. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

C. Prepare test and inspection reports.

3.4 CLEANING AND ADJUSTING

A. Occupancy Adjustments: When requested within 12 months from date of Substantial Completion, provide on-site assistance in adjusting system to suit actual occupied conditions. Provide up to two visits to Project during other-than-normal occupancy hours for this purpose.

B. After completing system installation and testing, adjusting, and balancing RTU and air-distribution systems, clean filter housings and install new filters.

3.5 DEMONSTRATION

A. Train Owner's maintenance personnel to adjust, operate, and maintain RTUs.

END OF SECTION 237416.11

SECTION 260519 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Copper building wire rated 600 V or less.
2. Metal-clad cable, Type MC, rated 600 V or less.
3. Connectors, splices, and terminations rated 600 V and less.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Product Schedule: Indicate type, use, location, and termination locations.

1.3 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

PART 2 - PRODUCTS

2.1 CONDUCTOR AND CABLE APPLICATIONS

A. Do not use conductors and cables for applications other than as permitted by NFPA 70 and product listing.

B. Nonmetallic-sheathed cable is not permitted.

C. Provide single conductor building wire installed in suitable raceway unless otherwise indicated, permitted, or required.

2.2 CONDUCTOR AND CABLE GENERAL REQUIREMENTS

A. Provide products that comply with requirements of NFPA 70

B. Provide products listed, classified, and labeled as suitable for the purpose intended.

C. Comply with NEMA WC 70

D. Thermoplastic-Insulated Conductors and Cables: Listed and labeled as complying with UL 83

E. Thermoset-Insulated Conductors and Cables: Listed and labeled as complying with UL-44

F. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, etc. as required for a complete operating system.

G. Conductor Material

1. Provide copper conductors only. Aluminum conductors are not acceptable for this project.
2. Copper Conductors: Soft drawn annealed, 98% conductivity, uncoated copper conductors complying with ASTM B 3, ASTM B 8, or ASTM B787/B787M unless otherwise indicated.
3. Tinned Copper Conductors: Comply with ASTM B33

H. Conductor Color Coding:

1. Color code conductors as indicated unless otherwise required by the authority having jurisdiction. Maintain consistent color coding throughout project.
2. Color Coding Method: Integrally colored insulation.
3. Color Code

a. 208Y/120V, 3 phase, 4 Wire System:

1) Phase A: Black
2) Phase B: Red
3) Phase C: Blue
4) Neutral/Grounded: White

b. Equipment Ground, All systems: Green

2.3 COPPER BUILDING WIRE

A. Description: Single conductor insulated wire.

B. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. American Bare Conductor.
2. Southwire Company.
3. WESCO.

C. Standards:

1. Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.
2. RoHS compliant.
3. Conductor and Cable Marking: Comply with wire and cable marking according to UL's "Wire and Cable Marking and Application Guide."

D. Conductors: Copper, complying with ASTM B 3 for bare annealed copper and with ASTM B 8 for stranded conductors.

E. Conductor Insulation:

1. Type THHN/THWN or Type THHN/THWN-2: Comply with UL 83.

2. Insulation voltage rating: 600 V

2.4 METAL-CLAD CABLE, TYPE MC

A. Description: A factory assembly of one or more current-carrying insulated conductors in an overall metallic sheath.

B. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. American Bare Conductor.
2. Southwire Company.
3. WESCO.

C. Standards:

1. Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.
2. Comply with UL 1569.
3. RoHS compliant.
4. Conductor and Cable Marking: Comply with wire and cable marking according to UL's "Wire and Cable Marking and Application Guide."

D. Circuits:

1. Single circuit.

E. Conductors: Copper, complying with ASTM B 3 for bare annealed copper and with ASTM B 8 for stranded conductors.

F. Ground Conductor: Insulated.

G. Minimum Conductor size is #12 AWG

H. Conductor Insulation:

1. Type TFN/THHN/THWN-2: Comply with UL 83.
2. Type XHHW-2: Comply with UL 44.

I. Minimum insulation rating is 90°C

J. Armor: Steel, interlocked.

K. Jacket: PVC applied over armor.

2.5 CONNECTORS AND SPLICES

A. Description: Factory-fabricated connectors, splices, and lugs of size, ampacity rating, material, type, and class for application and service indicated; listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and use.

B. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. 3M Electrical Products.
2. ABB (Electrification Products Division).
3. Hubbell Incorporated (Hubbell Power Systems).

C. Jacketed Cable Connectors: For steel and aluminum jacketed cables, zinc die-cast with set screws, designed to connect conductors specified in this Section.

D. Lugs: One piece, seamless, designed to terminate conductors specified in this Section.

1. Material: Copper.
2. Type: One hole with standard barrels.
3. Termination: Compression.

PART 3 - EXECUTION

3.1 CONDUCTOR MATERIAL APPLICATIONS

A. Feeders: Copper; solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.

B. Branch Circuits: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.

C. Power-Limited Fire Alarm and Control: Solid for No. 12 AWG and smaller.

3.2 CONDUCTOR INSULATION AND MULTICONDUCTOR CABLE APPLICATIONS AND WIRING METHODS

A. Exposed Branch Circuits, Including in Crawlspaces: Type THHN/THWN-2, single conductors in raceway.

B. Branch Circuits Concealed in Ceilings, Walls, and Partitions: Type THHN/THWN-2, single conductors in raceway.

C. Branch Circuits Concealed in Concrete, below Slabs-on-Grade, and Underground: Type XHHW-2, single conductors in raceway.

3.3 INSTALLATION OF CONDUCTORS AND CABLES

A. Conceal cables in finished walls, ceilings, and floors unless otherwise indicated.

B. Complete raceway installation between conductor and cable termination points according to Section 260533 "Raceways and Boxes for Electrical Systems" prior to pulling conductors and cables.

C. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.

D. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.

E. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.

F. Support cables according to Section 260529 "Hangers and Supports for Electrical Systems."

3.4 CONNECTIONS

A. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A-486B.

B. Make splices, terminations, and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.

C. Wiring at Outlets: Install conductor at each outlet, with at least 6 inches of slack.

3.5 IDENTIFICATION

A. Identify and color-code conductors and cables according to Section 260553 "Identification for Electrical Systems."

B. Identify each spare conductor at each end with identity number and location of other end of conductor, and identify as spare conductor.

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SECTION 260529 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:

1. Hangers and supports for electrical equipment and systems.
2. Construction requirements for concrete bases.

1.2 PERFORMANCE REQUIREMENTS

A. Design supports for multiple raceways capable of supporting combined weight of supported systems and its contents.

B. Design equipment supports capable of supporting combined operating weight of supported equipment and connected systems and components.

C. Rated Strength: Adequate in tension, shear, and pullout force to resist maximum loads calculated or imposed for this Project, with a minimum structural safety factor of five times the applied force.

1.3 ACTION SUBMITTALS

A. Product Data: For steel slotted support systems.

1.4 INFORMATIONAL SUBMITTALS

A. Welding certificates.

1.5 QUALITY ASSURANCE

A. Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."

B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 SUPPORT, ANCHORAGE, AND ATTACHMENT COMPONENTS

A. Steel Slotted Support Systems: Comply with MFMA-4, factory-fabricated components for field assembly.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

    a. Cooper B-Line, Inc.; a division of Cooper Industries.
    b. ERICO International Corporation.
    c. Thomas & Betts Corporation, A Member of the ABB Group.

2. Painted Coatings: Manufacturer's standard painted coating applied according to MFMA-4.
3. Channel Dimensions: Selected for applicable load criteria.

B. Raceway and Cable Supports: As described in NECA 1 and NECA 101.

C. Conduit and Cable Support Devices: Steel and malleable-iron hangers, clamps, and associated fittings, designed for types and sizes of raceway or cable to be supported.

D. Support for Conductors in Vertical Conduit: Factory-fabricated assembly consisting of threaded body and insulating wedging plug or plugs for non-armored electrical conductors or cables in riser conduits. Plugs shall have number, size, and shape of conductor gripping pieces as required to suit individual conductors or cables supported. Body shall be malleable iron.

E. Structural Steel for Fabricated Supports and Restraints: ASTM A 36/A 36M, steel plates, shapes, and bars; black and galvanized.

F. Mounting, Anchoring, and Attachment Components: Items for fastening electrical items or their supports to building surfaces include the following:

1. Powder-Actuated Fasteners: Threaded-steel stud, for use in hardened portland cement concrete, steel, or wood, with tension, shear, and pullout capacities appropriate for supported loads and building materials where used.

    a. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

        1) Hilti, Inc.
        2) ITW Ramset/Red Head; Illinois Tool Works, Inc.
        3) Simpson Strong-Tie Co., Inc.

2. Mechanical-Expansion Anchors: Insert-wedge-type, zinc-coated steel, for use in hardened portland cement concrete with tension, shear, and pullout capacities appropriate for supported loads and building materials in which used.

    a. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

        1) Cooper B-Line, Inc.; a division of Cooper Industries.
        2) Hilti, Inc.
        3) ITW Ramset/Red Head; Illinois Tool Works, Inc.

3. Concrete Inserts: Steel or malleable-iron, slotted support system units similar to MSS Type 18; complying with MFMA-4 or MSS SP-58.
4. Clamps for Attachment to Steel Structural Elements: MSS SP-58, type suitable for attached structural element.
5. Through Bolts: Structural type, hex head, and high strength. Comply with ASTM A 325.
6. Toggle Bolts: All-steel springhead type.
7. Hanger Rods: Threaded steel.

PART 3 - EXECUTION

3.1 APPLICATION

A. Comply with NECA 1 and NECA 101 for application of hangers and supports for electrical equipment and systems except if requirements in this Section are stricter.

B. Maximum Support Spacing and Minimum Hanger Rod Size for Raceway: Space supports for EMT, IMC, and RMC as required by NFPA 70. Minimum rod size shall be 1/4 inch in diameter.

C. Multiple Raceways or Cables: Install trapeze-type supports fabricated with steel slotted support system, sized so capacity can be increased by at least 25 percent in future without exceeding specified design load limits.

1. Secure raceways and cables to these supports with single-bolt conduit clamps.

D. Spring-steel clamps designed for supporting single conduits without bolts may be used for 1-1/2-inch and smaller raceways serving branch circuits and communication systems above suspended ceilings and for fastening raceways to trapeze supports.

3.2 SUPPORT INSTALLATION

A. Comply with NECA 1 and NECA 101 for installation requirements except as specified in this Article.

B. Raceway Support Methods: In addition to methods described in NECA 1, EMT, IMC, and RMC may be supported by openings through structure members, as permitted in NFPA 70.

C. Strength of Support Assemblies: Where not indicated, select sizes of components so strength will be adequate to carry present and future static loads within specified loading limits. Minimum static design load used for strength determination shall be weight of supported components plus 200 lb.

D. Mounting and Anchorage of Surface-Mounted Equipment and Components: Anchor and fasten electrical items and their supports to building structural elements by the following methods unless otherwise indicated by code:

1. To Wood: Fasten with lag screws or through bolts.
2. To New Concrete: Bolt to concrete inserts.
3. To Masonry: Approved toggle-type bolts on hollow masonry units and expansion anchor fasteners on solid masonry units.

4. To Existing Concrete: Expansion anchor fasteners.
5. Instead of expansion anchors, powder-actuated driven threaded studs provided with lock washers and nuts may be used in existing standard-weight concrete 4 inches thick or greater. Do not use for anchorage to lightweight-aggregate concrete or for slabs less than 4 inches thick.
6. To Steel: Beam clamps (MSS Type 19, 21, 23, 25, or 27) complying with MSS SP-69.
7. To Light Steel: Sheet metal screws.
8. Items Mounted on Hollow Walls and Nonstructural Building Surfaces: Mount cabinets, panelboards, disconnect switches, control enclosures, pull and junction boxes, transformers, and other devices on slotted-channel racks attached to substrate.

E. Drill holes for expansion anchors in concrete at locations and to depths that avoid reinforcing bars.

3.3 INSTALLATION OF FABRICATED METAL SUPPORTS

A. Cut, fit, and place miscellaneous metal supports accurately in location, alignment, and elevation to support and anchor electrical materials and equipment.

B. Field Welding: Comply with AWS D1.1/D1.1M.

3.4 PAINTING

A. Touchup: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA 1 requirements for touching up field-painted surfaces.

1. Apply paint by brush or spray to provide minimum dry film thickness of 2.0 mils.

B. Galvanized Surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A 780.

END OF SECTION 260529

SECTION 260533 - RACEWAYS AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Metal conduits and fittings.
2. Metal wireways and auxiliary gutters.
3. Boxes, enclosures, and cabinets.
4. Handholes and boxes for exterior underground cabling.

1.2 ACTION SUBMITTALS

A. Product Data: For each type of product.

1.3 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Conduit routing plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of items involved:

1. Structural members in paths of conduit groups with common supports.
2. HVAC and plumbing items and architectural features in paths of conduit groups with common supports.

PART 2 - PRODUCTS

2.1 METAL CONDUITS AND FITTINGS

A. Metal Conduit:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:
    a. Allied Tube & Conduit; a part of Atkore International.
    b. Thomas & Betts Corporation; A Member of the ABB Group.
    c. Wheatland Tube Company.
2. Listing and Labeling: Metal conduits, tubing, and fittings shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
3. GRC: Comply with ANSI C80.1 and UL 6.
4. EMT: Comply with ANSI C80.3 and UL 797.

5. FMC: Comply with UL 1; zinc-coated steel.

6. LFMC: Flexible steel conduit with PVC jacket and complying with UL 360.

B. Metal Fittings: Comply with NEMA FB 1 and UL 514B.

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

a. Allied Tube & Conduit; a part of Atkore International.

b. Thomas & Betts Corporation; A Member of the ABB Group.

c. Wheatland Tube Company.

2. Listing and Labeling: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

3. Fittings, General: Listed and labeled for type of conduit, location, and use.

4. Conduit Fittings for Hazardous (Classified) Locations: Comply with UL 1203 and NFPA 70.

5. Fittings for EMT:

a. Material: Steel.

b. Type: Setscrew.

6. Expansion Fittings: PVC or steel to match conduit type, complying with UL 651, rated for environmental conditions where installed, and including flexible external bonding jumper.

C. Joint Compound for IMC, GRC, or ARC: Approved, as defined in NFPA 70, by authorities having jurisdiction for use in conduit assemblies, and compounded for use to lubricate and protect threaded conduit joints from corrosion and to enhance their conductivity.

2.2 NONMETALLIC CONDUITS AND FITTINGS

A. Nonmetallic Conduit: Shall not be used.

2.3 METAL WIREWAYS AND AUXILIARY GUTTERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. B-line, an Eaton business.

2. Hoffman; a brand of Pentair Equipment Protection.

3. Square D.

B. Description: Sheet metal, complying with UL 870 and NEMA 250, Type 1 unless otherwise indicated, and sized according to NFPA 70.

1. Metal wireways installed outdoors shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

C. Fittings and Accessories: Include covers, couplings, offsets, elbows, expansion joints, adapters, hold-down straps, end caps, and other fittings to match and mate with wireways as required for complete system.

2.4 BOXES, ENCLOSURES, AND CABINETS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. Hoffman; a brand of Pentair Equipment Protection.
2. RACO; Hubbell.
3. Thomas & Betts Corporation; A Member of the ABB Group.

B. General Requirements for Boxes, Enclosures, and Cabinets: Boxes, enclosures, and cabinets installed in wet locations shall be listed for use in wet locations.

C. Sheet Metal Outlet and Device Boxes: Comply with NEMA OS 1 and UL 514A.

D. Cast-Metal Outlet and Device Boxes: Comply with NEMA FB 1, ferrous alloy, Type FD, with gasketed cover.

E. Nonmetallic Outlet and Device Boxes: Shall not be used.

F. Nonmetallic Floor Boxes: Nonadjustable, rectangular.

1. Listing and Labeling: Nonmetallic floor boxes shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

G. Luminaire Outlet Boxes: Nonadjustable, designed for attachment of luminaire weighing 50 lb. Outlet boxes designed for attachment of luminaires weighing more than 50 lb shall be listed and marked for the maximum allowable weight.

H. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.

I. Cast-Metal Access, Pull, and Junction Boxes: Comply with NEMA FB 1 and UL 1773, galvanized, cast iron with gasketed cover.

J. Box extensions used to accommodate new building finishes shall be of same material as recessed box.

K. Device Box Dimensions: 4 inches square by 2-1/8 inches deep.

L. Gangable boxes are allowed.

M. Hinged-Cover Enclosures: Comply with UL 50 and NEMA 250, with continuous-hinge cover with flush latch unless otherwise indicated.

1. Metal Enclosures: Steel, finished inside and out with manufacturer's standard enamel.
2. Nonmetallic Enclosures: Plastic.
3. Interior Panels: Steel; all sides finished with manufacturer's standard enamel.

N. Cabinets:

1. NEMA 250, galvanized-steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel.
2. Hinged door in front cover with flush latch and concealed hinge.
3. Key latch to match panelboards.
4. Metal barriers to separate wiring of different systems and voltage.
5. Accessory feet where required for freestanding equipment.
6. Nonmetallic cabinets shall be listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

PART 3 - EXECUTION

3.1 RACEWAY APPLICATION

A. Outdoors: Apply raceway products as specified below unless otherwise indicated:

1. Exposed Conduit: GRC.
2. Concealed Conduit, Aboveground: EMT.
3. Underground Conduit: RNC, Type EPC-40-PVC, direct buried.
4. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC.
5. Boxes and Enclosures, Aboveground: NEMA 250, Type 3R.

B. Indoors: Apply raceway products as specified below unless otherwise indicated.

1. Exposed, Not Subject to Physical Damage: EMT.
2. Exposed, Not Subject to Severe Physical Damage: EMT.
3. Exposed and Subject to Severe Physical Damage: GRC. Raceway locations include the following:
   a. Mechanical rooms.
4. Concealed in Ceilings and Interior Walls and Partitions: EMT.
5. Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): FMC, except use LFMC in damp or wet locations.
6. Damp or Wet Locations: GRC.
7. Boxes and Enclosures: NEMA 250, Type 1, except use NEMA 250, Type 4 stainless steel in institutional and commercial kitchens and damp or wet locations.

C. Minimum Raceway Size: 3/4-inch trade size.

D. Raceway Fittings: Compatible with raceways and suitable for use and location.

1. Rigid and Intermediate Steel Conduit: Use threaded rigid steel conduit fittings unless otherwise indicated. Comply with NEMA FB 2.10.

2. PVC Externally Coated, Rigid Steel Conduits: Use only fittings listed for use with this type of conduit. Patch and seal all joints, nicks, and scrapes in PVC coating after installing conduits and fittings. Use sealant recommended by fitting manufacturer and apply in thickness and number of coats recommended by manufacturer.

3. EMT: Use setscrew, steel fittings. Comply with NEMA FB 2.10.

4. Flexible Conduit: Use only fittings listed for use with flexible conduit. Comply with NEMA FB 2.20.

E. Do not install aluminum conduits, boxes, or fittings in contact with concrete or earth.

F. Do not install nonmetallic conduit where ambient temperature exceeds 120 deg F.

3.2 INSTALLATION

A. Comply with requirements in Section 260529 "Hangers and Supports for Electrical Systems" for hangers and supports.

B. Comply with NECA 1 and NECA 101 for installation requirements except where requirements on Drawings or in this article are stricter. Comply with NECA 102 for aluminum conduits. Comply with NFPA 70 limitations for types of raceways allowed in specific occupancies and number of floors.

C. Do not install raceways or electrical items on any "explosion-relief" walls or rotating equipment.

D. Do not fasten conduits onto the bottom side of a metal deck roof.

E. Keep raceways at least 6 inches away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.

F. Comply with requirements in Section 260529 "Hangers and Supports for Electrical Systems" for hangers and supports.

G. Arrange stub-ups so curved portions of bends are not visible above finished slab.

H. Make bends in raceway using large-radius preformed ells. Field bending shall be according to NFPA 70 minimum radii requirements. Use only equipment specifically designed for material and size involved.

I. Conceal conduit and EMT within finished walls, ceilings, and floors unless otherwise indicated. Install conduits parallel or perpendicular to building lines.

J. Support conduit within 12 inches of enclosures to which attached.

K. Raceways Embedded in Slabs:

1. Run conduit larger than 1-inch trade size, parallel or at right angles to main reinforcement. Where at right angles to reinforcement, place conduit close to slab support. Secure raceways to reinforcement at maximum 10-foot intervals.

2. Arrange raceways to cross building expansion joints at right angles with expansion fittings.

3. Arrange raceways to keep a minimum of 1 inch of concrete cover in all directions.

4. Do not embed threadless fittings in concrete unless specifically approved by Architect for each specific location.

L. Stub-ups to Above Recessed Ceilings:

1. Use EMT, IMC, or RMC for raceways.

2. Use a conduit bushing or insulated fitting to terminate stub-ups not terminated in hubs or in an enclosure.

M. Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions: Apply listed compound to threads of raceway and fittings before making up joints. Follow compound manufacturer's written instructions.

N. Coat field-cut threads on PVC-coated raceway with a corrosion-preventing conductive compound prior to assembly.

O. Raceway Terminations at Locations Subject to Moisture or Vibration: Use insulating bushings to protect conductors including conductors smaller than No. 4 AWG.

P. Terminate threaded conduits into threaded hubs or with locknuts on inside and outside of boxes or cabinets. Install bushings on conduits up to 1-1/4-inch trade size and insulated throat metal bushings on 1-1/2-inch trade size and larger conduits terminated with locknuts. Install insulated throat metal grounding bushings on service conduits.

Q. Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb tensile strength. Leave at least 12 inches of slack at each end of pull wire. Cap underground raceways designated as spare above grade alongside raceways in use.

R. Install raceway sealing fittings at accessible locations according to NFPA 70 and fill them with listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces.

S. Install devices to seal raceway interiors at accessible locations. Locate seals so no fittings or boxes are between the seal and the following changes of environments. Seal the interior of all raceways at the following points:

1. Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.

2. Where an underground service raceway enters a building or structure.

3. Conduit extending from interior to exterior of building.

4. Conduit extending into pressurized duct and equipment.

5. Conduit extending into pressurized zones that are automatically controlled to maintain different pressure set points.

6. Where otherwise required by NFPA 70.

T. Flexible Conduit Connections: Comply with NEMA RV 3. Use a maximum of 72 inches of flexible conduit for whips from junction boxes to single light fixtures.

1. Use LFMC in damp or wet locations subject to severe physical damage.

2. Use LFMC or LFNC in damp or wet locations not subject to severe physical damage.

U. Mount boxes at heights indicated on Drawings. If mounting heights of boxes are not individually indicated, give priority to ADA requirements. Install boxes with height measured to center of box unless otherwise indicated.

V. Recessed Boxes in Masonry Walls: Saw-cut opening for box in center of cell of masonry block, and install box flush with surface of wall. Prepare block surfaces to provide a flat surface for a raintight connection between the box and cover plate or the supported equipment and box.

W. Horizontally separate boxes mounted on opposite sides of walls so they are not in the same vertical channel.

X. Locate boxes so that cover or plate will not span different building finishes.

Y. Support boxes of three gangs or more from more than one side by spanning two framing members or mounting on brackets specifically designed for the purpose.

Z. Fasten junction and pull boxes to or support from building structure. Do not support boxes by conduits.

3.3 PROTECTION

A. Protect coatings, finishes, and cabinets from damage and deterioration.

1. Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
2. Repair damage to PVC coatings or paint finishes with matching touchup coating recommended by manufacturer.

END OF SECTION 260533

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SECTION 260553 - IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Identification for conductor and communication- and control- cable.
2. Warning labels and signs.
3. Equipment identification labels.

1.2 ACTION SUBMITTALS

A. Product Data: For each electrical identification product indicated.

1.3 QUALITY ASSURANCE

A. Comply with ANSI A13.1.

B. Comply with NFPA 70.

C. Comply with 29 CFR 1910.144 and 29 CFR 1910.145.

D. Comply with ANSI Z535.4 for safety signs and labels.

E. Adhesive-attached labeling materials, including label stocks, laminating adhesives, and inks used by label printers, shall comply with UL 969.

PART 2 - PRODUCTS

2.1 CONDUCTOR AND COMMUNICATION- AND CONTROL-CABLE IDENTIFICATION MATERIALS

A. Marker Tape: Vinyl or vinyl -cloth, self-adhesive wraparound type, with circuit identification legend machine printed by thermal transfer or equivalent process.

2.2 WARNING LABELS AND SIGNS

A. Comply with NFPA 70 and 29 CFR 1910.145.

B. Baked-Enamel Warning Signs:

1. Preprinted aluminum signs, punched or drilled for fasteners, with colors, legend, and size required for application.
2. 1/4-inch grommets in corners for mounting.
3. Nominal size, 7 by 10 inches.

C. Warning label and sign shall include, but are not limited to, the following legends:

1. Multiple Power Source Warning: "DANGER - ELECTRICAL SHOCK HAZARD - EQUIPMENT HAS MULTIPLE POWER SOURCES."
2. Workspace Clearance Warning: "WARNING - OSHA REGULATION - AREA IN FRONT OF ELECTRICAL EQUIPMENT MUST BE KEPT CLEAR FOR 36 INCHES."

2.3 EQUIPMENT IDENTIFICATION LABELS

A. Permanent Engraved nameplate

1. Nameplates shall be engraved three-layer Laminated Acrylic or Melamine Label: Adhesive backed, with black letters on a white background. Minimum letter height shall be 3/8 inch.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Location: Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment.

B. Apply identification devices to surfaces that require finish after completing finish work.

C. Self-Adhesive Identification Products: Clean surfaces before application, using materials and methods recommended by manufacturer of identification device.

D. Attach signs and plastic labels that are not self-adhesive type with mechanical fasteners appropriate to the location and substrate.

E. System Identification Color-Coding Bands for Raceways and Cables: Each color-coding band shall completely encircle cable or conduit. Place adjacent bands of two-color markings in contact, side by side. Locate bands at changes in direction, at penetrations of walls and floors, at 50-foot maximum intervals in straight runs, and at 25-foot maximum intervals in congested areas.

F. Underground-Line Warning Tape: During backfilling of trenches install continuous underground-line warning tape directly above line at 6 to 8 inches below finished grade. Use multiple tapes where width of multiple lines installed in a common trench exceeds 16 inches overall.

G. Painted Identification: Comply with requirements in painting Sections for surface preparation and paint application.

3.2 IDENTIFICATION SCHEDULE

A. Accessible Raceways and Metal-Clad Cables, 600 V or Less, for Service, Feeder, and Branch Circuits More Than 30 A, and 120 V to ground: Install labels at 10-foot maximum intervals.

B. Accessible Raceways and Cables within Buildings: Identify the covers of each junction and pull box of the following systems with self-adhesive vinyl labels with the wiring system legend and system voltage. System legends shall be as follows:

1. Power.

C. Install instructional sign including the color-code for grounded and ungrounded conductors using adhesive-film-type labels.

D. Conductors to Be Extended in the Future: Attach write-on tags to conductors and list source.

E. Auxiliary Electrical Systems Conductor Identification: Identify field-installed alarm, control, and signal connections.

1. Identify conductors, cables, and terminals in enclosures and at junctions, terminals, and pull points. Identify by system and circuit designation.
2. Use system of marker tape designations that is uniform and consistent with system used by manufacturer for factory-installed connections.
3. Coordinate identification with Project Drawings, manufacturer's wiring diagrams, and the Operation and Maintenance Manual.

F. Locations of Underground Lines: Identify with underground-line warning tape for power, lighting, communication, and control wiring and optical fiber cable.

1. Limit use of underground-line warning tape to direct-buried cables.
2. Install underground-line warning tape for both direct-buried cables and cables in raceway.

G. Workspace Indication: Install floor marking tape to show working clearances in the direction of access to live parts. Workspace shall be as required by NFPA 70 and 29 CFR 1926.403 unless otherwise indicated. Do not install at flush-mounted panelboards and similar equipment in finished spaces.

H. Warning Labels for Indoor Cabinets, Boxes, and Enclosures for Power and Lighting: Self-adhesive warning labels.

1. Comply with 29 CFR 1910.145.
2. Identify system voltage with black letters on an orange background.
3. Apply to exterior of door, cover, or other access.
4. For equipment with multiple power or control sources, apply to door or cover of equipment including, but not limited to, the following:

    a. Power transfer switches.
    b. Controls with external control power connections.

I. Operating Instruction Signs: Install instruction signs to facilitate proper operation and maintenance of electrical systems and items to which they connect. Install instruction signs with approved legend where instructions are needed for system or equipment operation.

J. Equipment Identification Labels: On each unit of equipment, install unique designation label that is consistent with wiring diagrams, schedules, and the Operation and Maintenance Manual. Apply labels to disconnect switches and protection equipment, central or master units, control panels, control stations, terminal cabinets, and racks of each system. Systems include power,

lighting, control, communication, signal, monitoring, and alarm systems unless equipment is provided with its own identification.

1. Labeling Instructions:

    a. Indoor Equipment: Laminated acrylic or melamine label. Unless otherwise indicated, provide a single line of text with 1/2-inch-high letters on 1-1/2-inch-high label; where two lines of text are required, use labels 2 inches high.
    b. Outdoor Equipment: Laminated acrylic or melamine label 4 inches high.
    c. Elevated Components: Increase sizes of labels and letters to those appropriate for viewing from the floor.
    d. Unless provided with self-adhesive means of attachment, fasten labels with appropriate mechanical fasteners that do not change the NEMA or NRTL rating of the enclosure.

2. Equipment to Be Labeled:

    a. Panelboards, electrical cabinets, and enclosures.
    b. Electrical switchgear and switchboards.
    c. Disconnect switches.
    d. Enclosed circuit breakers.
    e. Contactors.

3.3 INSTALLATION

A. Verify identity of each item before installing identification products.

B. Location: Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment.

C. Apply identification devices to surfaces that require finish after completing finish work.

D. Self-Adhesive Identification Products: Clean surfaces before application, using materials and methods recommended by manufacturer of identification device.

E. Attach non-adhesive signs and plastic labels with screws and auxiliary hardware appropriate to the location and substrate.

F. Color-Coding for Phase Identification, 600 V and Less: Use the colors listed below for ungrounded service, feeder, and branch-circuit conductors.

1. Color shall be factory applied.
2. Colors for 208/120-V Circuits:

    a. Phase A: Black.
    b. Phase B: Red.
    c. Phase C: Blue.

3. Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for a minimum distance of 6 inches from terminal points and in boxes where splices or taps are made. Apply last two turns of tape with no tension to prevent possible unwinding. Locate bands to avoid obscuring factory cable markings.

END OF SECTION 260553

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SECTION 262816 - ENCLOSED SWITCHES AND CIRCUIT BREAKERS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Fusible switches.
2. Nonfusible switches.
3. Molded-case circuit breakers (MCCBs).
4. Enclosures.

1.2 DEFINITIONS

A. NC: Normally closed.

B. NO: Normally open.

C. SPDT: Single pole, double throw.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of enclosed switch, circuit breaker, accessory, and component indicated.

B. Shop Drawings: For enclosed switches and circuit breakers. Include plans, elevations, sections, details, and attachments to other work.

1. Wiring Diagrams: For power, signal, and control wiring.

1.4 INFORMATIONAL SUBMITTALS

A. Field quality-control reports.

1.5 CLOSEOUT SUBMITTALS

A. Operation and maintenance data.

1.6 QUALITY ASSURANCE

A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

B. Comply with NFPA 70.

PART 2 - PRODUCTS

2.1 FUSIBLE SWITCHES

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. Eaton Electrical Sector; Eaton Corporation.
2. General Electric Company.
3. ABB, Electrification Business
4. Siemens Industry, Inc.
5. Square D.

B. Type GD, General Duty, Single Throw, 240-V ac, 800 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, with cartridge fuse interiors to accommodate indicated fuses, lockable handle with capability to accept two padlocks, and interlocked with cover in closed position.

C. Accessories:

1. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.
2. Neutral Kit: Internally mounted; insulated, capable of being grounded and bonded; labeled for copper and aluminum neutral conductors.
3. Class R Fuse Kit: Provides rejection of other fuse types when Class R fuses are specified.
4. Lugs: Suitable for number, size, and conductor material.

2.2 NONFUSIBLE SWITCHES

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. Eaton Electrical Sector; Eaton Corporation.
2. General Electric Company.
3. Siemens Industry, Inc.
4. Square D.
5. ABB, Electrification Business

B. Type GD, General Duty, Single Throw, 600 A and Smaller: UL 98 and NEMA KS 1, horsepower rated, lockable handle with capability to accept two padlocks, and interlocked with cover in closed position.

C. Accessories:

1. Equipment Ground Kit: Internally mounted and labeled for copper and aluminum ground conductors.
2. Neutral Kit: Internally mounted; insulated, capable of being grounded and bonded; labeled for copper and aluminum neutral conductors.
3. Lugs: Suitable for number, size, and conductor material.

2.3 MOLDED-CASE CIRCUIT BREAKERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

1. ABB, Electrification Business

2. Eaton Electrical Sector; Eaton Corporation.
3. General Electric Company.
4. Siemens Industry, Inc.
5. Square D.

B. General Requirements: Comply with UL 489, NEMA AB 1, and NEMA AB 3, with interrupting capacity to comply with available fault currents.

C. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 100 A and larger.

D. Electronic Trip Circuit Breakers: Field-replaceable rating plug, rms sensing, with the following field-adjustable settings:

1. Instantaneous trip.
2. Long- and short-time pickup levels.
3. Long- and short-time time adjustments.
4. Ground-fault pickup level, time delay, and I^2t response.

E. Current-Limiting Circuit Breakers: Frame sizes 400 A and smaller, and let-through ratings less than NEMA FU 1, RK-5.

F. Features and Accessories:

1. Standard frame sizes, trip ratings, and number of poles.
2. Lugs: Suitable for number, size, trip ratings, and conductor material.
3. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HID for feeding fluorescent and high-intensity discharge lighting circuits.
4. Ground-Fault Protection: Comply with UL 1053; integrally mounted, self-powered type with mechanical ground-fault indicator; relay with adjustable pickup and time-delay settings, push-to-test feature, internal memory, and shunt trip unit; and three-phase, zero-sequence current transformer/sensor.
5. Shunt Trip: Trip coil energized from separate circuit, with coil-clearing contact.

2.4 ENCLOSURES

A. Enclosed Switches and Circuit Breakers: NEMA AB 1, NEMA KS 1, NEMA 250, and UL 50, to comply with environmental conditions at installed location.

1. Indoor, Dry and Clean Locations: NEMA 250, Type 1.
2. Outdoor Locations: NEMA 250, Type 3R.
3. Other Wet or Damp, Indoor Locations: NEMA 250, Type 4.
4. Indoor Locations Subject to Dust, Falling Dirt, and Dripping Noncorrosive Liquids: NEMA 250, Type 12.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install individual wall-mounted switches and circuit breakers with tops at uniform height unless otherwise indicated.

B. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from enclosures and components.

C. Install fuses in fusible devices.

D. Comply with NECA 1.

3.2 IDENTIFICATION

A. Comply with requirements in Section 260553 "Identification for Electrical Systems."

1. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs.
2. Label each enclosure with engraved metal or laminated-plastic nameplate.

3.3 FIELD QUALITY CONTROL

A. Perform tests and inspections.

B. Acceptance Testing Preparation:

1. Test continuity of each circuit.

C. Tests and Inspections:

1. Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification. Certify compliance with test parameters.
2. Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.

D. Enclosed switches and circuit breakers will be considered defective if they do not pass tests and inspections.

E. Prepare test and inspection reports, including a certified report that identifies enclosed switches and circuit breakers and that describes scanning results. Include notation of deficiencies detected, remedial action taken, and observations after remedial action.

END OF SECTION 262816

APPENDIX A

HAZARDOUS MATERIAL
INSPECTION REPORT
October 2025

OCCU-TEC

Protecting People, Places and Performance

Hazardous Materials Inspection

Scruggs Station Warehouse Complex
4720 Scruggs Station Road
Jefferson City, Missouri 65109

Project Number: 925307

PREPARED FOR

FACILITIES MANAGEMENT FMDC DESIGN & CONSTRUCTION
MISSOURI OFFICE of ADMINISTRATION

State of Missouri - Office of Administration
301 W. High Street – RM 730
Jefferson City, Missouri 65101
573-301-1423
Phillip Akin
Project Manager

PREPARED BY

OCCU-TEC, Inc.
2604 NE Industrial Dr., Ste. 230
North Kansas City, Missouri 64117
(816) 231-5580

December 5th, 2025

Acronyms

EPA	United States Environmental Protection Agency
AHERA	Asbestos Hazard and Emergency Response Act
NESHAP	National Emissions Standards for Hazardous Air Pollutants
RCRA	Resource Conservation and Recovery Act
ACM	Asbestos Containing Material
PACM	Presumed Asbestos Containing Material
NIST	National Institute of Standards and Technology
NVLAP	National Laboratory Accreditation Program
PLM	Polarized Light Microscopy
TEM	Transmission Electron Microscopy
NOB	Non-Friable Organically Bound ACM
CAA	Clean Air Act
AIHA	American Industrial Hygiene Association
MDNR	Missouri Department of Natural Resources
HUD	United States Department of Housing and Urban Development
LBP	Lead-based Paint
XRF	X-Ray Fluorescence Analyzer
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit

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EXECUTIVE SUMMARY

OCCU-TEC, Inc. (OCCU-TEC) completed a hazardous materials survey of the subject property located at 4720 Scruggs Station Road, Jefferson City, Missouri at the request of Phillip Akin at State of Missouri - Office of Administration (STMO - OA). Hazardous materials surveyed include asbestos, lead-based paint, other regulated materials (ORM), and volatile organic compounds (VOCs). The survey was completed on the entire building.

The survey was completed by Justin Arnold and Erin Anderson of OCCU-TEC on October 27th through 29th, 2025. The survey was completed in general accordance with the requirements set forth by the Asbestos Hazard and Emergency Response Act (AHERA), the National Emission Standards for Hazardous Air Pollutants (NESHAP), United States Department of Housing and Urban Development (HUD), Missouri Department of Health and Human Services, State of Missouri regulations, and local regulations, as applicable.

During the inspection, OCCU-TEC identified thirty-seven (37) suspect asbestos containing materials (ACMs) that were quantified and sampled. Samples were analyzed by Polarized Light Microscopy by Hayes Microbial Consulting (Hayes) of Midlothian, Virginia. Samples are considered ACM if at least one sample from a homogeneous material contains asbestos at a concentration greater than 1-percent by volume. Results of sampling indicated the presence of ACMs at the subject property.

During the inspection, OCCU-TEC completed testing of painted surfaces at the subject property using X-ray Fluorescence (XRF) technology. Paint is considered to be lead-based paint if the concentration of lead is greater or equal to 1.0 mg/cm^2. Lead-based paint was identified at the subject property during this investigation.

OCCU-TEC completed an inventory of other regulated materials (ORMs) that may be present at the subject property. ORMs include building components that may contain, but are not limited to, mercury containing equipment, refrigerant containing equipment, polychlorinated biphenyls (PCBs), and batteries. OCCU-TEC collected twelve (12) samples of suspect PCB-containing caulking. Samples were analyzed by gas chromatography by EMSL Analytical, Inc. (EMSL) of Cinnaminson, New Jersey. Results of sampling indicated no detectable concentrations of PCBs in the caulking samples collected.

OCCU-TEC collected fifty (50) surface wipe samples to identify concentrations of Resource Conservation and Recovery Act (RCRA) 8 Metals, hexavalent chromium, and PCBs on surfaces throughout the building. Analysis of metals and PCBs was completed by EMSL of Cinnaminson, New Jersey via inductively coupled plasma-optical emission spectrometry and gas chromatography, respectively. Analysis of hexavalent chromium was completed by LA Testing of Huntington Beach, California via ion chromatography. Results of sampling indicated concentrations of arsenic, cadmium, chromium, and lead exceeding Acceptable Surface Levels (ASLs) established using a ratio of the Occupational Safety and Health Administration (OSHA) airborne Permissible Exposure Limit (PEL) or American Conference of Governmental Industrial Hygienists (ACGIH) airborne Threshold Limit Values (TLV) to Department of Energy (DOE) Beryllium housekeeping criteria.

OCCU-TEC collected six (6) air samples from throughout the building to determine concentrations of VOCs. Samples were analyzed by gas chromatography/mass spectrometry by EMSL of Cinnaminson, New Jersey. Results of sampling indicated detectable concentrations of VOCs, however, all concentrations were below the both the OSHA PELs and ACGIH TLVs.

This executive summary has been prepared to provide a brief outline of the activities completed during the investigation and a general overview of the results of the investigation. Additional detail regarding the methodology and results of the investigation are included in the subsequent report. The report should be read in its entirety for a complete understanding of the investigation and results. Key terms and acronyms used throughout this report can be found in the Key Terms and Acronyms Section.

1.0 INTRODUCTION

On October 27th through 29th, 2025, Justin Arnold and Erin Anderson of OCCU-TEC completed a hazardous materials survey of the Scruggs Station Warehouse Complex at the request of Phillip Akin of STMO - OA. Copies of the inspector's credentials are included in Appendix I.

Survey Details	
Property Name	Scruggs Station Warehouse Complex
Address	4720 Scruggs Station Road Jefferson City, Missouri
Area of Survey	Throughout the entire building
Reason for Survey	Renovation
Survey Authorization	Authorization was provided by the receipt of purchase order O2534-01.

2.0 METHODOLOGY

2.1 Asbestos Survey

The asbestos survey was completed in general accordance with accepted industry standards and the requirements of the U.S. Environmental Protection Agency (EPA), as outlined in NESHAP and AHERA regulations (see Section 7 of this report). The survey was completed by an EPA-accredited inspector licensed or accredited by the State of Missouri. A copy of the inspector's credentials is provided in Appendix I.

The survey involved a systematic visual assessment of the subject property to identify suspect ACM. Suspect ACMs were grouped into homogeneous materials based on type of material, color, texture, and date of application/ installation. Once identified, each homogeneous material was categorized into one of three categories, as defined by AHERA: surfacing material, thermal system insulation, or miscellaneous material.

Each material was then assessed for friability. The EPA defines friable ACM as material that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure. Non-friable ACM is further classified as either:

- **Category I non-friable ACM**: asbestos-containing resilient floor coverings, asphalt roofing products, packings, and gaskets.
- **Category II non-friable ACM**: all other non-friable ACM not included in Category I.

Bulk sampling of suspect homogeneous materials was performed in accordance with AHERA requirements, as follows:

- **Surfacing materials**: Random sampling using the "3-5-7 rule" (3 samples from materials ≤1,000 square feet.; 5 samples from materials between 1,000 and 5,000 square feet; 7 samples from materials >5,000 square feet).
- **Thermal system insulation**: A minimum of 3 randomly distributed samples per homogeneous material.
- **Miscellaneous materials**: A minimum of 2 samples per homogeneous material.

It should be noted that the quantity of samples collected may vary from the requirements listed above. If the quantity of samples collected from each homogeneous material varied from the requirements listed above, OCCU-TEC collected samples in accordance with the exceptions listed in the AHERA regulation.

All samples were submitted to Hayes for laboratory analysis. Hayes is accredited by the National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP), Lab Code 500096-0. Bulk samples were analyzed using polarized light microscopy (PLM) with dispersion staining in accordance with the AHERA regulation.

A material is classified as ACM if at least one sample from a homogeneous material contains asbestos at a concentration greater than 1% by volume.

The Homogeneous Materials Table is included in Appendix D, and the Functional Spaces Table is provided in Appendix E.

2.2 Lead-Based Paint

The lead-based paint survey was conducted in accordance with HUD and EPA requirements (as referenced in Section 7 of this report), in addition to all applicable state and local regulations. The lead-based paint survey was conducted to determine the presence of lead-based paint components through visual inspection and XRF testing.

2.2.1 Visual Inspection and Testing Methodology

Upon arrival at the site, a visual inspection of the subject property was conducted to give an overview of painting history, determine like building components, and develop a testing strategy for the survey. After the visual inspection, testing was completed, if applicable.

2.2.2 XRF Paint Testing

XRF testing was conducted using a Viken Detection Model Pb200e Handheld XRF Lead Paint Analyzer, Serial # 01098, utilizing a Cobalt-57 radioisotope source with an activity level of 5.0 millicuries (mCi). XRF results are classified as positive if they are greater than or equal to the stated threshold for the instrument (1.0 mg/cm^2), and negative if they are less than the threshold.

A minimum of three calibration readings were taken, using a 1.0 mg/cm^2 calibration block, before beginning the inspection, every 4-hours, and at the end of testing for the day. The Viken Detection XRF Performance Characteristic Sheet, dated September 1st, 2022, sets the XRF Calibration Limits as 0.8 to 1.2 mg/cm^2. The Performance Characteristic Sheet is provided in Appendix G.

HUD defines lead-based paint as any paint or other surface coating materials that contain lead equal to or in excess of 1.0 mg/cm^2 or more than 0.5% by weight. If there are components that were not tested, they too must be considered lead containing.

Each assay from a wall within the survey area is identified by it's cardinal direction, north, east, south, or west.

2.3 Other Regulated Materials

During the inspection, OCCU-TEC completed a visual assessment of the building for ORMs that may require special disposal considerations. A visual assessment was conducted to provide an inventory of other miscellaneous regulated and/or hazardous materials including mercury containing equipment, refrigerant containing equipment, radioactive materials, miscellaneous chemical containers, etc. It should be noted that every attempt was made to identify ORM, however, some may not have been identified due to access considerations (i.e. electrical equipment).

2.3.1 Polychlorinated Biphenyls

The PCB survey was completed in general accordance with generally accepted industry standards and the requirements set forth by the United States Environmental Protection Agency (EPA) procedures outlined in 40 Code of Federal Regulations (CFR) Part 761 Subpart D *Storage and Disposal*.

OCCU-TEC utilized trained environmental inspectors to inspect for suspect PCB-containing materials. OCCU-TEC collected bulk samples of suspect PCB-containing caulking. Bulk samples of suspect PCB-containing caulking were collected and placed in laboratory provided sample containers for analysis. Samples were properly labeled, packed, and stored on ice for delivery to the lab via FedEx under proper chain-of-custody protocol. Samples were submitted to EMSL of Cinnaminson, New Jersey for analysis of PCBs per EPA Method SW-846 3540C/8082A.

Caulking samples containing concentrations of PCBs greater than or equal to 50 parts per million (ppm) are considered PCB bulk product waste according to the EPA (40 CFR 761.62 *Disposal of PCB Bulk Product Waste*).

2.4 Surface Wipe Sampling

2.4.1 Resource Conservation and Recovery Act Metals

Dust wipe sampling was conducted in accordance with ASTM Standard E1728/E1728M-24: Standard Practice for Collection of Settled Dust Samples Using Wipe Sampling Methods for Subsequent Lead Determination. ASTM Standard E1728/E1728M-24 is consistent with the methodology described in the Housing and Urban Development Guidelines and 40 CFR 745.63. The Brookhaven National Laboratory's Surface Wipe Sampling Procedure (IH75190) was also used as a guideline.

A representative surface area of 100 cm^2 was delineated with laboratory manufactured disposable 100 cm^2 templates were used to demarcate the sampling area. The dust wipe samples were collected using dedicated dust wipe cloths meeting ASTM standards. Each dust wipe cloth was moistened with DI water provided by the laboratory. Each sample was collected by wiping in a back and forth "S" pattern over a measured sampling area. Then, the wipe was folded over itself, and the area was wiped again in a direction perpendicular to the first wipe orientation. The wipe samples were then placed into labeled, clean laboratory-supplied plastic centrifuge tubes with screw on caps. The samples were sent under chain of custody via FedEx for analysis by

EMSL. Mercury was collected and analyzed in accordance with OSHA Method ID-145 via cold vapor-atomic absorption spectrophotometer. The remaining metals were collected and analyzed in accordance with EPA Method SW-846 6010D via inductively coupled plasma-optical emission spectrometry. EMSL is accredited by the American Industrial Hygiene Association (AIHA) under the Laboratory Accreditation Program (LAP), Lab Code 100194.

2.4.2 Hexavalent Chromium

Hexavalent chromium dust wipe sampling was conducted from a representative surface area of 100 cm^2 that was delineated with laboratory-manufactured disposable 100 cm^2 templates to demarcate the sampling area. The Hexavalent chromium dust samples were collected by using firm hand pressure to move a 37-mm diameter polyvinyl chloride (PVC) filter, 5-µm pore size, across the surface. Each sample was collected by wiping in a back-and-forth "S" pattern over a measured sampling area. Then, the wipe was folded over itself, and the area was wiped again in a direction perpendicular to the first wipe orientation. The wipe samples were then placed into labeled, clean laboratory-supplied plastic centrifuge tubes with screw-on caps. The samples were sent under chain of custody via FedEx for analysis by LA Testing. The samples were collected and analyzed in accordance with OSHA Method ID-215 via ion chromatography. LA Testing is accredited by the AIHA-LAP, Lab Code 101650.

2.4.3 Polychlorinated Biphenyls

Residual oil sampling was conducted from a representative surface area of 100 cm^2 that was delineated with laboratory-manufactured disposable 100 cm^2 templates to demarcate the sampling area. The PCB residual oil samples were collected by using firm hand pressure to move dedicated wipe cloths meeting ASTM standards. Each dust wipe cloth was moistened with Acetone Hexane provided by the laboratory. Each sample was collected by wiping in a back-and-forth "S" pattern over a measured sampling area. Then, the wipe was folded over itself, and the area was wiped again in a direction perpendicular to the first wipe orientation. The wipe samples were then placed into labeled, clean laboratory-supplied plastic centrifuge tubes with screw-on caps. The samples were sent under chain of custody via FedEx for analysis by EMSL. The samples were collected and analyzed in accordance with EPA Method SW-846 8082A via gas chromatography. EMSL is accredited by the AIHA-LAP, Lab Code 100194.

2.5 Volatile Organic Compound Sampling

Volatile organic compound (VOC) sampling was completed in accordance with EPA Method TO-15. Samples were collected in certified passive steel canisters, known as a SUMMA canisters, that are placed under vacuum which draws air through a critical orifice at a known rate for 8-12 hours. The SUMMA canisters were cleaned and placed under vacuum in the laboratory. SUMMA canisters were placed in the sampling locations and samples were collected for a duration of 6-8 hours. The samples were then sent under chain of custody via FedEx to EMSL for analysis by gas chromatography/mass spectrometry. EMSL is accredited by The NELAC Institute (TNI) under the National Environmental Lab Accreditation Program (NELAP), Lab Code 03036.

3.0 INVESTIGATION RESULTS

3.1 Asbestos Results

The materials listed below are either confirmed to contain asbestos above the Federal EPA level of greater than 1% asbestos content, are at trace (<1%) levels, or were assumed to contain asbestos. A material description, approximate quantities, and material locations of the ACM identified at the subject property have been summarized below. Quantities are only an approximation and should be verified by any asbestos abatement contractor who may submit future abatement bids.

Table 3.1 Laboratory Analysis of Asbestos Containing Materials

Sample #	Sample Description	Material Location	Quantity	Friability	% Asbestos
HM-19	Electrical Switches/ Bakelight	Throughout Building	135 EA	NFR	Assumed
HM-36	Roof Sealant - Black	Southern Roof	50,000 SF	NFR	2% Chrysotile

SF = Square Feet
LF = Linear Feet
EA = Each
w/ = With
Rm. = Room
FR = Friable
NFR=Non-Friable

Laboratory analytical reports and chain of custody documentation for suspect ACMs are included in Appendix C.

3.2 Lead-Based Paint Results

All materials listed below contain lead above the HUD and the State of Missouri standard. A material description and material locations of the lead-based paint identified at the subject property have been summarized below. It should be noted that unique sampling combinations were utilized to complete testing of materials. Unique testing combinations were collected to provide representative readings of the material tested throughout the area of the survey.

Table 3.2 Lead-Based Paint Results Summary

XRF Reading #	Material Location	Material Description	Description	Color	Result (mg/cm²)
131	Men's Restroom Front Entry	Ceramic Tile	Wall	Brown	1.2
134	Women's Restroom Front Entry	Ceramic Tile	Wall	Brown	1.4
163	North Warehouse	Metal Pipe	North side	Red	1.1
164	North Warehouse	Metal Post	North side	Yellow	3.5
213	Southwest Warehouse	Metal Pipe	East side	Yellow	3
215	Southwest Warehouse	Metal Pipe	South side	Yellow	5.1
241	Southeast Warehouse	Metal Post	West side	Yellow	2.3
242	Southeast Warehouse	Metal Post	South side	Yellow	2.7
251	Southeast Warehouse	Metal Tank	South Side	Blue	4.5

mg/cm^2 = milligrams per cubic centimeter

Complete XRF Analysis Results are presented in Appendix F.

3.3 Other Regulated Materials

OCCU-TEC completed a visual assessment for the presence of ORMs within the building. OCCU-TEC identified materials that should be treated as hazardous, special, or universal waste prior to demolition of the structure. An inventory of the materials identified as requiring special handling is presented below.

OCCU-TEC did not disassemble lights or any other equipment to determine the presence of ORMs.

Table 3.3 Other Regulated Materials

Building - ORM Inventory	
Item	**Total**
Mercury Thermostats	20
Emergency Exit Lights	20
Emergency Lighting	30
Smoke Detectors	5
Window Air Conditioning Units	2
Drinking Fountains	6
8 Bulb, 4 Ballast Lights	175
4 Bulb, 2 Ballast Lights	350
2 Bulb, 1 Ballast Lights	45

3.3.1 Polychlorinated Biphenyls Caulking Results

OCCU-TEC identified six (6) suspect PCB-containing caulks during the inspection. Laboratory analytical results for the suspect PCB-containing caulks are included in Appendix C. Results of sampling indicated no detectable concentrations of PCBs in the caulking samples collected.

3.4 Surface Wipe Sampling Results

OCCU-TEC collected a total of fifty (50) surface wipe samples for analysis of RCRA 8 Metals (arsenic, barium, cadmium, chromium, lead, selenium, silver, and mercury), hexavalent chromium, and PCBs.

Twenty-eight (28) samples were collected in the warehouse. OCCU-TEC divided the warehouse area into quadrants in order to ensure similar components were tested throughout. In each quadrant a sample was collected from each of the following:

- Floor
- Wall
- HVAC Supply Vent
- Top of HVAC Ducting
- Top of Piping
- Top of I-Beam
- Discretionary location based on dust collection
  - Quadrant A (northeast) - Top of paint booth
  - Quadrant B (northwest) - Top of light fixture
  - Quadrant C (southwest) - Top of shipping office
  - Quadrant D (southeast) - Wall below exhaust fan

Six (6) samples were collected from the two levels of the north office area.

- Three (3) floor samples.
- Two (2) wall samples.
- One (1) HVAC Supply Vent sample.

Six (6) samples were collected from the two levels of the central office area.

- Two (2) floor samples.
- One (1) wall sample.
- Two (2) HVAC Supply Vent samples.
- One (1) Lab Table sample.

Eight (8) samples were collected from the roof.

- Four (4) HVAC Unit samples.
- Three (3) Roof Surface samples.
- One (1) Exhaust Fan sample.

Two (2) field blank samples were collected.

Arsenic, barium, cadmium, chromium, lead, silver, mercury, hexavalent chromium, and PCBs were detected above laboratory reporting limits in the surface wipe samples collected.

Results of metals in the surface wipe samples were compared to ASLs determined from a ratio of the more conservative of the OSHA airborne PEL or ACGIH airborne TLV to the DOE Beryllium housekeeping criteria per 10 CFR 850.31 *Release Criteria - Chronic Beryllium Disease Prevention Program*. The formula used to calculate the ASL is below.

$$\frac{\text{DOE Beryllium } \textit{Housekeeping} \text{ criteria (3 ug/100cm}^2\text{)}}{\text{DOE/OSHA airborne PEL for Beryllium (2 ug/m}^3\text{)}} = \frac{\text{BNL } \textit{Housekeeping} \text{ recommendation for toxic metal (in ug/100cm}^2\text{)}}{\text{ACGIH Airborne TLV or OSHA Airborne PEL (in ug/m}^3\text{)}}$$

Results of PCBs in the surface wipe samples were compared to the equivalency listed in 40 CFR Part 761.1 (b)(3) of 10 ug/100 cm^2 to 50 parts per million (ppm). Materials with concentrations of PCBs less than 50 ppm are generally considered non-hazardous and/or non-PCB and do not have any special disposal requirements.

Concentrations of arsenic, cadmium, chromium, and lead were detected above ASLs in samples collected throughout the building.

No concentrations of PCBs were detected above 10 ug/100 cm^2.

Surface wipe analytical results are summarized in Table 3.4 in Appendix A and laboratory analytical results are presented in Appendix C. Surface wipe sampling locations are depicted in Figures 1-3 in Appendix B.

3.5 Volatile Organic Compounds Results

OCCU-TEC collected six (6) air samples for analysis of VOCs. Four (4) air samples were collected in the warehouse, one (1) in each quadrant as discussed above in Section 3.4; one (1) air sample was collected on the mezzanine level of the north offices; and one (1) air sample was collected on the mezzanine level of the central offices. All air samples were collected from within the breathing zone, approximately 4 feet above floor level.

Results of sampling indicated detectable concentrations of VOCs, however, all concentrations were below the both the OSHA PELs and ACGIH TLVs. The concentrations of Freon 11 and Freon 12 indicate the potential for a refrigerant leak somewhere within the facility.

The remaining VOC levels detected in the samples collected are negligible and do not indicate an indoor air quality issue.

4.0 RECOMMENDATIONS

Based on the results of the hazardous materials survey, OCCU-TEC recommends the following:

- Abatement of any ACMs prior to renovations that may impact the materials by a qualified asbestos abatement contractor licensed by the state of Missouri. Every reasonable effort was made to access and identify all suspect ACMs; however, if materials are found that do not match materials sampled, they should be Presumed Asbestos Containing Materials (PACM), as defined in the OSHA Construction Standard for Asbestos 29 CFR 1926.1101, and treated as ACM until sampling and laboratory analysis meeting the OSHA requirements is conducted.
- Using safe lead work practices as outlined by HUD. Additionally, OCCU-TEC recommends following all state, local, and other relevant regulations for lead-based paint removal.
- Proper disposal of all ORM in accordance with applicable state and federal regulations if ORM will be removed or disturbed during future renovation or construction at the facility.
- Industrial cleaning of the facility for remediation of RCRA 8 Metals in dust.
- Inspection of refrigerant containing equipment by a qualified technician.

5.0 LIMITATIONS OF THE SURVEY

OCCU-TEC identified and collected samples of suspect ACM from the survey area of the subject property that were accessible at the time of the survey. Every reasonable effort was made to access and identify all suspect ACMs. However, if materials are found that do not match materials sampled, they should be assumed to be ACM and treated as ACM until sampling and laboratory analysis meeting the OSHA requirements is conducted.

Lead-based paint is defined as any paint or other surface coating materials that contain lead equal to or in excess of 1.0 mg/cm^2 or more than five-tenths percent (0.5%) by weight (5000 ppm). The OSHA requires employers to ensure that employees are not exposed to excess amounts of lead over the PEL regardless of the lead content.

The lead testing data will show all components that were tested and the corresponding results. If there are components that were not tested, they should be considered lead containing until testing results prove otherwise.

For the purposes of this investigation, any material exhibiting the characteristics identified in the Lead-Based Paint Results Summary table should be considered positive for lead-based paint until further sampling can definitively prove otherwise.

OCCU-TEC completed a visual assessment of the building for ORMs that may require special disposal considerations during demolition or remodel. A visual assessment was conducted to provide an inventory of other miscellaneous regulated and/or hazardous materials including mercury lights & switches, refrigerants, radioactive materials, miscellaneous chemical containers, etc. It should be noted that every attempt was made to identify ORM, however, some ORM may not have been identified due to access or safety considerations (i.e. live electrical equipment).

The results of this investigation are only applicable to the time and methodologies used during the investigation. Due to fluctuation in general air conditions, potential changes in the general work environment, and seasonal changes, the results of this investigation are only valid for the date of the investigation.

This report is provided by OCCU-TEC for the sole reliance by STMO - OA. Any reliance by other parties is forbidden without OCCU-TEC's express written consent. If other parties are granted reliance on this report by OCCU-TEC, said parties are bound by the terms and conditions set forth in the original proposal agreed to by the issuance of notice to proceed by STMO - OA.

6.0 SIGNATURE(S)

OCCU-TEC appreciates the opportunity to provide STMO - OA with the above referenced professional services. If you have any questions regarding the contents of this report, please contact us at (816) 231-5580. Thank you for choosing OCCU-TEC.

Respectfully,



Justin Arnold, CIEC
Project Manager



Erin Anderson
Project Manager

7.0 REFERENCES

The Asbestos Hazard Emergency Response Act (AHERA) – 15 U.S.C Chapter 53, Subchapter II (1986)

Clean Air Act: National Emissions Standards for Hazardous Air Pollutants (NESHAP)- 42 U.S.C § 7401 Section 112 (1970)

NESHAP - 40 CFR § 61

AHERA - 40 CFR § 763 (E): *Interim Method for the Determination of Asbestos in Bulk Insulation Samples*

AHERA - 40 CFR § 763.86

AHERA - 40 CFR § 763.86 subpart (b)(2) through (4)

Housing and Urban Development - 24 CFR Part 35

EPA - 40 CFR Part 745

Interim Method for the Determination of Asbestos in Bulk Insulation Sample - 40 CFR § 763 (E)

Asbestos General Standard – OSHA – 29 CFR § 1910.1001

Asbestos Construction Standard – OSHA – 29 SFR § 1926.1101

Housing and Urban Development - 24 CFR Part 35, Subpart B, Section 1350.

IH75190 Surface Wipe Sampling Procedure, Brookhaven National Laboratory Safety & Health Services Division – Industrial Hygiene Group Standard Operating Procedure, March 4, 2014

OSHA -*Table Z-1,* 29 CFR 1910.1000

OSHA - *Table Z-2, 29 CFR 1910.1000*

Release Criteria - Chronic Beryllium Disease Prevention Program - 10 CFR 850.31

ACGIH Data Hub 2026

EPA - 40 CFR 761

DOE - 10 CFR 850.31

HUD - 40 CFR 745.63

APPENDIX A
TABLES

OCCU-TEC
Protecting People, Places and Performance

Table 3.4: Surface Wipe Sampling Results
STMO OA Scruggs Station Warehouse Complex
Project #: 925307

Sample	Component	ug/100cm^2								
		Arsenic	*Barium*	*Cadmium*	*Chromium*	*Lead*	*Silver*	*Mercury*	*Hexavalent Chromium*	*PCBs*
925307-01	Floor	-	-	-	-	-	-	-	0.056	-
925307-02	Floor	-	-	-	-	-	-	-	-	-
925307-03	Wall	-	-	-	-	-	-	-	-	-
925307-04	Floor	-	-	-	31	**3.3**	-	-	-	-
925307-05	Wall	-	-	-	1.1	-	-	-	-	-
925307-06	HVAC Supply	5.3	90	**9.4**	120	**250**	4.5	-	-	-
925307-07	Floor	-	-	-	5.3	**1.5**	-	-	-	-
925307-08	HVAC Supply	-	6.4	-	40	**7.3**	-	-	-	-
925307-09	Wall	-	-	-	-	-	-	-	-	-
925307-10	HVAC Supply	-	-	-	37	**4.5**	-	-	-	-
925307-11	Lab Table	-	-	-	-	-	-	-	-	-
925307-12	Floor	-	-	-	2.8	**1.3**	-	-	0.75	-
925307-13	Roof	-	-	-	2.1	**1.5**	-	-	0.14	-
925307-14	Exhaust Fan	-	-	-	11	**3.1**	-	-	0.097	-
925307-15	Roof HVAC	-	-	-	-	**1.7**	-	-	0.11	-
925307-16	Roof HVAC	-	-	-	-	-	-	-	0.052	-
925307-17	Roof HVAC	-	-	-	-	**1.7**	-	-	0.12	-
925307-18	Roof	-	-	-	3.1	**10**	-	-	0.15	-
925307-19	Roof HVAC	-	-	0.98	-	-	14	-	0.097	-
925307-20	Roof	-	-	-	1.0	**2.7**	-	-	0.10	-
925307-21	Floor	-	-	-	3.4	-	-	-	0.069	-
925307-22	Wall	-	-	-	12	-	-	-	-	-
925307-23	Ceiling Deck	10	19	0.33	280	**46**	1.5	-	-	-
925307-24	HVAC Supply	-	-	-	38	**6.2**	-	-	-	-
925307-25	Top of Duct	**26**	68	**5.9**	**970**	**120**	4.4	-	-	-
925307-26	I-beam	8.2	94	**54**	280	**50**	1.4	-	-	-
925307-27	Top of Pipe	**19**	70	**5.0**	740	**250**	6.2	-	-	-
925307-28	Floor	-	-	-	1.1	-	-	-	0.097	-
925307-29	Top of Light	2.1	12	-	55	**11**	-	-	-	-
925307-30	Wall	-	-	-	2.5	-	-	-	-	-
925307-31	Top of Light	**27**	150	**4.6**	**1100**	**290**	7.3	-	-	-
925307-32	HVAC Supply	-	-	-	9.5	**1.9**	-	-	0.075	-
925307-33	Top of Duct	4.2	46	0.31	140	**36**	1.1	-	-	-
925307-34	I-beam	-	35	**8.8**	52	**15**	-	-	0.052	-
925307-35	Floor	-	-	-	37	**1.3**	-	-	0.056	-
925307-36	Wall	-	-	-	5.9	-	-	-	-	-
925307-37	HVAC Supply	**35**	51	-	**1400**	**58**	2.3	-	-	-
Acceptable Surface Level ug/100cm^2		**15** *	**750** *	**3** *	**750** *	**1.1** **	**15** *	**37.5** *	**7.5** *	**10**

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Table 3.4: Surface Wipe Sampling Results
STMO OA Scruggs Station Warehouse Complex
Project #: 925307

Sample	Component	ug/100cm^2								
		Arsenic	*Barium*	*Cadmium*	*Chromium*	*Lead*	*Silver*	*Mercury*	*Hexavalent Chromium*	*PCBs*
925307-38	Top of Duct	**44**	59	-	**1700**	**78**	4.1	-	-	-
925307-39	Ceiling Deck	**30**	55	1.2	**1200**	**79**	2.5	-	-	-
925307-40	I-beam	**44**	84	**6.6**	**1700**	**120**	3.8	-	-	-
925307-41	Top of Pipe	**46**	150	2.1	**1800**	**220**	4.2	-	-	-
925307-42	Floor	-	-	-	6.8	**1.8**	-	-	0.084	-
925307-43	Wall	-	-	-	9.4	-	-	-	-	-
925307-44	HVAC Supply	**33**	38	-	**1100**	**60**	3.7	-	-	-
925307-45	Top of Duct	11	15	-	400	**21**	1.8	-	-	-
925307-46	I-beam	**83**	52	-	**3600**	**79**	6.8	-	-	-
925307-47	Wall	-	-	-	18	**4.2**	-	0.12	-	-
925307-48	Floor - Mez	**36**	61	0.52	**1400**	**90**	2.9	0.037	0.057	1.15
925307-49	Field Blank	-	-	-	-	-	-	-	-	-
925307-50	Field Blank	-	-	-	-	-	-	-	-	-
Acceptable Surface Level ug/100cm^2		**15** *	**750** *	**3** *	**750** *	**1.1** **	**15** *	**37.5** *	**7.5** *	**10** ***

- = Not detected above laboratory reporting limits
Bold Red = Detected above Acceptable Surface Levels
*Recommended based on ratio of TLV/PEL airborne to DOE Beryllium housekeeping criteria
** Recommended based on HUD Lead Clearance Level for Floors, housekeeping in non-lead operational areas
*** Recommended based on equivalency listed in 40 CFR Part 761.1 (b)(3) of 10 ug/100 cm^2 to 50 parts per million
NA = Acceptable Surface Level Not Available

DOE Beryllium *Housekeeping* criteria (3 ug/100cm^2) / DOE/OSHA airborne PEL for beryllium (2 ug/m^3) = BNL *Housekeeping* recommendation for toxic metal (in ug/100cm^2) / ACGIH 2011 Airborne TLV or OSHA Airborne PEL (in ug/m^3)

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Table 3.5: Volatile Organic Compound Sampling Results
STMO OA Scruggs Station Warehouse Complex
Project #: 925307

Compound (ug/m^3)	Samples						OSHA PEL (8-Hour TWA) (ug/m^3)	ACGIH TLV (8-Hour TWA Recommended Level) (ug/m^3)
	925307-01	925307-02	925307-03	925307-04	925307-05	925307-06		
Acetone	23	23	17	20	13	15	**2,400,000**	**594,000**
Acetonitrile	0.50	-	-	-	-	-	**70,000**	**33,000**
Benzene	-	-	0.67	-	-	-	**3,190**	**60**
n-Butane	8.2	8.9	6.6	6.7	8.4	6.9	**NA**	**2,377,000**
2-Butanone (MEK)	2.1	1.2	1.2	1.0	0.94	3.0	**590,000**	**220,000**
Carbon tetrachloride	5.5	-	2.7	-	-	-	**63,000**	**31,000**
Chloroform	3.4	-	18	-	-	11	**240,000**	**49,000**
Chloromethane	1.2	1.0	2.1	0.99	0.93	0.87	**210,000**	**103,000**
1,4-Dichlorobenzene	-	-	-	-	-	1.9	**450,000**	**60,000**
Ethanol	170	110	37	51	34	51	**1,900,000**	**1,880,000**
Ethyl acetate	8.5	6.1	7.3	4.9	7.6	7.7	**1,400,000**	**350,000**
Ethylbenzene	1.2	1.1	-	-	-	-	**435,000**	**87,000**
Freon 12 (Dichlorodifluoromethane)	16	7.4	6.7	6.2	4.2	5.3	**4,950,000**	**4,950,000**
Freon 11 (Trichlorofluoromethane)	45	28	30	22	12	15	**5,600,000**	**5,620,000**
n-Heptane	-	1.3	-	0.94	-	1.1	**2,000,000**	**1,600,000**
n-Hexane	0.99	0.88	-	0.74	-	0.71	**1,800,000**	**180,000**
Isopropyl alcohol (2-Propanol)	5.5	6.3	3.6	4.5	3.5	6.6	**980,000**	**490,000**
Methylene chloride	5.7	1.8	26	2.1	-	4.1	**87,000**	**174,000**
4-Methyl-2-pentanone (MIBK)	0.90	-	0.94	-	-	1.8	**410,000**	**82,000**
Naphthalene	-	-	-	-	-	2.0	**50,000**	**52,000**
Tetrachloroethene	1.8	-	-	-	-	2.4	**680,000**	**170,000**
Toluene	1.6	1.5	1.2	1.7	1.4	2.7	**754,000**	**75,400**
1,2,4-Trimethylbenzene	1.5	1.3	-	-	-	-	**NA**	**123,000**
Xylene (o)	1.7	1.9	-	-	-	-	**435,000**	**87,000**
Xylene (p, m)	4.4	4.6	-	-	-	1.8	**435,000**	**87,000**
Total Target Compound Concentrations	**310**	**210**	**160**	**120**	**86**	**140**	**NA**	**NA**

- = Not detected above laboratory reporting limits
NA = PEL/TLV Not Available

APPENDIX B
FIGURES

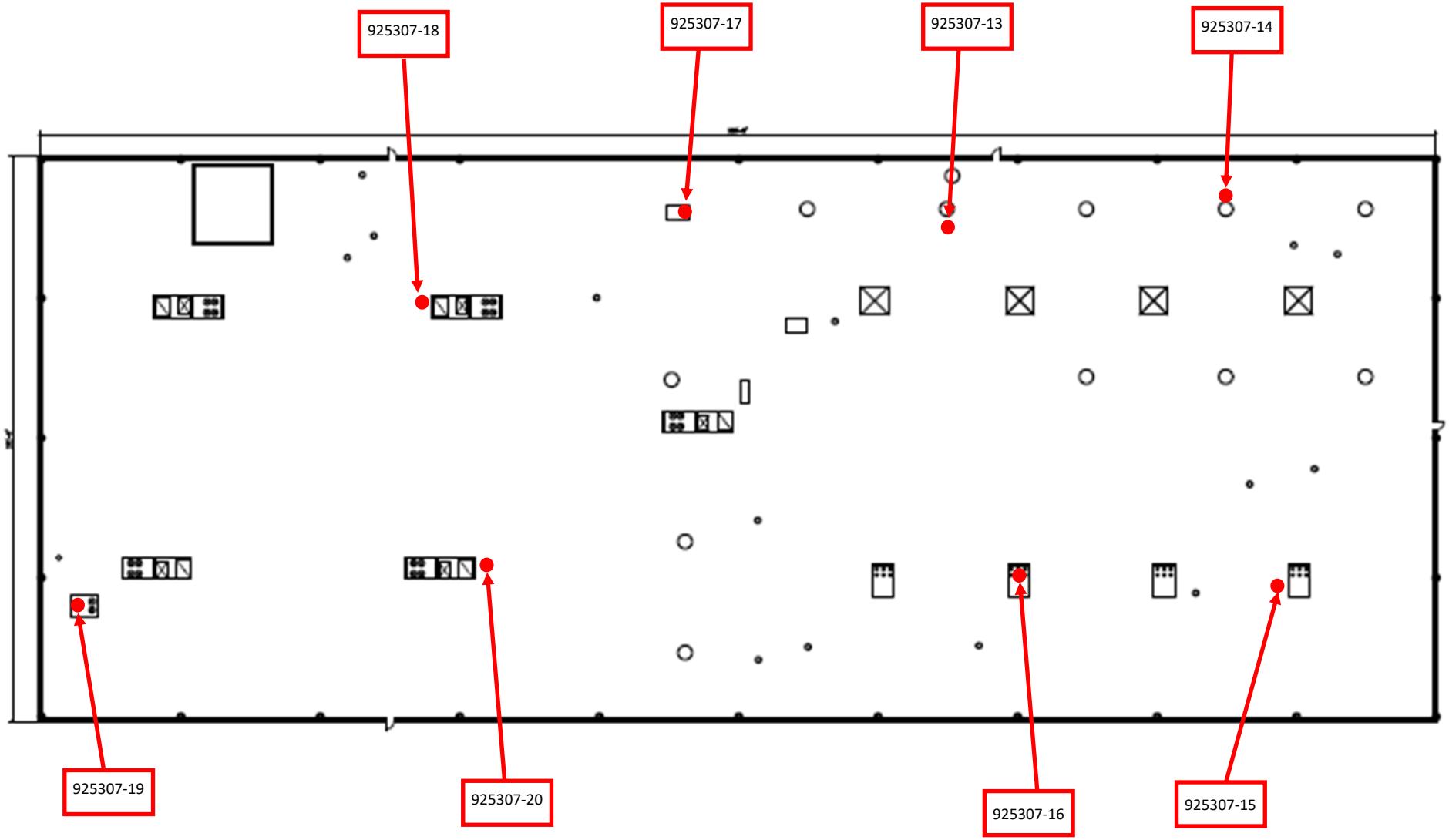


Figure 1: Roof Wipe Sample Location Map

Address: 1535 Fairgrounds Road, Jefferson City, MO 65106

OCCU-TEC Project Number: 925307

STMO OA FMDC Project Number: 02534-01

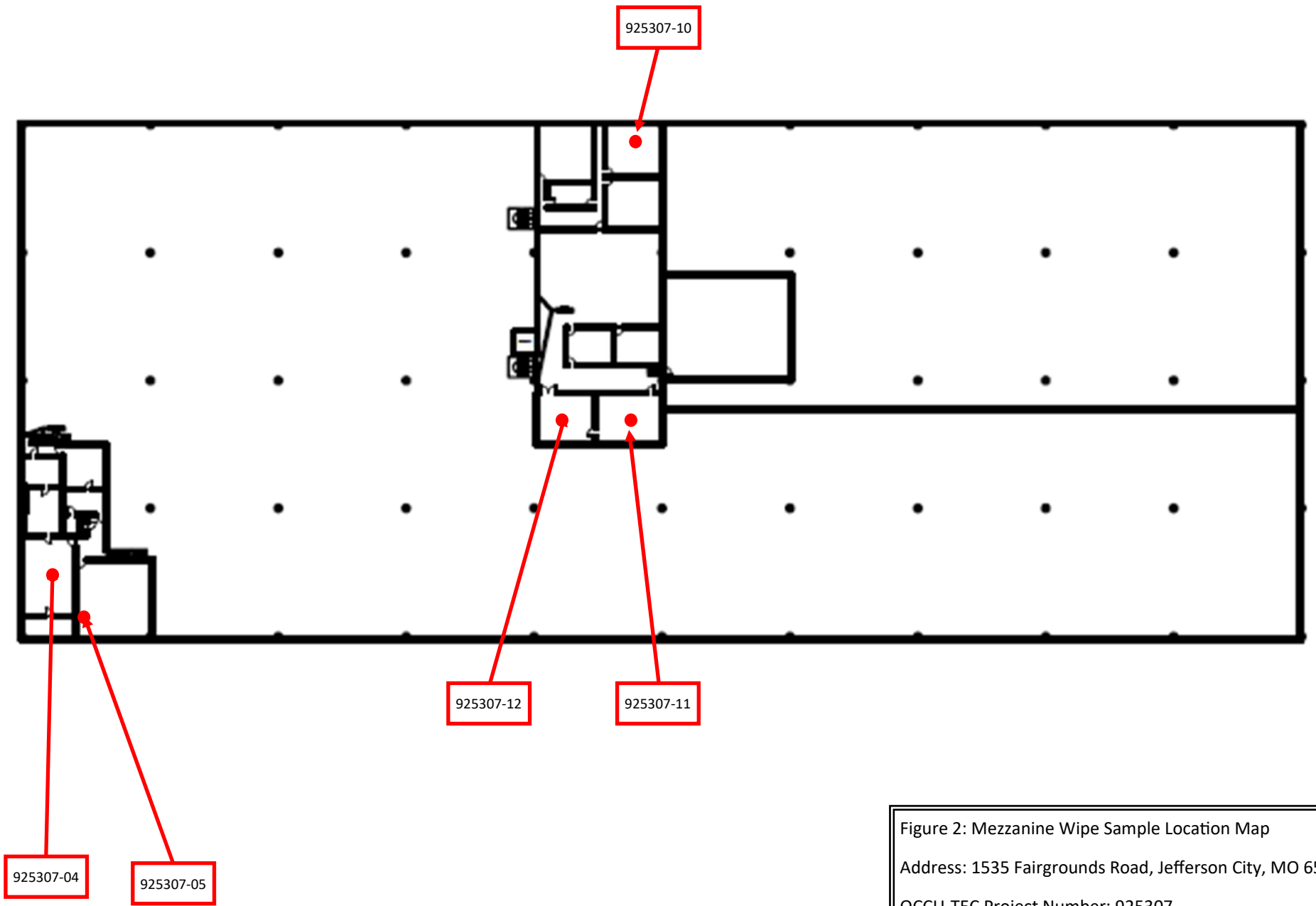


Figure 2: Mezzanine Wipe Sample Location Map

Address: 1535 Fairgrounds Road, Jefferson City, MO 65106

OCCU-TEC Project Number: 925307

STMO OA FMDC Project Number: 02534-01

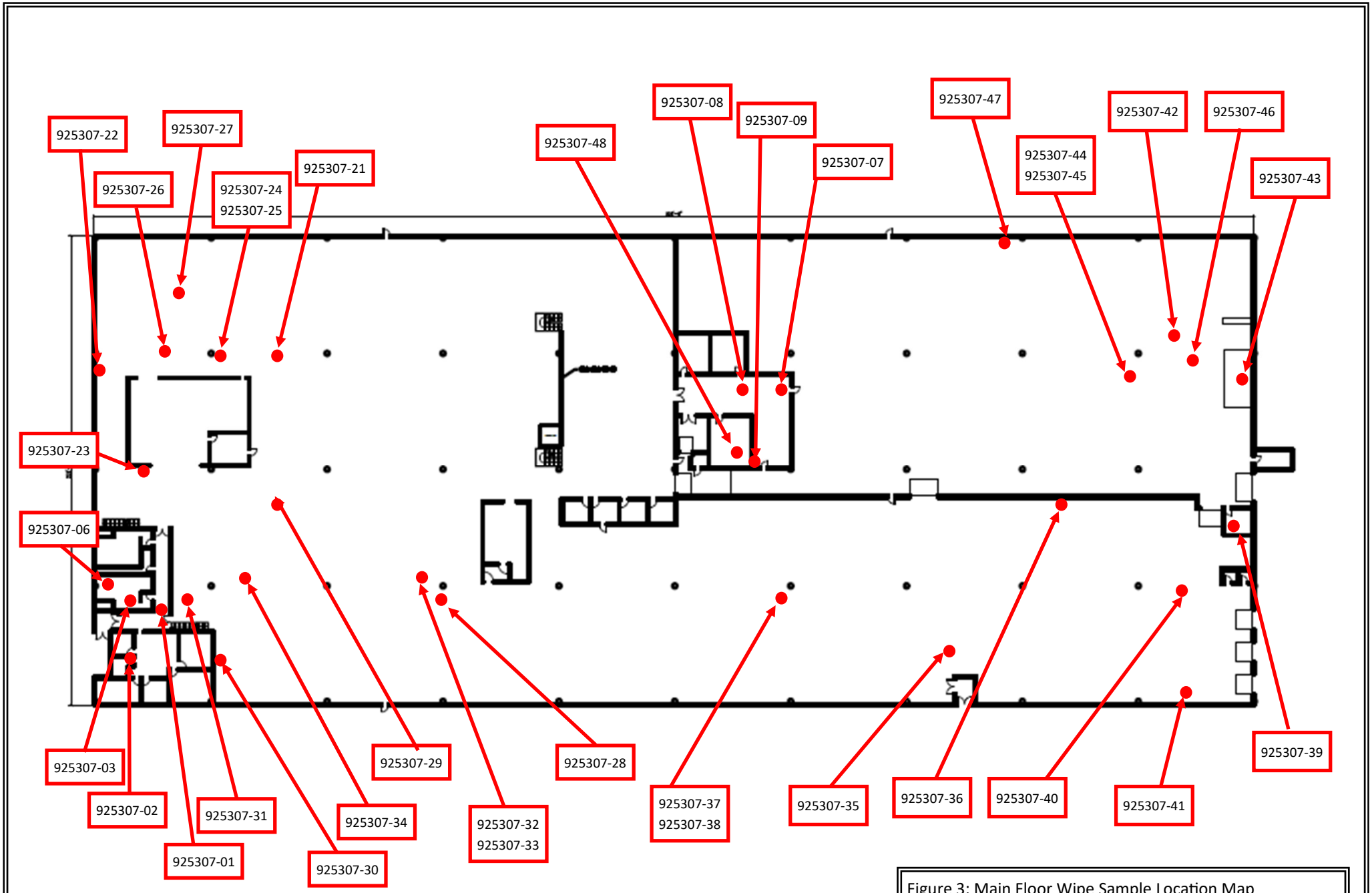


Figure 3: Main Floor Wipe Sample Location Map

Address: 1535 Fairgrounds Road, Jefferson City, MO 65106

OCCU-TEC Project Number: 925307

STMO OA FMDC Project Number: 02534-01

APPENDIX C
LABORATORY ANALYTICAL RESULTS AND CHAIN OF CUSTODY

HAYES MICROBIAL CONSULTING

#25054049

Analysis Report prepared for

Occu-Tec

2604 NE Industrial Drive
Suite 230
North Kansas City, MO 64117

Phone: **(816) 994-3420**

925307
Portie-Scruggs Station

Collected: **October 27, 2025**
Received: **October 29, 2025**
Reported: **November 5, 2025**

We would like to thank you for trusting Hayes Microbial for your analytical needs!
We received 76 samples by FedEx in good condition for this project on October 29th, 2025.

The results in this analysis pertain only to this job, collected on the stated date, and should not be used in the interpretation of any other job. Information supplied by the customer can affect the validity of results. These results apply only to the samples as received. This report may not be duplicated, except in full, without the written consent of Hayes Microbial Consulting, LLC.

All information provided to Hayes Microbial is confidential information relating to our customers and their clients. We will not disclose, copy, or distribute any information verbally or written, except to those designated by the customer(s). We take confidentiality very seriously. No changes to the distribution list will be made without the express consent of the customer.

This laboratory bears no responsibility for sample collection activities, analytical method limitations, or your use of the test results. Interpretation and use of test results are your responsibility. Any reference to health effects or interpretation of mold levels is strictly the opinion of Hayes Microbial. In no event, shall Hayes Microbial or any of its employees be liable for lost profits or any special, incidental or consequential damages arising out of the use of these test results.

Steve Hayes, BSMT(ASCP)
Laboratory Director
Hayes Microbial Consulting, LLC.

EPA Laboratory ID: VA01419

DPH License: #PH-0198

Justin Arnold
Occu-Tec
2604 NE Industrial Drive Suite 230
North Kansas City, MO 64117
(816) 994-3420

925307
Portie-Scruggs Station

#25054049

Asbestos PLM Bulk

EPA 600/R-93/116; EPA 40 CFR Appendix E to Subpart E of Part 763

#	Sample	Material Description	Non-Fibrous	Non-Asbestos Fibers	Asbestos Fibers
1	CT-01-01 - 2x4 Small Pock & Pinhole Ceiling Tile	Heterogenous / Ceiling Tile / White	67%	30% Cellulose Fibers 3% Fiberglass	**None Detected**
2	CT-01-02 - 2x4 Small Pock & Pinhole Ceiling Tile	Heterogenous / Ceiling Tile / White	67%	30% Cellulose Fibers 3% Fiberglass	**None Detected**
3	CT-01-03 - 2x4 Small Pock & Pinhole Ceiling Tile	Heterogenous / Ceiling Tile / White	67%	30% Cellulose Fibers 3% Fiberglass	**None Detected**
4	DWP-02-01 - Drywall Panels	Heterogenous / Drywall / White-Brown	90%	10% Cellulose Fibers	**None Detected**
5	DWP-02-02 - Drywall Panels	Heterogenous / Drywall / White-Brown	90%	10% Cellulose Fibers	**None Detected**
6	DWP-02-03 - Drywall Panels	Heterogenous / Drywall / White-Brown	90%	10% Cellulose Fibers	**None Detected**
7	CMB-03-01 - Cove Base & Mastic 4" Gray	Homogenous / Cove Base / Gray	100%		**None Detected**
		Homogenous / Adhesive / Yellow	100%		**None Detected**
8	CMB-03-02 - Cove Base & Mastic 4" Gray	Homogenous / Cove Base / Gray	100%		**None Detected**
		Homogenous / Adhesive / Yellow	100%		**None Detected**
9	CM-04-01 - Carpet Mastic	Heterogenous / Adhesive / Clear-Orange	90%	10% Synthetic Fibers	**None Detected**

Collected: **Oct 27, 2025** Received: **Oct 29, 2025** Reported: **Nov 5, 2025**

Project Analyst: James Kergosien, James Kergosien Date: **11 - 05 - 2025**

Reviewed By: Brian Keith, Date: **11 - 05 - 2025**

Justin Arnold
Occu-Tec
2604 NE Industrial Drive Suite 230
North Kansas City, MO 64117
(816) 994-3420

925307
Portie-Scruggs Station

#25054049

Asbestos PLM Bulk

EPA 600/R-93/116; EPA 40 CFR Appendix E to Subpart E of Part 763

#	Sample	Material Description	Non-Fibrous	Non-Asbestos Fibers	Asbestos Fibers
10	CM-04-02 - Carpet Mastic	Heterogenous / Adhesive / Clear-Orange	90%	10% Synthetic Fibers	**None Detected**
11	CBM-05-01 - Cove Base & Mastic 4" Black	Homogenous / Cove Base / Gray	100%		**None Detected**
		Heterogenous / Adhesive / Clear	98%	2% Cellulose Fibers	**None Detected**
12	CBM-05-02 - Cove Base & Mastic 4" Black	Homogenous / Cove Base / Gray	100%		**None Detected**
		Homogenous / Adhesive / Yellow	100%		**None Detected**
		Homogenous / Joint Compound / White	100%		**None Detected**
13	FTM-06-01 - Floor Tile & Mastic 12" Dark Gray w/White & Black	Heterogenous / Floor Tile / Gray	100%		**None Detected**
		Heterogenous / Adhesive / Brown	100%		**None Detected**
14	FTM-06-02 - Floor Tile & Mastic 12" Dark Gray w/White & Black	Heterogenous / Floor Tile / Gray	100%		**None Detected**
		Heterogenous / Mastic / Black	95%	5% Cellulose Fibers	**None Detected**

Justin Arnold
Occu-Tec
2604 NE Industrial Drive Suite 230
North Kansas City, MO 64117
(816) 994-3420

925307
Portie-Scruggs Station

#25054049

Asbestos PLM Bulk

EPA 600/R-93/116; EPA 40 CFR Appendix E to Subpart E of Part 763

#	Sample	Material Description	Non-Fibrous	Non-Asbestos Fibers	Asbestos Fibers
15	CBM-07-01 - Cove Base & Mastic 6" Black	Homogenous / Cove Base / Gray	100%		**None Detected**
		Homogenous / Adhesive / Beige	100%		**None Detected**
16	CBM-07-02 - Cove Base & Mastic 6" Black	Homogenous / Cove Base / Gray	100%		**None Detected**
		Homogenous / Adhesive / Beige	100%		**None Detected**
17	FTM-08-01 - Floor Tile & Mastic 12" Blue w/White	Heterogenous / Floor Tile / Blue	100%		**None Detected**
		Heterogenous / Adhesive / Brown	100%		**None Detected**
18	FTM-08-02 - Floor Tile & Mastic 12" Blue w/White	Heterogenous / Floor Tile / Blue	100%		**None Detected**
		Heterogenous / Adhesive / Brown	100%		**None Detected**
19	FTM-09-01 - Floor Tile & Mastic 12" White w/Blue	Heterogenous / Adhesive / Gray	100%		**None Detected**
		Heterogenous / Floor Tile / White	100%		**None Detected**
		Heterogenous / Adhesive / Brown	100%		**None Detected**

Justin Arnold
Occu-Tec
2604 NE Industrial Drive Suite 230
North Kansas City, MO 64117
(816) 994-3420

925307
Portie-Scruggs Station

#25054049

Asbestos PLM Bulk

EPA 600/R-93/116; EPA 40 CFR Appendix E to Subpart E of Part 763

#	Sample	Material Description	Non-Fibrous	Non-Asbestos Fibers	Asbestos Fibers
20	FTM-09-02 - Floor Tile & Mastic 12" White w/Blue	Heterogenous / Adhesive / Gray	100%		**None Detected**
		Heterogenous / Floor Tile / White	100%		**None Detected**
		Heterogenous / Adhesive / Clear	100%		**None Detected**
21	EF-10-01 - Epoxy Flooring - Gray	Heterogenous / Floor Tile / Gray	100%		**None Detected**
22	EF-10-02 - Epoxy Flooring - Gray	Heterogenous / Floor Tile / Gray	100%		**None Detected**
23	PM-12-01 - White Pipe Mastic	Homogenous / Caulk / Beige	90%	10% Cellulose Fibers	**None Detected**
		Homogenous / Insulation / Yellow	5%	95% Fiberglass	**None Detected**
24	PM-12-02 - White Pipe Mastic	Homogenous / Caulk / Beige	90%	10% Cellulose Fibers	**None Detected**
		Homogenous / Insulation / Yellow	5%	95% Fiberglass	**None Detected**
25	CT-13-01 - Ceiling Tile 2x4 Width Wide Fissures and Pinhole	Heterogenous / Ceiling Tile / Off-White	67%	30% Cellulose Fibers 3% Fiberglass	**None Detected**
26	CT-13-02 - Ceiling Tile 2x4 Width Wide Fissures and Pinhole	Heterogenous / Ceiling Tile / Off-White	67%	30% Cellulose Fibers 3% Fiberglass	**None Detected**

Collected: **Oct 27, 2025** Received: **Oct 29, 2025** Reported: **Nov 5, 2025**

Project Analyst: James Kergosien, James Kergosien Date: **11 - 05 - 2025**

Reviewed By: Brian Keith, Date: **11 - 05 - 2025**

Justin Arnold
Occu-Tec
2604 NE Industrial Drive Suite 230
North Kansas City, MO 64117
(816) 994-3420

925307
Portie-Scruggs Station

#25054049

Asbestos PLM Bulk

EPA 600/R-93/116; EPA 40 CFR Appendix E to Subpart E of Part 763

#	Sample	Material Description	Non-Fibrous	Non-Asbestos Fibers	Asbestos Fibers
27	CT-13-03 - Ceiling Tile 2x4 Width Wide Fissures and Pinhole	Homogenous / Ceiling Tile / Off-White	67%	30% Cellulose Fibers 3% Fiberglass	**None Detected**
28	CT-14-01 - Ceiling Tile 2x4 Large Pock & Pinhole	Heterogenous / Ceiling Tile / Off-White	67%	30% Cellulose Fibers 3% Fiberglass	**None Detected**
29	CT-14-02 - Ceiling Tile 2x4 Large Pock & Pinhole	Heterogenous / Ceiling Tile / Off-White	67%	30% Cellulose Fibers 3% Fiberglass	**None Detected**
30	CT-14-03 - Ceiling Tile 2x4 Large Pock & Pinhole	Heterogenous / Ceiling Tile / Off-White	67%	30% Cellulose Fibers 3% Fiberglass	**None Detected**
31	DWJC-15-01 - Drywall & Joint Compound	Heterogenous / Drywall / White-Brown	88%	10% Cellulose Fibers 2% Fiberglass	**None Detected**
		Homogenous / Joint Compound / White	100%		**None Detected**
		Homogenous / Tape / Cream	1%	99% Cellulose Fibers	**None Detected**
32	DWJC-15-02 - Drywall & Joint Compound	Heterogenous / Drywall / White-Brown	88%	10% Cellulose Fibers 2% Fiberglass	**None Detected**
		Homogenous / Joint Compound / Off-White	100%		**None Detected**
		Homogenous / Tape / Cream	1%	99% Cellulose Fibers	**None Detected**

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Occu-Tec
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EPA 600/R-93/116; EPA 40 CFR Appendix E to Subpart E of Part 763

#	Sample	Material Description	Non-Fibrous	Non-Asbestos Fibers	Asbestos Fibers
33	DWJC-15-03 - Drywall & Joint Compound	Heterogenous / Drywall / White-Brown	88%	10% Cellulose Fibers 2% Fiberglass	**None Detected**
		Homogenous / Joint Compound / White	100%		**None Detected**
		Homogenous / Tape / Cream	1%	99% Cellulose Fibers	**None Detected**
34	MAS-16-01 - Wall Bumper Mastic	Heterogenous / Adhesive / Yellow	100%		**None Detected**
35	MAS-16-02 - Wall Bumper Mastic	Heterogenous / Adhesive / Yellow	100%		**None Detected**
36	EJ-17-01 - Expansion Joint Flooring	Heterogenous / Caulk / Black-Yellow	97%	3% Synthetic Fibers	**None Detected**
37	EJ-17-02 - Expansion Joint Flooring	Heterogenous / Caulk / Black-Yellow	97%	3% Synthetic Fibers	**None Detected**
38	FLC-18-01 - Floor Leveling Compound	Heterogenous / Leveling Compound / Gray	100%		**None Detected**
		Heterogenous / Cementitious / Off-White	100%		**None Detected**
39	FLC-18-02 - Floor Leveling Compound	Heterogenous / Leveling Compound / Gray	100%		**None Detected**

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Occu-Tec
2604 NE Industrial Drive Suite 230
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#	Sample	Material Description	Non-Fibrous	Non-Asbestos Fibers	Asbestos Fibers
40	FTM-20-01 - Floor Tile & Mastic 12" Black w/White	Heterogenous / Floor Tile / Black	100%		**None Detected**
		Homogenous / Adhesive / Brown	100%		**None Detected**
41	FTM-20-02 - Floor Tile & Mastic 12" Black w/White	Heterogenous / Floor Tile / Black	100%		**None Detected**
42	FTM-21-01 - Floor Tile & Mastic 12" Brown w/Pink, White, Black	Heterogenous / Floor Tile / Red-Brown	100%		**None Detected**
		Heterogenous / Adhesive / Brown	100%		**None Detected**
43	FTM-21-02 - Floor Tile & Mastic 12" Brown w/Pink, White, Black	Heterogenous / Floor Tile / Red-Brown	100%		**None Detected**
		Heterogenous / Adhesive / Yellow	100%		**None Detected**
44	CT-22-01 - Ceiling Tile 2x2 Large Pock & Pinhole	Heterogenous / Ceiling Tile / Beige	50%	50% Cellulose Fibers	**None Detected**
45	CT-22-02 - Ceiling Tile 2x2 Large Pock & Pinhole	Heterogenous / Ceiling Tile / Beige	50%	50% Cellulose Fibers	**None Detected**
46	CT-22-03 - Ceiling Tile 2x2 Large Pock & Pinhole	Heterogenous / Ceiling Tile / Beige	50%	50% Cellulose Fibers	**None Detected**

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Occu-Tec
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EPA 600/R-93/116; EPA 40 CFR Appendix E to Subpart E of Part 763

#	Sample	Material Description	Non-Fibrous	Non-Asbestos Fibers	Asbestos Fibers
47	CBM-23-01 - Cove Base & Mastic 4" Beige	Homogenous / Cove Base / Beige	100%		**None Detected**
		Heterogenous / Adhesive / Yellow	100%		**None Detected**
48	FTM-24-01 - Floor Tile & Mastic 12" Cream	Heterogenous / Floor Tile / Gray	100%		**None Detected**
		Homogenous / Mastic / Black	96%	4% Cellulose Fibers	**None Detected**
49	FTM-26-01 - Floor Tile & Mastic 12" Gray w/Cream	Heterogenous / Floor Tile / Gray	100%		**None Detected**
		Homogenous / Mastic / Black	96%	4% Cellulose Fibers	**None Detected**
50	FTM-26-02 - Floor Tile & Mastic 12" Gray w/Cream	Heterogenous / Floor Tile / Gray	100%		**None Detected**
		Homogenous / Mastic / Black	96%	4% Cellulose Fibers	**None Detected**
51	CT-27-01 - Ceiling Tile 2x4 Lengthwise Fissures & Pinhole	Heterogenous / Ceiling Tile / Beige	36%	60% Cellulose Fibers 4% Fiberglass	**None Detected**
52	CT-27-02 - Ceiling Tile 2x4 Lengthwise Fissures & Pinhole	Heterogenous / Ceiling Tile / Beige	36%	60% Cellulose Fibers 4% Fiberglass	**None Detected**
53	CT-27-03 - Ceiling Tile 2x4 Lengthwise Fissures & Pinhole	Heterogenous / Ceiling Tile / Beige	36%	60% Cellulose Fibers 4% Fiberglass	**None Detected**

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Occu-Tec
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#	Sample	Material Description	Non-Fibrous	Non-Asbestos Fibers	Asbestos Fibers
54	FTM-29-01 - Floor Tile & Mastic 12" Magenta **Lab Note:** Mastic Layer Not Observed.	Heterogenous / Floor Tile / Purple	100%		**None Detected**
55	FTM-29-02 - Floor Tile & Mastic 12" Magenta	Homogenous / Floor Tile / Purple	100%		**None Detected**
		Homogenous / Adhesive / Gray	100%		**None Detected**
56	FTM-30-01 - Floor Tile & Mastic 12" Purple	Heterogenous / Floor Tile / Purple	100%		**None Detected**
		Heterogenous / Adhesive / Brown	100%		**None Detected**
57	LC-31-01 - Lab Countertop	Homogenous / Countertop / Black	100%		**None Detected**
		Homogenous / Adhesive / Brown	100%		**None Detected**
58	LC-31-02 - Lab Countertop	Homogenous / Countertop / Black	100%		**None Detected**
59	LH-32-01 - Lab Hood	Heterogenous / Tile / Gray	85%	10% Fiberglass 5% Cellulose Fibers	**None Detected**
60	LH-32-02 - Lab Hood	Heterogenous / Tile / Gray	85%	10% Fiberglass 5% Cellulose Fibers	**None Detected**

Justin Arnold
Occu-Tec
2604 NE Industrial Drive Suite 230
North Kansas City, MO 64117
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925307
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#	Sample	Material Description	Non-Fibrous	Non-Asbestos Fibers	Asbestos Fibers
61	FTM-33-01 - Floor Tile & Mastic 12" Orange	Heterogenous / Floor Tile / Orange	100%		**None Detected**
		Homogenous / Mastic / Black	95%	5% Cellulose Fibers	**None Detected**
62	FTM-33-02 - Floor Tile & Mastic 12" Orange	Heterogenous / Floor Tile / Orange	100%		**None Detected**
		Homogenous / Mastic / Black	95%	5% Cellulose Fibers	**None Detected**
63	CMB-34-01 - Cove Base & Mastic 4" Blue	Heterogenous / Cove Base / Blue-Black	100%		**None Detected**
		Homogenous / Adhesive / Beige	100%		**None Detected**
64	CMB-34-02 - Cove Base & Mastic 4" Blue	Heterogenous / Cove Base / Blue-Black	100%		**None Detected**
		Homogenous / Adhesive / Beige	100%		**None Detected**
65	FT-35-01 - Floor Tile - Marble Pattern Laminate Peel & Stick	Heterogenous / Floor Tile / Gray	100%		**None Detected**
		Homogenous / Adhesive / Clear	100%		**None Detected**

Justin Arnold
Occu-Tec
2604 NE Industrial Drive Suite 230
North Kansas City, MO 64117
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925307
Portie-Scruggs Station

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EPA 600/R-93/116; EPA 40 CFR Appendix E to Subpart E of Part 763

#	Sample	Material Description	Non-Fibrous	Non-Asbestos Fibers	Asbestos Fibers
66	FT-35-02 - Floor Tile - Marble Pattern Laminate Peel & Stick	Heterogenous / Floor Tile / Gray	100%		**None Detected**
		Homogenous / Adhesive / Clear	100%		**None Detected**
67	RS-36-01 - Roof Sealant Black	Heterogenous / Bulk Material / Black	98%		**2% Chrysotile**
68	RS-36-02 - Roof Sealant Black	Heterogenous / Bulk Material / Black	98%		**2% Chrysotile**
69	FL-37-01 - Flashing Silver Plane of Roof	Homogenous / Flashing / Gray	100%		**None Detected**
70	FL-37-02 - Flashing Silver Plane of Roof	Homogenous / Flashing / Gray	100%		**None Detected**
71	FL-38-01 - Flashing Light Gray Perimeter	Homogenous / Flashing / Gray	100%		**None Detected**
72	FL-38-02 - Flashing Light Gray Perimeter	Homogenous / Flashing / Gray	100%		**None Detected**
73	EJ-39-01 - Expansion Joint Silver	Homogenous / Flashing / Silver	100%		**None Detected**
		Homogenous / Adhesive / Beige	100%		**None Detected**

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Occu-Tec
2604 NE Industrial Drive Suite 230
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925307
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#	Sample	Material Description	Non-Fibrous	Non-Asbestos Fibers	Asbestos Fibers
74	EJ-39-02 - Expansion Joint Silver	Homogenous / Flashing / Silver	100%		**None Detected**
		Homogenous / Flashing / Gray	100%		**None Detected**
75	EJ-40-01 - Expansion Joint White	Homogenous / Flashing / Off-White	100%		**None Detected**
76	EJ-40-02 - Expansion Joint White	Homogenous / Flashing / Off-White	100%		**None Detected**

Justin Arnold
Occu-Tec
2604 NE Industrial Drive Suite 230
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925307
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Asbestos Analysis Information

Analysis Details	All samples were received in acceptable condition unless otherwise noted on the report. This report must not be used by the client to claim product certification, approval, or endorsement by AIHA, NIST, NVLAP, NY ELAP, or any agency. The results relate only to the items tested. Hayes Microbial Consulting reserves the right to dispose of all samples after a period of 60 days in compliance with state and federal guidelines.
PLM Analysis	All Polarized Light Microscopy (PLM) results include an inherent uncertainty of measurement associated with estimating percentages by PLM. Materials with interfering matrix, low asbestos content, or small fiber size may require additional analysis via TEM Analysis.
TEM Analysis	Analysis by TEM is capable of providing positive identification of asbestos type(s) and semi-quantitation of asbestos content.
Definitions	'None Detected' - Below the detected reporting limit of 1% unless point counting is performed, then the detected reporting limit is .25%.
New York ELAP	Per NY ELAP198.6 (NOB), TEM is the only reliable method to declare an NOB material as Non-Asbestos Containing. Any NY ELAP samples that are subcontracted to another laboratory will display the name and ELAP Lab Identification number in the report page heading of those samples. The original report provided to Hayes Microbial Consulting is available upon request.

HAYES MICROBIAL CONSULTING

Occu-Tec
2604 NE Industrial Drive
Suite 230
North Kansas City, MO 64117

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SHIP: FEDEX - PAK SO
DATE: 10-29-2025

8187 4693 8919

ASBESTOS

25054049

Job Number: 925307	Job Name: Portie-Scruggs Station		
Collector: Justin Arnold		Mobile: 816-810-3276	Email: jarnold@occutec.com
Date Collected: 10/27/2025		Note:	

Analysis Type		Analysis Methods	Turnaround Times					
PLM	Bulk	EPA 600*	3 Hour*	Same Day*	1 Day	2 Day	3 Day	5 Day
	Point Count	400 Point*, 1000 Point*	3 Hour*	Same Day*	1 Day	2 Day	3 Day	5 Day
	Vermiculite	EPA 600*, Cincinnati Method	3 Hour*	Same Day*	1 Day	2 Day	3 Day	5 Day
	Soil	EPA 600*, CARB 435	3 Hour*	Same Day*	1 Day	2 Day	3 Day	5 Day
TEM	Air	EPA AHERA, NIOSH 7402	-	Same Day	1 Day	2 Day	3 Day	5 Day
	Bulk	Chatfield	-	Same Day	1 Day	2 Day	3 Day	5 Day
	Wipe	ASTM D6480-05	-	Same Day	1 Day	2 Day	3 Day	5 Day
	Microvac	ASTM D5755-09	-	Same Day	1 Day	2 Day	3 Day	5 Day
PCM	Air	NIOSH 7400	3 Hour	Same Day	1 Day	2 Day	3 Day	5 Day

#	Group	Number	Sample Name	Analysis Type	Turnaround	Volume / Area	Stop (+)
1	01	CT-01-01	2x4 small pock + pinhole	EPA 600	5 Day		Yes
2		-02	ceiling tile	EPA 600	5 Day		Yes
3		-03	↓	EPA 600	5 Day		Yes
4	02	DWP-02-01	Drywall Panels	EPA 600	5 Day		Yes
5		-02	↓	EPA 600	5 Day		Yes
6		-03	↓	EPA 600	5 Day		Yes
7	03	CBM-03-01	cove base + mastic	EPA 600	5 Day		Yes
8		-02	4" gray	EPA 600	5 Day		Yes
9	04	CM-04-01	carpet mastic	EPA 600	5 Day		Yes
10		-02	↓	EPA 600	5 Day		Yes
11	05	CBM-05-01	cove base + mastic	EPA 600	5 Day		Yes
12		-02	4" Black	EPA 600	5 Day		Yes
13	06	FTM-06-01	Floor tile + mastic 12"	EPA 600	5 Day		Yes
14		-02	dark gray w/white + black	EPA 600	5 Day		Yes
15	07	CBM-07-01	cove base + mastic	EPA 600	5 Day		Yes
16		-02	6" Black	EPA 600	5 Day		Yes

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Released by:	Date: 10/28/25	Received By: JM	Date: 10/29/25

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Occu-Tec
2604 NE Industrial Drive
Suite 230
North Kansas City, MO 64117

N

SHIP: FEDEX - PAK SO
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8187 4693 8919

ASBESTOS
25054049

Job Number: 925307	Job Name: Portie-Scruggs Station
Collector: Justin Arnold	Mobile: 816-810-3276 Email: jarnold@occutec.com
Date Collected: 10/27/2025	Note:

Analysis Type		Analysis Methods	Turnaround Times					
PLM	Bulk	EPA 600*	3 Hour*	Same Day*	1 Day	2 Day	3 Day	5 Day
	Point Count	400 Point*, 1000 Point*	3 Hour*	Same Day*	1 Day	2 Day	3 Day	5 Day
	Vermiculite	EPA 600*, Cincinnati Method	3 Hour*	Same Day*	1 Day	2 Day	3 Day	5 Day
	Soil	EPA 600*, CARB 435	3 Hour*	Same Day*	1 Day	2 Day	3 Day	5 Day
TEM	Air	EPA AHERA, NIOSH 7402	-	Same Day	1 Day	2 Day	3 Day	5 Day
	Bulk	Chatfield	-	Same Day	1 Day	2 Day	3 Day	5 Day
	Wipe	ASTM D6480-05	-	Same Day	1 Day	2 Day	3 Day	5 Day
	Microvac	ASTM D5755-09	-	Same Day	1 Day	2 Day	3 Day	5 Day
PCM	Air	NIOSH 7400	3 Hour	Same Day	1 Day	2 Day	3 Day	5 Day

#	Group	Number	Sample Name	Analysis Type	Turnaround	Volume / Area	Stop (+)
1	08	FTM-08-01	Floor tile + mastic	EPA 600	5 Day		Yes
2		-02	12" Blue w/ White	EPA 600	5 Day		Yes
3	09	FTM-09-01	Floor tile + mastic	EPA 600	5 Day		Yes
4		-02	12" White w/ blue	EPA 600	5 Day		Yes
5	10	EF-10-01	Epoxy flooring - gray	EPA 600	5 Day		Yes
6		-02	↓	EPA 600	5 Day		Yes
7	12	PM-12-01	White pipe mastic	EPA 600	5 Day		Yes
8		-02	↓	EPA 600	5 Day		Yes
9	13	CT-13-01	Ceiling tile 2x4 width	EPA 600	5 Day		Yes
10		-02	wide fissures and pinhole	EPA 600	5 Day		Yes
11		-03	↓	EPA 600	5 Day		Yes
12	14	CT-14-01	Ceiling tile 2x4 large	EPA 600	5 Day		Yes
13		-02	pock + pinhole	EPA 600	5 Day		Yes
14		-03	↓	EPA 600	5 Day		Yes
15	15	DWJC-15-01	Drywall + Joint compound	EPA 600	5 Day		Yes
16		-02	↓	EPA 600	5 Day		Yes

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Released by: [signature] Date: 10/28/25 Received By: JM Date: 10/29/25

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Occu-Tec
2604 NE Industrial Drive
Suite 230
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ASBESTOS

25054049

Job Number: 925307	Job Name: Portie-Scruggs Station
Collector: Justin Arnold	Mobile: 816-810-3276 Email: jarnold@occutec.com
Date Collected: 10/27/2025	Note:

Analysis Type		Analysis Methods	Turnaround Times					
PLM	Bulk	EPA 600*	3 Hour*	Same Day*	1 Day	2 Day	3 Day	5 Day
	Point Count	400 Point*, 1000 Point*	3 Hour*	Same Day*	1 Day	2 Day	3 Day	5 Day
	Vermiculite	EPA 600*, Cincinnati Method	3 Hour*	Same Day*	1 Day	2 Day	3 Day	5 Day
	Soil	EPA 600*, CARB 435	3 Hour*	Same Day*	1 Day	2 Day	3 Day	5 Day
TEM	Air	EPA AHERA, NIOSH 7402	-	Same Day	1 Day	2 Day	3 Day	5 Day
	Bulk	Chatfield	-	Same Day	1 Day	2 Day	3 Day	5 Day
	Wipe	ASTM D6480-05	-	Same Day	1 Day	2 Day	3 Day	5 Day
	Microvac	ASTM D5755-09	-	Same Day	1 Day	2 Day	3 Day	5 Day
PCM	Air	NIOSH 7400	3 Hour	Same Day	1 Day	2 Day	3 Day	5 Day

#	Group	Number	Sample Name	Analysis Type	Turnaround	Volume / Area	Stop (+)
1	15	DWJC-15-03	Drywall + Joint compound	EPA 600	5 Day		Yes
2	16	MAS-16-01	Wall Bumper Mastic	EPA 600	5 Day		Yes
3		-02	↓	EPA 600	5 Day		Yes
4	17	EJ-17-01	Expansion Joint Flooring	EPA 600	5 Day		Yes
5		-02	↓	EPA 600	5 Day		Yes
6	18	FLC-18-01	Floor Leveling Compound	EPA 600	5 Day		Yes
7		-02	↓	EPA 600	5 Day		Yes
8	20	FTM-20-01	Floor tile + mastic 12"	EPA 600	5 Day		Yes
9		-02	Black w/white	EPA 600	5 Day		Yes
10	21	FTM-21-01	Floor tile + mastic 12"	EPA 600	5 Day		Yes
11		-02	Brown w/pink, white, black	EPA 600	5 Day		Yes
12	22	CT-22-01	Ceiling Tile 2x2 large	EPA 600	5 Day		Yes
13		-02	pack + pinhole	EPA 600	5 Day		Yes
14		-03	↓	EPA 600	5 Day		Yes
15	23	CBM-23-01	Cove base + mastic 4" beige	EPA 600	5 Day		Yes
16	24	FTM-24-01	Floor tile + mastic 12" Cream	EPA 600	5 Day		Yes

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Released by: [signature] Date: 10/28/25 Received By: ym Date: 10/29/25

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Occu-Tec
2604 NE Industrial Drive
Suite 230
North Kansas City, MO 64117

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SHIP: FEDEX - PAK SO
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ASBESTOS

25054049

Job Number: 925307	Job Name: Portie-Scruggs Station
Collector: Justin Arnold	Mobile: 816-810-3276 Email: jarnold@occutec.com
Date Collected: 10/27/2025	Note:

Analysis Type		Analysis Methods	Turnaround Times					
PLM	Bulk	EPA 600*	3 Hour*	Same Day*	1 Day	2 Day	3 Day	5 Day
	Point Count	400 Point*, 1000 Point*	3 Hour*	Same Day*	1 Day	2 Day	3 Day	5 Day
	Vermiculite	EPA 600*, Cincinnati Method	3 Hour*	Same Day*	1 Day	2 Day	3 Day	5 Day
	Soil	EPA 600*, CARB 435	3 Hour*	Same Day*	1 Day	2 Day	3 Day	5 Day
TEM	Air	EPA AHERA, NIOSH 7402	-	Same Day	1 Day	2 Day	3 Day	5 Day
	Bulk	Chatfield	-	Same Day	1 Day	2 Day	3 Day	5 Day
	Wipe	ASTM D6480-05	-	Same Day	1 Day	2 Day	3 Day	5 Day
	Microvac	ASTM D5755-09	-	Same Day	1 Day	2 Day	3 Day	5 Day
PCM	Air	NIOSH 7400	3 Hour	Same Day	1 Day	2 Day	3 Day	5 Day

#	Group	Number	Sample Name	Analysis Type	Turnaround	Volume / Area	Stop (+)
1	26	FTM-26-01	Floor tile + mastic 12"	EPA 600	5 Day		Yes
2		-02	gray w/ cream	EPA 600	5 Day		Yes
3	27	CT-27-01	Ceiling tile 2x4 lengthwise	EPA 600	5 Day		Yes
4		-02	fissures + pinhole	EPA 600	5 Day		Yes
5		-03	↓	EPA 600	5 Day		Yes
6	29	FTM-29-01	Floor tile + mastic 12"	EPA 600	5 Day		Yes
7		-02	magenta	EPA 600	5 Day		Yes
8	30	FTM-30-01	Floor tile + mastic 12" purple	EPA 600	5 Day		Yes
9	31	LC-31-01	Lab countertop	EPA 600	5 Day		Yes
10		-02	↓	EPA 600	5 Day		Yes
11	32	LH-32-01	Lab Hood	EPA 600	5 Day		Yes
12		-02	↓	EPA 600	5 Day		Yes
13	33	FTM-33-01	Floor tile + mastic 12" orange	EPA 600	5 Day		Yes
14		-02	↓	EPA 600	5 Day		Yes
15	34	CBM-34-01	Cove base + mastic 4" Blue	EPA 600	5 Day		Yes
16		-02	↓	EPA 600	5 Day		Yes

Released by: [signature] Date: 10/28/25 Received By: YM Date: 10/29/25

HAYES MICROBIAL CONSULTING

Occu-Tec
2604 NE Industrial Drive
Suite 230
North Kansas City, MO 64117

N
SHIP: FEDEX - PAK SO
DATE: 10-29-2025
8187 4693 8919

ASBESTOS
25054049

Job Number: 925307	Job Name: Porite-Scruggs Station
Collector: Justin Arnold	
Date Collected: 10/27/25	

Mobile: | Email: jarnold@occutec.com
Note:

Analysis Type		Analysis Methods	Turnaround Times					
PLM	Bulk	EPA 600*	3 Hour*	Same Day*	1 Day	2 Day	3 Day	5 Day
	Point Count	400 Point*, 1000 Point*	3 Hour*	Same Day*	1 Day	2 Day	3 Day	5 Day
	Vermiculite	EPA 600*, Cincinnati Method	3 Hour*	Same Day*	1 Day	2 Day	3 Day	5 Day
	Soil	EPA 600*, CARB 435	3 Hour*	Same Day*	1 Day	2 Day	3 Day	5 Day
TEM	Air	EPA AHERA, NIOSH 7402	-	Same Day	1 Day	2 Day	3 Day	5 Day
	Bulk	Chatfield	-	Same Day	1 Day	2 Day	3 Day	5 Day
	Wipe	ASTM D6480-05	-	Same Day	1 Day	2 Day	3 Day	5 Day
	Microvac	ASTM D5755-09	-	Same Day	1 Day	2 Day	3 Day	5 Day
PCM	Air	NIOSH 7400	3 Hour	Same Day	1 Day	2 Day	3 Day	5 Day

#	Group	Number	Sample Name	Analysis Type	Turnaround	Volume / Area	Stop (+)
1	35	FT-35-01	Floor tile-marble pattern	EPA 600	5 Day		Yes
2		-02	laminate peel & Stick				
3	36	RS-36-01	Roof Sealant Black				
4		-02	↓				
5	37	FL-37-01	Flashing: Silver-pane of roof				
6		-02	↓				
7	38	FL-38-01	Flashing-light gray perimeter				
8		-02	↓				
9	39	EJ-39-01	Expansion joint silver				
10		-02	↓				
11	40	EJ-40-01	Expansion joint white				
12		-02	↓				
13							
14							
15							
16							

76

Released by: | Date: 10/28/25 | Received By: JM | Date: 10/29/25

EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778
LIMS Reference ID: AD40778
EMSL Customer ID: OCCU21

December 04, 2025

Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117

The following analytical report covers the analysis performed on samples submitted to EMSL Analytical, Inc. on 10/31/2025. The results are tabulated on the attached pages for the following client designated project:

925307

The reference number for these samples is EMSL Order #: AD40778 . Please use this reference when calling about these samples. If you have any questions, please do not hesitate to contact the lab at 856-858-4800.

Report Date	Report Revision	Report Comments
12/04/2025	0	Initial Report

Owen McKenna, Laboratory Manager or other approved signatory

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EMSL Order ID: 012540778

LIMS Reference ID: AD40778

EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307

Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Condition on Receipt

Cooler ID: Default Cooler **Temperature: 22.1 °C**

Custody Seals	Y
Containers Intact	Y
COC/Labels Agree	Y
Preservation Confirmed	Y

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LIMS Reference ID: AD40778

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2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307

Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Samples in this Report

Lab ID	Sample	Matrix	Date Sampled	Date Received
AD40778-01	925307-01	Wipe	10/28/25 10:50 am	10/31/2025
AD40778-02	925307-02	Wipe	10/28/25 11:00 am	10/31/2025
AD40778-03	925307-03	Wipe	10/28/25 11:09 am	10/31/2025
AD40778-04	925307-04	Wipe	10/28/25 11:23 am	10/31/2025
AD40778-05	925307-05	Wipe	10/28/25 11:26 am	10/31/2025
AD40778-06	925307-06	Wipe	10/28/25 11:35 am	10/31/2025
AD40778-07	925307-07	Wipe	10/28/25 11:52 am	10/31/2025
AD40778-08	925307-08	Wipe	10/28/25 11:58 am	10/31/2025
AD40778-09	925307-09	Wipe	10/28/25 12:08 pm	10/31/2025
AD40778-10	925307-10	Wipe	10/28/25 12:17 pm	10/31/2025
AD40778-11	925307-11	Wipe	10/28/25 12:30 pm	10/31/2025
AD40778-12	925307-12	Wipe	10/28/25 12:38 pm	10/31/2025
AD40778-13	925307-13	Wipe	10/28/25 2:00 pm	10/31/2025
AD40778-14	925307-14	Wipe	10/28/25 2:06 pm	10/31/2025
AD40778-15	925307-15	Wipe	10/28/25 2:15 pm	10/31/2025
AD40778-16	925307-16	Wipe	10/28/25 2:21 pm	10/31/2025
AD40778-17	925307-17	Wipe	10/28/25 2:29 pm	10/31/2025
AD40778-18	925307-18	Wipe	10/28/25 2:36 pm	10/31/2025
AD40778-19	925307-19	Wipe	10/28/25 2:45 pm	10/31/2025
AD40778-20	925307-20	Wipe	10/28/25 2:50 pm	10/31/2025
AD40778-21	925307-21	Wipe	10/29/25 7:18 am	10/31/2025
AD40778-22	925307-22	Wipe	10/29/25 7:27 am	10/31/2025
AD40778-23	925307-23	Wipe	10/29/25 7:40 am	10/31/2025
AD40778-24	925307-24	Wipe	10/29/25 7:50 am	10/31/2025
AD40778-25	925307-25	Wipe	10/29/25 7:57 am	10/31/2025
AD40778-26	925307-26	Wipe	10/29/25 8:12 am	10/31/2025
AD40778-27	925307-27	Wipe	10/29/25 8:20 am	10/31/2025
AD40778-28	925307-28	Wipe	10/29/25 8:30 am	10/31/2025
AD40778-29	925307-29	Wipe	10/29/25 8:38 am	10/31/2025
AD40778-30	925307-30	Wipe	10/29/25 8:43 am	10/31/2025
AD40778-31	925307-31	Wipe	10/29/25 8:49 am	10/31/2025
AD40778-32	925307-32	Wipe	10/29/25 8:56 am	10/31/2025
AD40778-33	925307-33	Wipe	10/29/25 9:03 am	10/31/2025
AD40778-34	925307-34	Wipe	10/29/25 9:09 am	10/31/2025
AD40778-35	925307-35	Wipe	10/29/25 9:19 am	10/31/2025
AD40778-36	925307-36	Wipe	10/29/25 9:28 am	10/31/2025
AD40778-37	925307-37	Wipe	10/29/25 9:34 am	10/31/2025
AD40778-38	925307-38	Wipe	10/29/25 9:40 am	10/31/2025
AD40778-39	925307-39	Wipe	10/29/25 9:48 am	10/31/2025

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778

LIMS Reference ID: AD40778

EMSL Customer ID: OCCU21

Attention: Justin Arnold

Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307

Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Samples in this Report
(Continued)

Lab ID	Sample	Matrix	Date Sampled	Date Received
AD40778-40	925307-40	Wipe	10/29/25 9:55 am	10/31/2025
AD40778-41	925307-41	Wipe	10/29/25 10:02 am	10/31/2025
AD40778-42	925307-42	Wipe	10/29/25 10:12 am	10/31/2025
AD40778-43	925307-43	Wipe	10/29/25 10:18 am	10/31/2025
AD40778-44	925307-44	Wipe	10/29/25 10:24 am	10/31/2025
AD40778-45	925307-45	Wipe	10/29/25 10:31 am	10/31/2025
AD40778-46	925307-46	Wipe	10/29/25 10:38 am	10/31/2025
AD40778-47	925307-47	Wipe	10/29/25 10:45 am	10/31/2025
AD40778-48	925307-48	Wipe	10/29/25 10:55 am	10/31/2025
AD40778-49	925307-49	Wipe	10/29/25 11:30 am	10/31/2025
AD40778-50	925307-50	Wipe	10/29/25 11:35 am	10/31/2025
AD40778-51	925307-17-01	Solid	10/29/25 12:50 am	10/31/2025
AD40778-52	925307-17-02	Solid	10/29/25 12:00 am	10/31/2025
AD40778-53	925307-36-01	Solid	10/28/25 12:00 am	10/31/2025
AD40778-54	925307-36-02	Solid	10/28/25 12:00 am	10/31/2025
AD40778-55	925307-37-01	Solid	10/28/25 12:00 am	10/31/2025
AD40778-56	925307-37-02	Solid	10/28/25 12:00 am	10/31/2025
AD40778-57	925307-38-01	Solid	10/28/25 12:00 am	10/31/2025
AD40778-58	925307-38-02	Solid	10/28/25 12:00 am	10/31/2025
AD40778-59	925307-39-01	Solid	10/28/25 12:00 am	10/31/2025
AD40778-60	925307-39-02	Solid	10/28/25 12:00 am	10/31/2025
AD40778-61	925307-40-01	Solid	10/28/25 12:00 am	10/31/2025
AD40778-62	925307-40-02	Solid	10/28/25 12:00 am	10/31/2025

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EMSL Customer ID: OCCU21

Attention: Justin Arnold
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2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Positive Hits Summary

Lab ID	Client ID				Sampled
AD40778-04	925307-04				10/28/25 11:23
Method	Analyte	Result	Qualifier	Unit	Analyzed
SW-846 6010D	**Lead**	**3.3**		**µg/100 cm²**	**11/05/2025 16:14**
SW-846 6010D	**Chromium**	**31**		**µg/100 cm²**	**11/05/2025 16:14**
Lab ID	**Client ID**				**Sampled**
AD40778-05	925307-05				10/28/25 11:26
Method	Analyte	Result	Qualifier	Unit	Analyzed
SW-846 6010D	**Chromium**	**1.1**		**µg/100 cm²**	**11/05/2025 16:16**
Lab ID	**Client ID**				**Sampled**
AD40778-06	925307-06				10/28/25 11:35
Method	Analyte	Result	Qualifier	Unit	Analyzed
SW-846 6010D	**Chromium**	**120**	**D**	**µg/100 cm²**	**11/06/2025 10:50**
SW-846 6010D	**Lead**	**250**	**D**	**µg/100 cm²**	**11/06/2025 10:50**
SW-846 6010D	**Silver**	**4.5**		**µg/100 cm²**	**11/05/2025 16:25**
SW-846 6010D	**Arsenic**	**5.3**		**µg/100 cm²**	**11/05/2025 16:25**
SW-846 6010D	**Cadmium**	**9.4**		**µg/100 cm²**	**11/05/2025 16:25**
SW-846 6010D	**Barium**	**90**		**µg/100 cm²**	**11/05/2025 16:25**
Lab ID	**Client ID**				**Sampled**
AD40778-07	925307-07				10/28/25 11:52
Method	Analyte	Result	Qualifier	Unit	Analyzed
SW-846 6010D	**Lead**	**1.5**		**µg/100 cm²**	**11/05/2025 16:28**
SW-846 6010D	**Chromium**	**5.3**		**µg/100 cm²**	**11/05/2025 16:28**
Lab ID	**Client ID**				**Sampled**
AD40778-08	925307-08				10/28/25 11:58
Method	Analyte	Result	Qualifier	Unit	Analyzed
SW-846 6010D	**Chromium**	**40**		**µg/100 cm²**	**11/05/2025 16:31**
SW-846 6010D	**Barium**	**6.4**		**µg/100 cm²**	**11/05/2025 16:31**
SW-846 6010D	**Lead**	**7.3**		**µg/100 cm²**	**11/05/2025 16:31**
Lab ID	**Client ID**				**Sampled**
AD40778-10	925307-10				10/28/25 12:17
Method	Analyte	Result	Qualifier	Unit	Analyzed

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Project Name: 925307
Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Positive Hits Summary
(Continued)

Lab ID	Client ID				Sampled
AD40778-10	925307-10				10/28/25 12:17
Method	Analyte	Result	Qualifier	Unit	Analyzed
SW-846 6010D	Chromium	37		µg/100 cm²	11/05/2025 16:37
SW-846 6010D	Lead	4.5		µg/100 cm²	11/05/2025 16:37
Lab ID	Client ID				Sampled
AD40778-12	925307-12				10/28/25 12:38
Method	Analyte	Result	Qualifier	Unit	Analyzed
SW-846 6010D	Lead	1.3		µg/100 cm²	11/05/2025 16:43
SW-846 6010D	Chromium	2.8		µg/100 cm²	11/05/2025 16:43
Lab ID	Client ID				Sampled
AD40778-13	925307-13				10/28/25 14:00
Method	Analyte	Result	Qualifier	Unit	Analyzed
SW-846 6010D	Lead	1.5		µg/100 cm²	11/05/2025 16:46
SW-846 6010D	Chromium	2.1		µg/100 cm²	11/05/2025 16:46
Lab ID	Client ID				Sampled
AD40778-14	925307-14				10/28/25 14:06
Method	Analyte	Result	Qualifier	Unit	Analyzed
SW-846 6010D	Chromium	11		µg/100 cm²	11/05/2025 16:55
SW-846 6010D	Lead	3.1		µg/100 cm²	11/05/2025 16:55
Lab ID	Client ID				Sampled
AD40778-15	925307-15				10/28/25 14:15
Method	Analyte	Result	Qualifier	Unit	Analyzed
SW-846 6010D	Lead	1.7		µg/100 cm²	11/05/2025 16:58
Lab ID	Client ID				Sampled
AD40778-17	925307-17				10/28/25 14:29
Method	Analyte	Result	Qualifier	Unit	Analyzed
SW-846 6010D	Lead	1.7		µg/100 cm²	11/05/2025 17:03
Lab ID	Client ID				Sampled
AD40778-18	925307-18				10/28/25 14:36
Method	Analyte	Result	Qualifier	Unit	Analyzed

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Project Name: 925307

Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Positive Hits Summary
(Continued)

Lab ID	Client ID				Sampled
AD40778-18	925307-18				10/28/25 14:36
Method	Analyte	Result	Qualifier	Unit	Analyzed
SW-846 6010D	**Lead**	**10**		**µg/100 cm²**	**11/05/2025 17:06**
SW-846 6010D	**Chromium**	**3.1**		**µg/100 cm²**	**11/05/2025 17:06**
Lab ID	**Client ID**				**Sampled**
AD40778-19	925307-19				10/28/25 14:45
Method	Analyte	Result	Qualifier	Unit	Analyzed
SW-846 6010D	**Cadmium**	**0.98**		**µg/100 cm²**	**11/05/2025 17:09**
SW-846 6010D	**Silver**	**14**		**µg/100 cm²**	**11/05/2025 17:09**
Lab ID	**Client ID**				**Sampled**
AD40778-20	925307-20				10/28/25 14:50
Method	Analyte	Result	Qualifier	Unit	Analyzed
SW-846 6010D	**Chromium**	**1.0**		**µg/100 cm²**	**11/05/2025 17:12**
SW-846 6010D	**Lead**	**2.7**		**µg/100 cm²**	**11/05/2025 17:12**
Lab ID	**Client ID**				**Sampled**
AD40778-21	925307-21				10/29/25 07:18
Method	Analyte	Result	Qualifier	Unit	Analyzed
SW-846 6010D	**Chromium**	**3.4**		**µg/100 cm²**	**11/05/2025 17:29**
Lab ID	**Client ID**				**Sampled**
AD40778-22	925307-22				10/29/25 07:27
Method	Analyte	Result	Qualifier	Unit	Analyzed
SW-846 6010D	**Chromium**	**12**		**µg/100 cm²**	**11/05/2025 17:32**
Lab ID	**Client ID**				**Sampled**
AD40778-23	925307-23				10/29/25 07:40
Method	Analyte	Result	Qualifier	Unit	Analyzed
SW-846 6010D	**Cadmium**	**0.33**		**µg/100 cm²**	**11/05/2025 17:35**
SW-846 6010D	**Silver**	**1.5**		**µg/100 cm²**	**11/05/2025 17:35**
SW-846 6010D	**Arsenic**	**10**		**µg/100 cm²**	**11/05/2025 17:35**
SW-846 6010D	**Barium**	**19**		**µg/100 cm²**	**11/05/2025 17:35**
SW-846 6010D	**Chromium**	**280**	**D**	**µg/100 cm²**	**11/06/2025 10:53**
SW-846 6010D	**Lead**	**46**		**µg/100 cm²**	**11/05/2025 17:35**

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Project Name: 925307
Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Positive Hits Summary
(Continued)

Lab ID	Client ID				Sampled
AD40778-24	925307-24				10/29/25 07:50
Method	Analyte	Result	Qualifier	Unit	Analyzed
SW-846 6010D	**Chromium**	**38**		**µg/100 cm²**	**11/05/2025 17:38**
SW-846 6010D	**Lead**	**6.2**		**µg/100 cm²**	**11/05/2025 17:38**

Lab ID	Client ID				Sampled
AD40778-25	925307-25				10/29/25 07:57
Method	Analyte	Result	Qualifier	Unit	Analyzed
SW-846 6010D	**Lead**	**120**	**D**	**µg/100 cm²**	**11/06/2025 10:56**
SW-846 6010D	**Arsenic**	**26**		**µg/100 cm²**	**11/05/2025 17:53**
SW-846 6010D	**Silver**	**4.4**		**µg/100 cm²**	**11/05/2025 17:53**
SW-846 6010D	**Cadmium**	**5.9**		**µg/100 cm²**	**11/05/2025 17:53**
SW-846 6010D	**Barium**	**68**		**µg/100 cm²**	**11/05/2025 17:53**
SW-846 6010D	**Chromium**	**970**	**D**	**µg/100 cm²**	**11/06/2025 10:56**

Lab ID	Client ID				Sampled
AD40778-26	925307-26				10/29/25 08:12
Method	Analyte	Result	Qualifier	Unit	Analyzed
SW-846 6010D	**Silver**	**1.4**		**µg/100 cm²**	**11/05/2025 17:56**
SW-846 6010D	**Chromium**	**280**	**D**	**µg/100 cm²**	**11/06/2025 10:59**
SW-846 6010D	**Lead**	**50**		**µg/100 cm²**	**11/05/2025 17:56**
SW-846 6010D	**Cadmium**	**54**		**µg/100 cm²**	**11/05/2025 17:56**
SW-846 6010D	**Arsenic**	**8.2**		**µg/100 cm²**	**11/05/2025 17:56**
SW-846 6010D	**Barium**	**94**		**µg/100 cm²**	**11/05/2025 17:56**

Lab ID	Client ID				Sampled
AD40778-27	925307-27				10/29/25 08:20
Method	Analyte	Result	Qualifier	Unit	Analyzed
SW-846 6010D	**Arsenic**	**19**		**µg/100 cm²**	**11/05/2025 17:59**
SW-846 6010D	**Lead**	**250**	**D**	**µg/100 cm²**	**11/06/2025 11:02**
SW-846 6010D	**Cadmium**	**5.0**		**µg/100 cm²**	**11/05/2025 17:59**
SW-846 6010D	**Silver**	**6.2**		**µg/100 cm²**	**11/05/2025 17:59**
SW-846 6010D	**Barium**	**70**		**µg/100 cm²**	**11/05/2025 17:59**
SW-846 6010D	**Chromium**	**740**	**D**	**µg/100 cm²**	**11/06/2025 11:02**

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778

LIMS Reference ID: AD40778

EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307

Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Positive Hits Summary
(Continued)

Lab ID	Client ID				Sampled
AD40778-28	925307-28				10/29/25 08:30
Method	Analyte	Result	Qualifier	Unit	Analyzed
SW-846 6010D	Chromium	1.1		µg/100 cm²	11/05/2025 18:01

Lab ID	Client ID				Sampled
AD40778-29	925307-29				10/29/25 08:38
Method	Analyte	Result	Qualifier	Unit	Analyzed
SW-846 6010D	Lead	11		µg/100 cm²	11/05/2025 18:04
SW-846 6010D	Barium	12		µg/100 cm²	11/05/2025 18:04
SW-846 6010D	Arsenic	2.1		µg/100 cm²	11/05/2025 18:04
SW-846 6010D	Chromium	55		µg/100 cm²	11/05/2025 18:04

Lab ID	Client ID				Sampled
AD40778-30	925307-30				10/29/25 08:43
Method	Analyte	Result	Qualifier	Unit	Analyzed
SW-846 6010D	Chromium	2.5		µg/100 cm²	11/05/2025 18:07

Lab ID	Client ID				Sampled
AD40778-31	925307-31				10/29/25 08:49
Method	Analyte	Result	Qualifier	Unit	Analyzed
SW-846 6010D	Chromium	1100		µg/100 cm²	11/05/2025 18:11
SW-846 6010D	Barium	150		µg/100 cm²	11/05/2025 18:11
SW-846 6010D	Arsenic	27		µg/100 cm²	11/05/2025 18:11
SW-846 6010D	Lead	290	D	µg/100 cm²	11/06/2025 11:05
SW-846 6010D	Cadmium	4.6		µg/100 cm²	11/05/2025 18:11
SW-846 6010D	Silver	7.3		µg/100 cm²	11/05/2025 18:11

Lab ID	Client ID				Sampled
AD40778-32	925307-32				10/29/25 08:56
Method	Analyte	Result	Qualifier	Unit	Analyzed
SW-846 6010D	Lead	1.9		µg/100 cm²	11/05/2025 18:13
SW-846 6010D	Chromium	9.5		µg/100 cm²	11/05/2025 18:13

Lab ID	Client ID				Sampled
AD40778-33	925307-33				10/29/25 09:03
Method	Analyte	Result	Qualifier	Unit	Analyzed

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EMSL-CIN-01

EMSL Order ID: 012540778
LIMS Reference ID: AD40778
EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Positive Hits Summary
(Continued)

Lab ID	Client ID				Sampled
AD40778-33	925307-33				10/29/25 09:03
Method	Analyte	Result	Qualifier	Unit	Analyzed
SW-846 6010D	**Cadmium**	**0.31**		**µg/100 cm²**	**11/05/2025 18:22**
SW-846 6010D	**Silver**	**1.1**		**µg/100 cm²**	**11/05/2025 18:22**
SW-846 6010D	**Chromium**	**140**	**D**	**µg/100 cm²**	**11/06/2025 11:08**
SW-846 6010D	**Lead**	**36**		**µg/100 cm²**	**11/05/2025 18:22**
SW-846 6010D	**Arsenic**	**4.2**		**µg/100 cm²**	**11/05/2025 18:22**
SW-846 6010D	**Barium**	**46**		**µg/100 cm²**	**11/05/2025 18:22**

Lab ID	Client ID				Sampled
AD40778-34	925307-34				10/29/25 09:09
Method	Analyte	Result	Qualifier	Unit	Analyzed
SW-846 6010D	**Lead**	**15**		**µg/100 cm²**	**11/05/2025 18:25**
SW-846 6010D	**Barium**	**35**		**µg/100 cm²**	**11/05/2025 18:25**
SW-846 6010D	**Chromium**	**52**		**µg/100 cm²**	**11/05/2025 18:25**
SW-846 6010D	**Cadmium**	**8.8**		**µg/100 cm²**	**11/05/2025 18:25**

Lab ID	Client ID				Sampled
AD40778-35	925307-35				10/29/25 09:19
Method	Analyte	Result	Qualifier	Unit	Analyzed
SW-846 6010D	**Lead**	**1.3**		**µg/100 cm²**	**11/05/2025 18:28**
SW-846 6010D	**Chromium**	**37**		**µg/100 cm²**	**11/05/2025 18:28**

Lab ID	Client ID				Sampled
AD40778-36	925307-36				10/29/25 09:28
Method	Analyte	Result	Qualifier	Unit	Analyzed
SW-846 6010D	**Chromium**	**5.9**		**µg/100 cm²**	**11/05/2025 18:31**

Lab ID	Client ID				Sampled
AD40778-37	925307-37				10/29/25 09:34
Method	Analyte	Result	Qualifier	Unit	Analyzed
SW-846 6010D	**Chromium**	**1400**	**D**	**µg/100 cm²**	**11/06/2025 11:11**
SW-846 6010D	**Silver**	**2.3**		**µg/100 cm²**	**11/05/2025 18:34**
SW-846 6010D	**Arsenic**	**35**		**µg/100 cm²**	**11/05/2025 18:34**
SW-846 6010D	**Barium**	**51**		**µg/100 cm²**	**11/05/2025 18:34**
SW-846 6010D	**Lead**	**58**		**µg/100 cm²**	**11/05/2025 18:34**

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Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Positive Hits Summary
(Continued)

Lab ID	Client ID				Sampled
AD40778-38	925307-38				10/29/25 09:40
Method	Analyte	Result	Qualifier	Unit	Analyzed
SW-846 6010D	Chromium	1700	D	µg/100 cm²	11/06/2025 11:19
SW-846 6010D	Silver	4.1		µg/100 cm²	11/05/2025 18:37
SW-846 6010D	Arsenic	44		µg/100 cm²	11/05/2025 18:37
SW-846 6010D	Barium	59		µg/100 cm²	11/05/2025 18:37
SW-846 6010D	Lead	78		µg/100 cm²	11/05/2025 18:37

Lab ID	Client ID				Sampled
AD40778-39	925307-39				10/29/25 09:48
Method	Analyte	Result	Qualifier	Unit	Analyzed
SW-846 6010D	Cadmium	1.2		µg/100 cm²	11/05/2025 18:39
SW-846 6010D	Chromium	1200	D	µg/100 cm²	11/06/2025 11:22
SW-846 6010D	Silver	2.5		µg/100 cm²	11/05/2025 18:39
SW-846 6010D	Arsenic	30		µg/100 cm²	11/05/2025 18:39
SW-846 6010D	Barium	55		µg/100 cm²	11/05/2025 18:39
SW-846 6010D	Lead	79		µg/100 cm²	11/05/2025 18:39

Lab ID	Client ID				Sampled
AD40778-40	925307-40				10/29/25 09:55
Method	Analyte	Result	Qualifier	Unit	Analyzed
SW-846 6010D	Lead	120	D	µg/100 cm²	11/06/2025 11:25
SW-846 6010D	Chromium	1700	D	µg/100 cm²	11/06/2025 11:25
SW-846 6010D	Silver	3.8		µg/100 cm²	11/05/2025 18:42
SW-846 6010D	Arsenic	44		µg/100 cm²	11/05/2025 18:42
SW-846 6010D	Cadmium	6.6		µg/100 cm²	11/05/2025 18:42
SW-846 6010D	Barium	84		µg/100 cm²	11/05/2025 18:42

Lab ID	Client ID				Sampled
AD40778-41	925307-41				10/29/25 10:02
Method	Analyte	Result	Qualifier	Unit	Analyzed
SW-846 6010D	Barium	150		µg/100 cm²	11/05/2025 18:59
SW-846 6010D	Chromium	1800	D	µg/100 cm²	11/06/2025 11:28
SW-846 6010D	Cadmium	2.1		µg/100 cm²	11/05/2025 18:59
SW-846 6010D	Lead	220	D	µg/100 cm²	11/06/2025 11:28
SW-846 6010D	Silver	4.2		µg/100 cm²	11/05/2025 18:59
SW-846 6010D	Arsenic	46		µg/100 cm²	11/05/2025 18:59

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Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307

Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Positive Hits Summary
(Continued)

Lab ID	Client ID				Sampled
AD40778-42	925307-42				10/29/25 10:12
Method	Analyte	Result	Qualifier	Unit	Analyzed
SW-846 6010D	**Lead**	**1.8**		**µg/100 cm²**	**11/05/2025 19:02**
SW-846 6010D	**Chromium**	**6.8**		**µg/100 cm²**	**11/05/2025 19:02**

Lab ID	Client ID				Sampled
AD40778-43	925307-43				10/29/25 10:18
Method	Analyte	Result	Qualifier	Unit	Analyzed
SW-846 6010D	**Chromium**	**9.4**		**µg/100 cm²**	**11/05/2025 19:05**

Lab ID	Client ID				Sampled
AD40778-44	925307-44				10/29/25 10:24
Method	Analyte	Result	Qualifier	Unit	Analyzed
SW-846 6010D	**Chromium**	**1100**	**D**	**µg/100 cm²**	**11/06/2025 11:31**
SW-846 6010D	**Silver**	**3.7**		**µg/100 cm²**	**11/05/2025 19:08**
SW-846 6010D	**Arsenic**	**33**		**µg/100 cm²**	**11/05/2025 19:08**
SW-846 6010D	**Barium**	**38**		**µg/100 cm²**	**11/05/2025 19:08**
SW-846 6010D	**Lead**	**60**		**µg/100 cm²**	**11/05/2025 19:08**

Lab ID	Client ID				Sampled
AD40778-45	925307-45				10/29/25 10:31
Method	Analyte	Result	Qualifier	Unit	Analyzed
SW-846 6010D	**Silver**	**1.8**		**µg/100 cm²**	**11/05/2025 19:10**
SW-846 6010D	**Arsenic**	**11**		**µg/100 cm²**	**11/05/2025 19:10**
SW-846 6010D	**Barium**	**15**		**µg/100 cm²**	**11/05/2025 19:10**
SW-846 6010D	**Lead**	**21**		**µg/100 cm²**	**11/05/2025 19:10**
SW-846 6010D	**Chromium**	**400**	**D**	**µg/100 cm²**	**11/06/2025 11:34**

Lab ID	Client ID				Sampled
AD40778-46	925307-46				10/29/25 10:38
Method	Analyte	Result	Qualifier	Unit	Analyzed
SW-846 6010D	**Chromium**	**3600**	**D**	**µg/100 cm²**	**11/06/2025 11:37**
SW-846 6010D	**Barium**	**52**		**µg/100 cm²**	**11/05/2025 19:19**
SW-846 6010D	**Silver**	**6.8**		**µg/100 cm²**	**11/05/2025 19:19**
SW-846 6010D	**Lead**	**79**		**µg/100 cm²**	**11/05/2025 19:19**
SW-846 6010D	**Arsenic**	**83**		**µg/100 cm²**	**11/05/2025 19:19**

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EMSL Order ID: 012540778
LIMS Reference ID: AD40778
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Attention: Justin Arnold
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2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Positive Hits Summary
(Continued)

Lab ID	Client ID				Sampled
AD40778-47	925307-47				10/29/25 10:45
Method	Analyte	Result	Qualifier	Unit	Analyzed
OSHA ID-145	**Mercury**	**0.12**		**µg/100 cm²**	**11/12/2025 16:23**
SW-846 6010D	**Chromium**	**18**		**µg/100 cm²**	**11/05/2025 19:22**
SW-846 6010D	**Lead**	**4.2**		**µg/100 cm²**	**11/05/2025 19:22**

Lab ID	Client ID				Sampled
AD40778-48	925307-48				10/29/25 10:55
Method	Analyte	Result	Qualifier	Unit	Analyzed
OSHA ID-145	**Mercury**	**0.037**		**µg/100 cm²**	**11/12/2025 16:25**
SW-846 6010D	**Cadmium**	**0.52**		**µg/100 cm²**	**11/05/2025 19:25**
SW846-8082A	**Aroclor-1254**	**1.15**		**µg/100 cm²**	**11/11/2025 23:02**
SW-846 6010D	**Chromium**	**1400**	**D**	**µg/100 cm²**	**11/06/2025 11:40**
SW-846 6010D	**Silver**	**2.9**		**µg/100 cm²**	**11/05/2025 19:25**
SW-846 6010D	**Arsenic**	**36**		**µg/100 cm²**	**11/05/2025 19:25**
SW-846 6010D	**Barium**	**61**		**µg/100 cm²**	**11/05/2025 19:25**
SW-846 6010D	**Lead**	**90**		**µg/100 cm²**	**11/05/2025 19:25**

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North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307

Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Work Order Case Narrative

Client contacted - hex chrome transfered to HB, wipe area confirmed 10cmx10cm, and all 1 project 11/4 BC
Client notified and confimed transfer Hg to Indy 11/11 BC
Samples received outside of the required temperature range. Testing proceeded per client request.

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North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307

Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results

Sample: 925307-01
AD40778-01 (Wipe)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 14:41	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 14:41	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 14:41	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 14:41	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 14:41	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1254	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 14:41	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 14:41	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 14:41	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 14:41	AJX/TL1	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*89%*			*21-123*		11/11/25 15:35	11/12/25 14:41	AJX/TL1	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*106%*			*17-128*		11/11/25 15:35	11/12/25 14:41	AJX/TL1	SW846 3540C	*SW846-8082A*
Metals										
Arsenic	ND		1	2.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:04	TH/P.L.	SW846 3050B	SW-846 6010D
Barium	ND		1	5.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:04	TH/P.L.	SW846 3050B	SW-846 6010D
Cadmium	ND		1	0.20	µg/100 cm²	11/04/25 14:59	11/05/25 16:04	TH/P.L.	SW846 3050B	SW-846 6010D
Chromium	ND		1	1.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:04	TH/P.L.	SW846 3050B	SW-846 6010D
Lead	ND		1	1.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:04	TH/P.L.	SW846 3050B	SW-846 6010D
Selenium	ND	B, L1	1	2.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:04	TH/P.L.	SW846 3050B	SW-846 6010D
Silver	ND		1	0.50	µg/100 cm²	11/04/25 14:59	11/05/25 16:04	TH/P.L.	SW846 3050B	SW-846 6010D
Mercury	ND		1	0.020	µg/100 cm²	11/12/25 14:23	11/12/25 15:00	JW/JW	OSHA ID-145	OSHA ID-145

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778
LIMS Reference ID: AD40778
EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-02
AD40778-02 (Wipe)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 15:03	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 15:03	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 15:03	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 15:03	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 15:03	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1254	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 15:03	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 15:03	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 15:03	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 15:03	AJX/TL1	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*81%*			*21-123*		11/11/25 15:35	11/12/25 15:03	AJX/TL1	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*105%*			*17-128*		11/11/25 15:35	11/12/25 15:03	AJX/TL1	SW846 3540C	*SW846-8082A*
Metals										
Arsenic	ND		1	2.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:07	TH/P.L.	SW846 3050B	SW-846 6010D
Barium	ND		1	5.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:07	TH/P.L.	SW846 3050B	SW-846 6010D
Cadmium	ND		1	0.20	µg/100 cm²	11/04/25 14:59	11/05/25 16:07	TH/P.L.	SW846 3050B	SW-846 6010D
Chromium	ND		1	1.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:07	TH/P.L.	SW846 3050B	SW-846 6010D
Lead	ND		1	1.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:07	TH/P.L.	SW846 3050B	SW-846 6010D
Selenium	ND	B, L1	1	2.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:07	TH/P.L.	SW846 3050B	SW-846 6010D
Silver	ND		1	0.50	µg/100 cm²	11/04/25 14:59	11/05/25 16:07	TH/P.L.	SW846 3050B	SW-846 6010D
Mercury	ND		1	0.020	µg/100 cm²	11/12/25 14:23	11/12/25 15:04	JW/JW	OSHA ID-145	OSHA ID-145

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778
LIMS Reference ID: AD40778
EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-03
AD40778-03 (Wipe)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 15:25	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 15:25	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 15:25	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 15:25	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 15:25	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1254	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 15:25	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 15:25	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 15:25	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 15:25	AJX/TL1	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*79%*			*21-123*		11/11/25 15:35	11/12/25 15:25	AJX/TL1	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*99%*			*17-128*		11/11/25 15:35	11/12/25 15:25	AJX/TL1	SW846 3540C	*SW846-8082A*
Metals										
Arsenic	ND		1	2.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:10	TH/P.L.	SW846 3050B	SW-846 6010D
Barium	ND		1	5.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:10	TH/P.L.	SW846 3050B	SW-846 6010D
Cadmium	ND		1	0.20	µg/100 cm²	11/04/25 14:59	11/05/25 16:10	TH/P.L.	SW846 3050B	SW-846 6010D
Chromium	ND		1	1.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:10	TH/P.L.	SW846 3050B	SW-846 6010D
Lead	ND		1	1.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:10	TH/P.L.	SW846 3050B	SW-846 6010D
Selenium	ND	B, L1	1	2.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:10	TH/P.L.	SW846 3050B	SW-846 6010D
Silver	ND		1	0.50	µg/100 cm²	11/04/25 14:59	11/05/25 16:10	TH/P.L.	SW846 3050B	SW-846 6010D
Mercury	ND		1	0.020	µg/100 cm²	11/12/25 14:23	11/12/25 15:07	JW/JW	OSHA ID-145	OSHA ID-145

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778

LIMS Reference ID: AD40778

EMSL Customer ID: OCCU21

Attention: Justin Arnold

Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307

Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-04
AD40778-04 (Wipe)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 15:48	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 15:48	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 15:48	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 15:48	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 15:48	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1254	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 15:48	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 15:48	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 15:48	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 15:48	AJX/TL1	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*82%*			*21-123*		11/11/25 15:35	11/12/25 15:48	AJX/TL1	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*103%*			*17-128*		11/11/25 15:35	11/12/25 15:48	AJX/TL1	SW846 3540C	*SW846-8082A*
Metals										
Arsenic	ND		1	2.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:14	TH/P.L.	SW846 3050B	SW-846 6010D
Barium	ND		1	5.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:14	TH/P.L.	SW846 3050B	SW-846 6010D
Cadmium	ND		1	0.20	µg/100 cm²	11/04/25 14:59	11/05/25 16:14	TH/P.L.	SW846 3050B	SW-846 6010D
Chromium	**31**		1	1.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:14	TH/P.L.	SW846 3050B	SW-846 6010D
Lead	**3.3**		1	1.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:14	TH/P.L.	SW846 3050B	SW-846 6010D
Selenium	ND	B, L1	1	2.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:14	TH/P.L.	SW846 3050B	SW-846 6010D
Silver	ND		1	0.50	µg/100 cm²	11/04/25 14:59	11/05/25 16:14	TH/P.L.	SW846 3050B	SW-846 6010D
Mercury	ND		1	0.020	µg/100 cm²	11/12/25 14:23	11/12/25 15:09	JW/JW	OSHA ID-145	OSHA ID-145

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778
LIMS Reference ID: AD40778
EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-05
AD40778-05 (Wipe)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 16:10	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 16:10	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 16:10	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 16:10	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 16:10	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1254	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 16:10	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 16:10	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 16:10	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 16:10	AJX/TL1	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*78%*			*21-123*		11/11/25 15:35	11/12/25 16:10	AJX/TL1	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*98%*			*17-128*		11/11/25 15:35	11/12/25 16:10	AJX/TL1	SW846 3540C	*SW846-8082A*
Metals										
Arsenic	ND		1	2.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:16	TH/P.L.	SW846 3050B	SW-846 6010D
Barium	ND		1	5.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:16	TH/P.L.	SW846 3050B	SW-846 6010D
Cadmium	ND		1	0.20	µg/100 cm²	11/04/25 14:59	11/05/25 16:16	TH/P.L.	SW846 3050B	SW-846 6010D
Chromium	**1.1**		1	1.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:16	TH/P.L.	SW846 3050B	SW-846 6010D
Lead	ND		1	1.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:16	TH/P.L.	SW846 3050B	SW-846 6010D
Selenium	ND	B, L1	1	2.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:16	TH/P.L.	SW846 3050B	SW-846 6010D
Silver	ND		1	0.50	µg/100 cm²	11/04/25 14:59	11/05/25 16:16	TH/P.L.	SW846 3050B	SW-846 6010D
Mercury	ND		1	0.020	µg/100 cm²	11/12/25 14:23	11/12/25 15:11	JW/JW	OSHA ID-145	OSHA ID-145

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778
LIMS Reference ID: AD40778
EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-06
AD40778-06 (Wipe)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 16:31	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 16:31	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 16:31	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 16:31	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 16:31	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1254	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 16:31	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 16:31	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 16:31	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 16:31	AJX/TL1	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*85%*			*21-123*		11/11/25 15:35	11/12/25 16:31	AJX/TL1	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*100%*			*17-128*		11/11/25 15:35	11/12/25 16:31	AJX/TL1	SW846 3540C	*SW846-8082A*
Metals										
Arsenic	**5.3**		1	2.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:25	TH/P.L.	SW846 3050B	SW-846 6010D
Barium	**90**		1	5.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:25	TH/P.L.	SW846 3050B	SW-846 6010D
Cadmium	**9.4**		1	0.20	µg/100 cm²	11/04/25 14:59	11/05/25 16:25	TH/P.L.	SW846 3050B	SW-846 6010D
Chromium	**120**	D	5	5.0	µg/100 cm²	11/04/25 14:59	11/06/25 10:50	TH/P.L.	SW846 3050B	SW-846 6010D
Lead	**250**	D	5	5.0	µg/100 cm²	11/04/25 14:59	11/06/25 10:50	TH/P.L.	SW846 3050B	SW-846 6010D
Selenium	ND	B, L1	1	2.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:25	TH/P.L.	SW846 3050B	SW-846 6010D
Silver	**4.5**		1	0.50	µg/100 cm²	11/04/25 14:59	11/05/25 16:25	TH/P.L.	SW846 3050B	SW-846 6010D
Mercury	ND		1	0.020	µg/100 cm²	11/12/25 14:23	11/12/25 15:13	JW/JW	OSHA ID-145	OSHA ID-145

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778

LIMS Reference ID: AD40778

EMSL Customer ID: OCCU21

Attention: Justin Arnold

Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307

Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-07
AD40778-07 (Wipe)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 16:53	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 16:53	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 16:53	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 16:53	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 16:53	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1254	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 16:53	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 16:53	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 16:53	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 16:53	AJX/TL1	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*86%*			*21-123*		11/11/25 15:35	11/12/25 16:53	AJX/TL1	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*104%*			*17-128*		11/11/25 15:35	11/12/25 16:53	AJX/TL1	SW846 3540C	*SW846-8082A*
Metals										
Arsenic	ND		1	2.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:28	TH/P.L.	SW846 3050B	SW-846 6010D
Barium	ND		1	5.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:28	TH/P.L.	SW846 3050B	SW-846 6010D
Cadmium	ND		1	0.20	µg/100 cm²	11/04/25 14:59	11/05/25 16:28	TH/P.L.	SW846 3050B	SW-846 6010D
Chromium	**5.3**		1	1.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:28	TH/P.L.	SW846 3050B	SW-846 6010D
Lead	**1.5**		1	1.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:28	TH/P.L.	SW846 3050B	SW-846 6010D
Selenium	ND	B, L1	1	2.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:28	TH/P.L.	SW846 3050B	SW-846 6010D
Silver	ND		1	0.50	µg/100 cm²	11/04/25 14:59	11/05/25 16:28	TH/P.L.	SW846 3050B	SW-846 6010D
Mercury	ND		1	0.020	µg/100 cm²	11/12/25 14:23	11/12/25 15:20	JW/JW	OSHA ID-145	OSHA ID-145

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778
LIMS Reference ID: AD40778
EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-08
AD40778-08 (Wipe)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 17:15	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 17:15	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 17:15	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 17:15	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 17:15	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1254	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 17:15	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 17:15	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 17:15	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 17:15	AJX/TL1	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*89%*			*21-123*		11/11/25 15:35	11/12/25 17:15	AJX/TL1	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*112%*			*17-128*		11/11/25 15:35	11/12/25 17:15	AJX/TL1	SW846 3540C	*SW846-8082A*
Metals										
Arsenic	ND		1	2.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:31	TH/P.L.	SW846 3050B	SW-846 6010D
Barium	**6.4**		1	5.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:31	TH/P.L.	SW846 3050B	SW-846 6010D
Cadmium	ND		1	0.20	µg/100 cm²	11/04/25 14:59	11/05/25 16:31	TH/P.L.	SW846 3050B	SW-846 6010D
Chromium	**40**		1	1.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:31	TH/P.L.	SW846 3050B	SW-846 6010D
Lead	**7.3**		1	1.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:31	TH/P.L.	SW846 3050B	SW-846 6010D
Selenium	ND	B, L1	1	2.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:31	TH/P.L.	SW846 3050B	SW-846 6010D
Silver	ND		1	0.50	µg/100 cm²	11/04/25 14:59	11/05/25 16:31	TH/P.L.	SW846 3050B	SW-846 6010D
Mercury	ND		1	0.020	µg/100 cm²	11/12/25 14:23	11/12/25 15:22	JW/JW	OSHA ID-145	OSHA ID-145

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EMSL Analytical, Inc.

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Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778
LIMS Reference ID: AD40778
EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-09
AD40778-09 (Wipe)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 17:37	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 17:37	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 17:37	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 17:37	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 17:37	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1254	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 17:37	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 17:37	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 17:37	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 17:37	AJX/TL1	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*77%*			*21-123*		11/11/25 15:35	11/12/25 17:37	AJX/TL1	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*97%*			*17-128*		11/11/25 15:35	11/12/25 17:37	AJX/TL1	SW846 3540C	*SW846-8082A*
Metals										
Arsenic	ND		1	2.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:34	TH/P.L.	SW846 3050B	SW-846 6010D
Barium	ND		1	5.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:34	TH/P.L.	SW846 3050B	SW-846 6010D
Cadmium	ND		1	0.20	µg/100 cm²	11/04/25 14:59	11/05/25 16:34	TH/P.L.	SW846 3050B	SW-846 6010D
Chromium	ND		1	1.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:34	TH/P.L.	SW846 3050B	SW-846 6010D
Lead	ND		1	1.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:34	TH/P.L.	SW846 3050B	SW-846 6010D
Selenium	ND	B, L1	1	2.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:34	TH/P.L.	SW846 3050B	SW-846 6010D
Silver	ND		1	0.50	µg/100 cm²	11/04/25 14:59	11/05/25 16:34	TH/P.L.	SW846 3050B	SW-846 6010D
Mercury	ND		1	0.020	µg/100 cm²	11/12/25 14:23	11/12/25 15:25	JW/JW	OSHA ID-145	OSHA ID-145

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778
LIMS Reference ID: AD40778
EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-10
AD40778-10 (Wipe)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 17:59	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 17:59	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 17:59	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 17:59	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 17:59	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1254	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 17:59	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 17:59	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 17:59	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 17:59	AJX/TL1	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*78%*			*21-123*		11/11/25 15:35	11/12/25 17:59	AJX/TL1	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*96%*			*17-128*		11/11/25 15:35	11/12/25 17:59	AJX/TL1	SW846 3540C	*SW846-8082A*
Metals										
Arsenic	ND		1	2.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:37	TH/P.L.	SW846 3050B	SW-846 6010D
Barium	ND		1	5.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:37	TH/P.L.	SW846 3050B	SW-846 6010D
Cadmium	ND		1	0.20	µg/100 cm²	11/04/25 14:59	11/05/25 16:37	TH/P.L.	SW846 3050B	SW-846 6010D
Chromium	**37**		1	1.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:37	TH/P.L.	SW846 3050B	SW-846 6010D
Lead	**4.5**		1	1.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:37	TH/P.L.	SW846 3050B	SW-846 6010D
Selenium	ND	B, L1	1	2.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:37	TH/P.L.	SW846 3050B	SW-846 6010D
Silver	ND		1	0.50	µg/100 cm²	11/04/25 14:59	11/05/25 16:37	TH/P.L.	SW846 3050B	SW-846 6010D
Mercury	ND		1	0.020	µg/100 cm²	11/12/25 14:23	11/12/25 15:27	JW/JW	OSHA ID-145	OSHA ID-145

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Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778

LIMS Reference ID: AD40778

EMSL Customer ID: OCCU21

Attention: Justin Arnold

Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307

Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-11
AD40778-11 (Wipe)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 18:21	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 18:21	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 18:21	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 18:21	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 18:21	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1254	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 18:21	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 18:21	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 18:21	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 18:21	AJX/TL1	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*82%*			*21-123*		11/11/25 15:35	11/12/25 18:21	AJX/TL1	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*101%*			*17-128*		11/11/25 15:35	11/12/25 18:21	AJX/TL1	SW846 3540C	*SW846-8082A*
Metals										
Arsenic	ND		1	2.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:40	TH/P.L.	SW846 3050B	SW-846 6010D
Barium	ND		1	5.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:40	TH/P.L.	SW846 3050B	SW-846 6010D
Cadmium	ND		1	0.20	µg/100 cm²	11/04/25 14:59	11/05/25 16:40	TH/P.L.	SW846 3050B	SW-846 6010D
Chromium	ND		1	1.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:40	TH/P.L.	SW846 3050B	SW-846 6010D
Lead	ND		1	1.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:40	TH/P.L.	SW846 3050B	SW-846 6010D
Selenium	ND	B, L1	1	2.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:40	TH/P.L.	SW846 3050B	SW-846 6010D
Silver	ND		1	0.50	µg/100 cm²	11/04/25 14:59	11/05/25 16:40	TH/P.L.	SW846 3050B	SW-846 6010D
Mercury	ND		1	0.020	µg/100 cm²	11/12/25 14:23	11/12/25 15:29	JW/JW	OSHA ID-145	OSHA ID-145

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EMSL-CIN-01

EMSL Order ID: 012540778
LIMS Reference ID: AD40778
EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-12
AD40778-12 (Wipe)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 18:43	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 18:43	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 18:43	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 18:43	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 18:43	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1254	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 18:43	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 18:43	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 18:43	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 18:43	AJX/TL1	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*77%*			*21-123*		11/11/25 15:35	11/12/25 18:43	AJX/TL1	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*94%*			*17-128*		11/11/25 15:35	11/12/25 18:43	AJX/TL1	SW846 3540C	*SW846-8082A*
Metals										
Arsenic	ND		1	2.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:43	TH/P.L.	SW846 3050B	SW-846 6010D
Barium	ND		1	5.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:43	TH/P.L.	SW846 3050B	SW-846 6010D
Cadmium	ND		1	0.20	µg/100 cm²	11/04/25 14:59	11/05/25 16:43	TH/P.L.	SW846 3050B	SW-846 6010D
Chromium	**2.8**		1	1.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:43	TH/P.L.	SW846 3050B	SW-846 6010D
Lead	**1.3**		1	1.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:43	TH/P.L.	SW846 3050B	SW-846 6010D
Selenium	ND	B, L1	1	2.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:43	TH/P.L.	SW846 3050B	SW-846 6010D
Silver	ND		1	0.50	µg/100 cm²	11/04/25 14:59	11/05/25 16:43	TH/P.L.	SW846 3050B	SW-846 6010D
Mercury	ND		1	0.020	µg/100 cm²	11/12/25 14:23	11/12/25 15:31	JW/JW	OSHA ID-145	OSHA ID-145

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778

LIMS Reference ID: AD40778

EMSL Customer ID: OCCU21

Attention: Justin Arnold

Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307

Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-13
AD40778-13 (Wipe)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 19:05	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 19:05	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 19:05	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 19:05	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 19:05	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1254	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 19:05	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 19:05	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 19:05	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 19:05	AJX/TL1	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*84%*			*21-123*		11/11/25 15:35	11/12/25 19:05	AJX/TL1	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*100%*			*17-128*		11/11/25 15:35	11/12/25 19:05	AJX/TL1	SW846 3540C	*SW846-8082A*
Metals										
Arsenic	ND		1	2.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:46	TH/P.L.	SW846 3050B	SW-846 6010D
Barium	ND		1	5.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:46	TH/P.L.	SW846 3050B	SW-846 6010D
Cadmium	ND		1	0.20	µg/100 cm²	11/04/25 14:59	11/05/25 16:46	TH/P.L.	SW846 3050B	SW-846 6010D
Chromium	**2.1**		1	1.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:46	TH/P.L.	SW846 3050B	SW-846 6010D
Lead	**1.5**		1	1.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:46	TH/P.L.	SW846 3050B	SW-846 6010D
Selenium	ND	B, L1	1	2.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:46	TH/P.L.	SW846 3050B	SW-846 6010D
Silver	ND		1	0.50	µg/100 cm²	11/04/25 14:59	11/05/25 16:46	TH/P.L.	SW846 3050B	SW-846 6010D
Mercury	ND		1	0.020	µg/100 cm²	11/12/25 14:23	11/12/25 15:34	JW/JW	OSHA ID-145	OSHA ID-145

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778
LIMS Reference ID: AD40778
EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-14
AD40778-14 (Wipe)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 19:27	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 19:27	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 19:27	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 19:27	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 19:27	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1254	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 19:27	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 19:27	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 19:27	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 19:27	AJX/TL1	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*92%*			*21-123*		11/11/25 15:35	11/12/25 19:27	AJX/TL1	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*112%*			*17-128*		11/11/25 15:35	11/12/25 19:27	AJX/TL1	SW846 3540C	*SW846-8082A*
Metals										
Arsenic	ND		1	2.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:55	TH/P.L.	SW846 3050B	SW-846 6010D
Barium	ND		1	5.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:55	TH/P.L.	SW846 3050B	SW-846 6010D
Cadmium	ND		1	0.20	µg/100 cm²	11/04/25 14:59	11/05/25 16:55	TH/P.L.	SW846 3050B	SW-846 6010D
Chromium	**11**		1	1.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:55	TH/P.L.	SW846 3050B	SW-846 6010D
Lead	**3.1**		1	1.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:55	TH/P.L.	SW846 3050B	SW-846 6010D
Selenium	ND	B, L1	1	2.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:55	TH/P.L.	SW846 3050B	SW-846 6010D
Silver	ND		1	0.50	µg/100 cm²	11/04/25 14:59	11/05/25 16:55	TH/P.L.	SW846 3050B	SW-846 6010D
Mercury	ND		1	0.020	µg/100 cm²	11/12/25 14:23	11/12/25 15:36	JW/JW	OSHA ID-145	OSHA ID-145

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778

LIMS Reference ID: AD40778

EMSL Customer ID: OCCU21

Attention: Justin Arnold

Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307

Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-15
AD40778-15 (Wipe)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 19:49	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 19:49	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 19:49	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 19:49	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 19:49	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1254	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 19:49	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 19:49	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 19:49	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 19:49	AJX/TL1	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*97%*			*21-123*		11/11/25 15:35	11/12/25 19:49	AJX/TL1	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*119%*			*17-128*		11/11/25 15:35	11/12/25 19:49	AJX/TL1	SW846 3540C	*SW846-8082A*
Metals										
Arsenic	ND		1	2.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:58	TH/P.L.	SW846 3050B	SW-846 6010D
Barium	ND		1	5.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:58	TH/P.L.	SW846 3050B	SW-846 6010D
Cadmium	ND		1	0.20	µg/100 cm²	11/04/25 14:59	11/05/25 16:58	TH/P.L.	SW846 3050B	SW-846 6010D
Chromium	ND		1	1.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:58	TH/P.L.	SW846 3050B	SW-846 6010D
Lead	**1.7**		1	1.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:58	TH/P.L.	SW846 3050B	SW-846 6010D
Selenium	ND	B, L1	1	2.0	µg/100 cm²	11/04/25 14:59	11/05/25 16:58	TH/P.L.	SW846 3050B	SW-846 6010D
Silver	ND		1	0.50	µg/100 cm²	11/04/25 14:59	11/05/25 16:58	TH/P.L.	SW846 3050B	SW-846 6010D
Mercury	ND		1	0.020	µg/100 cm²	11/12/25 14:23	11/12/25 15:38	JW/JW	OSHA ID-145	OSHA ID-145

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778
LIMS Reference ID: AD40778
EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-16
AD40778-16 (Wipe)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 20:10	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 20:10	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 20:10	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 20:10	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 20:10	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1254	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 20:10	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 20:10	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 20:10	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 20:10	AJX/TL1	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*83%*			*21-123*		11/11/25 15:35	11/12/25 20:10	AJX/TL1	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*107%*			*17-128*		11/11/25 15:35	11/12/25 20:10	AJX/TL1	SW846 3540C	*SW846-8082A*
Metals										
Arsenic	ND		1	2.0	µg/100 cm²	11/04/25 14:59	11/05/25 17:01	TH/P.L.	SW846 3050B	SW-846 6010D
Barium	ND		1	5.0	µg/100 cm²	11/04/25 14:59	11/05/25 17:01	TH/P.L.	SW846 3050B	SW-846 6010D
Cadmium	ND		1	0.20	µg/100 cm²	11/04/25 14:59	11/05/25 17:01	TH/P.L.	SW846 3050B	SW-846 6010D
Chromium	ND		1	1.0	µg/100 cm²	11/04/25 14:59	11/05/25 17:01	TH/P.L.	SW846 3050B	SW-846 6010D
Lead	ND		1	1.0	µg/100 cm²	11/04/25 14:59	11/05/25 17:01	TH/P.L.	SW846 3050B	SW-846 6010D
Selenium	ND	B, L1	1	2.0	µg/100 cm²	11/04/25 14:59	11/05/25 17:01	TH/P.L.	SW846 3050B	SW-846 6010D
Silver	ND		1	0.50	µg/100 cm²	11/04/25 14:59	11/05/25 17:01	TH/P.L.	SW846 3050B	SW-846 6010D
Mercury	ND		1	0.020	µg/100 cm²	11/12/25 14:23	11/12/25 15:40	JW/JW	OSHA ID-145	OSHA ID-145

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EMSL Analytical, Inc.

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Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778

LIMS Reference ID: AD40778

EMSL Customer ID: OCCU21

Attention: Justin Arnold

Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307

Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-17
AD40778-17 (Wipe)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 20:32	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 20:32	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 20:32	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 20:32	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 20:32	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1254	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 20:32	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 20:32	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 20:32	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 20:32	AJX/TL1	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*91%*			*21-123*		11/11/25 15:35	11/12/25 20:32	AJX/TL1	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*113%*			*17-128*		11/11/25 15:35	11/12/25 20:32	AJX/TL1	SW846 3540C	*SW846-8082A*
Metals										
Arsenic	ND		1	2.0	µg/100 cm²	11/04/25 14:59	11/05/25 17:03	TH/P.L.	SW846 3050B	SW-846 6010D
Barium	ND		1	5.0	µg/100 cm²	11/04/25 14:59	11/05/25 17:03	TH/P.L.	SW846 3050B	SW-846 6010D
Cadmium	ND		1	0.20	µg/100 cm²	11/04/25 14:59	11/05/25 17:03	TH/P.L.	SW846 3050B	SW-846 6010D
Chromium	ND		1	1.0	µg/100 cm²	11/04/25 14:59	11/05/25 17:03	TH/P.L.	SW846 3050B	SW-846 6010D
Lead	**1.7**		1	1.0	µg/100 cm²	11/04/25 14:59	11/05/25 17:03	TH/P.L.	SW846 3050B	SW-846 6010D
Selenium	ND	B, L1	1	2.0	µg/100 cm²	11/04/25 14:59	11/05/25 17:03	TH/P.L.	SW846 3050B	SW-846 6010D
Silver	ND		1	0.50	µg/100 cm²	11/04/25 14:59	11/05/25 17:03	TH/P.L.	SW846 3050B	SW-846 6010D
Mercury	ND		1	0.020	µg/100 cm²	11/12/25 14:23	11/12/25 15:47	JW/JW	OSHA ID-145	OSHA ID-145

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778

LIMS Reference ID: AD40778

EMSL Customer ID: OCCU21

Attention: Justin Arnold

Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307

Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-18
AD40778-18 (Wipe)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 21:16	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 21:16	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 21:16	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 21:16	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 21:16	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1254	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 21:16	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 21:16	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 21:16	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 21:16	AJX/TL1	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*87%*			*21-123*		11/11/25 15:35	11/12/25 21:16	AJX/TL1	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*111%*			*17-128*		11/11/25 15:35	11/12/25 21:16	AJX/TL1	SW846 3540C	*SW846-8082A*
Metals										
Arsenic	ND		1	2.0	µg/100 cm²	11/04/25 14:59	11/05/25 17:06	TH/P.L.	SW846 3050B	SW-846 6010D
Barium	ND		1	5.0	µg/100 cm²	11/04/25 14:59	11/05/25 17:06	TH/P.L.	SW846 3050B	SW-846 6010D
Cadmium	ND		1	0.20	µg/100 cm²	11/04/25 14:59	11/05/25 17:06	TH/P.L.	SW846 3050B	SW-846 6010D
Chromium	**3.1**		1	1.0	µg/100 cm²	11/04/25 14:59	11/05/25 17:06	TH/P.L.	SW846 3050B	SW-846 6010D
Lead	**10**		1	1.0	µg/100 cm²	11/04/25 14:59	11/05/25 17:06	TH/P.L.	SW846 3050B	SW-846 6010D
Selenium	ND	B, L1	1	2.0	µg/100 cm²	11/04/25 14:59	11/05/25 17:06	TH/P.L.	SW846 3050B	SW-846 6010D
Silver	ND		1	0.50	µg/100 cm²	11/04/25 14:59	11/05/25 17:06	TH/P.L.	SW846 3050B	SW-846 6010D
Mercury	ND		1	0.020	µg/100 cm²	11/12/25 14:23	11/12/25 15:49	JW/JW	OSHA ID-145	OSHA ID-145

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778

LIMS Reference ID: AD40778

EMSL Customer ID: OCCU21

Attention: Justin Arnold

Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307

Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-19
AD40778-19 (Wipe)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 21:38	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 21:38	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 21:38	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 21:38	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 21:38	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1254	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 21:38	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 21:38	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 21:38	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 21:38	AJX/TL1	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*83%*			*21-123*		11/11/25 15:35	11/12/25 21:38	AJX/TL1	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*104%*			*17-128*		11/11/25 15:35	11/12/25 21:38	AJX/TL1	SW846 3540C	*SW846-8082A*
Metals										
Arsenic	ND		1	2.0	µg/100 cm²	11/04/25 14:59	11/05/25 17:09	TH/P.L.	SW846 3050B	SW-846 6010D
Barium	ND		1	5.0	µg/100 cm²	11/04/25 14:59	11/05/25 17:09	TH/P.L.	SW846 3050B	SW-846 6010D
Cadmium	**0.98**		1	0.20	µg/100 cm²	11/04/25 14:59	11/05/25 17:09	TH/P.L.	SW846 3050B	SW-846 6010D
Chromium	ND		1	1.0	µg/100 cm²	11/04/25 14:59	11/05/25 17:09	TH/P.L.	SW846 3050B	SW-846 6010D
Lead	ND		1	1.0	µg/100 cm²	11/04/25 14:59	11/05/25 17:09	TH/P.L.	SW846 3050B	SW-846 6010D
Selenium	ND	B, L1	1	2.0	µg/100 cm²	11/04/25 14:59	11/05/25 17:09	TH/P.L.	SW846 3050B	SW-846 6010D
Silver	**14**		1	0.50	µg/100 cm²	11/04/25 14:59	11/05/25 17:09	TH/P.L.	SW846 3050B	SW-846 6010D
Mercury	ND		1	0.020	µg/100 cm²	11/12/25 14:23	11/12/25 15:52	JW/JW	OSHA ID-145	OSHA ID-145

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778

LIMS Reference ID: AD40778

EMSL Customer ID: OCCU21

Attention: Justin Arnold

Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307

Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-20
AD40778-20 (Wipe)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 22:00	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 22:00	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 22:00	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 22:00	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 22:00	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1254	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 22:00	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 22:00	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 22:00	AJX/TL1	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.500	µg/100 cm²	11/11/25 15:35	11/12/25 22:00	AJX/TL1	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*7%*	*S01*		*21-123*		11/11/25 15:35	11/12/25 22:00	AJX/TL1	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*89%*			*17-128*		11/11/25 15:35	11/12/25 22:00	AJX/TL1	SW846 3540C	*SW846-8082A*
Metals										
Arsenic	ND		1	2.0	µg/100 cm²	11/04/25 14:59	11/05/25 17:12	TH/P.L.	SW846 3050B	SW-846 6010D
Barium	ND		1	5.0	µg/100 cm²	11/04/25 14:59	11/05/25 17:12	TH/P.L.	SW846 3050B	SW-846 6010D
Cadmium	ND		1	0.20	µg/100 cm²	11/04/25 14:59	11/05/25 17:12	TH/P.L.	SW846 3050B	SW-846 6010D
Chromium	**1.0**		1	1.0	µg/100 cm²	11/04/25 14:59	11/05/25 17:12	TH/P.L.	SW846 3050B	SW-846 6010D
Lead	**2.7**		1	1.0	µg/100 cm²	11/04/25 14:59	11/05/25 17:12	TH/P.L.	SW846 3050B	SW-846 6010D
Selenium	ND	B, L1	1	2.0	µg/100 cm²	11/04/25 14:59	11/05/25 17:12	TH/P.L.	SW846 3050B	SW-846 6010D
Silver	ND		1	0.50	µg/100 cm²	11/04/25 14:59	11/05/25 17:12	TH/P.L.	SW846 3050B	SW-846 6010D
Mercury	ND		1	0.020	µg/100 cm²	11/12/25 14:23	11/12/25 15:54	JW/JW	OSHA ID-145	OSHA ID-145

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778
LIMS Reference ID: AD40778
EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-21
AD40778-21 (Wipe)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/12/25 23:27	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/12/25 23:27	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/12/25 23:27	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/12/25 23:27	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/12/25 23:27	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1254	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/12/25 23:27	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/12/25 23:27	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/12/25 23:27	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/12/25 23:27	AJX/KAC	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*77%*			*21-123*		11/11/25 16:20	11/12/25 23:27	AJX/KAC	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*97%*			*17-128*		11/11/25 16:20	11/12/25 23:27	AJX/KAC	SW846 3540C	*SW846-8082A*
Metals										
Arsenic	ND		1	2.0	µg/100 cm²	11/04/25 15:04	11/05/25 17:29	TH/P.L.	SW846 3050B	SW-846 6010D
Barium	ND		1	5.0	µg/100 cm²	11/04/25 15:04	11/05/25 17:29	TH/P.L.	SW846 3050B	SW-846 6010D
Cadmium	ND		1	0.20	µg/100 cm²	11/04/25 15:04	11/05/25 17:29	TH/P.L.	SW846 3050B	SW-846 6010D
Chromium	**3.4**		1	1.0	µg/100 cm²	11/04/25 15:04	11/05/25 17:29	TH/P.L.	SW846 3050B	SW-846 6010D
Lead	ND		1	1.0	µg/100 cm²	11/04/25 15:04	11/05/25 17:29	TH/P.L.	SW846 3050B	SW-846 6010D
Selenium	ND	B, L1	1	2.0	µg/100 cm²	11/04/25 15:04	11/05/25 17:29	TH/P.L.	SW846 3050B	SW-846 6010D
Silver	ND		1	0.50	µg/100 cm²	11/04/25 15:04	11/05/25 17:29	TH/P.L.	SW846 3050B	SW-846 6010D
Mercury	ND		1	0.020	µg/100 cm²	11/13/25 15:22	11/13/25 16:57	JW/JW	OSHA ID-145	OSHA ID-145

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778

LIMS Reference ID: AD40778

EMSL Customer ID: OCCU21

Attention: Justin Arnold

Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307

Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-22
AD40778-22 (Wipe)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/12/25 23:49	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/12/25 23:49	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/12/25 23:49	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/12/25 23:49	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/12/25 23:49	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1254	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/12/25 23:49	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/12/25 23:49	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/12/25 23:49	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/12/25 23:49	AJX/KAC	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*69%*			*21-123*		11/11/25 16:20	11/12/25 23:49	AJX/KAC	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*86%*			*17-128*		11/11/25 16:20	11/12/25 23:49	AJX/KAC	SW846 3540C	*SW846-8082A*
Metals										
Arsenic	ND		1	2.0	µg/100 cm²	11/04/25 15:04	11/05/25 17:32	TH/P.L.	SW846 3050B	SW-846 6010D
Barium	ND		1	5.0	µg/100 cm²	11/04/25 15:04	11/05/25 17:32	TH/P.L.	SW846 3050B	SW-846 6010D
Cadmium	ND		1	0.20	µg/100 cm²	11/04/25 15:04	11/05/25 17:32	TH/P.L.	SW846 3050B	SW-846 6010D
Chromium	**12**		1	1.0	µg/100 cm²	11/04/25 15:04	11/05/25 17:32	TH/P.L.	SW846 3050B	SW-846 6010D
Lead	ND		1	1.0	µg/100 cm²	11/04/25 15:04	11/05/25 17:32	TH/P.L.	SW846 3050B	SW-846 6010D
Selenium	ND	B, L1	1	2.0	µg/100 cm²	11/04/25 15:04	11/05/25 17:32	TH/P.L.	SW846 3050B	SW-846 6010D
Silver	ND		1	0.50	µg/100 cm²	11/04/25 15:04	11/05/25 17:32	TH/P.L.	SW846 3050B	SW-846 6010D
Mercury	ND		1	0.020	µg/100 cm²	11/13/25 15:22	11/13/25 17:01	JW/JW	OSHA ID-145	OSHA ID-145

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778

LIMS Reference ID: AD40778

EMSL Customer ID: OCCU21

Attention: Justin Arnold

Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307

Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-23
AD40778-23 (Wipe)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 00:11	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 00:11	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 00:11	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 00:11	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 00:11	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1254	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 00:11	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 00:11	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 00:11	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 00:11	AJX/KAC	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*76%*			*21-123*		11/11/25 16:20	11/13/25 00:11	AJX/KAC	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*89%*			*17-128*		11/11/25 16:20	11/13/25 00:11	AJX/KAC	SW846 3540C	*SW846-8082A*
Metals										
Arsenic	**10**		1	2.0	µg/100 cm²	11/04/25 15:04	11/05/25 17:35	TH/P.L.	SW846 3050B	SW-846 6010D
Barium	**19**		1	5.0	µg/100 cm²	11/04/25 15:04	11/05/25 17:35	TH/P.L.	SW846 3050B	SW-846 6010D
Cadmium	**0.33**		1	0.20	µg/100 cm²	11/04/25 15:04	11/05/25 17:35	TH/P.L.	SW846 3050B	SW-846 6010D
Chromium	**280**	D	5	5.0	µg/100 cm²	11/04/25 15:04	11/06/25 10:53	TH/P.L.	SW846 3050B	SW-846 6010D
Lead	**46**		1	1.0	µg/100 cm²	11/04/25 15:04	11/05/25 17:35	TH/P.L.	SW846 3050B	SW-846 6010D
Selenium	ND	B, L1	1	2.0	µg/100 cm²	11/04/25 15:04	11/05/25 17:35	TH/P.L.	SW846 3050B	SW-846 6010D
Silver	**1.5**		1	0.50	µg/100 cm²	11/04/25 15:04	11/05/25 17:35	TH/P.L.	SW846 3050B	SW-846 6010D
Mercury	ND		1	0.020	µg/100 cm²	11/13/25 15:22	11/13/25 17:04	JW/JW	OSHA ID-145	OSHA ID-145

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778

LIMS Reference ID: AD40778

EMSL Customer ID: OCCU21

Attention: Justin Arnold

Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307

Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-24
AD40778-24 (Wipe)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 00:33	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 00:33	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 00:33	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 00:33	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 00:33	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1254	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 00:33	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 00:33	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 00:33	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 00:33	AJX/KAC	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*72%*			*21-123*		11/11/25 16:20	11/13/25 00:33	AJX/KAC	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*92%*			*17-128*		11/11/25 16:20	11/13/25 00:33	AJX/KAC	SW846 3540C	*SW846-8082A*
Metals										
Arsenic	ND		1	2.0	µg/100 cm²	11/04/25 15:04	11/05/25 17:38	TH/P.L.	SW846 3050B	SW-846 6010D
Barium	ND		1	5.0	µg/100 cm²	11/04/25 15:04	11/05/25 17:38	TH/P.L.	SW846 3050B	SW-846 6010D
Cadmium	ND		1	0.20	µg/100 cm²	11/04/25 15:04	11/05/25 17:38	TH/P.L.	SW846 3050B	SW-846 6010D
Chromium	**38**		1	1.0	µg/100 cm²	11/04/25 15:04	11/05/25 17:38	TH/P.L.	SW846 3050B	SW-846 6010D
Lead	**6.2**		1	1.0	µg/100 cm²	11/04/25 15:04	11/05/25 17:38	TH/P.L.	SW846 3050B	SW-846 6010D
Selenium	ND	B, L1	1	2.0	µg/100 cm²	11/04/25 15:04	11/05/25 17:38	TH/P.L.	SW846 3050B	SW-846 6010D
Silver	ND		1	0.50	µg/100 cm²	11/04/25 15:04	11/05/25 17:38	TH/P.L.	SW846 3050B	SW-846 6010D
Mercury	ND		1	0.020	µg/100 cm²	11/13/25 15:22	11/13/25 17:06	JW/JW	OSHA ID-145	OSHA ID-145

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778
LIMS Reference ID: AD40778
EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-25
AD40778-25 (Wipe)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 00:55	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 00:55	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 00:55	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 00:55	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 00:55	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1254	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 00:55	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 00:55	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 00:55	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 00:55	AJX/KAC	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*73%*			*21-123*		11/11/25 16:20	11/13/25 00:55	AJX/KAC	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*87%*			*17-128*		11/11/25 16:20	11/13/25 00:55	AJX/KAC	SW846 3540C	*SW846-8082A*
Metals										
Arsenic	**26**		1	2.0	µg/100 cm²	11/04/25 15:04	11/05/25 17:53	TH/P.L.	SW846 3050B	SW-846 6010D
Barium	**68**		1	5.0	µg/100 cm²	11/04/25 15:04	11/05/25 17:53	TH/P.L.	SW846 3050B	SW-846 6010D
Cadmium	**5.9**		1	0.20	µg/100 cm²	11/04/25 15:04	11/05/25 17:53	TH/P.L.	SW846 3050B	SW-846 6010D
Chromium	**970**	D	25	25	µg/100 cm²	11/04/25 15:04	11/06/25 10:56	TH/P.L.	SW846 3050B	SW-846 6010D
Lead	**120**	D	25	25	µg/100 cm²	11/04/25 15:04	11/06/25 10:56	TH/P.L.	SW846 3050B	SW-846 6010D
Selenium	ND	B, L1	1	2.0	µg/100 cm²	11/04/25 15:04	11/05/25 17:53	TH/P.L.	SW846 3050B	SW-846 6010D
Silver	**4.4**		1	0.50	µg/100 cm²	11/04/25 15:04	11/05/25 17:53	TH/P.L.	SW846 3050B	SW-846 6010D
Mercury	ND		1	0.020	µg/100 cm²	11/13/25 15:22	11/13/25 17:08	JW/JW	OSHA ID-145	OSHA ID-145

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778
LIMS Reference ID: AD40778
EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-26
AD40778-26 (Wipe)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 01:17	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 01:17	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 01:17	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 01:17	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 01:17	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1254	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 01:17	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 01:17	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 01:17	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 01:17	AJX/KAC	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*65%*			*21-123*		11/11/25 16:20	11/13/25 01:17	AJX/KAC	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*80%*			*17-128*		11/11/25 16:20	11/13/25 01:17	AJX/KAC	SW846 3540C	*SW846-8082A*
Metals										
Arsenic	**8.2**		1	2.0	µg/100 cm²	11/04/25 15:04	11/05/25 17:56	TH/P.L.	SW846 3050B	SW-846 6010D
Barium	**94**		1	5.0	µg/100 cm²	11/04/25 15:04	11/05/25 17:56	TH/P.L.	SW846 3050B	SW-846 6010D
Cadmium	**54**		1	0.20	µg/100 cm²	11/04/25 15:04	11/05/25 17:56	TH/P.L.	SW846 3050B	SW-846 6010D
Chromium	**280**	D	5	5.0	µg/100 cm²	11/04/25 15:04	11/06/25 10:59	TH/P.L.	SW846 3050B	SW-846 6010D
Lead	**50**		1	1.0	µg/100 cm²	11/04/25 15:04	11/05/25 17:56	TH/P.L.	SW846 3050B	SW-846 6010D
Selenium	ND	B, L1	1	2.0	µg/100 cm²	11/04/25 15:04	11/05/25 17:56	TH/P.L.	SW846 3050B	SW-846 6010D
Silver	**1.4**		1	0.50	µg/100 cm²	11/04/25 15:04	11/05/25 17:56	TH/P.L.	SW846 3050B	SW-846 6010D
Mercury	ND		1	0.020	µg/100 cm²	11/13/25 15:22	11/13/25 17:10	JW/JW	OSHA ID-145	OSHA ID-145

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Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778
LIMS Reference ID: AD40778
EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-27
AD40778-27 (Wipe)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 01:38	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 01:38	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 01:38	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 01:38	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 01:38	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1254	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 01:38	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 01:38	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 01:38	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 01:38	AJX/KAC	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*81%*			*21-123*		11/11/25 16:20	11/13/25 01:38	AJX/KAC	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*95%*			*17-128*		11/11/25 16:20	11/13/25 01:38	AJX/KAC	SW846 3540C	*SW846-8082A*
Metals										
Arsenic	**19**		1	2.0	µg/100 cm²	11/04/25 15:04	11/05/25 17:59	TH/P.L.	SW846 3050B	SW-846 6010D
Barium	**70**		1	5.0	µg/100 cm²	11/04/25 15:04	11/05/25 17:59	TH/P.L.	SW846 3050B	SW-846 6010D
Cadmium	**5.0**		1	0.20	µg/100 cm²	11/04/25 15:04	11/05/25 17:59	TH/P.L.	SW846 3050B	SW-846 6010D
Chromium	**740**	D	25	25	µg/100 cm²	11/04/25 15:04	11/06/25 11:02	TH/P.L.	SW846 3050B	SW-846 6010D
Lead	**250**	D	25	25	µg/100 cm²	11/04/25 15:04	11/06/25 11:02	TH/P.L.	SW846 3050B	SW-846 6010D
Selenium	ND	B, L1	1	2.0	µg/100 cm²	11/04/25 15:04	11/05/25 17:59	TH/P.L.	SW846 3050B	SW-846 6010D
Silver	**6.2**		1	0.50	µg/100 cm²	11/04/25 15:04	11/05/25 17:59	TH/P.L.	SW846 3050B	SW-846 6010D
Mercury	ND		1	0.020	µg/100 cm²	11/13/25 15:22	11/13/25 17:17	JW/JW	OSHA ID-145	OSHA ID-145

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778
LIMS Reference ID: AD40778
EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-28
AD40778-28 (Wipe)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 01:58	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 01:58	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 01:58	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 01:58	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 01:58	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1254	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 01:58	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 01:58	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 01:58	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 01:58	AJX/KAC	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*80%*			*21-123*		11/11/25 16:20	11/13/25 01:58	AJX/KAC	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*101%*			*17-128*		11/11/25 16:20	11/13/25 01:58	AJX/KAC	SW846 3540C	*SW846-8082A*
Metals										
Arsenic	ND		1	2.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:01	TH/P.L.	SW846 3050B	SW-846 6010D
Barium	ND		1	5.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:01	TH/P.L.	SW846 3050B	SW-846 6010D
Cadmium	ND		1	0.20	µg/100 cm²	11/04/25 15:04	11/05/25 18:01	TH/P.L.	SW846 3050B	SW-846 6010D
Chromium	**1.1**		1	1.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:01	TH/P.L.	SW846 3050B	SW-846 6010D
Lead	ND		1	1.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:01	TH/P.L.	SW846 3050B	SW-846 6010D
Selenium	ND	B, L1	1	2.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:01	TH/P.L.	SW846 3050B	SW-846 6010D
Silver	ND		1	0.50	µg/100 cm²	11/04/25 15:04	11/05/25 18:01	TH/P.L.	SW846 3050B	SW-846 6010D
Mercury	ND		1	0.020	µg/100 cm²	11/13/25 15:22	11/13/25 17:20	JW/JW	OSHA ID-145	OSHA ID-145

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778
LIMS Reference ID: AD40778
EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-29
AD40778-29 (Wipe)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 02:20	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 02:20	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 02:20	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 02:20	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 02:20	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1254	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 02:20	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 02:20	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 02:20	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 02:20	AJX/KAC	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*72%*			*21-123*		11/11/25 16:20	11/13/25 02:20	AJX/KAC	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*94%*			*17-128*		11/11/25 16:20	11/13/25 02:20	AJX/KAC	SW846 3540C	*SW846-8082A*
Metals										
Arsenic	**2.1**		1	2.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:04	TH/P.L.	SW846 3050B	SW-846 6010D
Barium	**12**		1	5.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:04	TH/P.L.	SW846 3050B	SW-846 6010D
Cadmium	ND		1	0.20	µg/100 cm²	11/04/25 15:04	11/05/25 18:04	TH/P.L.	SW846 3050B	SW-846 6010D
Chromium	**55**		1	1.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:04	TH/P.L.	SW846 3050B	SW-846 6010D
Lead	**11**		1	1.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:04	TH/P.L.	SW846 3050B	SW-846 6010D
Selenium	ND	B, L1	1	2.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:04	TH/P.L.	SW846 3050B	SW-846 6010D
Silver	ND		1	0.50	µg/100 cm²	11/04/25 15:04	11/05/25 18:04	TH/P.L.	SW846 3050B	SW-846 6010D
Mercury	ND		1	0.020	µg/100 cm²	11/13/25 15:22	11/13/25 17:22	JW/JW	OSHA ID-145	OSHA ID-145

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778
LIMS Reference ID: AD40778
EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-30
AD40778-30 (Wipe)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 02:42	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 02:42	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 02:42	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 02:42	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 02:42	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1254	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 02:42	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 02:42	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 02:42	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 02:42	AJX/KAC	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*76%*			*21-123*		11/11/25 16:20	11/13/25 02:42	AJX/KAC	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*98%*			*17-128*		11/11/25 16:20	11/13/25 02:42	AJX/KAC	SW846 3540C	*SW846-8082A*
Metals										
Arsenic	ND		1	2.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:07	TH/P.L.	SW846 3050B	SW-846 6010D
Barium	ND		1	5.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:07	TH/P.L.	SW846 3050B	SW-846 6010D
Cadmium	ND		1	0.20	µg/100 cm²	11/04/25 15:04	11/05/25 18:07	TH/P.L.	SW846 3050B	SW-846 6010D
Chromium	**2.5**		1	1.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:07	TH/P.L.	SW846 3050B	SW-846 6010D
Lead	ND		1	1.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:07	TH/P.L.	SW846 3050B	SW-846 6010D
Selenium	ND	B, L1	1	2.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:07	TH/P.L.	SW846 3050B	SW-846 6010D
Silver	ND		1	0.50	µg/100 cm²	11/04/25 15:04	11/05/25 18:07	TH/P.L.	SW846 3050B	SW-846 6010D
Mercury	ND		1	0.020	µg/100 cm²	11/13/25 15:22	11/13/25 17:24	JW/JW	OSHA ID-145	OSHA ID-145

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778
LIMS Reference ID: AD40778
EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-31
AD40778-31 (Wipe)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 03:03	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 03:03	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 03:03	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 03:03	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 03:03	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1254	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 03:03	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 03:03	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 03:03	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 03:03	AJX/KAC	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*78%*			*21-123*		11/11/25 16:20	11/13/25 03:03	AJX/KAC	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*92%*			*17-128*		11/11/25 16:20	11/13/25 03:03	AJX/KAC	SW846 3540C	*SW846-8082A*
Metals										
Arsenic	**27**		1	2.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:11	TH/P.L.	SW846 3050B	SW-846 6010D
Barium	**150**		1	5.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:11	TH/P.L.	SW846 3050B	SW-846 6010D
Cadmium	**4.6**		1	0.20	µg/100 cm²	11/04/25 15:04	11/05/25 18:11	TH/P.L.	SW846 3050B	SW-846 6010D
Chromium	**1100**		1	1.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:11	TH/P.L.	SW846 3050B	SW-846 6010D
Lead	**290**	D	25	25	µg/100 cm²	11/04/25 15:04	11/06/25 11:05	TH/P.L.	SW846 3050B	SW-846 6010D
Selenium	ND	B, L1	1	2.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:11	TH/P.L.	SW846 3050B	SW-846 6010D
Silver	**7.3**		1	0.50	µg/100 cm²	11/04/25 15:04	11/05/25 18:11	TH/P.L.	SW846 3050B	SW-846 6010D
Mercury	ND		1	0.020	µg/100 cm²	11/13/25 15:22	11/13/25 17:26	JW/JW	OSHA ID-145	OSHA ID-145

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EMSL Analytical, Inc.

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Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778

LIMS Reference ID: AD40778

EMSL Customer ID: OCCU21

Attention: Justin Arnold

Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307

Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-32
AD40778-32 (Wipe)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 03:25	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 03:25	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 03:25	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 03:25	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 03:25	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1254	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 03:25	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 03:25	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 03:25	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 03:25	AJX/KAC	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*72%*			*21-123*		11/11/25 16:20	11/13/25 03:25	AJX/KAC	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*90%*			*17-128*		11/11/25 16:20	11/13/25 03:25	AJX/KAC	SW846 3540C	*SW846-8082A*
Metals										
Arsenic	ND		1	2.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:13	TH/P.L.	SW846 3050B	SW-846 6010D
Barium	ND		1	5.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:13	TH/P.L.	SW846 3050B	SW-846 6010D
Cadmium	ND		1	0.20	µg/100 cm²	11/04/25 15:04	11/05/25 18:13	TH/P.L.	SW846 3050B	SW-846 6010D
Chromium	**9.5**		1	1.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:13	TH/P.L.	SW846 3050B	SW-846 6010D
Lead	**1.9**		1	1.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:13	TH/P.L.	SW846 3050B	SW-846 6010D
Selenium	ND	B, L1	1	2.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:13	TH/P.L.	SW846 3050B	SW-846 6010D
Silver	ND		1	0.50	µg/100 cm²	11/04/25 15:04	11/05/25 18:13	TH/P.L.	SW846 3050B	SW-846 6010D
Mercury	ND		1	0.020	µg/100 cm²	11/13/25 15:22	11/13/25 17:29	JW/JW	OSHA ID-145	OSHA ID-145

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778

LIMS Reference ID: AD40778

EMSL Customer ID: OCCU21

Attention: Justin Arnold

Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307

Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-33
AD40778-33 (Wipe)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 03:47	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 03:47	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 03:47	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 03:47	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 03:47	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1254	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 03:47	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 03:47	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 03:47	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 03:47	AJX/KAC	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*73%*			*21-123*		11/11/25 16:20	11/13/25 03:47	AJX/KAC	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*89%*			*17-128*		11/11/25 16:20	11/13/25 03:47	AJX/KAC	SW846 3540C	*SW846-8082A*
Metals										
Arsenic	**4.2**		1	2.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:22	TH/P.L.	SW846 3050B	SW-846 6010D
Barium	**46**		1	5.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:22	TH/P.L.	SW846 3050B	SW-846 6010D
Cadmium	**0.31**		1	0.20	µg/100 cm²	11/04/25 15:04	11/05/25 18:22	TH/P.L.	SW846 3050B	SW-846 6010D
Chromium	**140**	D	5	5.0	µg/100 cm²	11/04/25 15:04	11/06/25 11:08	TH/P.L.	SW846 3050B	SW-846 6010D
Lead	**36**		1	1.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:22	TH/P.L.	SW846 3050B	SW-846 6010D
Selenium	ND	B, L1	1	2.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:22	TH/P.L.	SW846 3050B	SW-846 6010D
Silver	**1.1**		1	0.50	µg/100 cm²	11/04/25 15:04	11/05/25 18:22	TH/P.L.	SW846 3050B	SW-846 6010D
Mercury	ND		1	0.020	µg/100 cm²	11/13/25 15:22	11/13/25 17:31	JW/JW	OSHA ID-145	OSHA ID-145

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778
LIMS Reference ID: AD40778
EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-34
AD40778-34 (Wipe)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 04:09	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 04:09	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 04:09	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 04:09	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 04:09	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1254	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 04:09	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 04:09	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 04:09	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 04:09	AJX/KAC	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*69%*			*21-123*		11/11/25 16:20	11/13/25 04:09	AJX/KAC	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*86%*			*17-128*		11/11/25 16:20	11/13/25 04:09	AJX/KAC	SW846 3540C	*SW846-8082A*
Metals										
Arsenic	ND		1	2.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:25	TH/P.L.	SW846 3050B	SW-846 6010D
Barium	**35**		1	5.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:25	TH/P.L.	SW846 3050B	SW-846 6010D
Cadmium	**8.8**		1	0.20	µg/100 cm²	11/04/25 15:04	11/05/25 18:25	TH/P.L.	SW846 3050B	SW-846 6010D
Chromium	**52**		1	1.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:25	TH/P.L.	SW846 3050B	SW-846 6010D
Lead	**15**		1	1.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:25	TH/P.L.	SW846 3050B	SW-846 6010D
Selenium	ND	B, L1	1	2.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:25	TH/P.L.	SW846 3050B	SW-846 6010D
Silver	ND		1	0.50	µg/100 cm²	11/04/25 15:04	11/05/25 18:25	TH/P.L.	SW846 3050B	SW-846 6010D
Mercury	ND		1	0.020	µg/100 cm²	11/13/25 15:22	11/13/25 17:33	JW/JW	OSHA ID-145	OSHA ID-145

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778

LIMS Reference ID: AD40778

EMSL Customer ID: OCCU21

Attention: Justin Arnold

Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307

Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-35
AD40778-35 (Wipe)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 04:53	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 04:53	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 04:53	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 04:53	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 04:53	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1254	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 04:53	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 04:53	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 04:53	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 04:53	AJX/KAC	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*75%*			*21-123*		11/11/25 16:20	11/13/25 04:53	AJX/KAC	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*93%*			*17-128*		11/11/25 16:20	11/13/25 04:53	AJX/KAC	SW846 3540C	*SW846-8082A*
Metals										
Arsenic	ND		1	2.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:28	TH/P.L.	SW846 3050B	SW-846 6010D
Barium	ND		1	5.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:28	TH/P.L.	SW846 3050B	SW-846 6010D
Cadmium	ND		1	0.20	µg/100 cm²	11/04/25 15:04	11/05/25 18:28	TH/P.L.	SW846 3050B	SW-846 6010D
Chromium	**37**		1	1.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:28	TH/P.L.	SW846 3050B	SW-846 6010D
Lead	**1.3**		1	1.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:28	TH/P.L.	SW846 3050B	SW-846 6010D
Selenium	ND	B, L1	1	2.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:28	TH/P.L.	SW846 3050B	SW-846 6010D
Silver	ND		1	0.50	µg/100 cm²	11/04/25 15:04	11/05/25 18:28	TH/P.L.	SW846 3050B	SW-846 6010D
Mercury	ND		1	0.020	µg/100 cm²	11/13/25 15:22	11/13/25 17:35	JW/JW	OSHA ID-145	OSHA ID-145

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778

LIMS Reference ID: AD40778

EMSL Customer ID: OCCU21

Attention: Justin Arnold

Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307

Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-36
AD40778-36 (Wipe)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 05:15	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 05:15	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 05:15	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 05:15	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 05:15	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1254	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 05:15	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 05:15	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 05:15	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 05:15	AJX/KAC	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*77%*			*21-123*		11/11/25 16:20	11/13/25 05:15	AJX/KAC	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*97%*			*17-128*		11/11/25 16:20	11/13/25 05:15	AJX/KAC	SW846 3540C	*SW846-8082A*
Metals										
Arsenic	ND		1	2.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:31	TH/P.L.	SW846 3050B	SW-846 6010D
Barium	ND		1	5.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:31	TH/P.L.	SW846 3050B	SW-846 6010D
Cadmium	ND		1	0.20	µg/100 cm²	11/04/25 15:04	11/05/25 18:31	TH/P.L.	SW846 3050B	SW-846 6010D
Chromium	**5.9**		1	1.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:31	TH/P.L.	SW846 3050B	SW-846 6010D
Lead	ND		1	1.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:31	TH/P.L.	SW846 3050B	SW-846 6010D
Selenium	ND	B, L1	1	2.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:31	TH/P.L.	SW846 3050B	SW-846 6010D
Silver	ND		1	0.50	µg/100 cm²	11/04/25 15:04	11/05/25 18:31	TH/P.L.	SW846 3050B	SW-846 6010D
Mercury	ND		1	0.020	µg/100 cm²	11/13/25 15:22	11/13/25 17:38	JW/JW	OSHA ID-145	OSHA ID-145

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778

LIMS Reference ID: AD40778

EMSL Customer ID: OCCU21

Attention: Justin Arnold

Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307

Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-37
AD40778-37 (Wipe)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 05:37	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 05:37	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 05:37	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 05:37	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 05:37	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1254	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 05:37	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 05:37	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 05:37	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 05:37	AJX/KAC	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*77%*			*21-123*		11/11/25 16:20	11/13/25 05:37	AJX/KAC	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*91%*			*17-128*		11/11/25 16:20	11/13/25 05:37	AJX/KAC	SW846 3540C	*SW846-8082A*
Metals										
Arsenic	**35**		1	2.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:34	TH/P.L.	SW846 3050B	SW-846 6010D
Barium	**51**		1	5.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:34	TH/P.L.	SW846 3050B	SW-846 6010D
Cadmium	ND		1	0.20	µg/100 cm²	11/04/25 15:04	11/05/25 18:34	TH/P.L.	SW846 3050B	SW-846 6010D
Chromium	**1400**	D	25	25	µg/100 cm²	11/04/25 15:04	11/06/25 11:11	TH/P.L.	SW846 3050B	SW-846 6010D
Lead	**58**		1	1.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:34	TH/P.L.	SW846 3050B	SW-846 6010D
Selenium	ND	B, L1	1	2.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:34	TH/P.L.	SW846 3050B	SW-846 6010D
Silver	**2.3**		1	0.50	µg/100 cm²	11/04/25 15:04	11/05/25 18:34	TH/P.L.	SW846 3050B	SW-846 6010D
Mercury	ND		1	0.020	µg/100 cm²	11/13/25 15:22	11/13/25 17:44	JW/JW	OSHA ID-145	OSHA ID-145

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778
LIMS Reference ID: AD40778
EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-38
AD40778-38 (Wipe)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 05:58	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 05:58	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 05:58	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 05:58	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 05:58	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1254	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 05:58	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 05:58	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 05:58	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 05:58	AJX/KAC	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*66%*			*21-123*		11/11/25 16:20	11/13/25 05:58	AJX/KAC	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*82%*			*17-128*		11/11/25 16:20	11/13/25 05:58	AJX/KAC	SW846 3540C	*SW846-8082A*
Metals										
Arsenic	**44**		1	2.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:37	TH/P.L.	SW846 3050B	SW-846 6010D
Barium	**59**		1	5.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:37	TH/P.L.	SW846 3050B	SW-846 6010D
Cadmium	ND		1	0.20	µg/100 cm²	11/04/25 15:04	11/05/25 18:37	TH/P.L.	SW846 3050B	SW-846 6010D
Chromium	**1700**	D	25	25	µg/100 cm²	11/04/25 15:04	11/06/25 11:19	TH/P.L.	SW846 3050B	SW-846 6010D
Lead	**78**		1	1.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:37	TH/P.L.	SW846 3050B	SW-846 6010D
Selenium	ND	B, L1	1	2.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:37	TH/P.L.	SW846 3050B	SW-846 6010D
Silver	**4.1**		1	0.50	µg/100 cm²	11/04/25 15:04	11/05/25 18:37	TH/P.L.	SW846 3050B	SW-846 6010D
Mercury	ND		1	0.020	µg/100 cm²	11/13/25 15:22	11/13/25 17:47	JW/JW	OSHA ID-145	OSHA ID-145

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778
LIMS Reference ID: AD40778
EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-39
AD40778-39 (Wipe)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 06:20	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 06:20	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 06:20	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 06:20	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 06:20	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1254	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 06:20	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 06:20	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 06:20	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 06:20	AJX/KAC	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*74%*			*21-123*		11/11/25 16:20	11/13/25 06:20	AJX/KAC	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*90%*			*17-128*		11/11/25 16:20	11/13/25 06:20	AJX/KAC	SW846 3540C	*SW846-8082A*
Metals										
Arsenic	**30**		1	2.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:39	TH/P.L.	SW846 3050B	SW-846 6010D
Barium	**55**		1	5.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:39	TH/P.L.	SW846 3050B	SW-846 6010D
Cadmium	**1.2**		1	0.20	µg/100 cm²	11/04/25 15:04	11/05/25 18:39	TH/P.L.	SW846 3050B	SW-846 6010D
Chromium	**1200**	D	25	25	µg/100 cm²	11/04/25 15:04	11/06/25 11:22	TH/P.L.	SW846 3050B	SW-846 6010D
Lead	**79**		1	1.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:39	TH/P.L.	SW846 3050B	SW-846 6010D
Selenium	ND	B, L1	1	2.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:39	TH/P.L.	SW846 3050B	SW-846 6010D
Silver	**2.5**		1	0.50	µg/100 cm²	11/04/25 15:04	11/05/25 18:39	TH/P.L.	SW846 3050B	SW-846 6010D
Mercury	ND		1	0.020	µg/100 cm²	11/13/25 15:22	11/13/25 17:49	JW/JW	OSHA ID-145	OSHA ID-145

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778
LIMS Reference ID: AD40778
EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-40
AD40778-40 (Wipe)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 06:42	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 06:42	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 06:42	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 06:42	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 06:42	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1254	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 06:42	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 06:42	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 06:42	AJX/KAC	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.500	µg/100 cm²	11/11/25 16:20	11/13/25 06:42	AJX/KAC	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*73%*			*21-123*		11/11/25 16:20	11/13/25 06:42	AJX/KAC	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*89%*			*17-128*		11/11/25 16:20	11/13/25 06:42	AJX/KAC	SW846 3540C	*SW846-8082A*
Metals										
Arsenic	**44**		1	2.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:42	TH/P.L.	SW846 3050B	SW-846 6010D
Barium	**84**		1	5.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:42	TH/P.L.	SW846 3050B	SW-846 6010D
Cadmium	**6.6**		1	0.20	µg/100 cm²	11/04/25 15:04	11/05/25 18:42	TH/P.L.	SW846 3050B	SW-846 6010D
Chromium	**1700**	D	25	25	µg/100 cm²	11/04/25 15:04	11/06/25 11:25	TH/P.L.	SW846 3050B	SW-846 6010D
Lead	**120**	D	25	25	µg/100 cm²	11/04/25 15:04	11/06/25 11:25	TH/P.L.	SW846 3050B	SW-846 6010D
Selenium	ND	B, L1	1	2.0	µg/100 cm²	11/04/25 15:04	11/05/25 18:42	TH/P.L.	SW846 3050B	SW-846 6010D
Silver	**3.8**		1	0.50	µg/100 cm²	11/04/25 15:04	11/05/25 18:42	TH/P.L.	SW846 3050B	SW-846 6010D
Mercury	ND		1	0.020	µg/100 cm²	11/13/25 15:22	11/13/25 17:51	JW/JW	OSHA ID-145	OSHA ID-145

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Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778
LIMS Reference ID: AD40778
EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-41
AD40778-41 (Wipe)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 20:31	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 20:31	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 20:31	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 20:31	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 20:31	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1254	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 20:31	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 20:31	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 20:31	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 20:31	NP2/TL1	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*111%*			*21-123*		11/10/25 14:55	11/11/25 20:31	NP2/TL1	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*114%*			*17-128*		11/10/25 14:55	11/11/25 20:31	NP2/TL1	SW846 3540C	*SW846-8082A*
Metals										
Arsenic	**46**		1	2.0	µg/100 cm²	11/04/25 15:06	11/05/25 18:59	TH/P.L.	SW846 3050B	SW-846 6010D
Barium	**150**		1	5.0	µg/100 cm²	11/04/25 15:06	11/05/25 18:59	TH/P.L.	SW846 3050B	SW-846 6010D
Cadmium	**2.1**		1	0.20	µg/100 cm²	11/04/25 15:06	11/05/25 18:59	TH/P.L.	SW846 3050B	SW-846 6010D
Chromium	**1800**	D	25	25	µg/100 cm²	11/04/25 15:06	11/06/25 11:28	TH/P.L.	SW846 3050B	SW-846 6010D
Lead	**220**	D	25	25	µg/100 cm²	11/04/25 15:06	11/06/25 11:28	TH/P.L.	SW846 3050B	SW-846 6010D
Selenium	ND	B, L1	1	2.0	µg/100 cm²	11/04/25 15:06	11/05/25 18:59	TH/P.L.	SW846 3050B	SW-846 6010D
Silver	**4.2**		1	0.50	µg/100 cm²	11/04/25 15:06	11/05/25 18:59	TH/P.L.	SW846 3050B	SW-846 6010D
Mercury	ND		1	0.020	µg/100 cm²	11/12/25 14:26	11/12/25 16:03	JW/JW	OSHA ID-145	OSHA ID-145

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Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778
LIMS Reference ID: AD40778
EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-42
AD40778-42 (Wipe)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 20:52	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 20:52	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 20:52	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 20:52	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 20:52	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1254	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 20:52	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 20:52	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 20:52	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 20:52	NP2/TL1	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*104%*			*21-123*		11/10/25 14:55	11/11/25 20:52	NP2/TL1	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*101%*			*17-128*		11/10/25 14:55	11/11/25 20:52	NP2/TL1	SW846 3540C	*SW846-8082A*
Metals										
Arsenic	ND		1	2.0	µg/100 cm²	11/04/25 15:06	11/05/25 19:02	TH/P.L.	SW846 3050B	SW-846 6010D
Barium	ND		1	5.0	µg/100 cm²	11/04/25 15:06	11/05/25 19:02	TH/P.L.	SW846 3050B	SW-846 6010D
Cadmium	ND		1	0.20	µg/100 cm²	11/04/25 15:06	11/05/25 19:02	TH/P.L.	SW846 3050B	SW-846 6010D
Chromium	**6.8**		1	1.0	µg/100 cm²	11/04/25 15:06	11/05/25 19:02	TH/P.L.	SW846 3050B	SW-846 6010D
Lead	**1.8**		1	1.0	µg/100 cm²	11/04/25 15:06	11/05/25 19:02	TH/P.L.	SW846 3050B	SW-846 6010D
Selenium	ND	B, L1	1	2.0	µg/100 cm²	11/04/25 15:06	11/05/25 19:02	TH/P.L.	SW846 3050B	SW-846 6010D
Silver	ND		1	0.50	µg/100 cm²	11/04/25 15:06	11/05/25 19:02	TH/P.L.	SW846 3050B	SW-846 6010D
Mercury	ND		1	0.020	µg/100 cm²	11/12/25 14:26	11/12/25 16:05	JW/JW	OSHA ID-145	OSHA ID-145

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778
LIMS Reference ID: AD40778
EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-43
AD40778-43 (Wipe)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 21:14	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 21:14	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 21:14	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 21:14	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 21:14	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1254	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 21:14	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 21:14	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 21:14	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 21:14	NP2/TL1	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*110%*			*21-123*		11/10/25 14:55	11/11/25 21:14	NP2/TL1	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*113%*			*17-128*		11/10/25 14:55	11/11/25 21:14	NP2/TL1	SW846 3540C	*SW846-8082A*
Metals										
Arsenic	ND		1	2.0	µg/100 cm²	11/04/25 15:06	11/05/25 19:05	TH/P.L.	SW846 3050B	SW-846 6010D
Barium	ND		1	5.0	µg/100 cm²	11/04/25 15:06	11/05/25 19:05	TH/P.L.	SW846 3050B	SW-846 6010D
Cadmium	ND		1	0.20	µg/100 cm²	11/04/25 15:06	11/05/25 19:05	TH/P.L.	SW846 3050B	SW-846 6010D
Chromium	**9.4**		1	1.0	µg/100 cm²	11/04/25 15:06	11/05/25 19:05	TH/P.L.	SW846 3050B	SW-846 6010D
Lead	ND		1	1.0	µg/100 cm²	11/04/25 15:06	11/05/25 19:05	TH/P.L.	SW846 3050B	SW-846 6010D
Selenium	ND	B, L1	1	2.0	µg/100 cm²	11/04/25 15:06	11/05/25 19:05	TH/P.L.	SW846 3050B	SW-846 6010D
Silver	ND		1	0.50	µg/100 cm²	11/04/25 15:06	11/05/25 19:05	TH/P.L.	SW846 3050B	SW-846 6010D
Mercury	ND		1	0.020	µg/100 cm²	11/12/25 14:26	11/12/25 16:07	JW/JW	OSHA ID-145	OSHA ID-145

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778

LIMS Reference ID: AD40778

EMSL Customer ID: OCCU21

Attention: Justin Arnold

Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307

Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-44
AD40778-44 (Wipe)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 21:37	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 21:37	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 21:37	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 21:37	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 21:37	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1254	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 21:37	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 21:37	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 21:37	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 21:37	NP2/TL1	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*108%*			*21-123*		11/10/25 14:55	11/11/25 21:37	NP2/TL1	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*111%*			*17-128*		11/10/25 14:55	11/11/25 21:37	NP2/TL1	SW846 3540C	*SW846-8082A*
Metals										
Arsenic	**33**		1	2.0	µg/100 cm²	11/04/25 15:06	11/05/25 19:08	TH/P.L.	SW846 3050B	SW-846 6010D
Barium	**38**		1	5.0	µg/100 cm²	11/04/25 15:06	11/05/25 19:08	TH/P.L.	SW846 3050B	SW-846 6010D
Cadmium	ND		1	0.20	µg/100 cm²	11/04/25 15:06	11/05/25 19:08	TH/P.L.	SW846 3050B	SW-846 6010D
Chromium	**1100**	D	25	25	µg/100 cm²	11/04/25 15:06	11/06/25 11:31	TH/P.L.	SW846 3050B	SW-846 6010D
Lead	**60**		1	1.0	µg/100 cm²	11/04/25 15:06	11/05/25 19:08	TH/P.L.	SW846 3050B	SW-846 6010D
Selenium	ND	B, L1	1	2.0	µg/100 cm²	11/04/25 15:06	11/05/25 19:08	TH/P.L.	SW846 3050B	SW-846 6010D
Silver	**3.7**		1	0.50	µg/100 cm²	11/04/25 15:06	11/05/25 19:08	TH/P.L.	SW846 3050B	SW-846 6010D
Mercury	ND		1	0.020	µg/100 cm²	11/12/25 14:26	11/12/25 16:16	JW/JW	OSHA ID-145	OSHA ID-145

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778
LIMS Reference ID: AD40778
EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-45
AD40778-45 (Wipe)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 21:57	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 21:57	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 21:57	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 21:57	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 21:57	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1254	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 21:57	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 21:57	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 21:57	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 21:57	NP2/TL1	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*105%*			*21-123*		11/10/25 14:55	11/11/25 21:57	NP2/TL1	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*104%*			*17-128*		11/10/25 14:55	11/11/25 21:57	NP2/TL1	SW846 3540C	*SW846-8082A*
Metals										
Arsenic	**11**		1	2.0	µg/100 cm²	11/04/25 15:06	11/05/25 19:10	TH/P.L.	SW846 3050B	SW-846 6010D
Barium	**15**		1	5.0	µg/100 cm²	11/04/25 15:06	11/05/25 19:10	TH/P.L.	SW846 3050B	SW-846 6010D
Cadmium	ND		1	0.20	µg/100 cm²	11/04/25 15:06	11/05/25 19:10	TH/P.L.	SW846 3050B	SW-846 6010D
Chromium	**400**	D	5	5.0	µg/100 cm²	11/04/25 15:06	11/06/25 11:34	TH/P.L.	SW846 3050B	SW-846 6010D
Lead	**21**		1	1.0	µg/100 cm²	11/04/25 15:06	11/05/25 19:10	TH/P.L.	SW846 3050B	SW-846 6010D
Selenium	ND	B, L1	1	2.0	µg/100 cm²	11/04/25 15:06	11/05/25 19:10	TH/P.L.	SW846 3050B	SW-846 6010D
Silver	**1.8**		1	0.50	µg/100 cm²	11/04/25 15:06	11/05/25 19:10	TH/P.L.	SW846 3050B	SW-846 6010D
Mercury	ND		1	0.020	µg/100 cm²	11/12/25 14:26	11/12/25 16:19	JW/JW	OSHA ID-145	OSHA ID-145

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778
LIMS Reference ID: AD40778
EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-46
AD40778-46 (Wipe)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 22:19	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 22:19	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 22:19	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 22:19	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 22:19	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1254	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 22:19	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 22:19	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 22:19	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 22:19	NP2/TL1	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*104%*			*21-123*		11/10/25 14:55	11/11/25 22:19	NP2/TL1	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*99%*			*17-128*		11/10/25 14:55	11/11/25 22:19	NP2/TL1	SW846 3540C	*SW846-8082A*
Metals										
Arsenic	**83**		1	2.0	µg/100 cm²	11/04/25 15:06	11/05/25 19:19	TH/P.L.	SW846 3050B	SW-846 6010D
Barium	**52**		1	5.0	µg/100 cm²	11/04/25 15:06	11/05/25 19:19	TH/P.L.	SW846 3050B	SW-846 6010D
Cadmium	ND		1	0.20	µg/100 cm²	11/04/25 15:06	11/05/25 19:19	TH/P.L.	SW846 3050B	SW-846 6010D
Chromium	**3600**	D	100	100	µg/100 cm²	11/04/25 15:06	11/06/25 11:37	TH/P.L.	SW846 3050B	SW-846 6010D
Lead	**79**		1	1.0	µg/100 cm²	11/04/25 15:06	11/05/25 19:19	TH/P.L.	SW846 3050B	SW-846 6010D
Selenium	ND	B, L1	1	2.0	µg/100 cm²	11/04/25 15:06	11/05/25 19:19	TH/P.L.	SW846 3050B	SW-846 6010D
Silver	**6.8**		1	0.50	µg/100 cm²	11/04/25 15:06	11/05/25 19:19	TH/P.L.	SW846 3050B	SW-846 6010D
Mercury	ND		1	0.020	µg/100 cm²	11/12/25 14:26	11/12/25 16:21	JW/JW	OSHA ID-145	OSHA ID-145

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778
LIMS Reference ID: AD40778
EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-47
AD40778-47 (Wipe)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 22:41	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 22:41	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 22:41	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 22:41	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 22:41	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1254	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 22:41	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 22:41	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 22:41	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 22:41	NP2/TL1	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*106%*			*21-123*		11/10/25 14:55	11/11/25 22:41	NP2/TL1	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*110%*			*17-128*		11/10/25 14:55	11/11/25 22:41	NP2/TL1	SW846 3540C	*SW846-8082A*
Metals										
Arsenic	ND		1	2.0	µg/100 cm²	11/04/25 15:06	11/05/25 19:22	TH/P.L.	SW846 3050B	SW-846 6010D
Barium	ND		1	5.0	µg/100 cm²	11/04/25 15:06	11/05/25 19:22	TH/P.L.	SW846 3050B	SW-846 6010D
Cadmium	ND		1	0.20	µg/100 cm²	11/04/25 15:06	11/05/25 19:22	TH/P.L.	SW846 3050B	SW-846 6010D
Chromium	**18**		1	1.0	µg/100 cm²	11/04/25 15:06	11/05/25 19:22	TH/P.L.	SW846 3050B	SW-846 6010D
Lead	**4.2**		1	1.0	µg/100 cm²	11/04/25 15:06	11/05/25 19:22	TH/P.L.	SW846 3050B	SW-846 6010D
Selenium	ND	B, L1	1	2.0	µg/100 cm²	11/04/25 15:06	11/05/25 19:22	TH/P.L.	SW846 3050B	SW-846 6010D
Silver	ND		1	0.50	µg/100 cm²	11/04/25 15:06	11/05/25 19:22	TH/P.L.	SW846 3050B	SW-846 6010D
Mercury	**0.12**		1	0.020	µg/100 cm²	11/12/25 14:26	11/12/25 16:23	JW/JW	OSHA ID-145	OSHA ID-145

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778

LIMS Reference ID: AD40778

EMSL Customer ID: OCCU21

Attention: Justin Arnold

Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307

Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-48
AD40778-48 (Wipe)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 23:02	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 23:02	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 23:02	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 23:02	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 23:02	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1254	**1.15**		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 23:02	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 23:02	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 23:02	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 23:02	NP2/TL1	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*90%*			*21-123*		11/10/25 14:55	11/11/25 23:02	NP2/TL1	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*92%*			*17-128*		11/10/25 14:55	11/11/25 23:02	NP2/TL1	SW846 3540C	*SW846-8082A*
Metals										
Arsenic	**36**		1	2.0	µg/100 cm²	11/04/25 15:06	11/05/25 19:25	TH/P.L.	SW846 3050B	SW-846 6010D
Barium	**61**		1	5.0	µg/100 cm²	11/04/25 15:06	11/05/25 19:25	TH/P.L.	SW846 3050B	SW-846 6010D
Cadmium	**0.52**		1	0.20	µg/100 cm²	11/04/25 15:06	11/05/25 19:25	TH/P.L.	SW846 3050B	SW-846 6010D
Chromium	**1400**	D	25	25	µg/100 cm²	11/04/25 15:06	11/06/25 11:40	TH/P.L.	SW846 3050B	SW-846 6010D
Lead	**90**		1	1.0	µg/100 cm²	11/04/25 15:06	11/05/25 19:25	TH/P.L.	SW846 3050B	SW-846 6010D
Selenium	ND	B, L1	1	2.0	µg/100 cm²	11/04/25 15:06	11/05/25 19:25	TH/P.L.	SW846 3050B	SW-846 6010D
Silver	**2.9**		1	0.50	µg/100 cm²	11/04/25 15:06	11/05/25 19:25	TH/P.L.	SW846 3050B	SW-846 6010D
Mercury	**0.037**		1	0.020	µg/100 cm²	11/12/25 14:26	11/12/25 16:25	JW/JW	OSHA ID-145	OSHA ID-145

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778
LIMS Reference ID: AD40778
EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-49
AD40778-49 (Wipe)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 23:23	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 23:23	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 23:23	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 23:23	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 23:23	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1254	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 23:23	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 23:23	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 23:23	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 23:23	NP2/TL1	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*95%*			*21-123*		11/10/25 14:55	11/11/25 23:23	NP2/TL1	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*100%*			*17-128*		11/10/25 14:55	11/11/25 23:23	NP2/TL1	SW846 3540C	*SW846-8082A*
Metals										
Arsenic	ND		1	2.0	µg/100 cm²	11/04/25 15:06	11/05/25 19:28	TH/P.L.	SW846 3050B	SW-846 6010D
Barium	ND		1	5.0	µg/100 cm²	11/04/25 15:06	11/05/25 19:28	TH/P.L.	SW846 3050B	SW-846 6010D
Cadmium	ND		1	0.20	µg/100 cm²	11/04/25 15:06	11/05/25 19:28	TH/P.L.	SW846 3050B	SW-846 6010D
Chromium	ND		1	1.0	µg/100 cm²	11/04/25 15:06	11/05/25 19:28	TH/P.L.	SW846 3050B	SW-846 6010D
Lead	ND		1	1.0	µg/100 cm²	11/04/25 15:06	11/05/25 19:28	TH/P.L.	SW846 3050B	SW-846 6010D
Selenium	ND	B, L1	1	2.0	µg/100 cm²	11/04/25 15:06	11/05/25 19:28	TH/P.L.	SW846 3050B	SW-846 6010D
Silver	ND		1	0.50	µg/100 cm²	11/04/25 15:06	11/05/25 19:28	TH/P.L.	SW846 3050B	SW-846 6010D
Mercury	ND		1	0.020	µg/100 cm²	11/12/25 14:26	11/12/25 16:28	JW/JW	OSHA ID-145	OSHA ID-145

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778
LIMS Reference ID: AD40778
EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-50
AD40778-50 (Wipe)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 23:45	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1221	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 23:45	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1232	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 23:45	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1242	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 23:45	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1248	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 23:45	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1254	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 23:45	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1260	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 23:45	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1262	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 23:45	NP2/TL1	SW846 3540C	SW846-8082A
Aroclor-1268	ND		1	0.500	µg/100 cm²	11/10/25 14:55	11/11/25 23:45	NP2/TL1	SW846 3540C	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*91%*			*21-123*		11/10/25 14:55	11/11/25 23:45	NP2/TL1	SW846 3540C	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*97%*			*17-128*		11/10/25 14:55	11/11/25 23:45	NP2/TL1	SW846 3540C	*SW846-8082A*
Metals										
Arsenic	ND		1	2.0	µg/100 cm²	11/04/25 15:06	11/05/25 19:31	TH/P.L.	SW846 3050B	SW-846 6010D
Barium	ND		1	5.0	µg/100 cm²	11/04/25 15:06	11/05/25 19:31	TH/P.L.	SW846 3050B	SW-846 6010D
Cadmium	ND		1	0.20	µg/100 cm²	11/04/25 15:06	11/05/25 19:31	TH/P.L.	SW846 3050B	SW-846 6010D
Chromium	ND		1	1.0	µg/100 cm²	11/04/25 15:06	11/05/25 19:31	TH/P.L.	SW846 3050B	SW-846 6010D
Lead	ND		1	1.0	µg/100 cm²	11/04/25 15:06	11/05/25 19:31	TH/P.L.	SW846 3050B	SW-846 6010D
Selenium	ND	B, L1	1	2.0	µg/100 cm²	11/04/25 15:06	11/05/25 19:31	TH/P.L.	SW846 3050B	SW-846 6010D
Silver	ND		1	0.50	µg/100 cm²	11/04/25 15:06	11/05/25 19:31	TH/P.L.	SW846 3050B	SW-846 6010D
Mercury	ND		1	0.020	µg/100 cm²	11/12/25 14:26	11/12/25 16:30	JW/JW	OSHA ID-145	OSHA ID-145

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778

LIMS Reference ID: AD40778

EMSL Customer ID: OCCU21

Attention: Justin Arnold

Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307

Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-17-01
AD40778-51 (Solid)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.83	mg/kg	11/11/25 09:04	11/11/25 18:09	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1221	ND		1	0.83	mg/kg	11/11/25 09:04	11/11/25 18:09	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1232	ND		1	0.83	mg/kg	11/11/25 09:04	11/11/25 18:09	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1242	ND		1	0.83	mg/kg	11/11/25 09:04	11/11/25 18:09	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1248	ND		1	0.83	mg/kg	11/11/25 09:04	11/11/25 18:09	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1254	ND		1	0.83	mg/kg	11/11/25 09:04	11/11/25 18:09	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1260	ND		1	0.83	mg/kg	11/11/25 09:04	11/11/25 18:09	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1262	ND		1	0.83	mg/kg	11/11/25 09:04	11/11/25 18:09	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1268	ND		1	0.83	mg/kg	11/11/25 09:04	11/11/25 18:09	TAY/AxJ	SW846 3546	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*60%*			*10-112*		11/11/25 09:04	11/11/25 18:09	TAY/AxJ	SW846 3546	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*70%*			*10-123*		11/11/25 09:04	11/11/25 18:09	TAY/AxJ	SW846 3546	*SW846-8082A*

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200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778

LIMS Reference ID: AD40778

EMSL Customer ID: OCCU21

Attention: Justin Arnold

Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307

Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-17-02
AD40778-52 (Solid)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.86	mg/kg	11/11/25 09:04	11/11/25 18:31	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1221	ND		1	0.86	mg/kg	11/11/25 09:04	11/11/25 18:31	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1232	ND		1	0.86	mg/kg	11/11/25 09:04	11/11/25 18:31	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1242	ND		1	0.86	mg/kg	11/11/25 09:04	11/11/25 18:31	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1248	ND		1	0.86	mg/kg	11/11/25 09:04	11/11/25 18:31	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1254	ND		1	0.86	mg/kg	11/11/25 09:04	11/11/25 18:31	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1260	ND		1	0.86	mg/kg	11/11/25 09:04	11/11/25 18:31	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1262	ND		1	0.86	mg/kg	11/11/25 09:04	11/11/25 18:31	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1268	ND		1	0.86	mg/kg	11/11/25 09:04	11/11/25 18:31	TAY/AxJ	SW846 3546	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*80%*			*10-112*		11/11/25 09:04	11/11/25 18:31	TAY/AxJ	SW846 3546	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*92%*			*10-123*		11/11/25 09:04	11/11/25 18:31	TAY/AxJ	SW846 3546	*SW846-8082A*

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778
LIMS Reference ID: AD40778
EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-36-01
AD40778-53 (Solid)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.98	mg/kg	11/11/25 09:04	11/11/25 18:52	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1221	ND		1	0.98	mg/kg	11/11/25 09:04	11/11/25 18:52	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1232	ND		1	0.98	mg/kg	11/11/25 09:04	11/11/25 18:52	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1242	ND		1	0.98	mg/kg	11/11/25 09:04	11/11/25 18:52	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1248	ND		1	0.98	mg/kg	11/11/25 09:04	11/11/25 18:52	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1254	ND		1	0.98	mg/kg	11/11/25 09:04	11/11/25 18:52	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1260	ND		1	0.98	mg/kg	11/11/25 09:04	11/11/25 18:52	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1262	ND		1	0.98	mg/kg	11/11/25 09:04	11/11/25 18:52	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1268	ND		1	0.98	mg/kg	11/11/25 09:04	11/11/25 18:52	TAY/AxJ	SW846 3546	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*68%*			*10-112*		11/11/25 09:04	11/11/25 18:52	TAY/AxJ	SW846 3546	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*81%*			*10-123*		11/11/25 09:04	11/11/25 18:52	TAY/AxJ	SW846 3546	*SW846-8082A*

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778

LIMS Reference ID: AD40778

EMSL Customer ID: OCCU21

Attention: Justin Arnold

Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307

Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-36-02
AD40778-54 (Solid)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.94	mg/kg	11/11/25 09:04	11/11/25 19:14	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1221	ND		1	0.94	mg/kg	11/11/25 09:04	11/11/25 19:14	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1232	ND		1	0.94	mg/kg	11/11/25 09:04	11/11/25 19:14	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1242	ND		1	0.94	mg/kg	11/11/25 09:04	11/11/25 19:14	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1248	ND		1	0.94	mg/kg	11/11/25 09:04	11/11/25 19:14	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1254	ND		1	0.94	mg/kg	11/11/25 09:04	11/11/25 19:14	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1260	ND		1	0.94	mg/kg	11/11/25 09:04	11/11/25 19:14	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1262	ND		1	0.94	mg/kg	11/11/25 09:04	11/11/25 19:14	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1268	ND		1	0.94	mg/kg	11/11/25 09:04	11/11/25 19:14	TAY/AxJ	SW846 3546	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*57%*			*10-112*		11/11/25 09:04	11/11/25 19:14	TAY/AxJ	SW846 3546	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*71%*			*10-123*		11/11/25 09:04	11/11/25 19:14	TAY/AxJ	SW846 3546	*SW846-8082A*

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778

LIMS Reference ID: AD40778

EMSL Customer ID: OCCU21

Attention: Justin Arnold

Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307

Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-37-01
AD40778-55 (Solid)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.93	mg/kg	11/11/25 09:04	11/11/25 19:36	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1221	ND		1	0.93	mg/kg	11/11/25 09:04	11/11/25 19:36	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1232	ND		1	0.93	mg/kg	11/11/25 09:04	11/11/25 19:36	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1242	ND		1	0.93	mg/kg	11/11/25 09:04	11/11/25 19:36	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1248	ND		1	0.93	mg/kg	11/11/25 09:04	11/11/25 19:36	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1254	ND		1	0.93	mg/kg	11/11/25 09:04	11/11/25 19:36	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1260	ND		1	0.93	mg/kg	11/11/25 09:04	11/11/25 19:36	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1262	ND		1	0.93	mg/kg	11/11/25 09:04	11/11/25 19:36	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1268	ND		1	0.93	mg/kg	11/11/25 09:04	11/11/25 19:36	TAY/AxJ	SW846 3546	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*47%*			*10-112*		11/11/25 09:04	11/11/25 19:36	TAY/AxJ	SW846 3546	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*47%*			*10-123*		11/11/25 09:04	11/11/25 19:36	TAY/AxJ	SW846 3546	*SW846-8082A*

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778

LIMS Reference ID: AD40778

EMSL Customer ID: OCCU21

Attention: Justin Arnold

Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307

Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-37-02
AD40778-56 (Solid)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.93	mg/kg	11/11/25 09:04	11/11/25 19:58	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1221	ND		1	0.93	mg/kg	11/11/25 09:04	11/11/25 19:58	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1232	ND		1	0.93	mg/kg	11/11/25 09:04	11/11/25 19:58	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1242	ND		1	0.93	mg/kg	11/11/25 09:04	11/11/25 19:58	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1248	ND		1	0.93	mg/kg	11/11/25 09:04	11/11/25 19:58	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1254	ND		1	0.93	mg/kg	11/11/25 09:04	11/11/25 19:58	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1260	ND		1	0.93	mg/kg	11/11/25 09:04	11/11/25 19:58	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1262	ND		1	0.93	mg/kg	11/11/25 09:04	11/11/25 19:58	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1268	ND		1	0.93	mg/kg	11/11/25 09:04	11/11/25 19:58	TAY/AxJ	SW846 3546	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*61%*			*10-112*		11/11/25 09:04	11/11/25 19:58	TAY/AxJ	SW846 3546	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*58%*			*10-123*		11/11/25 09:04	11/11/25 19:58	TAY/AxJ	SW846 3546	*SW846-8082A*

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778

LIMS Reference ID: AD40778

EMSL Customer ID: OCCU21

Attention: Justin Arnold

Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307

Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-38-01
AD40778-57 (Solid)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.25	mg/kg	11/11/25 09:04	11/11/25 20:20	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1221	ND		1	0.25	mg/kg	11/11/25 09:04	11/11/25 20:20	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1232	ND		1	0.25	mg/kg	11/11/25 09:04	11/11/25 20:20	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1242	ND		1	0.25	mg/kg	11/11/25 09:04	11/11/25 20:20	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1248	ND		1	0.25	mg/kg	11/11/25 09:04	11/11/25 20:20	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1254	ND		1	0.25	mg/kg	11/11/25 09:04	11/11/25 20:20	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1260	ND		1	0.25	mg/kg	11/11/25 09:04	11/11/25 20:20	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1262	ND		1	0.25	mg/kg	11/11/25 09:04	11/11/25 20:20	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1268	ND		1	0.25	mg/kg	11/11/25 09:04	11/11/25 20:20	TAY/AxJ	SW846 3546	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*52%*			*10-112*		11/11/25 09:04	11/11/25 20:20	TAY/AxJ	SW846 3546	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*62%*			*10-123*		11/11/25 09:04	11/11/25 20:20	TAY/AxJ	SW846 3546	*SW846-8082A*

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778
LIMS Reference ID: AD40778
EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-38-02
AD40778-58 (Solid)

GC-SVOA

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
Aroclor-1016	ND		1	0.25	mg/kg	11/11/25 09:04	11/11/25 20:42	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1221	ND		1	0.25	mg/kg	11/11/25 09:04	11/11/25 20:42	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1232	ND		1	0.25	mg/kg	11/11/25 09:04	11/11/25 20:42	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1242	ND		1	0.25	mg/kg	11/11/25 09:04	11/11/25 20:42	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1248	ND		1	0.25	mg/kg	11/11/25 09:04	11/11/25 20:42	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1254	ND		1	0.25	mg/kg	11/11/25 09:04	11/11/25 20:42	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1260	ND		1	0.25	mg/kg	11/11/25 09:04	11/11/25 20:42	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1262	ND		1	0.25	mg/kg	11/11/25 09:04	11/11/25 20:42	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1268	ND		1	0.25	mg/kg	11/11/25 09:04	11/11/25 20:42	TAY/AxJ	SW846 3546	SW846-8082A

Surrogate(s)	Recovery	Q	Limits					
Surrogate: Tetrachloro-m-xylene	*45%*		*10-112*	11/11/25 09:04	11/11/25 20:42	TAY/AxJ	SW846 3546	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*55%*		*10-123*	11/11/25 09:04	11/11/25 20:42	TAY/AxJ	SW846 3546	*SW846-8082A*

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778

LIMS Reference ID: AD40778

EMSL Customer ID: OCCU21

Attention: Justin Arnold

Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307

Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-39-01
AD40778-59 (Solid)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.24	mg/kg	11/11/25 09:04	11/11/25 21:04	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1221	ND		1	0.24	mg/kg	11/11/25 09:04	11/11/25 21:04	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1232	ND		1	0.24	mg/kg	11/11/25 09:04	11/11/25 21:04	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1242	ND		1	0.24	mg/kg	11/11/25 09:04	11/11/25 21:04	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1248	ND		1	0.24	mg/kg	11/11/25 09:04	11/11/25 21:04	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1254	ND		1	0.24	mg/kg	11/11/25 09:04	11/11/25 21:04	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1260	ND		1	0.24	mg/kg	11/11/25 09:04	11/11/25 21:04	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1262	ND		1	0.24	mg/kg	11/11/25 09:04	11/11/25 21:04	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1268	ND		1	0.24	mg/kg	11/11/25 09:04	11/11/25 21:04	TAY/AxJ	SW846 3546	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*33%*			*10-112*		11/11/25 09:04	11/11/25 21:04	TAY/AxJ	SW846 3546	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*41%*			*10-123*		11/11/25 09:04	11/11/25 21:04	TAY/AxJ	SW846 3546	*SW846-8082A*

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778
LIMS Reference ID: AD40778
EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-39-02
AD40778-60 (Solid)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	0.83	mg/kg	11/11/25 09:04	11/11/25 21:25	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1221	ND		1	0.83	mg/kg	11/11/25 09:04	11/11/25 21:25	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1232	ND		1	0.83	mg/kg	11/11/25 09:04	11/11/25 21:25	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1242	ND		1	0.83	mg/kg	11/11/25 09:04	11/11/25 21:25	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1248	ND		1	0.83	mg/kg	11/11/25 09:04	11/11/25 21:25	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1254	ND		1	0.83	mg/kg	11/11/25 09:04	11/11/25 21:25	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1260	ND		1	0.83	mg/kg	11/11/25 09:04	11/11/25 21:25	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1262	ND		1	0.83	mg/kg	11/11/25 09:04	11/11/25 21:25	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1268	ND		1	0.83	mg/kg	11/11/25 09:04	11/11/25 21:25	TAY/AxJ	SW846 3546	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*63%*			*10-112*		11/11/25 09:04	11/11/25 21:25	TAY/AxJ	SW846 3546	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*61%*			*10-123*		11/11/25 09:04	11/11/25 21:25	TAY/AxJ	SW846 3546	*SW846-8082A*

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778
LIMS Reference ID: AD40778
EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-40-01
AD40778-61 (Solid)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	1.1	mg/kg	11/11/25 09:04	11/11/25 21:47	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1221	ND		1	1.1	mg/kg	11/11/25 09:04	11/11/25 21:47	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1232	ND		1	1.1	mg/kg	11/11/25 09:04	11/11/25 21:47	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1242	ND		1	1.1	mg/kg	11/11/25 09:04	11/11/25 21:47	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1248	ND		1	1.1	mg/kg	11/11/25 09:04	11/11/25 21:47	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1254	ND		1	1.1	mg/kg	11/11/25 09:04	11/11/25 21:47	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1260	ND		1	1.1	mg/kg	11/11/25 09:04	11/11/25 21:47	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1262	ND		1	1.1	mg/kg	11/11/25 09:04	11/11/25 21:47	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1268	ND		1	1.1	mg/kg	11/11/25 09:04	11/11/25 21:47	TAY/AxJ	SW846 3546	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*62%*			*10-112*		11/11/25 09:04	11/11/25 21:47	TAY/AxJ	SW846 3546	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*75%*			*10-123*		11/11/25 09:04	11/11/25 21:47	TAY/AxJ	SW846 3546	*SW846-8082A*

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778
LIMS Reference ID: AD40778
EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Sample Results
(Continued)

Sample: 925307-40-02
AD40778-62 (Solid)

Analyte	Result	Q	DF	RL	Units	Prepared Date/Time	Analyzed Date/Time	Prep/Analyst Initials	Prep Method	Analytical Method
GC-SVOA										
Aroclor-1016	ND		1	1.0	mg/kg	11/11/25 09:04	11/11/25 22:09	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1221	ND		1	1.0	mg/kg	11/11/25 09:04	11/11/25 22:09	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1232	ND		1	1.0	mg/kg	11/11/25 09:04	11/11/25 22:09	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1242	ND		1	1.0	mg/kg	11/11/25 09:04	11/11/25 22:09	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1248	ND		1	1.0	mg/kg	11/11/25 09:04	11/11/25 22:09	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1254	ND		1	1.0	mg/kg	11/11/25 09:04	11/11/25 22:09	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1260	ND		1	1.0	mg/kg	11/11/25 09:04	11/11/25 22:09	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1262	ND		1	1.0	mg/kg	11/11/25 09:04	11/11/25 22:09	TAY/AxJ	SW846 3546	SW846-8082A
Aroclor-1268	ND		1	1.0	mg/kg	11/11/25 09:04	11/11/25 22:09	TAY/AxJ	SW846 3546	SW846-8082A
Surrogate(s)	**Recovery**	**Q**		**Limits**						
Surrogate: Tetrachloro-m-xylene	*60%*			*10-112*		11/11/25 09:04	11/11/25 22:09	TAY/AxJ	SW846 3546	*SW846-8082A*
Surrogate: Decachlorobiphenyl	*68%*			*10-123*		11/11/25 09:04	11/11/25 22:09	TAY/AxJ	SW846 3546	*SW846-8082A*

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(816) 994-3428
jarnold@occutec.com

Project Name: 925307

Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Quality Control

GC-SVOA

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BDK0939 - SW846 3540C										
Blank (BDK0939-BLK1)					Prepared: 11/10/2025 Analyzed: 11/11/2025					
Aroclor-1016	ND		0.500	µg/100 cm²						
Aroclor-1221	ND		0.500	µg/100 cm²						
Aroclor-1232	ND		0.500	µg/100 cm²						
Aroclor-1242	ND		0.500	µg/100 cm²						
Aroclor-1248	ND		0.500	µg/100 cm²						
Aroclor-1254	ND		0.500	µg/100 cm²						
Aroclor-1260	ND		0.500	µg/100 cm²						
Aroclor-1262	ND		0.500	µg/100 cm²						
Aroclor-1268	ND		0.500	µg/100 cm²						
Surrogate(s)										
Surrogate: Tetrachloro-m-xylene					*1.000*		*106*	*21-123*		
Surrogate: Decachlorobiphenyl					*1.000*		*111*	*17-128*		
LCS (BDK0939-BS1)					Prepared: 11/10/2025 Analyzed: 11/11/2025					
Aroclor-1016	5.42		0.500	µg/100 cm²	5.000		108	37-120		
Aroclor-1260	5.82		0.500	µg/100 cm²	5.000		116	45-121		
Surrogate(s)										
Surrogate: Tetrachloro-m-xylene					*1.000*		*105*	*21-123*		
Surrogate: Decachlorobiphenyl					*1.000*		*113*	*17-128*		
LCS Dup (BDK0939-BSD1)					Prepared: 11/10/2025 Analyzed: 11/11/2025					
Aroclor-1016	5.12		0.500	µg/100 cm²	5.000		102	37-120	6	25
Aroclor-1260	5.55		0.500	µg/100 cm²	5.000		111	45-121	5	25
Surrogate(s)										
Surrogate: Tetrachloro-m-xylene					*1.000*		*101*	*21-123*		
Surrogate: Decachlorobiphenyl					*1.000*		*106*	*17-128*		
Batch: BDK1113 - SW846 3540C										
Blank (BDK1113-BLK1)					Prepared: 11/11/2025 Analyzed: 11/12/2025					
Aroclor-1016	ND		0.500	µg/100 cm²						
Aroclor-1221	ND		0.500	µg/100 cm²						
Aroclor-1232	ND		0.500	µg/100 cm²						
Aroclor-1242	ND		0.500	µg/100 cm²						
Aroclor-1248	ND		0.500	µg/100 cm²						
Aroclor-1254	ND		0.500	µg/100 cm²						
Aroclor-1260	ND		0.500	µg/100 cm²						

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2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Quality Control
(Continued)

GC-SVOA (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BDK1113 - SW846 3540C (Continued)										
Blank (BDK1113-BLK1)					Prepared: 11/11/2025 Analyzed: 11/12/2025					
Aroclor-1262	ND		0.500	µg/100 cm²						
Aroclor-1268	ND		0.500	µg/100 cm²						
Surrogate(s)										
Surrogate: Tetrachloro-m-xylene					*1.000*		*90*	*21-123*		
Surrogate: Decachlorobiphenyl					*1.000*		*114*	*17-128*		
LCS (BDK1113-BS1)					Prepared: 11/11/2025 Analyzed: 11/12/2025					
Aroclor-1016	4.08		0.500	µg/100 cm²	5.000		82	37-120		
Aroclor-1260	4.60		0.500	µg/100 cm²	5.000		92	45-121		
Surrogate(s)										
Surrogate: Tetrachloro-m-xylene					*1.000*		*80*	*21-123*		
Surrogate: Decachlorobiphenyl					*1.000*		*104*	*17-128*		
LCS Dup (BDK1113-BSD1)					Prepared: 11/11/2025 Analyzed: 11/12/2025					
Aroclor-1016	4.41		0.500	µg/100 cm²	5.000		88	37-120	8	25
Aroclor-1260	5.05		0.500	µg/100 cm²	5.000		101	45-121	9	25
Surrogate(s)										
Surrogate: Tetrachloro-m-xylene					*1.000*		*87*	*21-123*		
Surrogate: Decachlorobiphenyl					*1.000*		*110*	*17-128*		
Batch: BDK1117 - SW846 3546										
Blank (BDK1117-BLK1)					Prepared & Analyzed: 11/11/2025					
Aroclor-1016	ND		0.25	mg/kg						
Aroclor-1221	ND		0.25	mg/kg						
Aroclor-1232	ND		0.25	mg/kg						
Aroclor-1242	ND		0.25	mg/kg						
Aroclor-1248	ND		0.25	mg/kg						
Aroclor-1254	ND		0.25	mg/kg						
Aroclor-1260	ND		0.25	mg/kg						
Aroclor-1262	ND		0.25	mg/kg						
Aroclor-1268	ND		0.25	mg/kg						
Surrogate(s)										
Surrogate: Tetrachloro-m-xylene					*0.5000*		*77*	*10-112*		
Surrogate: Decachlorobiphenyl					*0.5000*		*94*	*10-123*		

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2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307

Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Quality Control
(Continued)

GC-SVOA (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BDK1117 - SW846 3546 (Continued)										
LCS (BDK1117-BS1)					Prepared & Analyzed: 11/11/2025					
Aroclor-1016	1.68		0.25	mg/kg	2.500		67	23-111		
Aroclor-1260	1.92		0.25	mg/kg	2.500		77	29-119		
Surrogate(s)										
Surrogate: Tetrachloro-m-xylene					*0.5000*		*75*	*10-112*		
Surrogate: Decachlorobiphenyl					*0.5000*		*96*	*10-123*		
LCS Dup (BDK1117-BSD1)					Prepared & Analyzed: 11/11/2025					
Aroclor-1016	1.66		0.25	mg/kg	2.500		66	23-111	2	25
Aroclor-1260	2.00		0.25	mg/kg	2.500		80	29-119	4	25
Surrogate(s)										
Surrogate: Tetrachloro-m-xylene					*0.5000*		*71*	*10-112*		
Surrogate: Decachlorobiphenyl					*0.5000*		*90*	*10-123*		
Batch: BDK1251 - SW846 3540C										
Blank (BDK1251-BLK1)					Prepared: 11/11/2025 Analyzed: 11/12/2025					
Aroclor-1016	ND		0.500	µg/100 cm²						
Aroclor-1221	ND		0.500	µg/100 cm²						
Aroclor-1232	ND		0.500	µg/100 cm²						
Aroclor-1242	ND		0.500	µg/100 cm²						
Aroclor-1248	ND		0.500	µg/100 cm²						
Aroclor-1254	ND		0.500	µg/100 cm²						
Aroclor-1260	ND		0.500	µg/100 cm²						
Aroclor-1262	ND		0.500	µg/100 cm²						
Aroclor-1268	ND		0.500	µg/100 cm²						
Surrogate(s)										
Surrogate: Tetrachloro-m-xylene					*1.000*		*79*	*21-123*		
Surrogate: Decachlorobiphenyl					*1.000*		*99*	*17-128*		
LCS (BDK1251-BS1)					Prepared: 11/11/2025 Analyzed: 11/12/2025					
Aroclor-1016	3.43		0.500	µg/100 cm²	5.000		69	37-120		
Aroclor-1260	3.96		0.500	µg/100 cm²	5.000		79	45-121		
Surrogate(s)										
Surrogate: Tetrachloro-m-xylene					*1.000*		*64*	*21-123*		
Surrogate: Decachlorobiphenyl					*1.000*		*84*	*17-128*		

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North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Project ID: 925307
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Reported:

Quality Control
(Continued)

GC-SVOA (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BDK1251 - SW846 3540C (Continued)										
LCS Dup (BDK1251-BSD1)					Prepared: 11/11/2025 Analyzed: 11/12/2025					
Aroclor-1016	3.91		0.500	µg/100 cm²	5.000		78	37-120	13	25
Aroclor-1260	4.33		0.500	µg/100 cm²	5.000		87	45-121	9	25
Surrogate(s)										
Surrogate: Tetrachloro-m-xylene					*1.000*		*74*	*21-123*		
Surrogate: Decachlorobiphenyl					*1.000*		*96*	*17-128*		

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Project Name: 925307
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Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Quality Control
(Continued)

Metals

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BDK0319 - SW846 3050B										
Blank (BDK0319-BLK1)				Prepared: 11/4/2025 Analyzed: 11/5/2025						
Arsenic	ND		0.22	µg/100 cm²						
Barium	ND		0.54	µg/100 cm²						
Cadmium	ND		0.022	µg/100 cm²						
Chromium	ND		0.11	µg/100 cm²						
Lead	ND		0.11	µg/100 cm²						
Selenium	0.412	B	0.22	µg/100 cm²						
Silver	ND		0.054	µg/100 cm²						
LCS (BDK0319-BS1)				Prepared: 11/4/2025 Analyzed: 11/5/2025						
Arsenic	2.79		0.22	µg/100 cm²	2.691		104	80-120		
Barium	2.48		0.54	µg/100 cm²	2.691		92.3	80-120		
Cadmium	2.79		0.022	µg/100 cm²	2.691		104	80-120		
Chromium	2.46		0.11	µg/100 cm²	2.691		91	80-120		
Lead	2.31		0.11	µg/100 cm²	2.691		86	80-120		
Selenium	3.98	R1	0.22	µg/100 cm²	2.691		148	80-120		
Silver	2.70		0.054	µg/100 cm²	2.691		100	80-120		
LCS Dup (BDK0319-BSD1)				Prepared: 11/4/2025 Analyzed: 11/5/2025						
Arsenic	2.88		0.22	µg/100 cm²	2.691		107	80-120	2.86	200
Barium	2.52		0.54	µg/100 cm²	2.691		93.7	80-120	1.51	200
Cadmium	2.82		0.022	µg/100 cm²	2.691		105	80-120	1	20
Chromium	2.47		0.11	µg/100 cm²	2.691		92	80-120	0.4	200
Lead	2.35		0.11	µg/100 cm²	2.691		87	80-120	2	20
Selenium	4.13	R1	0.22	µg/100 cm²	2.691		154	80-120	3.88	200
Silver	2.72		0.054	µg/100 cm²	2.691		101	80-120	0.831	200
Batch: BDK0320 - SW846 3050B										
Blank (BDK0320-BLK1)				Prepared: 11/4/2025 Analyzed: 11/5/2025						
Arsenic	ND		0.22	µg/100 cm²						
Barium	ND		0.54	µg/100 cm²						
Cadmium	ND		0.022	µg/100 cm²						
Chromium	ND		0.11	µg/100 cm²						
Lead	ND		0.11	µg/100 cm²						
Selenium	0.369	B	0.22	µg/100 cm²						
Silver	ND		0.054	µg/100 cm²						

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Quality Control
(Continued)

Metals (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BDK0320 - SW846 3050B (Continued)										
LCS (BDK0320-BS1)					Prepared: 11/4/2025 Analyzed: 11/5/2025					
Arsenic	2.91		0.22	µg/100 cm²	2.691		108	80-120		
Barium	2.55		0.54	µg/100 cm²	2.691		94.6	80-120		
Cadmium	2.78		0.022	µg/100 cm²	2.691		103	80-120		
Chromium	2.45		0.11	µg/100 cm²	2.691		91	80-120		
Lead	2.30		0.11	µg/100 cm²	2.691		85	80-120		
Selenium	4.09	R1	0.22	µg/100 cm²	2.691		152	80-120		
Silver	2.69		0.054	µg/100 cm²	2.691		100	80-120		
LCS Dup (BDK0320-BSD1)					Prepared: 11/4/2025 Analyzed: 11/5/2025					
Arsenic	2.89		0.22	µg/100 cm²	2.691		107	80-120	0.877	200
Barium	2.48		0.54	µg/100 cm²	2.691		92.3	80-120	2.48	200
Cadmium	2.80		0.022	µg/100 cm²	2.691		104	80-120	0.8	20
Chromium	2.46		0.11	µg/100 cm²	2.691		91	80-120	0.2	200
Lead	2.28		0.11	µg/100 cm²	2.691		85	80-120	0.9	20
Selenium	4.23	R1	0.22	µg/100 cm²	2.691		157	80-120	3.29	200
Silver	2.71		0.054	µg/100 cm²	2.691		101	80-120	0.664	200
Batch: BDK0321 - SW846 3050B										
Blank (BDK0321-BLK1)					Prepared: 11/4/2025 Analyzed: 11/5/2025					
Arsenic	ND		0.22	µg/100 cm²						
Barium	ND		0.54	µg/100 cm²						
Cadmium	ND		0.022	µg/100 cm²						
Chromium	ND		0.11	µg/100 cm²						
Lead	ND		0.11	µg/100 cm²						
Selenium	0.376	B	0.22	µg/100 cm²						
Silver	ND		0.054	µg/100 cm²						

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EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778
LIMS Reference ID: AD40778
EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Quality Control
(Continued)

Metals (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BDK0321 - SW846 3050B (Continued)										
LCS (BDK0321-BS1)					Prepared: 11/4/2025 Analyzed: 11/5/2025					
Arsenic	2.90		0.22	µg/100 cm²	2.691		108	80-120		
Barium	2.52		0.54	µg/100 cm²	2.691		93.6	80-120		
Cadmium	2.81		0.022	µg/100 cm²	2.691		104	80-120		
Chromium	2.46		0.11	µg/100 cm²	2.691		91	80-120		
Lead	2.29		0.11	µg/100 cm²	2.691		85	80-120		
Selenium	4.17	R1	0.22	µg/100 cm²	2.691		155	80-120		
Silver	2.68		0.054	µg/100 cm²	2.691		99.7	80-120		
LCS Dup (BDK0321-BSD1)					Prepared: 11/4/2025 Analyzed: 11/5/2025					
Arsenic	2.91		0.22	µg/100 cm²	2.691		108	80-120	0.289	200
Barium	2.47		0.54	µg/100 cm²	2.691		92.0	80-120	1.81	200
Cadmium	2.81		0.022	µg/100 cm²	2.691		104	80-120	0.05	20
Chromium	2.42		0.11	µg/100 cm²	2.691		90	80-120	1	200
Lead	2.29		0.11	µg/100 cm²	2.691		85	80-120	0.06	20
Selenium	4.26	R1	0.22	µg/100 cm²	2.691		158	80-120	2.02	200
Silver	2.70		0.054	µg/100 cm²	2.691		100	80-120	0.645	200
Batch: D006767 - OSHA ID-145										
Blank (D006767-BLK1)					Prepared & Analyzed: 11/12/2025					
Mercury	ND		0.020	µg/100 cm²						
LCS (D006767-BS1)					Prepared & Analyzed: 11/12/2025					
Mercury	0.181		0.020	µg/100 cm²	0.2000		90.7	80-120		
LCS Dup (D006767-BSD1)					Prepared & Analyzed: 11/12/2025					
Mercury	0.178		0.020	µg/100 cm²	0.2000		89.0	80-120	1.90	25

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EMSL-CIN-01

EMSL Order ID: 012540778

LIMS Reference ID: AD40778

EMSL Customer ID: OCCU21

Attention: Justin Arnold

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2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307

Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Quality Control
(Continued)

Metals (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: D006767 - OSHA ID-145 (Continued)										
Duplicate (D006767-DUP1)		**Source: AD40778-01**			Prepared & Analyzed: 11/12/2025					
Mercury	ND		0.020	µg/100 cm²		ND				200
Batch: D006768 - OSHA ID-145										
Blank (D006768-BLK1)					Prepared & Analyzed: 11/12/2025					
Mercury	ND		0.020	µg/100 cm²						
LCS (D006768-BS1)					Prepared & Analyzed: 11/12/2025					
Mercury	0.176		0.020	µg/100 cm²	0.2000		88.2	80-120		
LCS Dup (D006768-BSD1)					Prepared & Analyzed: 11/12/2025					
Mercury	0.175		0.020	µg/100 cm²	0.2000		87.6	80-120	0.654	25
Duplicate (D006768-DUP1)		**Source: AD40778-42**			Prepared & Analyzed: 11/12/2025					
Mercury	ND		0.020	µg/100 cm²		ND				200
Batch: D006811 - OSHA ID-145										
Blank (D006811-BLK1)					Prepared & Analyzed: 11/13/2025					
Mercury	ND		0.020	µg/100 cm²						
LCS (D006811-BS1)					Prepared & Analyzed: 11/13/2025					
Mercury	0.173		0.020	µg/100 cm²	0.2000		86.6	80-120		
LCS Dup (D006811-BSD1)					Prepared & Analyzed: 11/13/2025					
Mercury	0.173		0.020	µg/100 cm²	0.2000		86.7	80-120	0.131	25

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EMSL-CIN-01

EMSL Order ID: 012540778

LIMS Reference ID: AD40778

EMSL Customer ID: OCCU21

Attention: Justin Arnold
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2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Quality Control
(Continued)

Metals (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: D006811 - OSHA ID-145 (Continued)										
Duplicate (D006811-DUP1)			**Source: AD40778-21**		Prepared & Analyzed: 11/13/2025					
Mercury	ND		0.020	µg/100 cm²		ND				200

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EMSL Order ID: 012540778

LIMS Reference ID: AD40778

EMSL Customer ID: OCCU21

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(816) 994-3428
jarnold@occutec.com

Project Name: 925307

Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Certified Analyses included in this Report

Analyte	CAS #	Certifications
SW-846 6010D in Wipe		
Arsenic	7440-38-2	NJDEP,California ELAP
Barium	7440-39-3	NJDEP,California ELAP
Cadmium	7440-43-9	NJDEP,California ELAP
Chromium	7440-47-3	NJDEP,California ELAP
Lead	7439-92-1	NJDEP,California ELAP
Selenium	7782-49-2	NJDEP,California ELAP
Silver	7440-22-4	NJDEP,California ELAP
SW846-8082A in Solid		
Aroclor-1016	12674-11-2	NJDEP,NYSDOH,PADEP,California ELAP
Aroclor-1221	11104-28-2	NJDEP,NYSDOH,PADEP,California ELAP
Aroclor-1232	11141-16-5	NJDEP,NYSDOH,PADEP,California ELAP
Aroclor-1242	53469-21-9	NJDEP,NYSDOH,PADEP,California ELAP
Aroclor-1248	12672-29-6	NJDEP,NYSDOH,PADEP,California ELAP
Aroclor-1254	11097-69-1	NJDEP,NYSDOH,PADEP,California ELAP
Aroclor-1260	11096-82-5	NJDEP,NYSDOH,PADEP,California ELAP
Aroclor-1262	37324-23-5	NJDEP,NYSDOH,PADEP
Aroclor-1268	11100-14-4	NJDEP,NYSDOH,PADEP
SW846-8082A in Wipe		
Aroclor-1016	12674-11-2	NJDEP,NYSDOH,PADEP,California ELAP
Aroclor-1221	11104-28-2	NJDEP,NYSDOH,PADEP,California ELAP
Aroclor-1232	11141-16-5	NJDEP,NYSDOH,PADEP,California ELAP
Aroclor-1242	53469-21-9	NJDEP,NYSDOH,PADEP,California ELAP
Aroclor-1248	12672-29-6	NJDEP,NYSDOH,PADEP,California ELAP
Aroclor-1254	11097-69-1	NJDEP,NYSDOH,PADEP,California ELAP
Aroclor-1260	11096-82-5	NJDEP,NYSDOH,PADEP,California ELAP
Aroclor-1262	37324-23-5	NJDEP,NYSDOH,PADEP
Aroclor-1268	11100-14-4	NJDEP,NYSDOH,PADEP

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Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012540778

LIMS Reference ID: AD40778

EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307

Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

List of Certifications

Code	Description	Number	Expires
PADEP	Pennsylvania Department of Environmental Protection	2845.25	11/30/2025
NYSDOH	New York State Department of Health ELAP	10872	04/01/2026
NJDEP	New Jersey Department of Environmental Protection	03036	06/30/2026
MADEP	Massachusetts Department of Environmental Protection	M-NJ337	06/30/2026
CTDPH	Connecticut Department of Public Health	PH-0270	06/30/2026
California ELAP	California Water Boards	1877	06/30/2026
AIHA LAP	American Industrial Hygiene Association (AIHA LAP, LLC)	100194	04/01/2027
A2LA	A2LA Environmental Certificate	2845.01	07/31/2026
21-A2LA	A2LA Food Chem/Mat Sci	2845.15	07/31/2026

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

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jarnold@occutec.com

Project Name: 925307
Project ID: 925307
Customer PO: 925307
Sales Rep: Emily Stressman
Received: 10/31/2025 12:00
Reported:

Notes and Definitions

Item	Definition
B	The analyte was detected in the Method Blank.
D	Analyte was reported from a dilution run.
L1	This compound is outside the method control limits in the associated BS.
R1	Recovery is outside of the method control limits.
S01	The surrogate recovery is outside the method control limits. There is insufficient sample left to re-extract for confirmation.
(Dig)	For metals analysis, sample was digested.
[2C]	Reported from the second channel in dual column analysis.
DA	Direct Analysis
DF	Dilution Factor
MDL	Method Detection Limit.
ND	Analyte was NOT DETECTED at or above the detection limit.
NR	Spike/Surrogate showed no recovery.
Q	Qualifier
RCS	Respirable Crystalline Silica
RL	Reporting Limit
Wet	Sample is not dry weight corrected.
%REC	Percent Recovery
RPD	Relative Percent Difference
Source	Sample that was matrix spiked or duplicated

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

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EMSL ANALYTICAL, INC.
TESTING LABS • PRODUCTS • TRAINING

Environmental Chemistry - Sampling Event
Chain of Custody

EMSL Order Number / Lab Use Only: AD40778

EMSL Analytical, Inc.
200 Route 130 North
Cinnaminson, NJ 08077
PHONE (800) 220-3675
EMAIL EnvChemistry2@EMSL.com

Customer Information

Customer ID:	OCCU21
Company Name:	OCCU-TEC Inc.
Contact Name:	Justin Arnold
Street Address:	2604 NE Industrial Drive, Suite 230
City, State, Zip:	North Kansas City
Country:	USA
Phone:	816.810.3276
Email(s) for Report:	jarnold@occutec.com, kheriford@occutec.com

Billing Information

Billing ID:	
Company Name:	
Billing Contact:	
Street Address:	
City, State, Zip:	
Country:	
Phone:	
Email(s) for Invoice:	

Project Name/No: 925307

Purchase Order: 925307

EMSL LIMS Project ID: (If applicable, EMSL will provide) 372025529562/372025526577

US State where samples collected: MO

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

Samples for Compliance? ☐ Yes ☑ No

If Yes, for NPDES? ☐ Yes ☐ No

Other (Specify)

PWS ID:

State Reporting Required? ☐ Yes ☑ No

Samples Collected by (Check One): ☐ EMSL ☑ CLIENT

Samples Received Chilled? ☑ Yes ☐ No

Sample(s) Temperature Upon Receipt (LAB ONLY) 22.1°C

Sampled By Name: Justin Arnold

Sampled By Signature:

No. of Samples in Shipment: 50

Turn-Around-Time (TAT) Standard Turn-Around-Time: ☑ 2 Weeks

The following TAT's are subject to Lab approval. Call lab to confirm TAT before submittal: ☐ 1 Week ☐ 4 Days ☐ 3 Days ☐ 2 Days ☐ 1 Day

Client Sample ID	Comp	Grab	Date / Time Collected	Matrix (W=Water S=Soil A=Air SL=Sludge O=Other)	Preservative (1 HCL 2 HNO3 3 H2SO4 4 ICE 5 Other — Describe below in Special Instructions)	Test 1: PCBs EPA method 8082A	Test 2: RCRA 8 Method 6010D/7471B	Test 3: Hex Chrom OSHA ID-215	Test 4:	Field PH	Field PH Test Time	Field Temp. Deg.C	Field Temp. Test Time	Comments
925307-01	☐	☑	10-28-25 1050	Wipe		☑	☑	☑	☐					
925307-02	☐	☑	10-28-25 1100	Wipe		☑	☑	☑	☐					
925307-03	☐	☑	10-28-25 1109	Wipe		☑	☑	☑	☐					
925307-04	☐	☑	10-28-25 1123	Wipe		☑	☑	☑	☐					

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

Reporting Requirements: ☑ Results Only ☐ Results and QC ☐ Reduced Deliverables ☐ Hzresults EDD ☐ Excel ☐ Other (Describe Above)

Method of Shipment: FedEx

Sample Condition Upon Receipt:

Relinquished by: Date/Time: 10/30/25 11:00

Received by: Date/Time 10/31/25 1200

Relinquished by: Date/Time:

Received by: Date/Time

Controlled Document - GOC-80 Chemistry Sampling Event R2 02/26/2021

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

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

EMSL ANALYTICAL, INC.

Environmental Chemistry - Sampling Event
Chain of Custody

EMSL Order Number / Lab Use Only: AD40778

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

PHONE (800) 220-3675
EMAIL EnvChemistry2@EMSL.com

Additional Pages of the Chain of Custody are only necessary if needed for additional sample information

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

Client Sample ID	Comp	Grab	Date / Time Collected	Matrix W=Water S=Soil A=Air SL=Sludge O=Other	Preservative 1 HCL 2 HNO3 3 H2SO4 4 ICE 5 Other *Describe in Special Instructions*	List Test(s) Needed (*Write in test below, then check on sample line:*) Test 1: PCBs EPA method 8082A	Test 2: RCRA 8 Method 6010D/7471B	Test 3: Hex Chrom OSHA ID-215	Test 4:	Field PH	Field PH Test Time	Field Temp. Deg.C	Field Temp. Test Time	Comments
925307-05	☐	☑	10-25-25 1124	Wipe		☑	☑	☑	☐					
925307-06	☐	☑	10-25-25 1135	Wipe		☑	☑	☑	☐					
925307-07	☐	☑	10-25-25 1152	Wipe		☑	☑	☑	☐					
925307-08	☐	☑	10-25-25 1158	Wipe		☑	☑	☑	☐					
925307-09	☐	☑	10-25-25 1208	Wipe		☑	☑	☑	☐					
925307-10	☐	☑	10-25-25 1217	Wipe		☑	☑	☑	☐					
925307-11	☐	☑	10-25-25 1230	Wipe		☑	☑	☑	☐					
925307-12	☐	☑	10-25-25 1238	Wipe		☑	☑	☑	☐					

Method of Shipment: FedEx		Sample Condition Upon Receipt:	
Relinquished by:	Date/Time: 10/30/25 11:00	Received by:	Date/Time 10/31/25 1200
Relinquished by:	Date/Time:	Received by:	Date/Time

Controlled Document - COC-80 Chemistry Sampling Event R2 02/26/2021

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

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EMSL ANALYTICAL, INC.

Environmental Chemistry - Sampling Event
Chain of Custody

EMSL Order Number / Lab Use Only: AD40778

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200 Route 130 North
Cinnaminson, NJ 08077
PHONE (800) 220-3675
EMAIL EnvChemistry2@EMSL.com

Additional Pages of the Chain of Custody are only necessary if needed for additional sample information

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

Client Sample ID	Comp	Grab	Date / Time Collected	Matrix W=Water S=Soil A=Air SL=Sludge O=Other	Preservative 1 HCL 2 HNO3 3 H2SO4 4 ICE 5 Other *Describe in Special Instructions*	List Test(s) Needed (*Write in test below, then check on sample line:*) Test 1: PCBs EPA method 8082A	Test 2: RCRA 8 Method 6010D/7471B	Test 3: Hex Chrom OSHA ID-215	Test 4:	Field PH	Field PH Test Time	Field Temp. Deg.C	Field Temp. Test Time	Comments
925307-13	☐	☑	10-28-25 1400	Wipe		☑	☑	☑	☐					
925307-14	☐	☑	10-28-25 1404	Wipe		☑	☑	☑	☐					
925307-15	☐	☑	10-28-25 1415	Wipe		☑	☑	☑	☐					
925307-16	☐	☑	10-28-25 1421	Wipe		☑	☑	☑	☐					
925307-17	☐	☑	10-28-25 1429	Wipe		☑	☑	☑	☐					
925307-18	☐	☑	10-28-25 1434	Wipe		☑	☑	☑	☐					
925307-19	☐	☑	10-28-25 1445	Wipe		☑	☑	☑	☐					
925307-20	☐	☑	10-28-25 1450	Wipe		☑	☑	☑	☐					

Method of Shipment: FedEx		Sample Condition Upon Receipt:	
Relinquished by:	Date/Time: 10/30/25	Received by:	Date/Time 10/31/25 1200
Relinquished by:	Date/Time:	Received by:	Date/Time

Controlled Document - COC-80 Chemistry Sampling Event R2 02/26/2021

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Environmental Chemistry - Sampling Event
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Special Instructions and/or Regulatory Requirements (Sample Specifications, Processing Methods, Limits of Detection, etc.)

Client Sample ID	Comp	Grab	Date / Time Collected	Matrix (W=Water S=Soil A=Air SL=Sludge O=Other)	Preservative (1 HCL 2 HNO3 3 H2SO4 4 ICE 5 Other — Describe in Special Instructions)	List Test(s) Needed (*Write in test below, then check on sample line:*) Test 1: PCBs EPA method 8082A	Test 2: RCRA 8 Method 6010D/7471B	Test 3: Hex Chrom OSHA ID-215	Test 4:	Field PH	Field PH Test Time	Field Temp. Deg.C	Field Temp. Test Time	Comments
925307-21	☐	☑	10-24-25 0718	Wipe		☑	☑	☑	☐					
925307-22	☐	☑	10- -25 0727	Wipe		☑	☑	☑	☐					
925307-23	☐	☑	10- -25 0740	Wipe		☑	☑	☑	☐					
925307-24	☐	☑	10- -25 0750	Wipe		☑	☑	☑	☐					
925307-25	☐	☑	10- -25 0757	Wipe		☑	☑	☑	☐					
925307-26	☐	☑	10- -25 0812	Wipe		☑	☑	☑	☐					
925307-27	☐	☑	10- -25 0820	Wipe		☑	☑	☑	☐					
925307-28	☐	☑	10- -25 0830	Wipe		☑	☑	☑	☐					

Method of Shipment: FedEx		Sample Condition Upon Receipt:	
Relinquished by:	Date/Time: 10/30/25	Received by:	Date/Time 10/31/25 1200
Relinquished by:	Date/Time:	Received by:	Date/Time

Controlled Document - COC-80 Chemistry Sampling Event R2 02/26/2021

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EMSL ANALYTICAL, INC.

Environmental Chemistry - Sampling Event
Chain of Custody

EMSL Order Number / Lab Use Only
AD40778

EMSL Analytical, Inc.
200 Route 130 North
Cinnaminson, NJ 08077
PHONE (800) 220-3675
EMAIL EnvChemistry2@EMSL.com

Additional Pages of the Chain of Custody are only necessary if needed for additional sample information

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

Client Sample ID	Comp	Grab	Date / Time Collected	Matrix W=Water S=Soil A=Air SL=Sludge O=Other	Preservative 1 HCL 2 HNO3 3 H2SO4 4 ICE 5 Other *Describe in Special Instructions*	List Test(s) Needed (*Write in test below, then check on sample line:*) Test 1: PCBs EPA method 8082A	Test 2: RCRA 8 Method 6010D/7471B	Test 3: Hex Chrom OSHA ID-215	Test 4:	Field PH	Field PH Test Time	Field Temp. Deg.C	Field Temp. Test Time	Comments
925307-29	☐	☑	10-29-25 0838	Wipe		☑	☑	☑	☐					
925307-30	☐	☑	10- -25 0843	Wipe		☑	☑	☑	☐					
925307-31	☐	☑	10- -25 0849	Wipe		☑	☑	☑	☐					
925307-32	☐	☑	10- -25 0854	Wipe		☑	☑	☑	☐					
925307-33	☐	☑	10- -25 0903	Wipe		☑	☑	☑	☐					
925307-34	☐	☑	10- -25 0909	Wipe		☑	☑	☑	☐					
925307-35	☐	☑	10- -25 0919	Wipe		☑	☑	☑	☐					
925307-36	☐	☑	10- -25 0928	Wipe		☑	☑	☑	☐					

Method of Shipment: FedEx		Sample Condition Upon Receipt:	
Relinquished by:	Date/Time: 10/30/25 11:00	Received by:	Date/Time 10/31/25 1200
Relinquished by:	Date/Time:	Received by:	Date/Time

Controlled Document - COC-80 Chemistry Sampling Event R2 02/26/2021

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Client Sample ID	Comp	Grab	Date / Time Collected	Matrix W=Water S=Soil A=Air SL=Sludge O=Other	Preservative 1 HCL 2 HNO3 3 H2SO4 4 ICE 5 Other *Describe in Special Instructions*	List Test(s) Needed (*Write in test below, then check on sample line:*) Test 1: PCBs EPA method 8082A	Test 2: RCRA 8 Method 6010D/7471B	Test 3: Hex Chrom OSHA ID-215	Test 4:	Field PH	Field PH Test Time	Field Temp. Deg.C	Field Temp. Test Time	Comments
925307-37	☐	☑	10-24-25 0934	Wipe		☑	☑	☑	☐					
925307-38	☐	☑	10- -25 0940	Wipe		☑	☑	☑	☐					
925307-39	☐	☑	10- -25 0948	Wipe		☑	☑	☑	☐					
925307-40	☐	☑	10- -25 0955	Wipe		☑	☑	☑	☐					
925307-41	☐	☑	10- -25 1002	Wipe		☑	☑	☑	☐					
925307-42	☐	☑	10- -25 1012	Wipe		☑	☑	☑	☐					
925307-43	☐	☑	10- -25 1018	Wipe		☑	☑	☑	☐					
925307-44	☐	☑	10-V-25 1024	Wipe		☑	☑	☑	☐					

Method of Shipment: FedEx		Sample Condition Upon Receipt:	
Relinquished by:	Date/Time: 10/30/25 11:00	Received by:	Date/Time 10/31/25 1200
Relinquished by:	Date/Time:	Received by:	Date/Time

Controlled Document - COC-80 Chemistry Sampling Event R2 02/26/2021

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Environmental Chemistry - Sampling Event
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EMSL Order Number / Lab Use Only: AD40778

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

Client Sample ID	Comp	Grab	Date / Time Collected	Matrix (W=Water S=Soil A=Air SL=Sludge O=Other)	Preservative (1 HCL 2 HNO3 3 H2SO4 4 ICE 5 Other — Describe in Special Instructions)	List Test(s) Needed (*Write in test below, then check on sample line:*) Test 1: PCBs EPA method 8082A	Test 2: RCRA 8 Method 6010D/7471B	Test 3: Hex Chrom OSHA ID-215	Test 4:	Field PH	Field PH Test Time	Field Temp. Deg.C	Field Temp. Test Time	Comments
925307-45	☐	☑	10-29-25 1031	Wipe		☐	☑	☑	☐					
925307-46	☐	☑	10- -25 1038	Wipe		☑	☑	☑	☐					
925307-47	☐	☑	10- -25 1045	Wipe		☑	☑	☑	☐					
925307-48	☐	☑	10- -25 1055	Wipe		☑	☑	☑	☐					
925307-49	☐	☑	10- -25 1130	Wipe		☑	☑	☑	☐					
925307-50	☐	☑	10- -25 1135	Wipe		☑	☑	☑	☐					
	☐	☐				☐	☐	☐	☐					
	☐	☐				☐	☐	☐	☐					

Method of Shipment: FedEx		Sample Condition Upon Receipt:	
Relinquished by:	Date/Time: 10/30/25 11:00	Received by:	Date/Time 10/31/25 1200
Relinquished by:	Date/Time:	Received by:	Date/Time

Controlled Document - COC-80 Chemistry Sampling Event R2 02/26/2021

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AD40778 EMSL Order Number / Lab Use Only

EMSL Analytical, Inc.
200 Route 130 North
Cinnaminson, NJ 08077
PHONE (800) 220-3675
EMAIL EnvChemistry2@EMSL.com

Customer Information		Billing Information	
Customer ID:	OCCU21	Billing ID:	
Company Name:	OCCU-TEC Inc.	Company Name:	
Contact Name:	Justin Arnold	Billing Contact:	
Street Address:	2604 NE Industrial Drive, Suite 230	Street Address:	
City, State, Zip:	North Kansas City	Country: USA	City, State, Zip: / Country:
Phone:	816.810.3276	Phone:	
Email(s) for Report:	jarnold@occutec.com, kheriford@occutec.com	Email(s) for Invoice:	

Project Name/No: 925307 | Purchase Order: 925307

EMSL LIMS Project ID: (If applicable, EMSL will provide) 372025529562 | US State where samples collected: MO | State of Connecticut (CT) must select project location: ☐ Commercial (Taxable) ☐ Residential (Non-Taxable)

Samples for Compliance? ☐ Yes ☑ No | If Yes, for NPDES? ☐ Yes ☐ No | Other (Specify) | PWS ID: | State Reporting Required? ☐ Yes ☒ No

Samples Collected by (Check One): ☐ EMSL ☑ CLIENT | Samples Received Chilled? ☑ Yes ☐ No | **Sample(s) Temperature Upon Receipt (LAB ONLY)**

Sampled By Name: Justin Arnold | Sampled By Signature: | No. of Samples in Shipment: 12

Turn-Around-Time (TAT) Standard Turn-Around-Time: ☑ 2 Weeks | The following TAT's are subject to Lab approval. Call lab to confirm TAT before submittal: ☐ 1 Week ☐ 4 Days ☐ 3 Days ☐ 2 Days ☐ 1 Day

Client Sample ID	Comp	Grab	Date / Time Collected	Matrix (W=Water, S=Soil, A=Air, SL=Sludge, O=Other)	Preservative (1 HCL, 2 HNO3, 3 H2SO4, 4 ICE, 5 Other – Describe below in Special Instructions)	Test 1: PCBs EPA method 8082A	Test 2:	Test 3:	Test 4:	Field PH	Field PH Test Time	Field Temp. Deg.C	Field Temp. Test Time	Comments
925307-17-01	☐	☑	10-29-25	Other		☑	☐	☐	☐					
925307-17-02	☐	☑	10-29-25	Other		☑	☐	☐	☐					
925307-36-01	☐	☑	10-28-25	Other		☑	☐	☐	☐					
925307-36-02	☐	☑	10-28-25	Other		☑	☐	☐	☐					

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

Reporting Requirements: ☑ Results Only ☐ Results and QC ☐ Reduced Deliverables ☐ Hzresults EDD ☐ Excel ☐ Other (Describe Above)

Method of Shipment: Fed Ex | Sample Condition Upon Receipt:

Relinquished by: | Date/Time: 10/30/25 11:00 | Received by: | Date/Time 10/31/25 1200

Relinquished by: | Date/Time: | Received by: | Date/Time

Controlled Document - COC-80 Chemistry Sampling Event R2 02/26/2021

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PHONE (800) 220-3675
EMAIL EnvChemistry2@EMSL.com

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

Client Sample ID	Comp	Grab	Date / Time Collected	Matrix W=Water S=Soil A=Air SL=Sludge O=Other	Preservative 1 HCL 2 HNO3 3 H2SO4 4 ICE 5 Other *Describe in Special Instructions*	List Test(s) Needed (*Write in test below, then check on sample line:*) Test 1: PCBs EPA method 8082A	Test 2:	Test 3:	Test 4:	Field PH	Field PH Test Time	Field Temp. Deg.C	Field Temp. Test Time	Comments
925307-37-01	☐	☑	10-28-25	Other		☑	☐	☐	☐					
925307-37-02	☐	☑	10-28-25	Other		☑	☐	☐	☐					
925307-38-01	☐	☑	10-28-25	Other		☑	☐	☐	☐					
925307-38-02	☐	☑	10-28-25	Other		☑	☐	☐	☐					
925307-39-01	☐	☑	10-28-25	Other		☑	☐	☐	☐					
925307-39-02	☐	☑	10-28-25	Other		☑	☐	☐	☐					
925307-40-01	☐	☑	10-28-25	Other		☑	☐	☐	☐					
925307-40-02	☐	☑	10-28-25	Other		☑	☐	☐	☐					

Method of Shipment: FedEx		Sample Condition Upon Receipt:	
Relinquished by:	Date/Time: 10/30/25	Received by:	Date/Time 10/31/25 1200
Relinquished by:	Date/Time:	Received by:	Date/Time

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LA Testing
5431 Industrial Drive, Huntington Beach, CA 92649
Phone: (714) 828-4999 Fax: (714) 828-4944 Email: hblab@latesting.com

Attn: **Justin Arnold**
Occu-Tec, Inc.
2604 NE Industrial Drive
Suite 230
North Kansas City, MO 64117
Phone: (816) 231-5580
Fax: (816) 231-5641

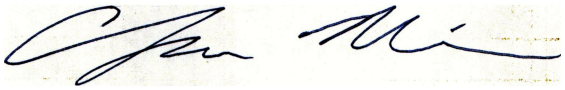
11/11/2025

The following analytical report covers the analysis performed on samples submitted to LA Testing on 11/5/2025. The results are tabulated on the attached data pages for the following client designated project:

925307 / 372025529562/372025526577

The reference number for these samples is EMSL Order #332527493. Please use this reference when calling about these samples. If you have any questions, please do not hesitate to contact me at (714) 828-4999.

Approved By:



Christopher Miranda, Laboratory Manager

AIHA LAP, LLC-IHLAP Accredited #101650

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

LA Testing
5431 Industrial Drive, Huntington Beach, CA 92649
Phone/Fax: (714) 828-4999 / (714) 828-4944
http://www.LATesting.com hblab@latesting.com

LA Testing Order: 332527493
CustomerID: OCCU21
CustomerPO: 925307
ProjectID:

Attn: **Justin Arnold**
Occu-Tec, Inc.
2604 NE Industrial Drive
Suite 230
North Kansas City, MO 64117

Phone: (816) 231-5580
Fax: (816) 231-5641
Received: 11/5/2025 10:15 AM
Collected: 10/29/2025

Project: **925307 / 372025529562/372025526577**

Analytical Results

Client Sample Description 925307-01 ***Collected:*** 10/28/2025 ***Lab ID:*** *332527493-0001*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*		*Analysis Date & Analyst*	
WET								
ID-215	Hexavalent Chromium	0.056	0.050	µg/100 cm²	11/6/2025	JK	11/8/2025	JK

Client Sample Description 925307-02 ***Collected:*** 10/28/2025 ***Lab ID:*** *332527493-0002*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*		*Analysis Date & Analyst*	
WET								
ID-215	Hexavalent Chromium	<0.050	0.050	µg/100 cm²	11/6/2025	JK	11/8/2025	JK

Client Sample Description 925307-03 ***Collected:*** 10/28/2025 ***Lab ID:*** *332527493-0003*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*		*Analysis Date & Analyst*	
WET								
ID-215	Hexavalent Chromium	<0.050	0.050	µg/100 cm²	11/6/2025	JK	11/8/2025	JK

Client Sample Description 925307-04 ***Collected:*** 10/28/2025 ***Lab ID:*** *332527493-0004*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*		*Analysis Date & Analyst*	
WET								
ID-215	Hexavalent Chromium	<0.050	0.050	µg/100 cm²	11/6/2025	JK	11/8/2025	JK

Client Sample Description 925307-05 ***Collected:*** 10/28/2025 ***Lab ID:*** *332527493-0005*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*		*Analysis Date & Analyst*	
WET								
ID-215	Hexavalent Chromium	<0.050	0.050	µg/100 cm²	11/6/2025	JK	11/8/2025	JK

Client Sample Description 925307-06 ***Collected:*** 10/28/2025 ***Lab ID:*** *332527493-0006*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*		*Analysis Date & Analyst*	
WET								

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Phone/Fax: (714) 828-4999 / (714) 828-4944
http://www.LATesting.com hblab@latesting.com

LA Testing Order: 332527493
CustomerID: OCCU21
CustomerPO: 925307
ProjectID:

Attn: **Justin Arnold**
Occu-Tec, Inc.
2604 NE Industrial Drive
Suite 230
North Kansas City, MO 64117

Phone: (816) 231-5580
Fax: (816) 231-5641
Received: 11/5/2025 10:15 AM
Collected: 10/29/2025

Project: **925307 / 372025529562/372025526577**

Analytical Results

Client Sample Description 925307-06 ***Collected:*** 10/28/2025 ***Lab ID:*** *332527493-0006*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*	*Analysis Date & Analyst*
WET						
ID-215	Hexavalent Chromium	<0.050	0.050	µg/100 cm²	11/6/2025 JK	11/8/2025 JK

Client Sample Description 925307-07 ***Collected:*** 10/28/2025 ***Lab ID:*** *332527493-0007*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*	*Analysis Date & Analyst*
WET						
ID-215	Hexavalent Chromium	<0.050	0.050	µg/100 cm²	11/6/2025 JK	11/8/2025 JK

Client Sample Description 925307-08 ***Collected:*** 10/28/2025 ***Lab ID:*** *332527493-0008*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*	*Analysis Date & Analyst*
WET						
ID-215	Hexavalent Chromium	<0.050	0.050	µg/100 cm²	11/6/2025 JK	11/8/2025 JK

Client Sample Description 925307-09 ***Collected:*** 10/28/2025 ***Lab ID:*** *332527493-0009*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*	*Analysis Date & Analyst*
WET						
ID-215	Hexavalent Chromium	<0.050	0.050	µg/100 cm²	11/6/2025 JK	11/8/2025 JK

Client Sample Description 925307-10 ***Collected:*** 10/28/2025 ***Lab ID:*** *332527493-0010*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*	*Analysis Date & Analyst*
WET						
ID-215	Hexavalent Chromium	<0.050	0.050	µg/100 cm²	11/6/2025 JK	11/8/2025 JK

Client Sample Description 925307-11 ***Collected:*** 10/28/2025 ***Lab ID:*** *332527493-0011*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*	*Analysis Date & Analyst*
WET						

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Phone/Fax: (714) 828-4999 / (714) 828-4944
http://www.LATesting.com hblab@latesting.com

LA Testing Order: 332527493
CustomerID: OCCU21
CustomerPO: 925307
ProjectID:

Attn: **Justin Arnold**
Occu-Tec, Inc.
2604 NE Industrial Drive
Suite 230
North Kansas City, MO 64117

Phone: (816) 231-5580
Fax: (816) 231-5641
Received: 11/5/2025 10:15 AM
Collected: 10/29/2025

Project: **925307 / 372025529562/372025526577**

Analytical Results

Client Sample Description 925307-11 ***Collected:*** 10/28/2025 ***Lab ID:*** *332527493-0011*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*		*Analysis Date & Analyst*	
WET								
ID-215	Hexavalent Chromium	<0.050	0.050	µg/100 cm²	11/6/2025	JK	11/8/2025	JK

Client Sample Description 925307-12 ***Collected:*** 10/28/2025 ***Lab ID:*** *332527493-0012*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*		*Analysis Date & Analyst*	
WET								
ID-215	Hexavalent Chromium	0.75	0.050	µg/100 cm²	11/6/2025	JK	11/8/2025	JK

Client Sample Description 925307-13 ***Collected:*** 10/28/2025 ***Lab ID:*** *332527493-0013*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*		*Analysis Date & Analyst*	
WET								
ID-215	Hexavalent Chromium	0.14	0.050	µg/100 cm²	11/6/2025	JK	11/8/2025	JK

Client Sample Description 925307-14 ***Collected:*** 10/28/2025 ***Lab ID:*** *332527493-0014*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*		*Analysis Date & Analyst*	
WET								
ID-215	Hexavalent Chromium	0.097	0.050	µg/100 cm²	11/6/2025	JK	11/8/2025	JK

Client Sample Description 925307-15 ***Collected:*** 10/28/2025 ***Lab ID:*** *332527493-0015*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*		*Analysis Date & Analyst*	
WET								
ID-215	Hexavalent Chromium	0.11	0.050	µg/100 cm²	11/6/2025	JK	11/8/2025	JK

Client Sample Description 925307-16 ***Collected:*** 10/28/2025 ***Lab ID:*** *332527493-0016*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*		*Analysis Date & Analyst*	
WET								

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5431 Industrial Drive, Huntington Beach, CA 92649
Phone/Fax: (714) 828-4999 / (714) 828-4944
http://www.LATesting.com hblab@latesting.com

LA Testing Order: 332527493
CustomerID: OCCU21
CustomerPO: 925307
ProjectID:

Attn: **Justin Arnold**
Occu-Tec, Inc.
2604 NE Industrial Drive
Suite 230
North Kansas City, MO 64117

Phone: (816) 231-5580
Fax: (816) 231-5641
Received: 11/5/2025 10:15 AM
Collected: 10/29/2025

Project: **925307 / 372025529562/372025526577**

Analytical Results

Client Sample Description 925307-16 ***Collected:*** 10/28/2025 ***Lab ID:*** *332527493-0016*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*		*Analysis Date & Analyst*	
WET								
ID-215	Hexavalent Chromium	0.052	0.050	µg/100 cm²	11/6/2025	JK	11/8/2025	JK

Client Sample Description 925307-17 ***Collected:*** 10/28/2025 ***Lab ID:*** *332527493-0017*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*		*Analysis Date & Analyst*	
WET								
ID-215	Hexavalent Chromium	0.12	0.050	µg/100 cm²	11/6/2025	JK	11/8/2025	JK

Client Sample Description 925307-18 ***Collected:*** 10/28/2025 ***Lab ID:*** *332527493-0018*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*		*Analysis Date & Analyst*	
WET								
ID-215	Hexavalent Chromium	0.15	0.050	µg/100 cm²	11/6/2025	JK	11/8/2025	JK

Client Sample Description 925307-19 ***Collected:*** 10/28/2025 ***Lab ID:*** *332527493-0019*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*		*Analysis Date & Analyst*	
WET								
ID-215	Hexavalent Chromium	0.097	0.050	µg/100 cm²	11/6/2025	JK	11/8/2025	JK

Client Sample Description 925307-20 ***Collected:*** 10/28/2025 ***Lab ID:*** *332527493-0020*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*		*Analysis Date & Analyst*	
WET								
ID-215	Hexavalent Chromium	0.10	0.050	µg/100 cm²	11/6/2025	JK	11/8/2025	JK

Client Sample Description 925307-21 ***Collected:*** 10/29/2025 ***Lab ID:*** *332527493-0021*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*		*Analysis Date & Analyst*	
WET								

LA Testing
5431 Industrial Drive, Huntington Beach, CA 92649
Phone/Fax: (714) 828-4999 / (714) 828-4944
http://www.LATesting.com hblab@latesting.com

LA Testing Order: 332527493
CustomerID: OCCU21
CustomerPO: 925307
ProjectID:

Attn: **Justin Arnold**
Occu-Tec, Inc.
2604 NE Industrial Drive
Suite 230
North Kansas City, MO 64117

Phone: (816) 231-5580
Fax: (816) 231-5641
Received: 11/5/2025 10:15 AM
Collected: 10/29/2025

Project: **925307 / 372025529562/372025526577**

Analytical Results

Client Sample Description 925307-21 ***Collected:*** 10/29/2025 ***Lab ID:*** *332527493-0021*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*	*Analysis Date & Analyst*
WET						
ID-215	Hexavalent Chromium	0.069	0.050	µg/100 cm²	11/6/2025 JK	11/8/2025 JK

Client Sample Description 925307-22 ***Collected:*** 10/29/2025 ***Lab ID:*** *332527493-0022*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*	*Analysis Date & Analyst*
WET						
ID-215	Hexavalent Chromium	<0.050	0.050	µg/100 cm²	11/6/2025 JK	11/8/2025 JK

Client Sample Description 925307-23 ***Collected:*** 10/29/2025 ***Lab ID:*** *332527493-0023*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*	*Analysis Date & Analyst*
WET						
ID-215	Hexavalent Chromium	<0.050	0.050	µg/100 cm²	11/6/2025 JK	11/8/2025 JK

Client Sample Description 925307-24 ***Collected:*** 10/29/2025 ***Lab ID:*** *332527493-0024*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*	*Analysis Date & Analyst*
WET						
ID-215	Hexavalent Chromium	<0.050	0.050	µg/100 cm²	11/6/2025 JK	11/8/2025 JK

Client Sample Description 925307-25 ***Collected:*** 10/29/2025 ***Lab ID:*** *332527493-0025*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*	*Analysis Date & Analyst*
WET						
ID-215	Hexavalent Chromium	<0.050	0.050	µg/100 cm²	11/6/2025 JK	11/8/2025 JK

Client Sample Description 925307-26 ***Collected:*** 10/29/2025 ***Lab ID:*** *332527493-0026*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*	*Analysis Date & Analyst*
WET						

LA Testing
5431 Industrial Drive, Huntington Beach, CA 92649
Phone/Fax: (714) 828-4999 / (714) 828-4944
http://www.LATesting.com hblab@latesting.com

LA Testing Order: 332527493
CustomerID: OCCU21
CustomerPO: 925307
ProjectID:

Attn: **Justin Arnold**
Occu-Tec, Inc.
2604 NE Industrial Drive
Suite 230
North Kansas City, MO 64117

Phone: (816) 231-5580
Fax: (816) 231-5641
Received: 11/5/2025 10:15 AM
Collected: 10/29/2025

Project: **925307 / 372025529562/372025526577**

Analytical Results

Client Sample Description 925307-26 ***Collected:*** 10/29/2025 ***Lab ID:*** *332527493-0026*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*	*Analysis Date & Analyst*
WET						
ID-215	Hexavalent Chromium	<0.050	0.050	µg/100 cm²	11/6/2025 JK	11/8/2025 JK

Client Sample Description 925307-27 ***Collected:*** 10/29/2025 ***Lab ID:*** *332527493-0027*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*	*Analysis Date & Analyst*
WET						
ID-215	Hexavalent Chromium	<0.050	0.050	µg/100 cm²	11/6/2025 JK	11/8/2025 JK

Client Sample Description 925307-28 ***Collected:*** 10/29/2025 ***Lab ID:*** *332527493-0028*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*	*Analysis Date & Analyst*
WET						
ID-215	Hexavalent Chromium	0.097	0.050	µg/100 cm²	11/6/2025 JK	11/8/2025 JK

Client Sample Description 925307-29 ***Collected:*** 10/29/2025 ***Lab ID:*** *332527493-0029*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*	*Analysis Date & Analyst*
WET						
ID-215	Hexavalent Chromium	<0.050	0.050	µg/100 cm²	11/6/2025 JK	11/8/2025 JK

Client Sample Description 925307-30 ***Collected:*** 10/29/2025 ***Lab ID:*** *332527493-0030*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*	*Analysis Date & Analyst*
WET						
ID-215	Hexavalent Chromium	<0.050	0.050	µg/100 cm²	11/6/2025 JK	11/8/2025 JK

Client Sample Description 925307-31 ***Collected:*** 10/29/2025 ***Lab ID:*** *332527493-0031*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*	*Analysis Date & Analyst*
WET						

LA Testing
5431 Industrial Drive, Huntington Beach, CA 92649
Phone/Fax: (714) 828-4999 / (714) 828-4944
http://www.LATesting.com hblab@latesting.com

LA Testing Order: 332527493
CustomerID: OCCU21
CustomerPO: 925307
ProjectID:

Attn: **Justin Arnold**
Occu-Tec, Inc.
2604 NE Industrial Drive
Suite 230
North Kansas City, MO 64117

Phone: (816) 231-5580
Fax: (816) 231-5641
Received: 11/5/2025 10:15 AM
Collected: 10/29/2025

Project: **925307 / 372025529562/372025526577**

Analytical Results

Client Sample Description 925307-31 ***Collected:*** 10/29/2025 ***Lab ID:*** *332527493-0031*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*	*Analysis Date & Analyst*
WET						
ID-215	Hexavalent Chromium	<0.050	0.050	µg/100 cm²	11/6/2025 JK	11/10/2025 JK

Client Sample Description 925307-32 ***Collected:*** 10/29/2025 ***Lab ID:*** *332527493-0032*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*	*Analysis Date & Analyst*
WET						
ID-215	Hexavalent Chromium	0.075	0.050	µg/100 cm²	11/6/2025 JK	11/10/2025 JK

Client Sample Description 925307-33 ***Collected:*** 10/29/2025 ***Lab ID:*** *332527493-0033*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*	*Analysis Date & Analyst*
WET						
ID-215	Hexavalent Chromium	<0.050	0.050	µg/100 cm²	11/6/2025 JK	11/10/2025 JK

Client Sample Description 925307-34 ***Collected:*** 10/29/2025 ***Lab ID:*** *332527493-0034*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*	*Analysis Date & Analyst*
WET						
ID-215	Hexavalent Chromium	0.052	0.050	µg/100 cm²	11/6/2025 JK	11/10/2025 JK

Client Sample Description 925307-35 ***Collected:*** 10/29/2025 ***Lab ID:*** *332527493-0035*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*	*Analysis Date & Analyst*
WET						
ID-215	Hexavalent Chromium	0.056	0.050	µg/100 cm²	11/6/2025 JK	11/10/2025 JK

Client Sample Description 925307-36 ***Collected:*** 10/29/2025 ***Lab ID:*** *332527493-0036*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*	*Analysis Date & Analyst*
WET						

LA Testing
5431 Industrial Drive, Huntington Beach, CA 92649
Phone/Fax: (714) 828-4999 / (714) 828-4944
http://www.LATesting.com hblab@latesting.com

LA Testing Order: 332527493
CustomerID: OCCU21
CustomerPO: 925307
ProjectID:

Attn: **Justin Arnold**
Occu-Tec, Inc.
2604 NE Industrial Drive
Suite 230
North Kansas City, MO 64117

Phone: (816) 231-5580
Fax: (816) 231-5641
Received: 11/5/2025 10:15 AM
Collected: 10/29/2025

Project: **925307 / 372025529562/372025526577**

Analytical Results

Client Sample Description 925307-36 ***Collected:*** 10/29/2025 ***Lab ID:*** *332527493-0036*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*	*Analysis Date & Analyst*
WET						
ID-215	Hexavalent Chromium	<0.050	0.050	µg/100 cm²	11/6/2025 JK	11/10/2025 JK

Client Sample Description 925307-37 ***Collected:*** 10/29/2025 ***Lab ID:*** *332527493-0037*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*	*Analysis Date & Analyst*
WET						
ID-215	Hexavalent Chromium	<0.050	0.050	µg/100 cm²	11/6/2025 JK	11/10/2025 JK

Client Sample Description 925307-38 ***Collected:*** 10/29/2025 ***Lab ID:*** *332527493-0038*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*	*Analysis Date & Analyst*
WET						
ID-215	Hexavalent Chromium	<0.050	0.050	µg/100 cm²	11/6/2025 JK	11/10/2025 JK

Client Sample Description 925307-39 ***Collected:*** 10/29/2025 ***Lab ID:*** *332527493-0039*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*	*Analysis Date & Analyst*
WET						
ID-215	Hexavalent Chromium	<0.050	0.050	µg/100 cm²	11/6/2025 JK	11/10/2025 JK

Client Sample Description 925307-40 ***Collected:*** 10/29/2025 ***Lab ID:*** *332527493-0040*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*	*Analysis Date & Analyst*
WET						
ID-215	Hexavalent Chromium	<0.050	0.050	µg/100 cm²	11/6/2025 JK	11/10/2025 JK

Client Sample Description 925307-41 ***Collected:*** 10/29/2025 ***Lab ID:*** *332527493-0041*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*	*Analysis Date & Analyst*
WET						

LA Testing
5431 Industrial Drive, Huntington Beach, CA 92649
Phone/Fax: (714) 828-4999 / (714) 828-4944
http://www.LATesting.com hblab@latesting.com

LA Testing Order: 332527493
CustomerID: OCCU21
CustomerPO: 925307
ProjectID:

Attn: **Justin Arnold**
Occu-Tec, Inc.
2604 NE Industrial Drive
Suite 230
North Kansas City, MO 64117

Phone: (816) 231-5580
Fax: (816) 231-5641
Received: 11/5/2025 10:15 AM
Collected: 10/29/2025

Project: **925307 / 372025529562/372025526577**

Analytical Results

Client Sample Description 925307-41 ***Collected:*** 10/29/2025 ***Lab ID:*** *332527493-0041*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*	*Analysis Date & Analyst*
WET						
ID-215	Hexavalent Chromium	<0.050	0.050	µg/100 cm²	11/6/2025 JK	11/10/2025 JK

Client Sample Description 925307-42 ***Collected:*** 10/29/2025 ***Lab ID:*** *332527493-0042*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*	*Analysis Date & Analyst*
WET						
ID-215	Hexavalent Chromium	0.084	0.050	µg/100 cm²	11/6/2025 JK	11/10/2025 JK

Client Sample Description 925307-43 ***Collected:*** 10/29/2025 ***Lab ID:*** *332527493-0043*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*	*Analysis Date & Analyst*
WET						
ID-215	Hexavalent Chromium	<0.050	0.050	µg/100 cm²	11/6/2025 JK	11/10/2025 JK

Client Sample Description 925307-44 ***Collected:*** 10/29/2025 ***Lab ID:*** *332527493-0044*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*	*Analysis Date & Analyst*
WET						
ID-215	Hexavalent Chromium	<0.050	0.050	µg/100 cm²	11/6/2025 JK	11/10/2025 JK

Client Sample Description 925307-45 ***Collected:*** 10/29/2025 ***Lab ID:*** *332527493-0045*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*	*Analysis Date & Analyst*
WET						
ID-215	Hexavalent Chromium	<0.050	0.050	µg/100 cm²	11/6/2025 JK	11/10/2025 JK

Client Sample Description 925307-46 ***Collected:*** 10/29/2025 ***Lab ID:*** *332527493-0046*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*	*Analysis Date & Analyst*
WET						

LA Testing
5431 Industrial Drive, Huntington Beach, CA 92649
Phone/Fax: (714) 828-4999 / (714) 828-4944
http://www.LATesting.com hblab@latesting.com

LA Testing Order: 332527493
CustomerID: OCCU21
CustomerPO: 925307
ProjectID:

Attn: **Justin Arnold**
Occu-Tec, Inc.
2604 NE Industrial Drive
Suite 230
North Kansas City, MO 64117

Phone: (816) 231-5580
Fax: (816) 231-5641
Received: 11/5/2025 10:15 AM
Collected: 10/29/2025

Project: **925307 / 372025529562/372025526577**

Analytical Results

Client Sample Description 925307-46 ***Collected:*** 10/29/2025 ***Lab ID:*** *332527493-0046*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*	*Analysis Date & Analyst*
WET						
ID-215	Hexavalent Chromium	<0.050	0.050	µg/100 cm²	11/6/2025 JK	11/10/2025 JK

Client Sample Description 925307-47 ***Collected:*** 10/29/2025 ***Lab ID:*** *332527493-0047*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*	*Analysis Date & Analyst*
WET						
ID-215	Hexavalent Chromium	<0.050	0.050	µg/100 cm²	11/6/2025 JK	11/10/2025 JK

Client Sample Description 925307-48 ***Collected:*** 10/29/2025 ***Lab ID:*** *332527493-0048*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*	*Analysis Date & Analyst*
WET						
ID-215	Hexavalent Chromium	0.057	0.050	µg/100 cm²	11/6/2025 JK	11/10/2025 JK

Client Sample Description 925307-49 ***Collected:*** 10/29/2025 ***Lab ID:*** *332527493-0049*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*	*Analysis Date & Analyst*
WET						
ID-215	Hexavalent Chromium	<0.050	0.050	µg/100 cm²	11/6/2025 JK	11/10/2025 JK

Client Sample Description 925307-50 ***Collected:*** 10/29/2025 ***Lab ID:*** *332527493-0050*

Method	*Parameter*	*Result*	*RL*	*Units*	*Prep Date & Analyst*	*Analysis Date & Analyst*
WET						
ID-215	Hexavalent Chromium	<0.050	0.050	µg/100 cm²	11/6/2025 JK	11/10/2025 JK

AIHA LAP, LLC-IHLAP Accredited #101650

Definitions:

MDL - method detection limit
J - Result was below the reporting limit, but at or above the MDL
ND - indicates that the analyte was not detected at the reporting limit
RL - Reporting Limit (Analytical)
D - Dilution Sample required a dilution which was used to calculate final results

#332527493

EMSL ANALYTICAL, INC.
TESTING LABS · PRODUCTS · TRAINING

Environmental Chemistry - Sampling Event
Chain of Custody

EMSL Order Number / Lab Use Only: AD40778

EMSL Analytical, Inc.
200 Route 130 North
Cinnaminson, NJ 08077
(800) 220-3675
EnvChemistry2@EMSL.com

Customer Information

Customer ID:	OCCU21
Company Name:	OCCU-TEC Inc.
Contact Name:	Justin Arnold
Street Address:	2604 NE Industrial Drive, Suite 230
City, State, Zip:	North Kansas City
Country:	USA
Phone:	816.810.3276
Email(s) for Report:	jarnold@occutec.com, kheriford@occutec.com

Billing Information

Billing ID:	
Company Name:	
Billing Contact:	
Street Address:	
City, State, Zip:	
Country:	
Phone:	
Email(s) for Invoice:	

Project Name/No: 925307

Purchase Order: 925307

EMSL LIMS Project ID: (If applicable, EMSL will provide) 372025529562/372025526577

US State where samples collected: MO

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

Samples for Compliance? ☐ Yes ☑ No — If Yes, for NPDES? ☐ Yes ☐ No

Other (Specify):

PWS ID:

State Reporting Required? ☐ Yes ☑ No

Samples Collected by (Check One): ☐ EMSL ☑ CLIENT

Samples Received Chilled? ☑ Yes ☐ No

Sample(s) Temperature Upon Receipt (LAB ONLY) 22.1°C

Sampled By Name: Justin Arnold

Sampled By Signature: [signature]

No. of Samples in Shipment: 50

Turn-Around-Time (TAT) Standard Turn-Around-Time: ☑ 2 Weeks

The following TAT's are subject to Lab approval. Call lab to confirm TAT before submittal: ☐ 1 Week ☐ 4 Days ☐ 3 Days ☐ 2 Days ☐ 1 Day

Client Sample ID	Comp	Grab	Date / Time Collected	Matrix (W=Water, S=Soil, A=Air, SL=Sludge, O=Other)	Preservative (1 HCL, 2 HNO3, 3 H2SO4, 4 ICE, 5 Other — Describe below in Special Instructions)	Test 1: PCBs EPA method 8082A	Test 2: RCRA 8 Method 6010D/7471B	Test 3: Hex Chrom OSHA ID-215	Test 4:	Field PH	Field PH Test Time	Field Temp. Deg.C	Field Temp. Test Time	Comments
925307-01	☐	☑	10-28-25 1050	Wipe		☑	☑	☑	☐					
925307-02	☐	☑	10-28-25 1100	Wipe		☑	☑	☑	☐					
925307-03	☐	☑	10-28-25 1109	Wipe		☑	☑	☑	☐					
925307-04	☐	☑	10-28-25 1123	Wipe		☑	☑	☑	☐					

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

* PCB+RCRA 8- Kept in Cinnaminson *

Reporting Requirements: ☑ Results Only ☐ Results and QC ☐ Reduced Deliverables ☐ Hzresults EDD ☐ Excel ☐ Other (Describe Above)

Method of Shipment: FedEx

Relinquished by: [signature] Date/Time: 10/30/25 11:05

Relinquished by: Date/Time:

Sample Condition Upon Receipt:

Received by: [signature] Date/Time: 10/31/25 12:00

Received by: Jonathan Santore (FX) Date/Time: 11/5/25 10:15am

Controlled Document - DOC-80 Chemistry Sampling Event R2 02/26/2021

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

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

OrderID: 332527493

#332527493

EMSL ANALYTICAL, INC.

Environmental Chemistry - Sampling Event
Chain of Custody

EMSL Order Number / Lab Use Only: AD40778

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

(800) 220-3675
EnvChemistry2@EMSL.com

Additional Pages of the Chain of Custody are only necessary if needed for additional sample information

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

Client Sample ID	Comp	Grab	Date / Time Collected	Matrix W=Water S=Soil A=Air SL=Sludge O=Other	Preservative 1 HCL 2 HNO3 3 H2SO4 4 ICE 5 Other *Describe in Special Instructions*	List Test(s) Needed (*Write in test below, then check on sample line:*) Test 1: PCBs EPA method 8082A	Test 2: RCRA 8 Method 6010D/7471B	Test 3: Hex Chrom OSHA ID-215	Test 4:	Field PH	Field PH Test Time	Field Temp. Deg.C	Field Temp. Test Time	Comments
925307-05	☐	☑	10-28-25 1124	Wipe		☑	☑	☑	☐					
925307-06	☐	☑	10-28-25 1135	Wipe		☑	☑	☑	☐					
925307-07	☐	☑	10-28-25 1152	Wipe		☑	☑	☑	☐					
925307-08	☐	☑	10-28-25 1158	Wipe		☑	☑	☑	☐					
925307-09	☐	☑	10-28-25 1208	Wipe		☑	☑	☑	☐					
925307-10	☐	☑	10-28-25 1217	Wipe		☑	☑	☑	☐					
925307-11	☐	☑	10-28-25 1230	Wipe		☑	☑	☑	☐					
925307-12	☐	☑	10-28-25 1238	Wipe		☑	☑	☑	☐					

Method of Shipment: FedEx		Sample Condition Upon Receipt:	
Relinquished by:	Date/Time: 10/30/25 11:00	Received by:	Date/Time: 10/31/25 1200
Relinquished by:	Date/Time:	Received by:	Date/Time:

Controlled Document - COC-80 Chemistry Sampling Event R2 02/26/2021

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

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

Page 2 of 7

OrderID: 332527493

#332527493

EMSL ANALYTICAL, INC.

Environmental Chemistry - Sampling Event
Chain of Custody

EMSL Order Number / Lab Use Only: AD40775

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

(800) 220-3675
EnvChemistry2@EMSL.com

Additional Pages of the Chain of Custody are only necessary if needed for additional sample information

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

Client Sample ID	Comp	Grab	Date / Time Collected	Matrix: W=Water S=Soil A=Air SL=Sludge O=Other	Preservative: 1 HCL 2 HNO3 3 H2SO4 4 ICE 5 Other (Describe in Special Instructions)	List Test(s) Needed (Write in test below, then check on sample line:) Test 1: PCBs EPA method 8082A	Test 2: RCRA 8 Method 6010D/7471B	Test 3: Hex Chrom OSHA ID-215	Test 4:	Field PH	Field PH Test Time	Field Temp. Deg.C	Field Temp. Test Time	Comments
925307-13	☐	☑	10-28-25 1400	Wipe		☑	☑	☑	☐					
925307-14	☐	☑	10-28-25 1404	Wipe		☑	☑	☑	☐					
925307-15	☐	☑	10-28-25 1415	Wipe		☑	☑	☑	☐					
925307-16	☐	☑	10-28-25 1421	Wipe		☑	☑	☑	☐					
925307-17	☐	☑	10-28-25 1429	Wipe		☑	☑	☑	☐					
925307-18	☐	☑	10-28-25 1434	Wipe		☑	☑	☑	☐					
925307-19	☐	☑	10-28-25 1445	Wipe		☑	☑	☑	☐					
925307-20	☐	☑	10-28-25 1450	Wipe		☑	☑	☑	☐					

Method of Shipment: FedEx		Sample Condition Upon Receipt:	
Relinquished by:	Date/Time: 10/30/25	Received by:	Date/Time: 10/31/25 1200
Relinquished by:	Date/Time:	Received by:	Date/Time:

Controlled Document - COC-80 Chemistry Sampling Event R2 02/26/2021

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#332527493

EMSL ANALYTICAL, INC.

Environmental Chemistry - Sampling Event
Chain of Custody

EMSL Order Number / Lab Use Only: AD40778

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

(800) 220-3675
EnvChemistry2@EMSL.com

Additional Pages of the Chain of Custody are only necessary if needed for additional sample information

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

Client Sample ID	Comp	Grab	Date / Time Collected	Matrix (W=Water, S=Soil, A=Air, SL=Sludge, O=Other)	Preservative (1 HCL, 2 HNO3, 3 H2SO4, 4 ICE, 5 Other – Describe in Special Instructions)	List Test(s) Needed (Write in test below, then check on sample line:) Test 1: PCBs EPA method 8082A	Test 2: RCRA 8 Method 6010D/7471B	Test 3: Hex Chrom OSHA ID-215	Test 4:	Field PH	Field PH Test Time	Field Temp. Deg.C	Field Temp. Test Time	Comments
925307-21	☐	☑	10-[illegible]25 0748	Wipe		☑	☑	☑	☐					
925307-22	☐	☑	10- -25 0727	Wipe		☑	☑	☑	☐					
925307-23	☐	☑	10- -25 0740	Wipe		☑	☑	☑	☐					
925307-24	☐	☑	10- -25 0730	Wipe		☑	☑	☑	☐					
925307-25	☐	☑	10- -25 0737	Wipe		☑	☑	☑	☐					
925307-26	☐	☑	10- -25 0812	Wipe		☑	☑	☑	☐					
925307-27	☐	☑	10- -25 0820	Wipe		☑	☑	☑	☐					
925307-28	☐	☑	10-✓-25 0830	Wipe		☑	☑	☑	☐					

Method of Shipment: FedEx		Sample Condition Upon Receipt:	
Relinquished by:	Date/Time: 10/30/25	Received by:	Date/Time: 10/31/25 1200
Relinquished by:	Date/Time:	Received by:	Date/Time:

Controlled Document - COC-80 Chemistry Sampling Event R2 02/26/2021

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Client Sample ID	Comp	Grab	Date / Time Collected	Matrix W=Water S=Soil A=Air SL=Sludge O=Other	Preservative 1 HCL 2 HNO3 3 H2SO4 4 ICE 5 Other *Describe in Special Instructions*	List Test(s) Needed (*Write in test below, then check on sample line:*) Test 1: PCBs EPA method 8082A	Test 2: RCRA 8 Method 6010D/7471B	Test 3: Hex Chrom OSHA ID-215	Test 4:	Field PH	Field PH Test Time	Field Temp. Deg.C	Field Temp. Test Time	Comments
925307-29	☐	☑	10-29-25 0838	Wipe		☑	☑	☑	☐					
925307-30	☐	☑	10- -25 0843	Wipe		☑	☑	☑	☐					
925307-31	☐	☑	10- -25 0849	Wipe		☑	☑	☑	☐					
925307-32	☐	☑	10- -25 0854	Wipe		☑	☑	☑	☐					
925307-33	☐	☑	10- -25 0903	Wipe		☑	☑	☑	☐					
925307-34	☐	☑	10- -25 0909	Wipe		☑	☑	☑	☐					
925307-35	☐	☑	10- -25 0919	Wipe		☑	☑	☑	☐					
925307-36	☐	☑	10- -25 0928	Wipe		☑	☑	☑	☐					

Method of Shipment: FedEx		Sample Condition Upon Receipt:	
Relinquished by:	Date/Time: 10/30/25 11:00	Received by:	Date/Time: 10/31/25 1200
Relinquished by:	Date/Time:	Received by:	Date/Time:

Controlled Document - COC-80 Chemistry Sampling Event R2 02/26/2021

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

Client Sample ID	Comp	Grab	Date / Time Collected	Matrix (W=Water, S=Soil, A=Air, SL=Sludge, O=Other)	Preservative (1 HCL, 2 HNO3, 3 H2SO4, 4 ICE, 5 Other - Describe in Special Instructions)	List Test(s) Needed (*Write in test below, then check on sample line:*) Test 1: PCBs EPA method 8082A	Test 2: RCRA 8 Method 6010D/7471B	Test 3: Hex Chrom OSHA ID-215	Test 4:	Field PH	Field PH Test Time	Field Temp. Deg.C	Field Temp. Test Time	Comments
925307-37	☐	☑	10-24-25 0934	Wipe		☑	☑	☑	☐					
925307-38	☐	☑	10- -25 0940	Wipe		☑	☑	☑	☐					
925307-39	☐	☑	10- -25 0948	Wipe		☑	☑	☑	☐					
925307-40	☐	☑	10- -25 0955	Wipe		☑	☑	☑	☐					
925307-41	☐	☑	10- -25 1002	Wipe		☑	☑	☑	☐					
925307-42	☐	☑	10- -25 1012	Wipe		☑	☑	☑	☐					
925307-43	☐	☑	10- -25 1018	Wipe		☑	☑	☑	☐					
925307-44	☐	☑	10-✓-25 1024	Wipe		☑	☑	☑	☐					

Method of Shipment: FedEx		Sample Condition Upon Receipt:	
Relinquished by:	Date/Time: 10/30/25 11:00	Received by:	Date/Time: 10/31/25 1200
Relinquished by:	Date/Time:	Received by:	Date/Time:

Controlled Document - COC-80 Chemistry Sampling Event R2 02/26/2021

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

Client Sample ID	Comp	Grab	Date / Time Collected	Matrix W=Water S=Soil A=Air SL=Sludge O=Other	Preservative 1 HCL 2 HNO3 3 H2SO4 4 ICE 5 Other *Describe in Special Instructions*	List Test(s) Needed (*Write in test below, then check on sample line:*) Test 1: PCBs EPA method 8082A	Test 2: RCRA 8 Method 6010D/7471B	Test 3: Hex Chrom OSHA ID-215	Test 4:	Field PH	Field PH Test Time	Field Temp. Deg.C	Field Temp. Test Time	Comments
925307-45	☐	☑	10-29-25 1031	Wipe		☐	☑	☑	☐					
925307-46	☐	☑	10-29-25 1038	Wipe		☑	☑	☑	☐					
925307-47	☐	☑	10-29-25 1045	Wipe		☑	☑	☑	☐					
925307-48	☐	☑	10-29-25 1055	Wipe		☑	☑	☑	☐					
925307-49	☐	☑	10-29-25 1130	Wipe		☑	☑	☑	☐					
925307-50	☐	☑	10-29-25 1135	Wipe		☑	☑	☑	☐					
	☐	☐				☐	☐	☐	☐					
	☐	☐				☐	☐	☐	☐					

Method of Shipment: FedEx		Sample Condition Upon Receipt:	
Relinquished by:	Date/Time: 10/30/25 11.00	Received by:	Date/Time: 10/31/25 1200
Relinquished by:	Date/Time:	Received by:	Date/Time

Controlled Document - COC-80 Chemistry Sampling Event R2 02/26/2021

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OrderID: 332527493

EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012539952
LIMS Reference ID: AD39952
EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Customer PO:
EMSL Sales Rep: Emily Stressman
Received: 10/28/2025 09:30
Reported: 11/11/2025 17:49

Samples in this Report

Lab ID	Sample	Matrix	Date Sampled	Date Received
AD39952-01	925307-01	Air	10/27/2025	10/28/2025
AD39952-02	925307-02	Air	10/27/2025	10/28/2025
AD39952-03	925307-03	Air	10/27/2025	10/28/2025
AD39952-04	925307-04	Air	10/27/2025	10/28/2025
AD39952-05	925307-05	Air	10/27/2025	10/28/2025
AD39952-06	925307-06	Air	10/27/2025	10/28/2025

Owen McKenna Laboratory Manager or other approved signatory

Test results meet all NELAP requirements unless otherwise specified. NJDEP Certification #: 03036

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

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2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Customer PO:
EMSL Sales Rep: Emily Stressman
Received: 10/28/2025 09:30
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Analysis Case Narrative

Method Reference
USEPA: Compendium TO-15, "Determination of Volatile Organic Compounds (VOCs) in Air..." Collected in Specially-Prepared Canisters and Analyzed by Gas Chromatography/Mass Spectrometry (GC/MS), January 1999, (EPA/625/R-96/010b).

Column
Restek RTX-502.2, 60m x 0.25mm x 1.4um

Concentrator Traps:
Entech Dual Cold Traps: (1) 1/8" No Packing, (2) 1/8" Tenax.

Gas Standards:
Certified Gas standards were used for all analyses.

Sample Volumes:
Sample volume aliquots for this procedure are 250cc for indoor/ambient air and 50cc for soil gas. Other volumes for sample dilutions are reflected on each result page.

Sampling Pressures:
All acceptance criteria were met.

Holding Times:
All holding times were met.

Sample Dilutions:
Ethanol and Isopropanol are not diluted for and may be reported with an "E" qualifier on the final result.

Initial Calibration:
All acceptance criteria were met.

Initial Calibration Verification Standard (ICVS)- Second Source:
All acceptance criteria were met.

Laboratory Control Samples (LCS):
All acceptance criteria were met.

Continuing Calibration Verification Standard (CCVS):
All acceptance criteria were met.

Method Blanks (MB):
All acceptance criteria were met.

Reporting Limit Laboratory Control Samples (MRL):
All acceptance criteria were met.

Duplicates (DUP):
All acceptance criteria were met.

Sample Internal Standards:

EMSL Analytical, Inc.

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Telephone: 856-858-4800 Fax:cs@emsl.com
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LIMS Reference ID: AD39952
EMSL Customer ID: OCCU21

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jarnold@occutec.com

Project Name: 925307
Customer PO:
EMSL Sales Rep: Emily Stressman
Received: 10/28/2025 09:30
Reported: 11/11/2025 17:49

All acceptance criteria were met.

Sample Analytes:
All acceptance criteria were met.

EMSL Analytical, Inc. certifies that this data package is in compliance with the terme and conditions of this contract, both technically and for completeness, for other thatn the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer ---readable data submitted on diskette has been authorized by the laboratory manager or his/her designee, as verified by the following signature



Owen McKenna Laboratory Manager or other approved signatory

EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012539952
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jarnold@occutec.com

Project Name: 925307
Customer PO:
EMSL Sales Rep: Emily Stressman
Received: 10/28/2025 09:30
Reported: 11/11/2025 17:49

EMSL Sample ID: AD39952-01
Customer Sample ID: 925307-01
Collected: 10/27/2025 07:47
Received: 10/28/2025 09:30

Analysis	Prep Batch	Lab File ID	Canister ID	Sample Vol.	Dil. Factor	Analyst Init.
11/11/25 14:54	BDK1157	y4910.D	HD1412	250 cc	1	TP

Target Compound Results Summary

Target Compounds	Cas#	MW	Result ppbv	RL ppbv	DF	Result ug/m3	RL ug/m3	Analyzed	Q
Acetone	67-64-1	58.1	**9.9**	0.20	1	**23**	0.48	11/11/25 14:54	
Acetonitrile	75-05-8	41.0	**0.30**	0.20	1	**0.50**	0.34	11/11/25 14:54	
Acrylonitrile	107-13-1	53.0	ND	0.20	1	ND	0.43	11/11/25 14:54	
Benzene	71-43-2	78.1	ND	0.20	1	ND	0.64	11/11/25 14:54	
Benzyl chloride	100-44-7	126.0	ND	0.20	1	ND	1.0	11/11/25 14:54	
Bromodichloromethane	75-27-4	163.8	ND	0.20	1	ND	1.3	11/11/25 14:54	
Bromoethane(Ethyl bromide)	74-96-4	109.0	ND	0.20	1	ND	0.89	11/11/25 14:54	
Bromoethene(Vinyl bromide)	593-60-2	106.9	ND	0.20	1	ND	0.88	11/11/25 14:54	
Bromoform	75-25-2	252.8	ND	0.20	1	ND	2.1	11/11/25 14:54	
Bromomethane	74-83-9	94.9	ND	0.20	1	ND	0.78	11/11/25 14:54	
1,3-Butadiene	106-99-0	54.1	ND	0.20	1	ND	0.44	11/11/25 14:54	
n-Butane	106-97-8	58.1	**3.4**	0.20	1	**8.2**	0.48	11/11/25 14:54	
2-Butanone(MEK)	78-93-3	72.1	**0.71**	0.20	1	**2.1**	0.59	11/11/25 14:54	
Carbon disulfide	75-15-0	76.1	ND	0.20	1	ND	0.62	11/11/25 14:54	
Carbon tetrachloride	56-23-5	153.8	**0.88**	0.20	1	**5.5**	1.3	11/11/25 14:54	
Chlorobenzene	108-90-7	112.6	ND	0.20	1	ND	0.92	11/11/25 14:54	
Chloroethane	75-00-3	64.5	ND	0.20	1	ND	0.53	11/11/25 14:54	
Chloroform	67-66-3	119.4	**0.69**	0.20	1	**3.4**	0.98	11/11/25 14:54	
Chloromethane	74-87-3	50.5	**0.60**	0.20	1	**1.2**	0.41	11/11/25 14:54	
3-Chloropropene(Allyl chloride)	107-05-1	76.5	ND	0.20	1	ND	0.63	11/11/25 14:54	
2-Chlorotoluene	95-49-8	126.6	ND	0.20	1	ND	1.0	11/11/25 14:54	
Cyclohexane	110-82-7	84.2	ND	0.20	1	ND	0.69	11/11/25 14:54	
Dibromochloromethane	124-48-1	208.3	ND	0.20	1	ND	1.7	11/11/25 14:54	
1,2-Dibromoethane	106-93-4	187.8	ND	0.20	1	ND	1.5	11/11/25 14:54	
1,2-Dichlorobenzene	95-50-1	147.0	ND	0.20	1	ND	1.2	11/11/25 14:54	
1,3-Dichlorobenzene	541-73-1	147.0	ND	0.20	1	ND	1.2	11/11/25 14:54	
1,4-Dichlorobenzene	106-46-7	147.0	ND	0.20	1	ND	1.2	11/11/25 14:54	
1,1-Dichloroethane	75-34-3	99.0	ND	0.20	1	ND	0.81	11/11/25 14:54	
1,2-Dichloroethane	107-06-2	99.0	ND	0.20	1	ND	0.81	11/11/25 14:54	
1,1-Dichloroethene	75-35-4	96.9	ND	0.20	1	ND	0.79	11/11/25 14:54	
cis-1,2-Dichloroethene	156-59-2	96.9	ND	0.20	1	ND	0.79	11/11/25 14:54	
trans-1,2-Dichloroethene	156-60-5	96.9	ND	0.20	1	ND	0.79	11/11/25 14:54	
1,2-Dichloropropane	78-87-5	113.0	ND	0.20	1	ND	0.92	11/11/25 14:54	
cis-1,3-Dichloropropene	10061-01-5	111.0	ND	0.20	1	ND	0.91	11/11/25 14:54	
trans-1,3-Dichloropropene	10061-02-6	111.0	ND	0.20	1	ND	0.91	11/11/25 14:54	
1,4-Dioxane	123-91-1	88.1	ND	0.20	1	ND	0.72	11/11/25 14:54	
Ethanol	64-17-5	46.1	**90**	1.0	1	**170**	1.9	11/11/25 14:54	E
Ethyl acetate	141-78-6	88.1	**2.4**	0.20	1	**8.5**	0.72	11/11/25 14:54	
Ethylbenzene	100-41-4	106.2	**0.28**	0.20	1	**1.2**	0.87	11/11/25 14:54	
4-Ethyltoluene	622-96-8	120.2	ND	0.20	1	ND	0.98	11/11/25 14:54	
Freon 12(Dichlorodifluoromethane)	75-71-8	120.9	**3.2**	0.20	1	**16**	0.99	11/11/25 14:54	
Freon 114(1,2-Dichlorotetrafluoroethane)	76-14-2	170.9	ND	0.20	1	ND	1.4	11/11/25 14:54	

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(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Customer PO:
EMSL Sales Rep: Emily Stressman
Received: 10/28/2025 09:30
Reported: 11/11/2025 17:49

EMSL Sample ID: AD39952-01
Customer Sample ID: 925307-01
Collected: 10/27/2025 07:47
Received: 10/28/2025 09:30

Analysis	Prep Batch	Lab File ID	Canister ID	Sample Vol.	Dil. Factor	Analyst Init.
11/11/25 14:54	BDK1157	y4910.D	HD1412	250 cc	1	TP

Target Compound Results Summary

Target Compounds	Cas#	MW	Result ppbv	RL ppbv	DF	Result ug/m3	RL ug/m3	Analyzed	Q
Freon 11(Trichlorofluoromethane)	75-69-4	137.4	**8.0**	0.20	1	**45**	1.1	11/11/25 14:54	
Freon 113(1,1,2-Trichlorotrifluoroethane)	76-13-1	187.4	ND	0.20	1	ND	1.5	11/11/25 14:54	
n-Heptane	142-82-5	100.2	ND	0.20	1	ND	0.82	11/11/25 14:54	
Hexachloro-1,3-butadiene	87-68-3	260.8	ND	0.20	1	ND	2.1	11/11/25 14:54	
n-Hexane	110-54-3	86.2	**0.28**	0.20	1	**0.99**	0.71	11/11/25 14:54	
2-Hexanone(MBK)	591-78-6	100.2	ND	0.20	1	ND	0.82	11/11/25 14:54	
Isopropyl alcohol(2-Propanol)	67-63-0	60.1	**2.2**	0.20	1	**5.5**	0.49	11/11/25 14:54	
Isopropylbenzene (cumene)	98-82-8	120.2	ND	0.20	1	ND	0.98	11/11/25 14:54	
Methyl-tert-butyl ether(MTBE)	1634-04-4	88.2	ND	0.20	1	ND	0.72	11/11/25 14:54	
Methylene chloride	75-09-2	84.9	**1.6**	0.20	1	**5.7**	0.69	11/11/25 14:54	
Methyl Methacrylate	80-62-6	100.1	ND	0.20	1	ND	0.82	11/11/25 14:54	
4-Methyl-2-pentanone(MIBK)	108-10-1	100.2	**0.22**	0.20	1	**0.90**	0.82	11/11/25 14:54	
Naphthalene	91-20-3	128.0	ND	0.20	1	ND	1.0	11/11/25 14:54	
Propylene	115-07-1	42.1	ND	0.20	1	ND	0.34	11/11/25 14:54	
Styrene	100-42-5	104.1	ND	0.20	1	ND	0.85	11/11/25 14:54	
Tertiary butyl alcohol(TBA)	75-65-0	74.1	ND	0.20	1	ND	0.61	11/11/25 14:54	
1,1,2,2-Tetrachloroethane	79-34-5	167.9	ND	0.20	1	ND	1.4	11/11/25 14:54	
Tetrachloroethene	127-18-4	165.8	**0.26**	0.20	1	**1.8**	1.4	11/11/25 14:54	
Tetrahydrofuran	109-99-9	72.1	ND	0.20	1	ND	0.59	11/11/25 14:54	
Toluene	108-88-3	92.1	**0.42**	0.20	1	**1.6**	0.75	11/11/25 14:54	
1,2,4-Trichlorobenzene	120-82-1	181.5	ND	0.20	1	ND	1.5	11/11/25 14:54	
1,1,1-Trichloroethane	71-55-6	133.4	ND	0.20	1	ND	1.1	11/11/25 14:54	
1,1,2-Trichloroethane	79-00-5	133.4	ND	0.20	1	ND	1.1	11/11/25 14:54	
Trichloroethene	79-01-6	131.4	ND	0.20	1	ND	1.1	11/11/25 14:54	
1,3,5-Trimethylbenzene	108-67-8	120.2	ND	0.20	1	ND	0.98	11/11/25 14:54	
1,2,4-Trimethylbenzene	95-63-6	120.2	**0.31**	0.20	1	**1.5**	0.98	11/11/25 14:54	
2,2,4-Trimethylpentane(Isooctane)	540-84-1	114.2	ND	0.20	1	ND	0.93	11/11/25 14:54	
Vinyl acetate	108-05-4	86.0	ND	0.20	1	ND	0.70	11/11/25 14:54	
Vinyl chloride	75-01-4	62.5	ND	0.20	1	ND	0.51	11/11/25 14:54	
Xylene (Ortho)	95-47-6	106.2	**0.40**	0.20	1	**1.7**	0.87	11/11/25 14:54	
Xylene (p,m)	179601-23-1	106.2	**1.0**	0.40	1	**4.4**	1.7	11/11/25 14:54	
Total Target Compound Concentrations:			**130**			**310**			

Surrogate	Result	Spike	Recovery
4-Bromofluorobenzene	10.8	10.00	108

EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012539952
LIMS Reference ID: AD39952
EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Customer PO:
EMSL Sales Rep: Emily Stressman
Received: 10/28/2025 09:30
Reported: 11/11/2025 17:49

EMSL Sample ID: AD39952-02
Customer Sample ID: 925307-02
Collected: 10/27/2025 07:58
Received: 10/28/2025 09:30

Analysis	Prep Batch	Lab File ID	Canister ID	Sample Vol.	Dil. Factor	Analyst Init.
11/11/25 15:51	BDK1157	y4911.D	HD2139	250 cc	1	TP

Target Compound Results Summary

Target Compounds	Cas#	MW	Result ppbv	RL ppbv	DF	Result ug/m3	RL ug/m3	Analyzed	Q
Acetone	67-64-1	58.1	**9.8**	0.20	1	**23**	0.48	11/11/25 15:51	
Acetonitrile	75-05-8	41.0	ND	0.20	1	ND	0.34	11/11/25 15:51	
Acrylonitrile	107-13-1	53.0	ND	0.20	1	ND	0.43	11/11/25 15:51	
Benzene	71-43-2	78.1	ND	0.20	1	ND	0.64	11/11/25 15:51	
Benzyl chloride	100-44-7	126.0	ND	0.20	1	ND	1.0	11/11/25 15:51	
Bromodichloromethane	75-27-4	163.8	ND	0.20	1	ND	1.3	11/11/25 15:51	
Bromoethane(Ethyl bromide)	74-96-4	109.0	ND	0.20	1	ND	0.89	11/11/25 15:51	
Bromoethene(Vinyl bromide)	593-60-2	106.9	ND	0.20	1	ND	0.88	11/11/25 15:51	
Bromoform	75-25-2	252.8	ND	0.20	1	ND	2.1	11/11/25 15:51	
Bromomethane	74-83-9	94.9	ND	0.20	1	ND	0.78	11/11/25 15:51	
1,3-Butadiene	106-99-0	54.1	ND	0.20	1	ND	0.44	11/11/25 15:51	
n-Butane	106-97-8	58.1	**3.7**	0.20	1	**8.9**	0.48	11/11/25 15:51	
2-Butanone(MEK)	78-93-3	72.1	**0.39**	0.20	1	**1.2**	0.59	11/11/25 15:51	
Carbon disulfide	75-15-0	76.1	ND	0.20	1	ND	0.62	11/11/25 15:51	
Carbon tetrachloride	56-23-5	153.8	ND	0.20	1	ND	1.3	11/11/25 15:51	
Chlorobenzene	108-90-7	112.6	ND	0.20	1	ND	0.92	11/11/25 15:51	
Chloroethane	75-00-3	64.5	ND	0.20	1	ND	0.53	11/11/25 15:51	
Chloroform	67-66-3	119.4	ND	0.20	1	ND	0.98	11/11/25 15:51	
Chloromethane	74-87-3	50.5	**0.50**	0.20	1	**1.0**	0.41	11/11/25 15:51	
3-Chloropropene(Allyl chloride)	107-05-1	76.5	ND	0.20	1	ND	0.63	11/11/25 15:51	
2-Chlorotoluene	95-49-8	126.6	ND	0.20	1	ND	1.0	11/11/25 15:51	
Cyclohexane	110-82-7	84.2	ND	0.20	1	ND	0.69	11/11/25 15:51	
Dibromochloromethane	124-48-1	208.3	ND	0.20	1	ND	1.7	11/11/25 15:51	
1,2-Dibromoethane	106-93-4	187.8	ND	0.20	1	ND	1.5	11/11/25 15:51	
1,2-Dichlorobenzene	95-50-1	147.0	ND	0.20	1	ND	1.2	11/11/25 15:51	
1,3-Dichlorobenzene	541-73-1	147.0	ND	0.20	1	ND	1.2	11/11/25 15:51	
1,4-Dichlorobenzene	106-46-7	147.0	ND	0.20	1	ND	1.2	11/11/25 15:51	
1,1-Dichloroethane	75-34-3	99.0	ND	0.20	1	ND	0.81	11/11/25 15:51	
1,2-Dichloroethane	107-06-2	99.0	ND	0.20	1	ND	0.81	11/11/25 15:51	
1,1-Dichloroethene	75-35-4	96.9	ND	0.20	1	ND	0.79	11/11/25 15:51	
cis-1,2-Dichloroethene	156-59-2	96.9	ND	0.20	1	ND	0.79	11/11/25 15:51	
trans-1,2-Dichloroethene	156-60-5	96.9	ND	0.20	1	ND	0.79	11/11/25 15:51	
1,2-Dichloropropane	78-87-5	113.0	ND	0.20	1	ND	0.92	11/11/25 15:51	
cis-1,3-Dichloropropene	10061-01-5	111.0	ND	0.20	1	ND	0.91	11/11/25 15:51	
trans-1,3-Dichloropropene	10061-02-6	111.0	ND	0.20	1	ND	0.91	11/11/25 15:51	
1,4-Dioxane	123-91-1	88.1	ND	0.20	1	ND	0.72	11/11/25 15:51	
Ethanol	64-17-5	46.1	**56**	1.0	1	**110**	1.9	11/11/25 15:51	E
Ethyl acetate	141-78-6	88.1	**1.7**	0.20	1	**6.1**	0.72	11/11/25 15:51	
Ethylbenzene	100-41-4	106.2	**0.25**	0.20	1	**1.1**	0.87	11/11/25 15:51	
4-Ethyltoluene	622-96-8	120.2	ND	0.20	1	ND	0.98	11/11/25 15:51	
Freon 12(Dichlorodifluoromethane)	75-71-8	120.9	**1.5**	0.20	1	**7.4**	0.99	11/11/25 15:51	
Freon 114(1,2-Dichlorotetrafluoroethane)	76-14-2	170.9	ND	0.20	1	ND	1.4	11/11/25 15:51	

EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012539952
LIMS Reference ID: AD39952
EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Customer PO:
EMSL Sales Rep: Emily Stressman
Received: 10/28/2025 09:30
Reported: 11/11/2025 17:49

EMSL Sample ID: AD39952-02
Customer Sample ID: 925307-02
Collected: 10/27/2025 07:58
Received: 10/28/2025 09:30

Analysis	Prep Batch	Lab File ID	Canister ID	Sample Vol.	Dil. Factor	Analyst Init.
11/11/25 15:51	BDK1157	y4911.D	HD2139	250 cc	1	TP

Target Compound Results Summary

Target Compounds	Cas#	MW	Result ppbv	RL ppbv	DF	Result ug/m3	RL ug/m3	Analyzed	Q
Freon 11(Trichlorofluoromethane)	75-69-4	137.4	**4.9**	0.20	1	**28**	1.1	11/11/25 15:51	
Freon 113(1,1,2-Trichlorotrifluoroethane)	76-13-1	187.4	ND	0.20	1	ND	1.5	11/11/25 15:51	
n-Heptane	142-82-5	100.2	**0.31**	0.20	1	**1.3**	0.82	11/11/25 15:51	
Hexachloro-1,3-butadiene	87-68-3	260.8	ND	0.20	1	ND	2.1	11/11/25 15:51	
n-Hexane	110-54-3	86.2	**0.25**	0.20	1	**0.88**	0.71	11/11/25 15:51	
2-Hexanone(MBK)	591-78-6	100.2	ND	0.20	1	ND	0.82	11/11/25 15:51	
Isopropyl alcohol(2-Propanol)	67-63-0	60.1	**2.6**	0.20	1	**6.3**	0.49	11/11/25 15:51	
Isopropylbenzene (cumene)	98-82-8	120.2	ND	0.20	1	ND	0.98	11/11/25 15:51	
Methyl-tert-butyl ether(MTBE)	1634-04-4	88.2	ND	0.20	1	ND	0.72	11/11/25 15:51	
Methylene chloride	75-09-2	84.9	**0.53**	0.20	1	**1.8**	0.69	11/11/25 15:51	
Methyl Methacrylate	80-62-6	100.1	ND	0.20	1	ND	0.82	11/11/25 15:51	
4-Methyl-2-pentanone(MIBK)	108-10-1	100.2	ND	0.20	1	ND	0.82	11/11/25 15:51	
Naphthalene	91-20-3	128.0	ND	0.20	1	ND	1.0	11/11/25 15:51	
Propylene	115-07-1	42.1	ND	0.20	1	ND	0.34	11/11/25 15:51	
Styrene	100-42-5	104.1	ND	0.20	1	ND	0.85	11/11/25 15:51	
Tertiary butyl alcohol(TBA)	75-65-0	74.1	ND	0.20	1	ND	0.61	11/11/25 15:51	
1,1,2,2-Tetrachloroethane	79-34-5	167.9	ND	0.20	1	ND	1.4	11/11/25 15:51	
Tetrachloroethene	127-18-4	165.8	ND	0.20	1	ND	1.4	11/11/25 15:51	
Tetrahydrofuran	109-99-9	72.1	ND	0.20	1	ND	0.59	11/11/25 15:51	
Toluene	108-88-3	92.1	**0.39**	0.20	1	**1.5**	0.75	11/11/25 15:51	
1,2,4-Trichlorobenzene	120-82-1	181.5	ND	0.20	1	ND	1.5	11/11/25 15:51	
1,1,1-Trichloroethane	71-55-6	133.4	ND	0.20	1	ND	1.1	11/11/25 15:51	
1,1,2-Trichloroethane	79-00-5	133.4	ND	0.20	1	ND	1.1	11/11/25 15:51	
Trichloroethene	79-01-6	131.4	ND	0.20	1	ND	1.1	11/11/25 15:51	
1,3,5-Trimethylbenzene	108-67-8	120.2	ND	0.20	1	ND	0.98	11/11/25 15:51	
1,2,4-Trimethylbenzene	95-63-6	120.2	**0.27**	0.20	1	**1.3**	0.98	11/11/25 15:51	
2,2,4-Trimethylpentane(Isooctane)	540-84-1	114.2	ND	0.20	1	ND	0.93	11/11/25 15:51	
Vinyl acetate	108-05-4	86.0	ND	0.20	1	ND	0.70	11/11/25 15:51	
Vinyl chloride	75-01-4	62.5	ND	0.20	1	ND	0.51	11/11/25 15:51	
Xylene (Ortho)	95-47-6	106.2	**0.43**	0.20	1	**1.9**	0.87	11/11/25 15:51	
Xylene (p,m)	179601-23-1	106.2	**1.1**	0.40	1	**4.6**	1.7	11/11/25 15:51	
Total Target Compound Concentrations:			**85**			**210**			

Surrogate	Result	Spike	Recovery
4-Bromofluorobenzene	10.8	10.00	108

EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012539952
LIMS Reference ID: AD39952
EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Customer PO:
EMSL Sales Rep: Emily Stressman
Received: 10/28/2025 09:30
Reported: 11/11/2025 17:49

EMSL Sample ID: AD39952-03
Customer Sample ID: 925307-03
Collected: 10/27/2025 08:01
Received: 10/28/2025 09:30

Analysis	Prep Batch	Lab File ID	Canister ID	Sample Vol.	Dil. Factor	Analyst Init.
11/11/25 16:03	BDK1254	v9457.D	HD2325	250 cc	1	LA

Target Compound Results Summary

Target Compounds	Cas#	MW	Result ppbv	RL ppbv	DF	Result ug/m3	RL ug/m3	Analyzed	Q
Acetone	67-64-1	58.1	**7.2**	0.20	1	**17**	0.48	11/11/25 16:03	
Acetonitrile	75-05-8	41.0	ND	0.50	1	ND	0.84	11/11/25 16:03	
Acrylonitrile	107-13-1	53.0	ND	0.20	1	ND	0.43	11/11/25 16:03	
Benzene	71-43-2	78.1	**0.21**	0.20	1	**0.67**	0.64	11/11/25 16:03	
Benzyl chloride	100-44-7	126.0	ND	0.20	1	ND	1.0	11/11/25 16:03	
Bromodichloromethane	75-27-4	163.8	ND	0.20	1	ND	1.3	11/11/25 16:03	
Bromoethane(Ethyl bromide)	74-96-4	109.0	ND	0.20	1	ND	0.89	11/11/25 16:03	
Bromoethene(Vinyl bromide)	593-60-2	106.9	ND	0.20	1	ND	0.88	11/11/25 16:03	
Bromoform	75-25-2	252.8	ND	0.20	1	ND	2.1	11/11/25 16:03	
Bromomethane	74-83-9	94.9	ND	0.20	1	ND	0.78	11/11/25 16:03	
1,3-Butadiene	106-99-0	54.1	ND	0.20	1	ND	0.44	11/11/25 16:03	
n-Butane	106-97-8	58.1	**2.8**	0.20	1	**6.6**	0.48	11/11/25 16:03	
2-Butanone(MEK)	78-93-3	72.1	**0.41**	0.20	1	**1.2**	0.59	11/11/25 16:03	
Carbon disulfide	75-15-0	76.1	ND	0.20	1	ND	0.62	11/11/25 16:03	
Carbon tetrachloride	56-23-5	153.8	**0.43**	0.20	1	**2.7**	1.3	11/11/25 16:03	
Chlorobenzene	108-90-7	112.6	ND	0.20	1	ND	0.92	11/11/25 16:03	
Chloroethane	75-00-3	64.5	ND	0.20	1	ND	0.53	11/11/25 16:03	
Chloroform	67-66-3	119.4	**3.6**	0.50	1	**18**	2.4	11/11/25 16:03	
Chloromethane	74-87-3	50.5	**1.0**	0.20	1	**2.1**	0.41	11/11/25 16:03	
3-Chloropropene(Allyl chloride)	107-05-1	76.5	ND	0.20	1	ND	0.63	11/11/25 16:03	
2-Chlorotoluene	95-49-8	126.6	ND	0.20	1	ND	1.0	11/11/25 16:03	
Cyclohexane	110-82-7	84.2	ND	0.20	1	ND	0.69	11/11/25 16:03	
Dibromochloromethane	124-48-1	208.3	ND	0.20	1	ND	1.7	11/11/25 16:03	
1,2-Dibromoethane	106-93-4	187.8	ND	0.20	1	ND	1.5	11/11/25 16:03	
1,2-Dichlorobenzene	95-50-1	147.0	ND	0.20	1	ND	1.2	11/11/25 16:03	
1,3-Dichlorobenzene	541-73-1	147.0	ND	0.20	1	ND	1.2	11/11/25 16:03	
1,4-Dichlorobenzene	106-46-7	147.0	ND	0.20	1	ND	1.2	11/11/25 16:03	
1,1-Dichloroethane	75-34-3	99.0	ND	0.20	1	ND	0.81	11/11/25 16:03	
1,2-Dichloroethane	107-06-2	99.0	ND	0.20	1	ND	0.81	11/11/25 16:03	
1,1-Dichloroethene	75-35-4	96.9	ND	0.20	1	ND	0.79	11/11/25 16:03	
cis-1,2-Dichloroethene	156-59-2	96.9	ND	0.20	1	ND	0.79	11/11/25 16:03	
trans-1,2-Dichloroethene	156-60-5	96.9	ND	0.20	1	ND	0.79	11/11/25 16:03	
1,2-Dichloropropane	78-87-5	113.0	ND	0.20	1	ND	0.92	11/11/25 16:03	
cis-1,3-Dichloropropene	10061-01-5	111.0	ND	0.20	1	ND	0.91	11/11/25 16:03	
trans-1,3-Dichloropropene	10061-02-6	111.0	ND	0.20	1	ND	0.91	11/11/25 16:03	
1,4-Dioxane	123-91-1	88.1	ND	0.20	1	ND	0.72	11/11/25 16:03	
Ethanol	64-17-5	46.1	**20**	1.0	1	**37**	1.9	11/11/25 16:03	
Ethyl acetate	141-78-6	88.1	**2.0**	0.20	1	**7.3**	0.72	11/11/25 16:03	
Ethylbenzene	100-41-4	106.2	ND	0.20	1	ND	0.87	11/11/25 16:03	
4-Ethyltoluene	622-96-8	120.2	ND	0.20	1	ND	0.98	11/11/25 16:03	
Freon 12(Dichlorodifluoromethane)	75-71-8	120.9	**1.4**	0.20	1	**6.7**	0.99	11/11/25 16:03	
Freon 114(1,2-Dichlorotetrafluoroethane)	76-14-2	170.9	ND	0.20	1	ND	1.4	11/11/25 16:03	

EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012539952
LIMS Reference ID: AD39952
EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Customer PO:
EMSL Sales Rep: Emily Stressman
Received: 10/28/2025 09:30
Reported: 11/11/2025 17:49

EMSL Sample ID: AD39952-03
Customer Sample ID: 925307-03
Collected: 10/27/2025 08:01
Received: 10/28/2025 09:30

Analysis	Prep Batch	Lab File ID	Canister ID	Sample Vol.	Dil. Factor	Analyst Init.
11/11/25 16:03	BDK1254	v9457.D	HD2325	250 cc	1	LA

Target Compound Results Summary

Target Compounds	Cas#	MW	Result ppbv	RL ppbv	DF	Result ug/m3	RL ug/m3	Analyzed	Q
Freon 11(Trichlorofluoromethane)	75-69-4	137.4	**5.4**	0.20	1	**30**	1.1	11/11/25 16:03	
Freon 113(1,1,2-Trichlorotrifluoroethane)	76-13-1	187.4	ND	0.20	1	ND	1.5	11/11/25 16:03	
n-Heptane	142-82-5	100.2	ND	0.20	1	ND	0.82	11/11/25 16:03	
Hexachloro-1,3-butadiene	87-68-3	260.8	ND	0.20	1	ND	2.1	11/11/25 16:03	
n-Hexane	110-54-3	86.2	ND	0.20	1	ND	0.71	11/11/25 16:03	
2-Hexanone(MBK)	591-78-6	100.2	ND	0.20	1	ND	0.82	11/11/25 16:03	
Isopropyl alcohol(2-Propanol)	67-63-0	60.1	**1.5**	0.20	1	**3.6**	0.49	11/11/25 16:03	
Isopropylbenzene (cumene)	98-82-8	120.2	ND	0.20	1	ND	0.98	11/11/25 16:03	
Methyl-tert-butyl ether(MTBE)	1634-04-4	88.2	ND	0.20	1	ND	0.72	11/11/25 16:03	
Methylene chloride	75-09-2	84.9	**7.4**	0.50	1	**26**	1.7	11/11/25 16:03	
Methyl Methacrylate	80-62-6	100.1	ND	0.20	1	ND	0.82	11/11/25 16:03	
4-Methyl-2-pentanone(MIBK)	108-10-1	100.2	**0.23**	0.20	1	**0.94**	0.82	11/11/25 16:03	
Naphthalene	91-20-3	128.0	ND	0.20	1	ND	1.0	11/11/25 16:03	
Propylene	115-07-1	42.1	ND	0.20	1	ND	0.34	11/11/25 16:03	
Styrene	100-42-5	104.1	ND	0.20	1	ND	0.85	11/11/25 16:03	
Tertiary butyl alcohol(TBA)	75-65-0	74.1	ND	0.20	1	ND	0.61	11/11/25 16:03	
1,1,2,2-Tetrachloroethane	79-34-5	167.9	ND	0.20	1	ND	1.4	11/11/25 16:03	
Tetrachloroethene	127-18-4	165.8	ND	0.20	1	ND	1.4	11/11/25 16:03	
Tetrahydrofuran	109-99-9	72.1	ND	0.20	1	ND	0.59	11/11/25 16:03	
Toluene	108-88-3	92.1	**0.32**	0.20	1	**1.2**	0.75	11/11/25 16:03	
1,2,4-Trichlorobenzene	120-82-1	181.5	ND	0.20	1	ND	1.5	11/11/25 16:03	
1,1,1-Trichloroethane	71-55-6	133.4	ND	0.20	1	ND	1.1	11/11/25 16:03	
1,1,2-Trichloroethane	79-00-5	133.4	ND	0.20	1	ND	1.1	11/11/25 16:03	
Trichloroethene	79-01-6	131.4	ND	0.20	1	ND	1.1	11/11/25 16:03	
1,3,5-Trimethylbenzene	108-67-8	120.2	ND	0.20	1	ND	0.98	11/11/25 16:03	
1,2,4-Trimethylbenzene	95-63-6	120.2	ND	0.20	1	ND	0.98	11/11/25 16:03	
2,2,4-Trimethylpentane(Isooctane)	540-84-1	114.2	ND	0.20	1	ND	0.93	11/11/25 16:03	
Vinyl acetate	108-05-4	86.0	ND	0.20	1	ND	0.70	11/11/25 16:03	
Vinyl chloride	75-01-4	62.5	ND	0.20	1	ND	0.51	11/11/25 16:03	
Xylene (Ortho)	95-47-6	106.2	ND	0.20	1	ND	0.87	11/11/25 16:03	
Xylene (p,m)	179601-23-1	106.2	ND	0.40	1	ND	1.7	11/11/25 16:03	
Total Target Compound Concentrations:			**54**			**160**			

Surrogate	Result	Spike	Recovery
4-Bromofluorobenzene	9.79	10.00	98

EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012539952
LIMS Reference ID: AD39952
EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Customer PO:
EMSL Sales Rep: Emily Stressman
Received: 10/28/2025 09:30
Reported: 11/11/2025 17:49

EMSL Sample ID: AD39952-04
Customer Sample ID: 925307-04
Collected: 10/27/2025 08:08
Received: 10/28/2025 09:30

Analysis	Prep Batch	Lab File ID	Canister ID	Sample Vol.	Dil. Factor	Analyst Init.
11/11/25 13:23	BDK1254	v9454.D	HD2734	250 cc	1	LA

Target Compound Results Summary

Target Compounds	Cas#	MW	Result ppbv	RL ppbv	DF	Result ug/m3	RL ug/m3	Analyzed	Q
Acetone	67-64-1	58.1	**8.6**	0.20	1	**20**	0.48	11/11/25 13:23	
Acetonitrile	75-05-8	41.0	ND	0.50	1	ND	0.84	11/11/25 13:23	
Acrylonitrile	107-13-1	53.0	ND	0.20	1	ND	0.43	11/11/25 13:23	
Benzene	71-43-2	78.1	ND	0.20	1	ND	0.64	11/11/25 13:23	
Benzyl chloride	100-44-7	126.0	ND	0.20	1	ND	1.0	11/11/25 13:23	
Bromodichloromethane	75-27-4	163.8	ND	0.20	1	ND	1.3	11/11/25 13:23	
Bromoethane(Ethyl bromide)	74-96-4	109.0	ND	0.20	1	ND	0.89	11/11/25 13:23	
Bromoethene(Vinyl bromide)	593-60-2	106.9	ND	0.20	1	ND	0.88	11/11/25 13:23	
Bromoform	75-25-2	252.8	ND	0.20	1	ND	2.1	11/11/25 13:23	
Bromomethane	74-83-9	94.9	ND	0.20	1	ND	0.78	11/11/25 13:23	
1,3-Butadiene	106-99-0	54.1	ND	0.20	1	ND	0.44	11/11/25 13:23	
n-Butane	106-97-8	58.1	**2.8**	0.20	1	**6.7**	0.48	11/11/25 13:23	
2-Butanone(MEK)	78-93-3	72.1	**0.35**	0.20	1	**1.0**	0.59	11/11/25 13:23	
Carbon disulfide	75-15-0	76.1	ND	0.20	1	ND	0.62	11/11/25 13:23	
Carbon tetrachloride	56-23-5	153.8	ND	0.20	1	ND	1.3	11/11/25 13:23	
Chlorobenzene	108-90-7	112.6	ND	0.20	1	ND	0.92	11/11/25 13:23	
Chloroethane	75-00-3	64.5	ND	0.20	1	ND	0.53	11/11/25 13:23	
Chloroform	67-66-3	119.4	ND	0.50	1	ND	2.4	11/11/25 13:23	
Chloromethane	74-87-3	50.5	**0.48**	0.20	1	**0.99**	0.41	11/11/25 13:23	
3-Chloropropene(Allyl chloride)	107-05-1	76.5	ND	0.20	1	ND	0.63	11/11/25 13:23	
2-Chlorotoluene	95-49-8	126.6	ND	0.20	1	ND	1.0	11/11/25 13:23	
Cyclohexane	110-82-7	84.2	ND	0.20	1	ND	0.69	11/11/25 13:23	
Dibromochloromethane	124-48-1	208.3	ND	0.20	1	ND	1.7	11/11/25 13:23	
1,2-Dibromoethane	106-93-4	187.8	ND	0.20	1	ND	1.5	11/11/25 13:23	
1,2-Dichlorobenzene	95-50-1	147.0	ND	0.20	1	ND	1.2	11/11/25 13:23	
1,3-Dichlorobenzene	541-73-1	147.0	ND	0.20	1	ND	1.2	11/11/25 13:23	
1,4-Dichlorobenzene	106-46-7	147.0	ND	0.20	1	ND	1.2	11/11/25 13:23	
1,1-Dichloroethane	75-34-3	99.0	ND	0.20	1	ND	0.81	11/11/25 13:23	
1,2-Dichloroethane	107-06-2	99.0	ND	0.20	1	ND	0.81	11/11/25 13:23	
1,1-Dichloroethene	75-35-4	96.9	ND	0.20	1	ND	0.79	11/11/25 13:23	
cis-1,2-Dichloroethene	156-59-2	96.9	ND	0.20	1	ND	0.79	11/11/25 13:23	
trans-1,2-Dichloroethene	156-60-5	96.9	ND	0.20	1	ND	0.79	11/11/25 13:23	
1,2-Dichloropropane	78-87-5	113.0	ND	0.20	1	ND	0.92	11/11/25 13:23	
cis-1,3-Dichloropropene	10061-01-5	111.0	ND	0.20	1	ND	0.91	11/11/25 13:23	
trans-1,3-Dichloropropene	10061-02-6	111.0	ND	0.20	1	ND	0.91	11/11/25 13:23	
1,4-Dioxane	123-91-1	88.1	ND	0.20	1	ND	0.72	11/11/25 13:23	
Ethanol	64-17-5	46.1	**27**	1.0	1	**51**	1.9	11/11/25 13:23	
Ethyl acetate	141-78-6	88.1	**1.4**	0.20	1	**4.9**	0.72	11/11/25 13:23	
Ethylbenzene	100-41-4	106.2	ND	0.20	1	ND	0.87	11/11/25 13:23	
4-Ethyltoluene	622-96-8	120.2	ND	0.20	1	ND	0.98	11/11/25 13:23	
Freon 12(Dichlorodifluoromethane)	75-71-8	120.9	**1.3**	0.20	1	**6.2**	0.99	11/11/25 13:23	
Freon 114(1,2-Dichlorotetrafluoroethane)	76-14-2	170.9	ND	0.20	1	ND	1.4	11/11/25 13:23	

EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012539952
LIMS Reference ID: AD39952
EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Customer PO:
EMSL Sales Rep: Emily Stressman
Received: 10/28/2025 09:30
Reported: 11/11/2025 17:49

EMSL Sample ID: AD39952-04
Customer Sample ID: 925307-04

Collected: 10/27/2025 08:08
Received: 10/28/2025 09:30

Analysis	Prep Batch	Lab File ID	Canister ID	Sample Vol.	Dil. Factor	Analyst Init.
11/11/25 13:23	BDK1254	v9454.D	HD2734	250 cc	1	LA

Target Compound Results Summary

Target Compounds	Cas#	MW	Result ppbv	RL ppbv	DF	Result ug/m3	RL ug/m3	Analyzed	Q
Freon 11(Trichlorofluoromethane)	75-69-4	137.4	**3.9**	0.20	1	**22**	1.1	11/11/25 13:23	
Freon 113(1,1,2-Trichlorotrifluoroethane)	76-13-1	187.4	ND	0.20	1	ND	1.5	11/11/25 13:23	
n-Heptane	142-82-5	100.2	**0.23**	0.20	1	**0.94**	0.82	11/11/25 13:23	
Hexachloro-1,3-butadiene	87-68-3	260.8	ND	0.20	1	ND	2.1	11/11/25 13:23	
n-Hexane	110-54-3	86.2	**0.21**	0.20	1	**0.74**	0.71	11/11/25 13:23	
2-Hexanone(MBK)	591-78-6	100.2	ND	0.20	1	ND	0.82	11/11/25 13:23	
Isopropyl alcohol(2-Propanol)	67-63-0	60.1	**1.8**	0.20	1	**4.5**	0.49	11/11/25 13:23	
Isopropylbenzene (cumene)	98-82-8	120.2	ND	0.20	1	ND	0.98	11/11/25 13:23	
Methyl-tert-butyl ether(MTBE)	1634-04-4	88.2	ND	0.20	1	ND	0.72	11/11/25 13:23	
Methylene chloride	75-09-2	84.9	**0.60**	0.50	1	**2.1**	1.7	11/11/25 13:23	
Methyl Methacrylate	80-62-6	100.1	ND	0.20	1	ND	0.82	11/11/25 13:23	
4-Methyl-2-pentanone(MIBK)	108-10-1	100.2	ND	0.20	1	ND	0.82	11/11/25 13:23	
Naphthalene	91-20-3	128.0	ND	0.20	1	ND	1.0	11/11/25 13:23	
Propylene	115-07-1	42.1	ND	0.20	1	ND	0.34	11/11/25 13:23	
Styrene	100-42-5	104.1	ND	0.20	1	ND	0.85	11/11/25 13:23	
Tertiary butyl alcohol(TBA)	75-65-0	74.1	ND	0.20	1	ND	0.61	11/11/25 13:23	
1,1,2,2-Tetrachloroethane	79-34-5	167.9	ND	0.20	1	ND	1.4	11/11/25 13:23	
Tetrachloroethene	127-18-4	165.8	ND	0.20	1	ND	1.4	11/11/25 13:23	
Tetrahydrofuran	109-99-9	72.1	ND	0.20	1	ND	0.59	11/11/25 13:23	
Toluene	108-88-3	92.1	**0.44**	0.20	1	**1.7**	0.75	11/11/25 13:23	
1,2,4-Trichlorobenzene	120-82-1	181.5	ND	0.20	1	ND	1.5	11/11/25 13:23	
1,1,1-Trichloroethane	71-55-6	133.4	ND	0.20	1	ND	1.1	11/11/25 13:23	
1,1,2-Trichloroethane	79-00-5	133.4	ND	0.20	1	ND	1.1	11/11/25 13:23	
Trichloroethene	79-01-6	131.4	ND	0.20	1	ND	1.1	11/11/25 13:23	
1,3,5-Trimethylbenzene	108-67-8	120.2	ND	0.20	1	ND	0.98	11/11/25 13:23	
1,2,4-Trimethylbenzene	95-63-6	120.2	ND	0.20	1	ND	0.98	11/11/25 13:23	
2,2,4-Trimethylpentane(Isooctane)	540-84-1	114.2	ND	0.20	1	ND	0.93	11/11/25 13:23	
Vinyl acetate	108-05-4	86.0	ND	0.20	1	ND	0.70	11/11/25 13:23	
Vinyl chloride	75-01-4	62.5	ND	0.20	1	ND	0.51	11/11/25 13:23	
Xylene (Ortho)	95-47-6	106.2	ND	0.20	1	ND	0.87	11/11/25 13:23	
Xylene (p,m)	179601-23-1	106.2	ND	0.40	1	ND	1.7	11/11/25 13:23	
Total Target Compound Concentrations:			**49**			**120**			

Surrogate	Result	Spike	Recovery
4-Bromofluorobenzene	9.78	10.00	98

EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012539952
LIMS Reference ID: AD39952
EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Customer PO:
EMSL Sales Rep: Emily Stressman
Received: 10/28/2025 09:30
Reported: 11/11/2025 17:49

EMSL Sample ID: AD39952-05
Customer Sample ID: 925307-05
Collected: 10/27/2025 08:11
Received: 10/28/2025 09:30

Analysis	Prep Batch	Lab File ID	Canister ID	Sample Vol.	Dil. Factor	Analyst Init.
11/11/25 14:17	BDK1254	v9455.D	HD2815	250 cc	1	LA

Target Compound Results Summary

Target Compounds	Cas#	MW	Result ppbv	RL ppbv	DF	Result ug/m3	RL ug/m3	Analyzed	Q
Acetone	67-64-1	58.1	**5.5**	0.20	1	**13**	0.48	11/11/25 14:17	
Acetonitrile	75-05-8	41.0	ND	0.50	1	ND	0.84	11/11/25 14:17	
Acrylonitrile	107-13-1	53.0	ND	0.20	1	ND	0.43	11/11/25 14:17	
Benzene	71-43-2	78.1	ND	0.20	1	ND	0.64	11/11/25 14:17	
Benzyl chloride	100-44-7	126.0	ND	0.20	1	ND	1.0	11/11/25 14:17	
Bromodichloromethane	75-27-4	163.8	ND	0.20	1	ND	1.3	11/11/25 14:17	
Bromoethane(Ethyl bromide)	74-96-4	109.0	ND	0.20	1	ND	0.89	11/11/25 14:17	
Bromoethene(Vinyl bromide)	593-60-2	106.9	ND	0.20	1	ND	0.88	11/11/25 14:17	
Bromoform	75-25-2	252.8	ND	0.20	1	ND	2.1	11/11/25 14:17	
Bromomethane	74-83-9	94.9	ND	0.20	1	ND	0.78	11/11/25 14:17	
1,3-Butadiene	106-99-0	54.1	ND	0.20	1	ND	0.44	11/11/25 14:17	
n-Butane	106-97-8	58.1	**3.5**	0.20	1	**8.4**	0.48	11/11/25 14:17	
2-Butanone(MEK)	78-93-3	72.1	**0.32**	0.20	1	**0.94**	0.59	11/11/25 14:17	
Carbon disulfide	75-15-0	76.1	ND	0.20	1	ND	0.62	11/11/25 14:17	
Carbon tetrachloride	56-23-5	153.8	ND	0.20	1	ND	1.3	11/11/25 14:17	
Chlorobenzene	108-90-7	112.6	ND	0.20	1	ND	0.92	11/11/25 14:17	
Chloroethane	75-00-3	64.5	ND	0.20	1	ND	0.53	11/11/25 14:17	
Chloroform	67-66-3	119.4	ND	0.50	1	ND	2.4	11/11/25 14:17	
Chloromethane	74-87-3	50.5	**0.45**	0.20	1	**0.93**	0.41	11/11/25 14:17	
3-Chloropropene(Allyl chloride)	107-05-1	76.5	ND	0.20	1	ND	0.63	11/11/25 14:17	
2-Chlorotoluene	95-49-8	126.6	ND	0.20	1	ND	1.0	11/11/25 14:17	
Cyclohexane	110-82-7	84.2	ND	0.20	1	ND	0.69	11/11/25 14:17	
Dibromochloromethane	124-48-1	208.3	ND	0.20	1	ND	1.7	11/11/25 14:17	
1,2-Dibromoethane	106-93-4	187.8	ND	0.20	1	ND	1.5	11/11/25 14:17	
1,2-Dichlorobenzene	95-50-1	147.0	ND	0.20	1	ND	1.2	11/11/25 14:17	
1,3-Dichlorobenzene	541-73-1	147.0	ND	0.20	1	ND	1.2	11/11/25 14:17	
1,4-Dichlorobenzene	106-46-7	147.0	ND	0.20	1	ND	1.2	11/11/25 14:17	
1,1-Dichloroethane	75-34-3	99.0	ND	0.20	1	ND	0.81	11/11/25 14:17	
1,2-Dichloroethane	107-06-2	99.0	ND	0.20	1	ND	0.81	11/11/25 14:17	
1,1-Dichloroethene	75-35-4	96.9	ND	0.20	1	ND	0.79	11/11/25 14:17	
cis-1,2-Dichloroethene	156-59-2	96.9	ND	0.20	1	ND	0.79	11/11/25 14:17	
trans-1,2-Dichloroethene	156-60-5	96.9	ND	0.20	1	ND	0.79	11/11/25 14:17	
1,2-Dichloropropane	78-87-5	113.0	ND	0.20	1	ND	0.92	11/11/25 14:17	
cis-1,3-Dichloropropene	10061-01-5	111.0	ND	0.20	1	ND	0.91	11/11/25 14:17	
trans-1,3-Dichloropropene	10061-02-6	111.0	ND	0.20	1	ND	0.91	11/11/25 14:17	
1,4-Dioxane	123-91-1	88.1	ND	0.20	1	ND	0.72	11/11/25 14:17	
Ethanol	64-17-5	46.1	**18**	1.0	1	**34**	1.9	11/11/25 14:17	
Ethyl acetate	141-78-6	88.1	**2.1**	0.20	1	**7.6**	0.72	11/11/25 14:17	
Ethylbenzene	100-41-4	106.2	ND	0.20	1	ND	0.87	11/11/25 14:17	
4-Ethyltoluene	622-96-8	120.2	ND	0.20	1	ND	0.98	11/11/25 14:17	
Freon 12(Dichlorodifluoromethane)	75-71-8	120.9	**0.85**	0.20	1	**4.2**	0.99	11/11/25 14:17	
Freon 114(1,2-Dichlorotetrafluoroethane)	76-14-2	170.9	ND	0.20	1	ND	1.4	11/11/25 14:17	

EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012539952
LIMS Reference ID: AD39952
EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Customer PO:
EMSL Sales Rep: Emily Stressman
Received: 10/28/2025 09:30
Reported: 11/11/2025 17:49

EMSL Sample ID: AD39952-05
Customer Sample ID: 925307-05
Collected: 10/27/2025 08:11
Received: 10/28/2025 09:30

Analysis	Prep Batch	Lab File ID	Canister ID	Sample Vol.	Dil. Factor	Analyst Init.
11/11/25 14:17	BDK1254	v9455.D	HD2815	250 cc	1	LA

Target Compound Results Summary

Target Compounds	Cas#	MW	Result ppbv	RL ppbv	DF	Result ug/m3	RL ug/m3	Analyzed	Q
Freon 11(Trichlorofluoromethane)	75-69-4	137.4	**2.2**	0.20	1	**12**	1.1	11/11/25 14:17	
Freon 113(1,1,2-Trichlorotrifluoroethane)	76-13-1	187.4	ND	0.20	1	ND	1.5	11/11/25 14:17	
n-Heptane	142-82-5	100.2	ND	0.20	1	ND	0.82	11/11/25 14:17	
Hexachloro-1,3-butadiene	87-68-3	260.8	ND	0.20	1	ND	2.1	11/11/25 14:17	
n-Hexane	110-54-3	86.2	ND	0.20	1	ND	0.71	11/11/25 14:17	
2-Hexanone(MBK)	591-78-6	100.2	ND	0.20	1	ND	0.82	11/11/25 14:17	
Isopropyl alcohol(2-Propanol)	67-63-0	60.1	**1.4**	0.20	1	**3.5**	0.49	11/11/25 14:17	
Isopropylbenzene (cumene)	98-82-8	120.2	ND	0.20	1	ND	0.98	11/11/25 14:17	
Methyl-tert-butyl ether(MTBE)	1634-04-4	88.2	ND	0.20	1	ND	0.72	11/11/25 14:17	
Methylene chloride	75-09-2	84.9	ND	0.50	1	ND	1.7	11/11/25 14:17	
Methyl Methacrylate	80-62-6	100.1	ND	0.20	1	ND	0.82	11/11/25 14:17	
4-Methyl-2-pentanone(MIBK)	108-10-1	100.2	ND	0.20	1	ND	0.82	11/11/25 14:17	
Naphthalene	91-20-3	128.0	ND	0.20	1	ND	1.0	11/11/25 14:17	
Propylene	115-07-1	42.1	ND	0.20	1	ND	0.34	11/11/25 14:17	
Styrene	100-42-5	104.1	ND	0.20	1	ND	0.85	11/11/25 14:17	
Tertiary butyl alcohol(TBA)	75-65-0	74.1	ND	0.20	1	ND	0.61	11/11/25 14:17	
1,1,2,2-Tetrachloroethane	79-34-5	167.9	ND	0.20	1	ND	1.4	11/11/25 14:17	
Tetrachloroethene	127-18-4	165.8	ND	0.20	1	ND	1.4	11/11/25 14:17	
Tetrahydrofuran	109-99-9	72.1	ND	0.20	1	ND	0.59	11/11/25 14:17	
Toluene	108-88-3	92.1	**0.36**	0.20	1	**1.4**	0.75	11/11/25 14:17	
1,2,4-Trichlorobenzene	120-82-1	181.5	ND	0.20	1	ND	1.5	11/11/25 14:17	
1,1,1-Trichloroethane	71-55-6	133.4	ND	0.20	1	ND	1.1	11/11/25 14:17	
1,1,2-Trichloroethane	79-00-5	133.4	ND	0.20	1	ND	1.1	11/11/25 14:17	
Trichloroethene	79-01-6	131.4	ND	0.20	1	ND	1.1	11/11/25 14:17	
1,3,5-Trimethylbenzene	108-67-8	120.2	ND	0.20	1	ND	0.98	11/11/25 14:17	
1,2,4-Trimethylbenzene	95-63-6	120.2	ND	0.20	1	ND	0.98	11/11/25 14:17	
2,2,4-Trimethylpentane(Isooctane)	540-84-1	114.2	ND	0.20	1	ND	0.93	11/11/25 14:17	
Vinyl acetate	108-05-4	86.0	ND	0.20	1	ND	0.70	11/11/25 14:17	
Vinyl chloride	75-01-4	62.5	ND	0.20	1	ND	0.51	11/11/25 14:17	
Xylene (Ortho)	95-47-6	106.2	ND	0.20	1	ND	0.87	11/11/25 14:17	
Xylene (p,m)	179601-23-1	106.2	ND	0.40	1	ND	1.7	11/11/25 14:17	
Total Target Compound Concentrations:			**35**			**86**			

Surrogate	Result	Spike	Recovery
4-Bromofluorobenzene	9.75	10.00	98

EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012539952
LIMS Reference ID: AD39952
EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Customer PO:
EMSL Sales Rep: Emily Stressman
Received: 10/28/2025 09:30
Reported: 11/11/2025 17:49

EMSL Sample ID: AD39952-06
Customer Sample ID: 925307-06
Collected: 10/27/2025 08:14
Received: 10/28/2025 09:30

Analysis	Prep Batch	Lab File ID	Canister ID	Sample Vol.	Dil. Factor	Analyst Init.
11/11/25 15:10	BDK1254	v9456.D	HD2871	250 cc	1	LA

Target Compound Results Summary

Target Compounds	Cas#	MW	Result ppbv	RL ppbv	DF	Result ug/m3	RL ug/m3	Analyzed	Q
Acetone	67-64-1	58.1	**6.2**	0.20	1	**15**	0.48	11/11/25 15:10	
Acetonitrile	75-05-8	41.0	ND	0.50	1	ND	0.84	11/11/25 15:10	
Acrylonitrile	107-13-1	53.0	ND	0.20	1	ND	0.43	11/11/25 15:10	
Benzene	71-43-2	78.1	ND	0.20	1	ND	0.64	11/11/25 15:10	
Benzyl chloride	100-44-7	126.0	ND	0.20	1	ND	1.0	11/11/25 15:10	
Bromodichloromethane	75-27-4	163.8	ND	0.20	1	ND	1.3	11/11/25 15:10	
Bromoethane(Ethyl bromide)	74-96-4	109.0	ND	0.20	1	ND	0.89	11/11/25 15:10	
Bromoethene(Vinyl bromide)	593-60-2	106.9	ND	0.20	1	ND	0.88	11/11/25 15:10	
Bromoform	75-25-2	252.8	ND	0.20	1	ND	2.1	11/11/25 15:10	
Bromomethane	74-83-9	94.9	ND	0.20	1	ND	0.78	11/11/25 15:10	
1,3-Butadiene	106-99-0	54.1	ND	0.20	1	ND	0.44	11/11/25 15:10	
n-Butane	106-97-8	58.1	**2.9**	0.20	1	**6.9**	0.48	11/11/25 15:10	
2-Butanone(MEK)	78-93-3	72.1	**1.0**	0.20	1	**3.0**	0.59	11/11/25 15:10	
Carbon disulfide	75-15-0	76.1	ND	0.20	1	ND	0.62	11/11/25 15:10	
Carbon tetrachloride	56-23-5	153.8	ND	0.20	1	ND	1.3	11/11/25 15:10	
Chlorobenzene	108-90-7	112.6	ND	0.20	1	ND	0.92	11/11/25 15:10	
Chloroethane	75-00-3	64.5	ND	0.20	1	ND	0.53	11/11/25 15:10	
Chloroform	67-66-3	119.4	**2.2**	0.50	1	**11**	2.4	11/11/25 15:10	
Chloromethane	74-87-3	50.5	**0.42**	0.20	1	**0.87**	0.41	11/11/25 15:10	
3-Chloropropene(Allyl chloride)	107-05-1	76.5	ND	0.20	1	ND	0.63	11/11/25 15:10	
2-Chlorotoluene	95-49-8	126.6	ND	0.20	1	ND	1.0	11/11/25 15:10	
Cyclohexane	110-82-7	84.2	ND	0.20	1	ND	0.69	11/11/25 15:10	
Dibromochloromethane	124-48-1	208.3	ND	0.20	1	ND	1.7	11/11/25 15:10	
1,2-Dibromoethane	106-93-4	187.8	ND	0.20	1	ND	1.5	11/11/25 15:10	
1,2-Dichlorobenzene	95-50-1	147.0	ND	0.20	1	ND	1.2	11/11/25 15:10	
1,3-Dichlorobenzene	541-73-1	147.0	ND	0.20	1	ND	1.2	11/11/25 15:10	
1,4-Dichlorobenzene	106-46-7	147.0	**0.31**	0.20	1	**1.9**	1.2	11/11/25 15:10	
1,1-Dichloroethane	75-34-3	99.0	ND	0.20	1	ND	0.81	11/11/25 15:10	
1,2-Dichloroethane	107-06-2	99.0	ND	0.20	1	ND	0.81	11/11/25 15:10	
1,1-Dichloroethene	75-35-4	96.9	ND	0.20	1	ND	0.79	11/11/25 15:10	
cis-1,2-Dichloroethene	156-59-2	96.9	ND	0.20	1	ND	0.79	11/11/25 15:10	
trans-1,2-Dichloroethene	156-60-5	96.9	ND	0.20	1	ND	0.79	11/11/25 15:10	
1,2-Dichloropropane	78-87-5	113.0	ND	0.20	1	ND	0.92	11/11/25 15:10	
cis-1,3-Dichloropropene	10061-01-5	111.0	ND	0.20	1	ND	0.91	11/11/25 15:10	
trans-1,3-Dichloropropene	10061-02-6	111.0	ND	0.20	1	ND	0.91	11/11/25 15:10	
1,4-Dioxane	123-91-1	88.1	ND	0.20	1	ND	0.72	11/11/25 15:10	
Ethanol	64-17-5	46.1	**27**	1.0	1	**51**	1.9	11/11/25 15:10	
Ethyl acetate	141-78-6	88.1	**2.2**	0.20	1	**7.7**	0.72	11/11/25 15:10	
Ethylbenzene	100-41-4	106.2	ND	0.20	1	ND	0.87	11/11/25 15:10	
4-Ethyltoluene	622-96-8	120.2	ND	0.20	1	ND	0.98	11/11/25 15:10	
Freon 12(Dichlorodifluoromethane)	75-71-8	120.9	**1.1**	0.20	1	**5.3**	0.99	11/11/25 15:10	
Freon 114(1,2-Dichlorotetrafluoroethane)	76-14-2	170.9	ND	0.20	1	ND	1.4	11/11/25 15:10	

EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012539952
LIMS Reference ID: AD39952
EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Customer PO:
EMSL Sales Rep: Emily Stressman
Received: 10/28/2025 09:30
Reported: 11/11/2025 17:49

EMSL Sample ID: AD39952-06
Customer Sample ID: 925307-06
Collected: 10/27/2025 08:14
Received: 10/28/2025 09:30

Analysis	Prep Batch	Lab File ID	Canister ID	Sample Vol.	Dil. Factor	Analyst Init.
11/11/25 15:10	BDK1254	v9456.D	HD2871	250 cc	1	LA

Target Compound Results Summary

Target Compounds	Cas#	MW	Result ppbv	RL ppbv	DF	Result ug/m3	RL ug/m3	Analyzed	Q
Freon 11(Trichlorofluoromethane)	75-69-4	137.4	**2.6**	0.20	1	**15**	1.1	11/11/25 15:10	
Freon 113(1,1,2-Trichlorotrifluoroethane)	76-13-1	187.4	ND	0.20	1	ND	1.5	11/11/25 15:10	
n-Heptane	142-82-5	100.2	**0.26**	0.20	1	**1.1**	0.82	11/11/25 15:10	
Hexachloro-1,3-butadiene	87-68-3	260.8	ND	0.20	1	ND	2.1	11/11/25 15:10	
n-Hexane	110-54-3	86.2	**0.20**	0.20	1	**0.71**	0.71	11/11/25 15:10	
2-Hexanone(MBK)	591-78-6	100.2	ND	0.20	1	ND	0.82	11/11/25 15:10	
Isopropyl alcohol(2-Propanol)	67-63-0	60.1	**2.7**	0.20	1	**6.6**	0.49	11/11/25 15:10	
Isopropylbenzene (cumene)	98-82-8	120.2	ND	0.20	1	ND	0.98	11/11/25 15:10	
Methyl-tert-butyl ether(MTBE)	1634-04-4	88.2	ND	0.20	1	ND	0.72	11/11/25 15:10	
Methylene chloride	75-09-2	84.9	**1.2**	0.50	1	**4.1**	1.7	11/11/25 15:10	
Methyl Methacrylate	80-62-6	100.1	ND	0.20	1	ND	0.82	11/11/25 15:10	
4-Methyl-2-pentanone(MIBK)	108-10-1	100.2	**0.43**	0.20	1	**1.8**	0.82	11/11/25 15:10	
Naphthalene	91-20-3	128.0	**0.39**	0.20	1	**2.0**	1.0	11/11/25 15:10	
Propylene	115-07-1	42.1	ND	0.20	1	ND	0.34	11/11/25 15:10	
Styrene	100-42-5	104.1	ND	0.20	1	ND	0.85	11/11/25 15:10	
Tertiary butyl alcohol(TBA)	75-65-0	74.1	ND	0.20	1	ND	0.61	11/11/25 15:10	
1,1,2,2-Tetrachloroethane	79-34-5	167.9	ND	0.20	1	ND	1.4	11/11/25 15:10	
Tetrachloroethene	127-18-4	165.8	**0.35**	0.20	1	**2.4**	1.4	11/11/25 15:10	
Tetrahydrofuran	109-99-9	72.1	ND	0.20	1	ND	0.59	11/11/25 15:10	
Toluene	108-88-3	92.1	**0.72**	0.20	1	**2.7**	0.75	11/11/25 15:10	
1,2,4-Trichlorobenzene	120-82-1	181.5	ND	0.20	1	ND	1.5	11/11/25 15:10	
1,1,1-Trichloroethane	71-55-6	133.4	ND	0.20	1	ND	1.1	11/11/25 15:10	
1,1,2-Trichloroethane	79-00-5	133.4	ND	0.20	1	ND	1.1	11/11/25 15:10	
Trichloroethene	79-01-6	131.4	ND	0.20	1	ND	1.1	11/11/25 15:10	
1,3,5-Trimethylbenzene	108-67-8	120.2	ND	0.20	1	ND	0.98	11/11/25 15:10	
1,2,4-Trimethylbenzene	95-63-6	120.2	ND	0.20	1	ND	0.98	11/11/25 15:10	
2,2,4-Trimethylpentane(Isooctane)	540-84-1	114.2	ND	0.20	1	ND	0.93	11/11/25 15:10	
Vinyl acetate	108-05-4	86.0	ND	0.20	1	ND	0.70	11/11/25 15:10	
Vinyl chloride	75-01-4	62.5	ND	0.20	1	ND	0.51	11/11/25 15:10	
Xylene (Ortho)	95-47-6	106.2	ND	0.20	1	ND	0.87	11/11/25 15:10	
Xylene (p,m)	179601-23-1	106.2	**0.41**	0.40	1	**1.8**	1.7	11/11/25 15:10	
Total Target Compound Concentrations:			**53**			**140**			

Surrogate	Result	Spike	Recovery
4-Bromofluorobenzene	9.79	10.00	98

EMSL Analytical, Inc.

200 Route 130, Cinnaminson, NJ, 08077
Telephone: 856-858-4800 Fax:cs@emsl.com
EMSL-CIN-01

EMSL Order ID: 012539952
LIMS Reference ID: AD39952
EMSL Customer ID: OCCU21

Attention: Justin Arnold
Occu-Tec, Inc. [OCCU21]
2604 NE Industrial Drive, Suite 230
North Kansas City, MO 64117
(816) 994-3428
jarnold@occutec.com

Project Name: 925307
Customer PO:
EMSL Sales Rep: Emily Stressman
Received: 10/28/2025 09:30
Reported: 11/11/2025 17:49

Notes and Definitions

Item	Definition
E	Result is beyond calibration range. This value is estimated.
ND	Non Detect. This notation would be used in the results column in lieu of a "U" qualifier.
U	Compound was analyzed for but not detected at a listed and appropriately adjusted reporting level.
J(Target)	Concentration estimated between Reporting Limit and MDL.
J	Estimated value reported below adjusted reporting limit for target compounds or estimating a concentration for TICs where a 1:1 response is assumed
B	Compound found in associated method blank as well as in the sample.
E	Estimated value exceeding upper calibration range of instrument. Ethanol and isopropyl alcohol are not specifically targeted to dilute within calibration range.
D	Compound reported from additional diluted analysis.
N	indicates presumptive evidence of a compound based on library search match.

USEPA TO-15

External Chain of Custody/ Field Test Data Sheet

EMSL ANALYTICAL, INC. LABORATORY • PRODUCTS • TRAINING

EMSL Analytical, Inc.
200 Route 130 North
Cinnaminson, NJ 08077
Ph. (800) 220-3675
Fax (856) 786-0327

EMSL Order Number (Lab Use Only): A039952 372025526577

Company/Cust. ID: OCCU21	Company/Billing ID:	Sampled By (Sign):
Contact Name: Justin Arnold	Billing Contact:	Sampled By (Name): Justin Arnold
Street Address: 2604 NE Industrial Drive Suite 230	Street Address:	Total # of Samples: Six (6)
City, State, Zip: North Kansas City, MO 64117	City, State, Zip:	Date Shipped: 10/27/2025
Phone: 816-810-3276 Fax:	Phone: Fax:	Sample Collection Zip Code: 65109
Email Results To: jarnold@occutec.com	Project Name: 925307	Purchase Order:

Turnaround Time (in Business Days): ☒ 10 Day Standard ☐ 5 Day ☐ 4 Day ☐ 3 Day ☐ 2 Day ☐ 1 Day ☐ Other

Reporting Format: ☒ Results Only (Standard Lab Report) ☐ Full Deliverables (Surcharge may apply) ☐ Other

Field Use - All Information Required! — Lab Use Only

EMSL Sample Identifier	Client Field Sample Identification	Sampling Start Information: Start Date	Start Time (24 hr clock)	Start Canister Pressure ("Hg)	Start Interior Temp. (F)	Sampling Stop Information: Stop Date	Stop Time (24 hr clock)	Stop Canister Pressure ("Hg)	Stop Interior Temp. (F)	Canister Information: Canister ID	Size (L)	Can Cert Batch ID	Gauge # SG-7 Outgoing Pressure ("Hg)	Gauge # SG-11 Incoming Pressure ("Hg)	Flow Contoller: Reg. ID	Flow Contoller: Cal Flow (ml/min)	Analysis: USEPA TO-15	NJDEP LLTO-15	LIBRARY SEARCH	ASTM-5504:H2S / S PANEL	TO-3: METHANE / C1-C6	Other:	Other:	Matrix: Indoor/ Ambient Air	Soil Gas/Sub Slab	Other:
	925307-TO-01	10/27/25	0747	-28.5	69.0	10/27/25	1413	-5.0	69.0	HD1412	1.4	H0814	-30.0	-7.0	5984	2.4	X							X		
	925307-TO-02	10/27/25	0758	-29.5	69.0	10/27/25	1503	-6.5	69.0	2139				-8.0	7944		X							X		
	925307-TO-03	10/27/25	0801	-28.5	69.0	10/27/25	1501	-5.5	69.0	2325				-7.0	8043		X							X		
	925307-TO-04	10/27/25	0808	-29.5	69.0	10/27/25	1509	-7.0	69.0	2734				-8.5	8070		X							X		
	925307-TO-05	10/27/25	0811	-30.0	69.0	10/27/25	1512	-9.0	69.0	2815				-7.5	8071		X							X		
	925307-TO-06	10/27/25	0814	-30.0	69.0	10/27/25	1505	-4.5	69.0	2871				-5.0	15135		X							X		

Comments:

Check Box if Seal Intact

Lab Canister Certification

Analyst Signature (TO-15):

Relinquished by:	Date/ Time	Received by:	Date/ Time	Seal # / Intact	Reason for Exchange (circle appropriate)
	10/15/25 / 1526		10/20/25 1024am	021 ☒	Shipping Courier Receiving Sampling Other:
	10/27/25	fx	10/28/25 0930	☐	Shipping Courier Receiving Sampling Other:
	10/28/25		10/28/25 1052	022 ☐	Shipping Courier Receiving Sampling Other:
				☐	Shipping Courier Receiving Sampling Other:
				☐	Shipping Courier Receiving Sampling Other:

RECEIVED EMSL CINNAMINSON NJ 2025 OCT 28 A 10:40

Page 17 of 17

FX: 7976 7959 2382

Page 1 of 1 6 SAH

APPENDIX D
HOMOGENEOUS MATERIALS TABLE

OCCU-TEC
Protecting People, Places and Performance

HOMOGENEOUS MATERIALS

Client:	STMO OA FMDC	Project Number:	925307
Project:	IH Sampling in Warehouse, ACM & LBP	Date:	10/27/2025
Building:	Porite-Scruggs Station Complex	Inspector:	Justin Arnold/Erin Anderson

HM #	MATERIAL DESCRIPTION	MATERIAL TYPE	FRIABLE NON-FRIABLE	ASBESTOS-CONTAINING MATERIAL	TOTAL QUANTITY
01	2'x4' Ceiling Tile - Small Pock and Pinhole	Misc	Friable	ND	
02	Drywall Panels	Misc	Non-Friable	ND	
03	Cove Base and Mastic - 4" Gray	Misc	Non-Friable	ND	
04	Carpet Mastic	Misc	Non-Friable	ND	
05	Cove Base and Mastic - 4" Black	Misc	Non-Friable	ND	
06	Floor Tile and Mastic - 12" Dark Gray with White and Black Pattern	Misc	Non-Friable	ND	
07	Cove Base and Mastic - 6" Black	Misc	Non-Friable	ND	
08	Floor Tile and Mastic - 12" Blue with White	Misc	Non-Friable	ND	
09	Floor Tile and Mastic - 12" White with Blue	Misc	Non-Friable	ND	
10	Gray Epoxy Flooring	Surf	Non-Friable	ND	
11	NOT USED				
12	White Pipe Mastic	TSI	Friable	ND	
13	2'x4' Ceiling Tile Width Wide Fissure and Pinhole	Misc	Friable	ND	
14	2'x4' Ceiling Tile Large Pock and Pinhole	Misc	Friable	ND	
15	Drywall and Joint Compound	Misc	Non-Friable	ND	
16	Wall Bumper Mastic	Misc	Non-Friable	ND	
17	Expansion Joints - Flooring	Misc	Non-Friable	ND	
18	Floor Leveling Compound	Surf	Non-Friable	ND	
19	**Electrical Switches/Bakelight**	**Misc**	**Non-Friable**	**Assume 1**	**135 EA**
20	Floor Tile and Mastic - 12" Black with White	Misc	Non-Friable	ND	
21	Floor Tile and Mastic - 12" Brown with Pink, White, and Black	Misc	Non-Friable	ND	
22	2'x2' Ceiling Tile Large Pock and Pinhole	Misc	Friable	ND	
23	Cove Base and Mastic -4" Beige	Misc	Non-Friable	ND	
24	Floor Tile and Mastic - 12" Cream	Misc	Non-Friable	ND	
25	NOT USED				
26	Floor Tile and Mastic - 12" Gray with Cream	Misc	Non-Friable	ND	
27	2'x4' Ceiling Tile - Lengthwise Fissures and Pinholes	Misc	Friable	ND	
28	NOT USED				

OCCU-TEC
Protecting People, Places and Performance

HOMOGENEOUS MATERIALS

Client:	STMO OA FMDC	Project Number:	925307
Project:	IH Sampling in Warehouse, ACM & LBP	Date:	10/27/2025
Building:	Porite-Scruggs Station Complex	Inspector:	Justin Arnold/Erin Anderson

HM #	MATERIAL DESCRIPTION	MATERIAL TYPE	FRIABLE NON-FRIABLE	ASBESTOS-CONTAINING MATERIAL	TOTAL QUANTITY
29	Floor Tile and Mastic - 12" Magenta	Misc	Non-Friable	ND	
30	Floor Tile and Mastic - 12" Purple	Misc	Non-Friable	ND	
31	Lab Counterop	Misc	Non-Friable	ND	
32	Lab Hood/Transite	Misc	Non-Friable	ND	
33	Floor Tile and Mastic - 12" Orange	Misc	Non-Friable	ND	
34	Cove Base and Mastic - 4" Blue	Misc	Non-Friable	ND	
35	Floor Tile - Marble Pattern Laminate P&S	Misc	Non-Friable	ND	
36	**Roof Sealant - Black**	**Misc**	**Non-Friable**	**ACM**	**50,000 SF**
37	Flashing - Silver- On Plane of Roof	Misc	Non-Friable	ND	
38	Flashing - Light Gray - Perimeter of Building	Misc	Non-Friable	ND	
39	Expansion Joints Silver Between Wall Panels	Misc	Non-Friable	ND	
40	Expansion Joints White Between Wall Panels	Misc	Non-Friable	ND	

LEGEND:

ACM = Asbestos Containment Materials
ND = No Asbestos Detected
Surf = Surfacing
TSI = Thermal System Insulation
Misc. = Miscellaneous

Assume 1 = Assumed ACM (inaccessible)
Assume 2 = Assumed ACM (would destroy material integrity)
TR = <1% ACM

LF = LINEAR FEET
SF = SQUARE FEET
CF = CUBIC FEET
EA = Each

C = Chrysotile
A = Amosite

APPENDIX E
FUNCTIONAL SPACE TABLE

OCCU-TEC
Protecting People, Places and Performance

Client:	STMO OA FMDC	Project Number:	925307
Facility / Address:	1535 Fairgrounds Road, Jefferson City, MO 65109	Date(s):	10/27/2025
		Inspector:	Justin Arnold/Erin Anderson

ASBESTOS INSPECTION FUNCTIONAL SPACES

FUNCTIONAL SPACE NAME	FUNC. SPACE #	FLOOR	HM #	MAT. TYPE	MATERIAL DESCRIPTION	L	W	H	SF	WSA	P	Quantity	F or NF
Conference Room	1	1	1	Misc	2'x4' Ceiling Tile - Small Pock and Pinhole	19	18	8	342	592	74	350	Friable
			2	Misc	Drywall Panels							600	Non-Friable
			3	Misc	Cove Base and Mastic - 4" Gray							75	Non-Friable
			4	Misc	Carpet Mastic							350	Non-Friable
SE Office	2	1	1	Misc	2'x4' Ceiling Tile - Small Pock and Pinhole	15	15	8	225	480	60	225	Friable
			2	Misc	Drywall Panels							500	Non-Friable
			5	Misc	Cove Base and Mastic - 4" Black							60	Non-Friable
			6	Misc	Floor Tile and Mastic - 12" Dark Gray with White and Black Pattern							225	Non-Friable
SW Office	3	1	1	Misc	2'x4' Ceiling Tile - Small Pock and Pinhole	15	19	8	285	544	68	285	Friable
			2	Misc	Drywall Panels							550	Non-Friable
			3	Misc	Cove Base and Mastic - 4" Gray							70	Non-Friable
			4	Misc	Carpet Mastic							285	Non-Friable
Middle West Office	4	1	1	Misc	2'x4' Ceiling Tile - Small Pock and Pinhole	11	12	8	132	368	46	140	Friable
			2	Misc	Drywall Panels							400	Non-Friable
			3	Misc	Cove Base and Mastic - 4" Gray							50	Non-Friable
			4	Misc	Carpet Mastic							140	Non-Friable

OCCU-TEC
Protecting People, Places and Performance

Client:	STMO OA FMDC	Project Number:	925307
Facility / Address:	1535 Fairgrounds Road, Jefferson City, MO 65109	Date(s):	10/27/2025
		Inspector:	Justin Arnold/Erin Anderson

ASBESTOS INSPECTION FUNCTIONAL SPACES

FUNCTIONAL SPACE NAME	FUNC. SPACE #	FLOOR	HM #	MAT. TYPE	MATERIAL DESCRIPTION	L	W	H	SF	WSA	P	Quantity	F or NF
Northwest Office	5	1	1	Misc	2'x4' Ceiling Tile - Small Pock and Pinhole	11	19	8	209	480	60	215	Friable
			2	Misc	Drywall Panels							480	Non-Friable
			3	Misc	Cove Base and Mastic - 4" Gray							60	Non-Friable
			4	Misc	Carpet Mastic							215	Non-Friable
Middle North Office	6	1	1	Misc	2'x4' Ceiling Tile - Small Pock and Pinhole	8	10	8	80	288	36	80	Friable
			2	Misc	Drywall Panels							300	Non-Friable
			3	Misc	Cove Base and Mastic - 4" Gray							40	Non-Friable
			4	Misc	Carpet Mastic							80	Non-Friable
Northeast Office	7	1	1	Misc	2'x4' Ceiling Tile - Small Pock and Pinhole	10	10	8	100	320	40	100	Friable
			2	Misc	Drywall Panels							350	Non-Friable
			3	Misc	Cove Base and Mastic - 4" Gray							40	Non-Friable
			4	Misc	Carpet Mastic							100	Non-Friable
Main Entrance Hallway	8	1	1	Misc	2'x4' Ceiling Tile - Small Pock and Pinhole	34	8	9	272	756	84	624	Friable
			7	Misc	Cove Base and Mastic - 6" Black	44	8	9	352	936	104	200	Non-Friable
			8	Misc	Floor Tile and Mastic - 12" Blue with White							500	Non-Friable
			9	Misc	Floor Tile and Mastic - 12" White with Blue							175	Non-Friable
Men's Restroom	9	1	1	Misc	2'x4' Ceiling Tile - Small Pock and Pinhole	24	16	9	384	720	80	400	Friable
			10	Surf	Gray Epoxy Flooring							400	Non-Friable
			12	TSI	White Pipe Mastic							20	Friable
			15	Misc	Drywall and Joint Compound							750	Non-Friable

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ASBESTOS INSPECTION FUNCTIONAL SPACES

FUNCTIONAL SPACE NAME	FUNC. SPACE #	FLOOR	HM #	MAT. TYPE	MATERIAL DESCRIPTION	L	W	H	SF	WSA	P	Quantity	F or NF
Women's Restroom	10	1	1	Misc	2'x4' Ceiling Tile - Small Pock and Pinhole	24	16	9	384	720	80	400	Friable
			10	Surf	Gray Epoxy Flooring							400	Non-Friable
			12	TSI	White Pipe Mastic							20	Friable
			15	Misc	Drywall and Joint Compound							750	Non-Friable
Janitor's Closet	10A	1	12	TSI	White Pipe Mastic	24	11		264	0	70	35	Friable
North Warehouse Room	11	1	5	Misc	Cove Base and Mastic - 4" Black	38	52	12	1976	2160	180	500	Non-Friable
			13	Misc	2'x4' Ceiling Tile Width Wide Fissure and Pinhole							100	Friable
			14	Misc	2'x4' Ceiling Tile Large Pock and Pinhole							100	Friable
			15	Misc	Drywall and Joint Compound							5000	Non-Friable
			16	Misc	Wall Bumper Mastic							500	Non-Friable
North Warehouse Office	12	1	5	Misc	Cove Base and Mastic - 4" Black	16	10	12	160	624	52	52	Non-Friable
			14	Misc	2'x4' Ceiling Tile Large Pock and Pinhole							160	Friable
			15	Misc	Drywall and Joint Compound							650	Non-Friable
			16	Misc	Wall Bumper Mastic							52	Non-Friable
North Warehouse	13	1	12	TSI	White Pipe Mastic	250	250	25	62500	25000	1000	1500	Friable
			17	Misc	Expansion Joints - Flooring							2500	Non-Friable
			18	Surf	Floor Leveling Compound							20000	Non-Friable
			19	**Misc**	**Electrical Switches/Bakelight**							**75**	**Non-Friable**

OCCU-TEC
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ASBESTOS INSPECTION FUNCTIONAL SPACES

FUNCTIONAL SPACE NAME	FUNC. SPACE #	FLOOR	HM #	MAT. TYPE	MATERIAL DESCRIPTION	L	W	H	SF	WSA	P	Quantity	F or NF
North Central Warehouse Office	14	1	5	Misc	Cove Base and Mastic - 4" Black	11	12	8	132	368	46	50	Non-Friable
			14	Misc	2'x4' Ceiling Tile Large Pock and Pinhole							150	Friable
			15	Misc	Drywall and Joint Compound							100	Non-Friable
			20	Misc	Floor Tile and Mastic - 12" Black with White							150	Non-Friable
North Middle Central Warehouse Office	15	1	5	Misc	Cove Base and Mastic - 4" Black	11	12	8	132	368	46	50	Non-Friable
			14	Misc	2'x4' Ceiling Tile Large Pock and Pinhole							150	Friable
			15	Misc	Drywall and Joint Compound							200	Non-Friable
			21	Misc	Floor Tile and Mastic - 12" Brown with Pink, White, and Black							150	Non-Friable
South Middle Central Warehouse Office	16	1	5	Misc	Cove Base and Mastic - 4" Black	11	12	8	132	368	46	50	Non-Friable
			14	Misc	2'x4' Ceiling Tile Large Pock and Pinhole							150	Friable
			15	Misc	Drywall and Joint Compound							200	Non-Friable
			20	Misc	Floor Tile and Mastic - 12" Black with White							150	Non-Friable
South Central Warehouse Office	17	1	5	Misc	Cove Base and Mastic - 4" Black	11	12	8	132	368	46	50	Non-Friable
			14	Misc	2'x4' Ceiling Tile Large Pock and Pinhole				0	0	0	150	Friable
			15	Misc	Drywall and Joint Compound				0	0	0	100	Non-Friable
			21	Misc	Floor Tile and Mastic - 12" Brown with Pink, White, and Black				0	0	0	150	Non-Friable

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ASBESTOS INSPECTION FUNCTIONAL SPACES

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Southwest Warehouse	18	1	12	TSI	White Pipe Mastic	250	125	25	31250	18750	750	750	Friable
			17	Misc	Expansion Joints - Flooring							1500	Non-Friable
			18	Surf	Floor Leveling Compound							10000	Non-Friable
			19	**Misc**	**Electrical Switches/Bakelight**							**30**	**Non-Friable**
West Entryway	18A	1	22	Misc	2'x2' Ceiling Tile Large Pock and Pinhole	8	12	8	96	320	40	100	Friable
			23	Misc	Cove Base and Mastic -4" Beige							40	Non-Friable
			24	Misc	Floor Tile and Mastic - 12" Cream							100	Non-Friable
South Restroom	18B	1	15	Misc	Drywall and Joint Compound	5	6	8	30	176	22	200	Non-Friable
North Restroom	18C	1	5	Misc	Cove Base and Mastic - 4" Black	5	6	8	30	176	22	25	Non-Friable
			15	Misc	Drywall and Joint Compound							200	Non-Friable
			26	Misc	Floor Tile and Mastic - 12" Gray with Cream							30	Non-Friable
South Warehouse Office	18D	1	2	Misc	Drywall Panels	13	14	8	182	432	54	450	Non-Friable
			27	Misc	2'x4' Ceiling Tile - Lengthwise Fissures and Pinholes							200	Friable
Southeast Warehouse	19	1	12	TSI	White Pipe Mastic							750	Friable
			17	Misc	Expansion Joints - Flooring							1500	Non-Friable
			18	Surf	Floor Leveling Compound							10000	Non-Friable
			19	**Misc**	**Electrical Switches/Bakelight**							**30**	**Non-Friable**

OCCU-TEC
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ASBESTOS INSPECTION FUNCTIONAL SPACES

FUNCTIONAL SPACE NAME	FUNC. SPACE #	FLOOR	HM #	MAT. TYPE	MATERIAL DESCRIPTION	L	W	H	SF	WSA	P	Quantity	F or NF
Breakroom	20	1	5	Misc	Cove Base and Mastic - 4" Black	50	17	8	850	1072	134	250	Non-Friable
			9	Misc	Floor Tile and Mastic - 12" White with Blue	22	22	8	484	704	88	1200	Non-Friable
			15	Misc	Drywall and Joint Compound							400	Non-Friable
			20	Misc	Floor Tile and Mastic - 12" Black with White							25	Non-Friable
			22	Misc	2'x2' Ceiling Tile Large Pock and Pinhole							1400	Friable
			29	Misc	Floor Tile and Mastic - 12" Magenta							100	Non-Friable
			30	Misc	Floor Tile and Mastic - 12" Purple							100	Non-Friable
Utility Room	20A	1	15	Misc	Drywall and Joint Compound	14	7	8	98	336	42	275	Non-Friable
			21	Misc	Floor Tile and Mastic - 12" Brown with Pink, White, and Black							5	Non-Friable
			22	Misc	2'x2' Ceiling Tile Large Pock and Pinhole							100	Friable
			23	Misc	Cove Base and Mastic -4" Beige							50	Non-Friable
Breakroom Office South	21	1	5	Misc	Cove Base and Mastic - 4" Black	11	14	8	154	400	50	50	Non-Friable
			6	Misc	Floor Tile and Mastic - 12" Dark Gray with White and Black Pattern							150	Non-Friable
			15	Misc	Drywall and Joint Compound							400	Non-Friable
			22	Misc	2'x2' Ceiling Tile Large Pock and Pinhole							150	Friable
Breakroom Office North	23	1	5	Misc	Cove Base and Mastic - 4" Black	16	14	8	224	480	60	60	Non-Friable
			6	Misc	Floor Tile and Mastic - 12" Dark Gray with White and Black Pattern							250	Non-Friable
			15	Misc	Drywall and Joint Compound							240	Non-Friable
			22	Misc	2'x2' Ceiling Tile Large Pock and Pinhole							250	Friable

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ASBESTOS INSPECTION FUNCTIONAL SPACES

FUNCTIONAL SPACE NAME	FUNC. SPACE #	FLOOR	HM #	MAT. TYPE	MATERIAL DESCRIPTION	L	W	H	SF	WSA	P	Quantity	F or NF
Women's Bathroom	24	1	12	TSI	White Pipe Mastic	18	16	8	288	544	68	25	Friable
			22	Misc	2'x2' Ceiling Tile Large Pock and Pinhole							300	Friable
Men's Bathroom	25	1	12	TSI	White Pipe Mastic	18	16	8	288	544	68	25	Friable
			22	Misc	2'x2' Ceiling Tile Large Pock and Pinhole							300	Friable
North Lab	26	M	5	Misc	Cove Base and Mastic - 4" Black	20	22	8	440	672	84	90	Non-Friable
			14	Misc	2'x4' Ceiling Tile Large Pock and Pinhole							450	Friable
			15	Misc	Drywall and Joint Compound							675	Non-Friable
			21	Misc	Floor Tile and Mastic - 12" Brown with Pink, White, and Black							450	Non-Friable
			31	Misc	Lab Counterop							15	Non-Friable
South Lab	27	M	5	Misc	Cove Base and Mastic - 4" Black	27	20	8	540	752	94	100	Non-Friable
			14	Misc	2'x4' Ceiling Tile Large Pock and Pinhole							550	Friable
			15	Misc	Drywall and Joint Compound							800	Non-Friable
			21	Misc	Floor Tile and Mastic - 12" Brown with Pink, White, and Black							550	Non-Friable
			31	Misc	Lab Counterop							20	Non-Friable
			32	Misc	Lab Hood/Transite							1	Non-Friable

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ASBESTOS INSPECTION FUNCTIONAL SPACES

FUNCTIONAL SPACE NAME	FUNC. SPACE #	FLOOR	HM #	MAT. TYPE	MATERIAL DESCRIPTION	L	W	H	SF	WSA	P	Quantity	F or NF
South Office Mezz	28	M	2	Misc	Drywall Panels	15	23	8	345	608	76	650	
			5	Misc	Cove Base and Mastic - 4" Black							80	Non-Friable
			14	Misc	2'x4' Ceiling Tile Large Pock and Pinhole							200	Friable
			20	Misc	Floor Tile and Mastic - 12" Black with White							350	Non-Friable
			27	Misc	2'x4' Ceiling Tile - Lengthwise Fissures and Pinholes							150	Friable
North Office Mezz	29	M	2	Misc	Drywall Panels	15	15	8	225	480	60	500	Non-Friable
			14	Misc	2'x4' Ceiling Tile Large Pock and Pinhole							225	Friable
			20	Misc	Floor Tile and Mastic - 12" Black with White							225	Non-Friable
Mezz Open Air	30	M	5	Misc	Cove Base and Mastic - 4" Black	39	50		1950	0	178	100	Non-Friable
			15	Misc	Drywall and Joint Compound							700	Non-Friable
Mezz Office	31	M	3	Misc	Cove Base and Mastic - 4" Gray	20	22	9	440	756	84	100	Non-Friable
			4	Misc	Carpet Mastic							450	Non-Friable
			14	Misc	2'x4' Ceiling Tile Large Pock and Pinhole							450	Friable
			15	Misc	Drywall and Joint Compound							800	Non-Friable
Mezz Office	32	M	3	Misc	Cove Base and Mastic - 4" Gray	20	22	9	440	756	84	100	Non-Friable
			4	Misc	Carpet Mastic							450	Non-Friable
			6	Misc	Floor Tile and Mastic - 12" Dark Gray with White and Black Pattern	14	4					60	Non-Friable
			14	Misc	2'x4' Ceiling Tile Large Pock and Pinhole							450	Friable
			15	Misc	Drywall and Joint Compound							800	Non-Friable
Mezz Office	33	M	3	Misc	Cove Base and Mastic - 4" Gray	22	24	9	528	828	92	100	Non-Friable

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ASBESTOS INSPECTION FUNCTIONAL SPACES

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			4	Misc	Carpet Mastic							550	Non-Friable
			14	Misc	2'x4' Ceiling Tile Large Pock and Pinhole							550	Friable
			15	Misc	Drywall and Joint Compound							900	Non-Friable
Mezz Office	34	M	3	Misc	Cove Base and Mastic - 4" Gray	9	20	9	180	522	58	60	Non-Friable
			4	Misc	Carpet Mastic							200	Non-Friable
			14	Misc	2'x4' Ceiling Tile Large Pock and Pinhole							200	Friable
			15	Misc	Drywall and Joint Compound							600	Non-Friable
Mezz Hallway	35	M	3	Misc	Cove Base and Mastic - 4" Gray	4	41	9	164	810	90	100	Non-Friable
			6	Misc	Floor Tile and Mastic - 12" Dark Gray with White and Black Pattern							175	Non-Friable
			14	Misc	2'x4' Ceiling Tile Large Pock and Pinhole							175	Friable
2nd Floor Landing and Closet	36	2	5	Misc	Cove Base and Mastic - 4" Black	18	12	9	216	540	60	60	Non-Friable
			14	Misc	2'x4' Ceiling Tile Large Pock and Pinhole							225	Friable
			15	Misc	Drywall and Joint Compound							300	Non-Friable
			33	Misc	Floor Tile and Mastic - 12" Orange							225	Non-Friable

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Classroom	37	2	5	Misc	Cove Base and Mastic - 4" Black	30	30	9	900	1080	120	120	Non-Friable
			14	Misc	2'x4' Ceiling Tile Large Pock and Pinhole							1000	Friable
			15	Misc	Drywall and Joint Compound							1200	Non-Friable
			21	Misc	Floor Tile and Mastic - 12" Brown with Pink, White, and Black							1000	Non-Friable
Room 38	38	2	2	Misc	Drywall Panels	20	30	8	600	800	100	160	Non-Friable
			5	Misc	Cove Base and Mastic - 4" Black							100	Non-Friable
			14	Misc	2'x4' Ceiling Tile Large Pock and Pinhole							400	Friable
			15	Misc	Drywall and Joint Compound							640	Non-Friable
			21	Misc	Floor Tile and Mastic - 12" Brown with Pink, White, and Black							600	Non-Friable
			27	Misc	2'x4' Ceiling Tile - Lengthwise Fissures and Pinholes							200	Friable
Room 38 Closet	39	2	2	Misc	Drywall Panels	10	20	8	200	480	60	160	Non-Friable
			5	Misc	Cove Base and Mastic - 4" Black							60	Non-Friable
			13	Misc	2'x4' Ceiling Tile Width Wide Fissure and Pinhole							75	Friable
			14	Misc	2'x4' Ceiling Tile Large Pock and Pinhole							75	Friable
			15	Misc	Drywall and Joint Compound							320	Non-Friable
			21	Misc	Floor Tile and Mastic - 12" Brown with Pink, White, and Black							200	Non-Friable
			27	Misc	2'x4' Ceiling Tile - Lengthwise Fissures and Pinholes							50	Friable

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Room 40	40	2	1	Misc	2'x4' Ceiling Tile - Small Pock and Pinhole	13	18	8	234	496	62	75	Friable
			13	Misc	2'x4' Ceiling Tile Width Wide Fissure and Pinhole							75	Friable
			14	Misc	2'x4' Ceiling Tile Large Pock and Pinhole							50	Friable
			15	Misc	Drywall and Joint Compound							500	Non-Friable
			27	Misc	2'x4' Ceiling Tile - Lengthwise Fissures and Pinholes							50	Friable
			34	Misc	Cove Base and Mastic - 4" Blue							250	Non-Friable
			35	Misc	Floor Tile - Marble Pattern Laminate P&S							250	Non-Friable
Room 41	41	2	1	Misc	2'x4' Ceiling Tile - Small Pock and Pinhole	11	13	8	143	384	48	50	Friable
			13	Misc	2'x4' Ceiling Tile Width Wide Fissure and Pinhole							50	Friable
			14	Misc	2'x4' Ceiling Tile Large Pock and Pinhole							25	Friable
			15	Misc	Drywall and Joint Compound							400	Non-Friable
			27	Misc	2'x4' Ceiling Tile - Lengthwise Fissures and Pinholes							25	Friable
			34	Misc	Cove Base and Mastic - 4" Blue							50	Non-Friable
			35	Misc	Floor Tile - Marble Pattern Laminate P&S							150	Non-Friable
Room 42	42	2	4	Misc	Carpet Mastic	16	17	8	272	528	66	275	Non-Friable
			14	Misc	2'x4' Ceiling Tile Large Pock and Pinhole							275	Friable
			15	Misc	Drywall and Joint Compound							550	Non-Friable
			34	Misc	Cove Base and Mastic - 4" Blue							66	Non-Friable

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Room 43 and Closet	43	2	4	Misc	Carpet Mastic	10	17	8	170	432	54	175	Non-Friable
			14	Misc	2'x4' Ceiling Tile Large Pock and Pinhole	7	8	8	56	240	30	235	Friable
			15	Misc	Drywall and Joint Compound							700	Non-Friable
			33	Misc	Floor Tile and Mastic - 12" Orange							60	Non-Friable
			34	Misc	Cove Base and Mastic - 4" Blue							85	Non-Friable
Exterior	44	E	**36**	**Misc**	**Roof Sealant - Black**	**200**	**500**	**25**	**100000**	**35000**	**1400**	**50000**	**Non-Friable**
			37	Misc	Flashing - Silver- On Plane of Roof							2500	Non-Friable
			38	Misc	Flashing - Light Gray - Perimeter of Building							1500	Non-Friable
			39	Misc	Expansion Joints Silver Between Wall Panels							1200	Non-Friable
			40	Misc	Expansion Joints White Between Wall Panels							1200	Non-Friable

APPENDIX F
XRF ANALYSIS RESULTS

Company	Viken
Model	Pb200e
Type	XRF Lead Paint Analyzer
Serial Num.	1098
App Version	Pb200i-5.3.1

Lead Based Paint Inspection
Scruggs Stations Warehous Complex
4720 Scruggs Station Road, Jefferson City, Missouri

OCCU-TEC
Protecting People, Places and Performance

Job Id	Reading #	Concentration	Units	3 SD	Result	Action Level	Nom Sec	Date	Time	User	Mode	Analytic Mode	Floor	Room	Side	Component	Color	Substrate	Condition	Misc
925307	83	0.9	mg/cm2	0.2	Calibration	1	5	10/18/2025	18:34:00	Justin	Action Level	Lead Paint								
925307	84	1	mg/cm2	0.2	Calibration	1	5	10/18/2025	18:34:34	Justin	Action Level	Lead Paint								
925307	85	0.9	mg/cm2	0.2	Calibration	1	5	10/18/2025	18:35:07	Justin	Action Level	Lead Paint								
925307	86	0	mg/cm2	0.3	Negative	1	2	10/18/2025	18:57:02	Justin	Action Level	Lead Paint	1st	1	North	Wall	White	Drywall	Intact	
925307	87	0.1	mg/cm2	0.3	Negative	1	2	10/18/2025	18:57:23	Justin	Action Level	Lead Paint	1st	1	East	Wall	White	Drywall	Intact	
925307	88	0	mg/cm2	0.3	Negative	1	2	10/18/2025	18:57:48	Justin	Action Level	Lead Paint	1st	1	South	Wall	White	Drywall	Intact	
925307	89	0	mg/cm2	0.3	Negative	1	2	10/18/2025	18:58:10	Justin	Action Level	Lead Paint	1st	1	West	Wall	White	Drywall	Intact	
925307	90	0	mg/cm2	0.3	Negative	1	2	10/18/2025	18:59:52	Justin	Action Level	Lead Paint	1st	1	East	Door	Gray	Wood	Intact	
925307	91	0.3	mg/cm2	0.3	Negative	1	2	10/18/2025	19:00:21	Justin	Action Level	Lead Paint	1st	1	East	Door Jamb	Gray	Metal	Intact	
925307	92	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:00:43	Justin	Action Level	Lead Paint	1st	1	East	Door Casing	Gray	Metal	Intact	
925307	93	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:01:12	Justin	Action Level	Lead Paint	1st	1	East	Window Frame	Gray	Metal	Intact	
925307	94	0.4	mg/cm2	0.3	Negative	1	2	10/18/2025	19:01:37	Justin	Action Level	Lead Paint	1st	1	East	Window Case	Gray	Metal	Intact	
925307	95	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:02:40	Justin	Action Level	Lead Paint	1st	1	South	Door	Gray	Wood	Intact	
925307	96	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:03:14	Justin	Action Level	Lead Paint	1st	1	South	Door Jamb	Gray	Metal	Intact	
925307	97	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:03:39	Justin	Action Level	Lead Paint	1st	1	South	Door Casing	Gray	Metal	Intact	
925307	98	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:04:24	Justin	Action Level	Lead Paint	1st	2	North	Wall	White	Drywall	Intact	
925307	99	0.1	mg/cm2	0.3	Negative	1	2	10/18/2025	19:04:46	Justin	Action Level	Lead Paint	1st	2	East	Wall	White	Drywall	Intact	
925307	100	0.1	mg/cm2	0.3	Negative	1	2	10/18/2025	19:05:47	Justin	Action Level	Lead Paint	1st	2	South	Wall	White	Drywall	Intact	
925307	101	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:06:11	Justin	Action Level	Lead Paint	1st	2	West	Wall	White	Drywall	Intact	
925307	102	0.1	mg/cm2	0.3	Negative	1	2	10/18/2025	19:07:01	Justin	Action Level	Lead Paint	1st	2	West	Covebase	Black	Vinyl	Intact	
925307	103	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:10:04	Justin	Action Level	Lead Paint	1st	3	East	Cove-base	Gray	Vinyl	Intact	
925307	104	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:10:56	Justin	Action Level	Lead Paint	1st	3	North	Wall	White	Drywall	Intact	
925307	105	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:11:18	Justin	Action Level	Lead Paint	1st	3	East	Wall	White	Drywall	Intact	
925307	106	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:12:04	Justin	Action Level	Lead Paint	1st	4	North	Wall	White	Drywall	Intact	
925307	107	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:12:42	Justin	Action Level	Lead Paint	1st	4	East	Wall	White	Drywall	Intact	
925307	108	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:13:25	Justin	Action Level	Lead Paint	1st	4	East	Door	Gray	Wood	Intact	
925307	109	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:13:57	Justin	Action Level	Lead Paint	1st	4	East	Door Jamb	Gray	Metal	Intact	
925307	110	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:14:18	Justin	Action Level	Lead Paint	1st	4	East	Door Casing	Gray	Metal	Intact	
925307	111	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:14:50	Justin	Action Level	Lead Paint	1st	5	East	Door Casing	Gray	Metal	Intact	
925307	112	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:15:11	Justin	Action Level	Lead Paint	1st	5	East	Door Jamb	Gray	Metal	Intact	
925307	113	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:15:36	Justin	Action Level	Lead Paint	1st	5	East	Door	Gray	Wood	Intact	
925307	114	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:16:18	Justin	Action Level	Lead Paint	1st	5	East	Wall	White	Drywall	Intact	
925307	115	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:16:42	Justin	Action Level	Lead Paint	1st	5	South	Wall	White	Drywall	Intact	
925307	116	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:17:14	Justin	Action Level	Lead Paint	1st	6	North	Wall	White	Drywall	Intact	
925307	117	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:17:37	Justin	Action Level	Lead Paint	1st	6	East	Wall	White	Drywall	Intact	
925307	118	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:17:59	Justin	Action Level	Lead Paint	1st	6	South	Wall	White	Drywall	Intact	
925307	119	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:18:41	Justin	Action Level	Lead Paint	1st	6	South	Door	Gray	Wood	Intact	
925307	120	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:19:14	Justin	Action Level	Lead Paint	1st	6	South	Door Jamb	Gray	Metal	Intact	
925307	121	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:19:36	Justin	Action Level	Lead Paint	1st	6	South	Door Casing	Gray	Metal	Intact	
925307	122	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:20:17	Justin	Action Level	Lead Paint	1st	7	South	Door Casing	Gray	Metal	Intact	
925307	123	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:20:41	Justin	Action Level	Lead Paint	1st	7	South	Door Jamb	Gray	Metal	Intact	
925307	124	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:21:06	Justin	Action Level	Lead Paint	1st	7	South	Door	Gray	Wood	Intact	
925307	125	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:21:47	Justin	Action Level	Lead Paint	1st	7	North	Wall	White	Drywall	Intact	
925307	126	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:22:12	Justin	Action Level	Lead Paint	1st	7	West	Wall	White	Drywall	Intact	
925307	127	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:23:29	Justin	Action Level	Lead Paint	1st	8	North	Wall	White	Cinderblock	Intact	
925307	128	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:23:52	Justin	Action Level	Lead Paint	1st	8	East	Wall	White	Cinderblock	Intact	
925307	129	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:24:18	Justin	Action Level	Lead Paint	1st	8	South	Wall	White	Cinderblock	Intact	
925307	130	0	mg/cm2	0.4	Negative	1	2	10/18/2025	19:24:40	Justin	Action Level	Lead Paint	1st	8	West	Wall	White	Cinderblock	Intact	
925307	131	1.2	mg/cm2	0.2	Positive	1	5	10/18/2025	19:25:46	Justin	Action Level	Lead Paint	1st	9 Men's Rr	North	Wall	Brown	Ceramic Tile	Intact	
925307	132	0.4	mg/cm2	0.3	Negative	1	2	10/18/2025	19:27:08	Justin	Action Level	Lead Paint	1st	9 Men's Rr	Room Center	Floor	Gray	Concrete	Intact	
925307	133	0.1	mg/cm2	0.3	Negative	1	2	10/18/2025	19:31:34	Justin	Action Level	Lead Paint	1st	10 Women's Rr	Room Center	Floor	Gray	Concrete	Intact	
925307	134	1.4	mg/cm2	0.3	Positive	1	4	10/18/2025	19:32:17	Justin	Action Level	Lead Paint	1st	10 Women's Rr	North	Wall	Brown	Ceramic	Intact	
925307	135	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:33:57	Justin	Action Level	Lead Paint	1st	10 Women's Rr	South	Door	Gray	Wood	Intact	
925307	136	0.5	mg/cm2	0.3	Negative	1	3	10/18/2025	19:34:36	Justin	Action Level	Lead Paint	1st	10 Women's Rr	South	Door Jamb	Gray	Metal	Intact	
925307	137	0.3	mg/cm2	0.3	Negative	1	2	10/18/2025	19:35:00	Justin	Action Level	Lead Paint	1st	10 Women's Rr	South	Door Casing	Gray	Metal	Intact	
925307	138	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:35:45	Justin	Action Level	Lead Paint	1st	10A Janitor	South	Door Casing	Gray	Metal	Intact	

Black = Negative
Blue = Calibration/Null
Red = Positive

Intact = Paint in good condition
Fair = Below De minimis levels
Poor = Above De minimis levels

Company	Viken
Model	Pb200e
Type	XRF Lead Paint Analyzer
Serial Num.	1098
App Version	Pb200i-5.3.1

Lead Based Paint Inspection
Scruggs Stations Warehous Complex
4720 Scruggs Station Road, Jefferson City, Missouri

OCCU-TEC
Protecting People, Places and Performance

Job Id	Reading #	Concentration	Units	3 SD	Result	Action Level	Nom Sec	Date	Time	User	Mode	Analytic Mode	Floor	Room	Side	Component	Color	Substrate	Condition	Misc
925307	139	0.3	mg/cm2	0.3	Negative	1	2	10/18/2025	19:36:18	Justin	Action Level	Lead Paint	1st	10A Janitor	South	Door Jamb	Beige	Metal	Intact	
925307	140	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:37:15	Justin	Action Level	Lead Paint	1st	10A Janitor	North	Wall	Beige	Cinderblock	Intact	
925307	141	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:37:38	Justin	Action Level	Lead Paint	1st	10A Janitor	East	Wall	Beige	Cinderblock	Intact	
925307	142	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:38:57	Justin	Action Level	Lead Paint	1st	11	North	Wall	Beige	Drywall	Intact	
925307	143	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:39:21	Justin	Action Level	Lead Paint	1st	11	East	Wall	Beige	Drywall	Intact	
925307	144	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:40:05	Justin	Action Level	Lead Paint	1st	11	South	Wall	Beige	Drywall	Intact	
925307	145	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:40:32	Justin	Action Level	Lead Paint	1st	11	West	Wall	Beige	Drywall	Intact	
925307	146	0.1	mg/cm2	0.3	Negative	1	2	10/18/2025	19:41:03	Justin	Action Level	Lead Paint	1st	11	West	Wall	Red	Drywall	Intact	
925307	147	0.1	mg/cm2	0.4	Negative	1	2	10/18/2025	19:42:13	Justin	Action Level	Lead Paint	1st	11	Room Center	Floor	Gray	Drywall	Intact	
925307	148	0.2	mg/cm2	0.4	Negative	1	2	10/18/2025	19:42:36	Justin	Action Level	Lead Paint	1st	11	Room Center	Floor	Gray	Drywall	Intact	
925307	149	0.1	mg/cm2	0.4	Negative	1	2	10/18/2025	19:43:11	Justin	Action Level	Lead Paint	1st	12	Room Center	Floor	Gray	Drywall	Intact	
925307	150	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:43:53	Justin	Action Level	Lead Paint	1st	12	North	Door	Gray	Metal	Intact	
925307	151	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:44:18	Justin	Action Level	Lead Paint	1st	12	North	Door Jamb	Gray	Metal	Intact	
925307	152	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:44:39	Justin	Action Level	Lead Paint	1st	12	North	Door Casing	Gray	Metal	Intact	
925307	153	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:46:28	Justin	Action Level	Lead Paint	1st	12	North	Wall	Gray	Drywall	Intact	
925307	154	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:46:50	Justin	Action Level	Lead Paint	1st	12	East	Wall	Gray	Drywall	Intact	
925307	155	0.1	mg/cm2	0.3	Negative	1	2	10/18/2025	19:47:12	Justin	Action Level	Lead Paint	1st	12	South	Wall	Gray	Drywall	Intact	
925307	156	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:47:33	Justin	Action Level	Lead Paint	1st	12	West	Wall	Gray	Drywall	Intact	
925307	157	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:51:56	Justin	Action Level	Lead Paint	1st	13	North	Wall	Beige	Metal	Intact	
925307	158	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:52:23	Justin	Action Level	Lead Paint	1st	13	North	Wall	Beige	Metal	Intact	
925307	159	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:52:49	Justin	Action Level	Lead Paint	1st	13	North	Wall	Beige	Concrete	Intact	
925307	160	0	mg/cm2	0.4	Negative	1	2	10/18/2025	19:53:11	Justin	Action Level	Lead Paint	1st	13	North	Wall	Beige	Concrete	Intact	
925307	161	0	mg/cm2	0.4	Negative	1	2	10/18/2025	19:53:38	Justin	Action Level	Lead Paint	1st	13	North	Wall	Beige	Concrete	Intact	
925307	162	0	mg/cm2	0.3	Negative	1	2	10/18/2025	19:54:02	Justin	Action Level	Lead Paint	1st	13	North	Wall	Beige	Metal	Intact	
925307	163	1.1	mg/cm2	0.2	Positive	1	5	10/18/2025	19:57:32	Justin	Action Level	Lead Paint	1st	13	North	Pipe	Red	Metal	Intact	
925307	164	3.5	mg/cm2	0.3	Positive	1	2	10/18/2025	19:58:52	Justin	Action Level	Lead Paint	1st	13	North	Post	Yellow	Metal	Intact	
925307	165	0.2	mg/cm2	0.3	Negative	1	2	10/18/2025	19:59:32	Justin	Action Level	Lead Paint	1st	13	North	Floor	Yellow	Concrete	Intact	
925307	166	0.3	mg/cm2	0.4	Negative	1	2	10/18/2025	19:59:55	Justin	Action Level	Lead Paint	1st	13	North	Floor	Yellow	Concrete	Intact	
925307	167	0	mg/cm2	0.4	Negative	1	2	10/18/2025	20:01:01	Justin	Action Level	Lead Paint	1st	13	East	Wall	Beige	Concrete	Intact	
925307	168	0	mg/cm2	0.4	Negative	1	2	10/18/2025	20:01:39	Justin	Action Level	Lead Paint	1st	13	East	Wall	Beige	Concrete	Intact	
925307	169	0.2	mg/cm2	0.4	Negative	1	2	10/18/2025	20:02:26	Justin	Action Level	Lead Paint	1st	13	East	Wall	Beige	Concrete	Intact	
925307	170	0.1	mg/cm2	0.3	Negative	1	2	10/18/2025	20:02:54	Justin	Action Level	Lead Paint	1st	13	East	Beam	Beige	Metal	Intact	
925307	171	0.1	mg/cm2	0.3	Negative	1	2	10/18/2025	20:03:13	Justin	Action Level	Lead Paint	1st	13	East	Beam	Beige	Metal	Intact	
925307	172	0.1	mg/cm2	0.3	Negative	1	2	10/18/2025	20:03:47	Justin	Action Level	Lead Paint	1st	13	Room Center	Beam	Beige	Metal	Intact	
925307	173	0.1	mg/cm2	0.3	Negative	1	2	10/18/2025	20:04:25	Justin	Action Level	Lead Paint	1st	13	East	Beam	Beige	Metal	Intact	
925307	174	0.2	mg/cm2	0.4	Negative	1	2	10/18/2025	20:04:58	Justin	Action Level	Lead Paint	1st	13	East	Wall	Red	Metal	Intact	
925307	175	0	mg/cm2	0.3	Negative	1	2	10/18/2025	20:05:41	Justin	Action Level	Lead Paint	1st	13	East	Door	Lt-Green	Metal	Intact	
925307	176	0	mg/cm2	0.3	Negative	1	2	10/18/2025	20:06:04	Justin	Action Level	Lead Paint	1st	13	East	Door Jamb	Lt-Green	Metal	Intact	
925307	177	0	mg/cm2	0.3	Negative	1	2	10/18/2025	20:06:24	Justin	Action Level	Lead Paint	1st	13	East	Door Casing	Lt-Green	Metal	Intact	
925307	178	0	mg/cm2	0.3	Negative	1	2	10/18/2025	20:07:27	Justin	Action Level	Lead Paint	1st	13	South	Wall	Lt-Green	Cinderblock	Intact	
925307	179	0.2	mg/cm2	0.3	Negative	1	2	10/18/2025	20:08:06	Justin	Action Level	Lead Paint	1st	13	South	Beam	Beige	Metal	Intact	
925307	180	0.1	mg/cm2	0.3	Negative	1	2	10/18/2025	20:08:29	Justin	Action Level	Lead Paint	1st	13	South	Beam	Beige	Metal	Intact	
925307	181	0.1	mg/cm2	0.3	Negative	1	2	10/18/2025	20:09:38	Justin	Action Level	Lead Paint	1st	13	South	Beam	Yellow	Metal	Intact	
925307	182	0	mg/cm2	0.3	Negative	1	2	10/18/2025	20:09:58	Justin	Action Level	Lead Paint	1st	13	South	Beam	Yellow	Metal	Intact	
925307	183	0	mg/cm2	0.3	Negative	1	2	10/18/2025	20:10:32	Justin	Action Level	Lead Paint	1st	13	South	Beam	Yellow	Metal	Intact	
925307	184	0	mg/cm2	0.3	Negative	1	2	10/18/2025	20:11:13	Justin	Action Level	Lead Paint	1st	13	South	Wall	Lt-Blue	Cinderblock	Intact	
925307	185	0	mg/cm2	0.4	Negative	1	2	10/18/2025	20:11:53	Justin	Action Level	Lead Paint	1st	13	West	Wall	Lt-Blue	Cinderblock	Intact	
925307	186	0	mg/cm2	0.3	Negative	1	2	10/18/2025	20:12:17	Justin	Action Level	Lead Paint	1st	13	West	Wall	Blue	Cinderblock	Intact	
925307	187	0.1	mg/cm2	0.3	Negative	1	2	10/18/2025	20:19:40	Justin	Action Level	Lead Paint	1st	13	West	Wall	Beige	Concrete	Intact	
925307	188	0	mg/cm2	0.4	Negative	1	2	10/18/2025	20:20:04	Justin	Action Level	Lead Paint	1st	13	West	Wall	Red	Concrete	Intact	
925307	189	0.1	mg/cm2	0.4	Negative	1	2	10/18/2025	20:20:32	Justin	Action Level	Lead Paint	1st	13	West	Wall	Beige	Concrete	Intact	
925307	190	0	mg/cm2	0.3	Negative	1	2	10/18/2025	20:20:58	Justin	Action Level	Lead Paint	1st	13	West	Beam	Beige	Metal	Intact	
925307	191	0.2	mg/cm2	0.3	Negative	1	2	10/18/2025	20:22:07	Justin	Action Level	Lead Paint	1st	13	West	Floor	Yellow	Concrete	Intact	
925307	192	0.3	mg/cm2	0.4	Negative	1	2	10/18/2025	20:22:37	Justin	Action Level	Lead Paint	1st	13	West	Floor	Yellow	Concrete	Intact	
925307	193	0.2	mg/cm2	0.4	Negative	1	2	10/18/2025	20:22:57	Justin	Action Level	Lead Paint	1st	13	West	Floor	Yellow	Concrete	Intact	
925307	194	0.1	mg/cm2	0.3	Negative	1	2	10/18/2025	20:23:59	Justin	Action Level	Lead Paint	1st	13	North	Stair Riser	Black	Metal	Intact	

Black = Negative
Blue = Calibration/Null
Red = Positive

Intact = Paint in good condition
Fair = Below De minimis levels
Poor = Above De minimis levels

Company	Viken
Model	Pb200e
Type	XRF Lead Paint Analyzer
Serial Num.	1098
App Version	Pb200i-5.3.1

Lead Based Paint Inspection
Scruggs Stations Warehous Complex
4720 Scruggs Station Road, Jefferson City, Missouri

OCCU-TEC
Protecting People, Places and Performance

Job Id	Reading #	Concentration	Units	3 SD	Result	Action Level	Nom Sec	Date	Time	User	Mode	Analytic Mode	Floor	Room	Side	Component	Color	Substrate	Condition	Misc
925307	195	0	mg/cm2	0.3	Negative	1	2	10/18/2025	20:24:24	Justin	Action Level	Lead Paint	1st	13	North	Stair Tread	Black	Metal	Intact	
925307	196	0.2	mg/cm2	0.3	Negative	1	2	10/18/2025	20:24:51	Justin	Action Level	Lead Paint	1st	13	North	Stair Stringer	Blue	Metal	Intact	
925307	197	0.2	mg/cm2	0.3	Negative	1	2	10/18/2025	20:25:20	Justin	Action Level	Lead Paint	1st	13	North	Hand Rail	Beige	Metal	Intact	
925307	198	0.1	mg/cm2	0.3	Negative	1	2	10/18/2025	20:25:39	Justin	Action Level	Lead Paint	1st	13	North	Hand Rail	Beige	Metal	Intact	
925307	199	0	mg/cm2	0.3	Negative	1	2	10/18/2025	20:35:22	Justin	Action Level	Lead Paint	1st	14	South	Wall	White	Drywall	Intact	
925307	200	0	mg/cm2	0.3	Negative	1	2	10/18/2025	20:35:51	Justin	Action Level	Lead Paint	1st	14	West	Wall	White	Cinderblock	Intact	
925307	201	0	mg/cm2	0.3	Negative	1	2	10/18/2025	20:36:35	Justin	Action Level	Lead Paint	1st	15	East	Wall	White	Cinderblock	Intact	
925307	202	0.1	mg/cm2	0.3	Negative	1	2	10/18/2025	20:37:01	Justin	Action Level	Lead Paint	1st	15	South	Wall	White	Drywall	Intact	
925307	203	0	mg/cm2	0.3	Negative	1	2	10/18/2025	20:37:44	Justin	Action Level	Lead Paint	1st	15	East	Door	White	Metal	Intact	
925307	204	0	mg/cm2	0.3	Negative	1	2	10/18/2025	20:38:20	Justin	Action Level	Lead Paint	1st	16	East	Door	White	Metal	Intact	
925307	205	0	mg/cm2	0.3	Negative	1	2	10/18/2025	20:39:02	Justin	Action Level	Lead Paint	1st	16	East	Wall	White	Cinderblock	Intact	
925307	206	0	mg/cm2	0.3	Negative	1	2	10/18/2025	20:39:32	Justin	Action Level	Lead Paint	1st	17	East	Wall	White	Cinderblock	Intact	
925307	207	0	mg/cm2	0.3	Negative	1	2	10/18/2025	20:40:00	Justin	Action Level	Lead Paint	1st	17	North	Wall	White	Drywall	Intact	
925307	208	0	mg/cm2	0.3	Negative	1	2	10/18/2025	20:41:40	Justin	Action Level	Lead Paint	1st	18	East	Wall	White	Cinderblock	Intact	
925307	209	0.2	mg/cm2	0.4	Negative	1	2	10/18/2025	20:44:16	Justin	Action Level	Lead Paint	1st	18	Floor	Floor	Yellow	Concrete	Intact	
925307	210	0.1	mg/cm2	0.3	Negative	1	2	10/18/2025	20:45:03	Justin	Action Level	Lead Paint	1st	18	East	Wall	White	Cinderblock	Intact	
925307	211	0	mg/cm2	0.3	Negative	1	2	10/18/2025	20:45:53	Justin	Action Level	Lead Paint	1st	18	East	Wall	Red	Cinderblock	Intact	
925307	212	0	mg/cm2	0.4	Negative	1	2	10/18/2025	20:46:52	Justin	Action Level	Lead Paint	1st	18	East	Wall	Red	Cinderblock	Intact	
925307	213	3	mg/cm2	0.3	Positive	1	2	10/18/2025	20:47:59	Justin	Action Level	Lead Paint	1st	18	East	Pipe	Yellow	Metal	Intact	
925307	214	0	mg/cm2	0.3	Negative	1	2	10/18/2025	20:48:40	Justin	Action Level	Lead Paint	1st	18	South	Pipe	Yellow	Metal	Intact	
925307	215	5.1	mg/cm2	0.3	Positive	1	2	10/18/2025	20:49:01	Justin	Action Level	Lead Paint	1st	18	South	Pipe	Yellow	Metal	Intact	
925307	216	0	mg/cm2	0.3	Negative	1	2	10/18/2025	20:49:43	Justin	Action Level	Lead Paint	1st	18	South	Wall	Beige	Concrete	Intact	
925307	217	0	mg/cm2	0.4	Negative	1	2	10/18/2025	20:50:13	Justin	Action Level	Lead Paint	1st	18	South	Wall	Beige	Concrete	Intact	
925307	218	0.5	mg/cm2	0.4	Negative	1	2	10/18/2025	20:50:38	Justin	Action Level	Lead Paint	1st	18	South	Wall	Red	Concrete	Intact	
925307	219	0	mg/cm2	0.3	Negative	1	2	10/18/2025	20:51:10	Justin	Action Level	Lead Paint	1st	18	South	Beam	Beige	Metal	Intact	
925307	220	0	mg/cm2	0.3	Negative	1	2	10/18/2025	20:51:28	Justin	Action Level	Lead Paint	1st	18	South	Beam	Beige	Metal	Intact	
925307	221	0.1	mg/cm2	0.3	Negative	1	2	10/18/2025	20:52:30	Justin	Action Level	Lead Paint	1st	18	South	Beam	Beige	Metal	Intact	
925307	222	0.9	mg/cm2	0.2	Negative	1	5	10/18/2025	20:54:26	Justin	Action Level	Lead Paint	1st	18	South	Floor	Yellow	Concrete	Intact	
925307	223	0	mg/cm2	0.3	Negative	1	2	10/18/2025	20:55:42	Justin	Action Level	Lead Paint	1st	18	West	Pipe	Yellow	Metal	Intact	
925307	224	0	mg/cm2	0.3	Negative	1	2	10/18/2025	20:56:30	Justin	Action Level	Lead Paint	1st	18	West	Beam	Beige	Metal	Intact	
925307	225	0	mg/cm2	0.3	Negative	1	2	10/18/2025	20:56:48	Justin	Action Level	Lead Paint	1st	18	West	Beam	Beige	Metal	Intact	
925307	226	0.1	mg/cm2	0.3	Negative	1	2	10/18/2025	20:58:12	Justin	Action Level	Lead Paint	1st	18	West	Wall	Beige	Cinderblock	Intact	
925307	227	0	mg/cm2	0.3	Negative	1	2	10/18/2025	20:58:41	Justin	Action Level	Lead Paint	1st	18	West	Wall	Beige	Concrete	Intact	
925307	228	0.3	mg/cm2	0.4	Negative	1	2	10/18/2025	21:00:35	Justin	Action Level	Lead Paint	1st	18	West	Floor	Yellow	Concrete	Intact	
925307	229	0.2	mg/cm2	0.4	Negative	1	2	10/18/2025	21:00:52	Justin	Action Level	Lead Paint	1st	18	West	Floor	Yellow	Concrete	Intact	
925307	230	0.9	mg/cm2	0.2	Calibration	1	5	10/18/2025	21:01:59	Justin	Action Level	Lead Paint								
925307	231	0.9	mg/cm2	0.2	Calibration	1	5	10/18/2025	21:02:33	Justin	Action Level	Lead Paint								
925307	232	0.9	mg/cm2	0.2	Calibration	1	5	10/18/2025	21:03:07	Justin	Action Level	Lead Paint								
925307	233	0.9	mg/cm2	0.2	Calibration	1	5	10/27/2025	12:19:28	Justin	Action Level	Lead Paint								
925307	234	1	mg/cm2	0.2	Calibration	1	5	10/27/2025	12:20:19	Justin	Action Level	Lead Paint								
925307	235	0.9	mg/cm2	0.2	Calibration	1	5	10/27/2025	12:20:54	Justin	Action Level	Lead Paint								
925307	236	0	mg/cm2	0.3	Negative	1	2	10/27/2025	12:23:37	Justin	Action Level	Lead Paint	1st	19	North	Wall	White	Cinderblock	Intact	
925307	237	0	mg/cm2	0.4	Negative	1	2	10/27/2025	12:24:00	Justin	Action Level	Lead Paint	1st	19	West	Wall	White	Cinderblock	Intact	
925307	238	0	mg/cm2	0.4	Negative	1	2	10/27/2025	12:24:27	Justin	Action Level	Lead Paint	1st	19	West	Wall	White	Cinderblock	Intact	
925307	239	0	mg/cm2	0.3	Negative	1	2	10/27/2025	12:24:50	Justin	Action Level	Lead Paint	1st	19	West	Wall	White	Cinderblock	Intact	
925307	240	0	mg/cm2	0.3	Negative	1	2	10/27/2025	12:25:18	Justin	Action Level	Lead Paint	1st	19	West	Wall	White	Cinderblock	Intact	
925307	241	2.3	mg/cm2	0.3	Positive	1	2	10/27/2025	12:26:08	Justin	Action Level	Lead Paint	1st	19	West	Post	Yellow	Metal	Intact	
925307	242	2.7	mg/cm2	0.4	Positive	1	2	10/27/2025	12:26:46	Justin	Action Level	Lead Paint	1st	19	South	Post	Yellow	Metal	Intact	
925307	243	0	mg/cm2	0.3	Negative	1	2	10/27/2025	12:27:18	Justin	Action Level	Lead Paint	1st	19	South	Beam	Beige	Metal	Intact	
925307	244	0.2	mg/cm2	0.4	Negative	1	2	10/27/2025	12:27:42	Justin	Action Level	Lead Paint	1st	19	South	Beam	Beige	Metal	Intact	
925307	245	0.1	mg/cm2	0.3	Negative	1	2	10/27/2025	12:28:00	Justin	Action Level	Lead Paint	1st	19	South	Beam	Beige	Metal	Intact	
925307	246	0.1	mg/cm2	0.3	Negative	1	2	10/27/2025	12:28:23	Justin	Action Level	Lead Paint	1st	19	South	Beam	Beige	Metal	Intact	
925307	247	0	mg/cm2	0.3	Negative	1	2	10/27/2025	12:29:12	Justin	Action Level	Lead Paint	1st	19	South	Pipe	Orange	Metal	Intact	
925307	248	0	mg/cm2	0.3	Negative	1	2	10/27/2025	12:29:36	Justin	Action Level	Lead Paint	1st	19	South	Pipe	Orange	Metal	Intact	
925307	249	0.1	mg/cm2	0.3	Negative	1	2	10/27/2025	12:30:00	Justin	Action Level	Lead Paint	1st	19	South	Pipe	Beige	Metal	Intact	
925307	250	0	mg/cm2	0.3	Negative	1	2	10/27/2025	12:30:21	Justin	Action Level	Lead Paint	1st	19	South	Pipe	Beige	Metal	Intact	

Black = Negative
Blue = Calibration/Null
Red = Positive

Intact = Paint in good condition
Fair = Below De minimis levels
Poor = Above De minimis levels

Company	Viken
Model	Pb200e
Type	XRF Lead Paint Analyzer
Serial Num.	1098
App Version	Pb200i-5.3.1

Lead Based Paint Inspection
Scruggs Stations Warehous Complex
4720 Scruggs Station Road, Jefferson City, Missouri

OCCU-TEC
Protecting People, Places and Performance

Job Id	Reading #	Concentration	Units	3 SD	Result	Action Level	Nom Sec	Date	Time	User	Mode	Analytic Mode	Floor	Room	Side	Component	Color	Substrate	Condition	Misc
925307	251	4.5	mg/cm2	0.3	Positive	1	2	10/27/2025	12:31:02	Justin	Action Level	Lead Paint	1st	19	South	Tank	Blue	Metal	Intact	
925307	252	0.1	mg/cm2	0.3	Negative	1	2	10/27/2025	12:32:10	Justin	Action Level	Lead Paint	1st	19	East	Wall	Beige	Concrete	Intact	
925307	253	0	mg/cm2	0.4	Negative	1	2	10/27/2025	12:33:16	Justin	Action Level	Lead Paint	1st	19	East	Wall	Beige	Concrete	Intact	
925307	254	0.3	mg/cm2	0.4	Negative	1	2	10/27/2025	12:33:52	Justin	Action Level	Lead Paint	1st	19	East	Floor	Yellow	Concrete	Intact	
925307	255	0.3	mg/cm2	0.4	Negative	1	2	10/27/2025	12:34:12	Justin	Action Level	Lead Paint	1st	19	East	Floor	Yellow	Concrete	Intact	
925307	256	0.2	mg/cm2	0.3	Negative	1	2	10/27/2025	12:35:19	Justin	Action Level	Lead Paint	1st	19	Room Center	Beam	Beige	Metal	Intact	
925307	257	0	mg/cm2	0.3	Negative	1	2	10/27/2025	12:38:39	Justin	Action Level	Lead Paint	1st	20	North	Wall	White	Cinderblock	Intact	
925307	258	0	mg/cm2	0.3	Negative	1	2	10/27/2025	12:39:03	Justin	Action Level	Lead Paint	1st	20	East	Wall	White	Cinderblock	Intact	
925307	259	0	mg/cm2	0.4	Negative	1	2	10/27/2025	12:40:22	Justin	Action Level	Lead Paint	1st	20	South	Wall	White	Cinderblock	Intact	
925307	260	0	mg/cm2	0.4	Negative	1	2	10/27/2025	12:40:49	Justin	Action Level	Lead Paint	1st	20	West	Wall	White	Cinderblock	Intact	
925307	261	0.1	mg/cm2	0.4	Negative	1	2	10/27/2025	12:48:54	Justin	Action Level	Lead Paint	1st	23	North	Wall	Beige	Ceramic Tile	Intact	
925307	262	0	mg/cm2	0.3	Negative	1	2	10/27/2025	12:49:25	Justin	Action Level	Lead Paint	1st	23	East	Wall	Beige	Ceramic Tile	Intact	
925307	263	0.1	mg/cm2	0.4	Negative	1	2	10/27/2025	12:49:53	Justin	Action Level	Lead Paint	1st	23	South	Wall	Beige	Ceramic Tile	Intact	
925307	264	0	mg/cm2	0.3	Negative	1	2	10/27/2025	12:50:17	Justin	Action Level	Lead Paint	1st	23	West	Wall	Beige	Ceramic Tile	Intact	
925307	265	0	mg/cm2	0.3	Negative	1	2	10/27/2025	12:51:15	Justin	Action Level	Lead Paint	1st	24	North	Wall	Beige	Ceramic Tile	Intact	
925307	266	0.1	mg/cm2	0.3	Negative	1	2	10/27/2025	12:51:40	Justin	Action Level	Lead Paint	1st	24	East	Wall	Beige	Ceramic Tile	Intact	
925307	267	0	mg/cm2	0.3	Negative	1	2	10/27/2025	12:52:04	Justin	Action Level	Lead Paint	1st	24	South	Wall	Beige	Ceramic Tile	Intact	
925307	268	0	mg/cm2	0.3	Negative	1	2	10/27/2025	12:52:27	Justin	Action Level	Lead Paint	1st	24	West	Wall	Beige	Ceramic Tile	Intact	
925307	269	0.1	mg/cm2	0.3	Negative	1	2	10/27/2025	13:13:51	Justin	Action Level	Lead Paint	Mezzanine	Mez	North	Wall	White	Drywall	Intact	
925307	270	0	mg/cm2	0.3	Negative	1	2	10/27/2025	13:14:15	Justin	Action Level	Lead Paint	Mezzanine	Mez	East	Wall	White	Drywall	Intact	
925307	271	0.1	mg/cm2	0.3	Negative	1	2	10/27/2025	13:14:44	Justin	Action Level	Lead Paint	Mezzanine	Mez	South	Wall	White	Drywall	Intact	
925307	272	0.1	mg/cm2	0.3	Negative	1	2	10/27/2025	13:15:11	Justin	Action Level	Lead Paint	Mezzanine	Mez	West	Wall	White	Drywall	Intact	
925307	273	0	mg/cm2	0.3	Negative	1	2	10/27/2025	13:15:54	Justin	Action Level	Lead Paint	Mezzanine	Mez	East	Door	Gray	Metal	Intact	
925307	274	0	mg/cm2	0.3	Negative	1	2	10/27/2025	13:16:33	Justin	Action Level	Lead Paint	Mezzanine	Mez	East	Door Casing	Gray	Metal	Intact	
925307	275	0	mg/cm2	0.3	Negative	1	2	10/27/2025	13:16:55	Justin	Action Level	Lead Paint	Mezzanine	Mez	East	Door Jamb	Gray	Metal	Intact	
925307	276	0.1	mg/cm2	0.3	Negative	1	2	10/27/2025	13:17:32	Justin	Action Level	Lead Paint	Mezzanine	Mez	Room Center	Floor	Yellow	Concrete	Intact	
925307	277	0	mg/cm2	0.3	Negative	1	2	10/27/2025	13:18:23	Justin	Action Level	Lead Paint	Mezzanine	Mez	South	Stair Tread	Lt-Blue	Concrete	Intact	
925307	278	0	mg/cm2	0.3	Negative	1	2	10/27/2025	13:18:51	Justin	Action Level	Lead Paint	Mezzanine	Mez	South	Stair Riser	Lt-Blue	Concrete	Intact	
925307	279	0.4	mg/cm2	0.3	Negative	1	2	10/27/2025	13:19:15	Justin	Action Level	Lead Paint	Mezzanine	Mez	South	Stair Stringer	Lt-Blue	Concrete	Intact	
925307	280	0.5	mg/cm2	0.3	Negative	1	2	10/27/2025	13:19:51	Justin	Action Level	Lead Paint	Mezzanine	Mez	South	Hand Rail	Beige	Concrete	Intact	
925307	281	0	mg/cm2	0.3	Negative	1	2	10/27/2025	13:21:34	Justin	Action Level	Lead Paint	Mezzanine	Mez office center	North	Wall	Beige	Drywall	Intact	
925307	282	0	mg/cm2	0.3	Negative	1	2	10/27/2025	13:21:57	Justin	Action Level	Lead Paint	Mezzanine	Mez office center	East	Wall	Beige	Drywall	Intact	
925307	283	0.1	mg/cm2	0.3	Negative	1	2	10/27/2025	13:24:43	Justin	Action Level	Lead Paint	Mezzanine	Mez Lab	East	Wall	Beige	Drywall	Intact	
925307	284	0	mg/cm2	0.3	Negative	1	2	10/27/2025	13:25:12	Justin	Action Level	Lead Paint	Mezzanine	Mez Lab	South	Wall	White	Cinderblock	Intact	
925307	285	0	mg/cm2	0.3	Negative	1	2	10/27/2025	13:28:53	Justin	Action Level	Lead Paint	Mezzanine	Mez east off	North	Wall	White	Drywall	Intact	
925307	286	0	mg/cm2	0.3	Negative	1	2	10/27/2025	13:29:16	Justin	Action Level	Lead Paint	Mezzanine	Mez east off	East	Wall	White	Drywall	Intact	
925307	287	0	mg/cm2	0.3	Negative	1	2	10/27/2025	13:29:46	Justin	Action Level	Lead Paint	Mezzanine	Mez east off	South	Wall	White	Cinderblock	Intact	
925307	288	0	mg/cm2	0.3	Negative	1	2	10/27/2025	13:30:57	Justin	Action Level	Lead Paint	Mezzanine	Mez east off 2	South	Wall	White	Cinderblock	Intact	
925307	289	0	mg/cm2	0.3	Negative	1	2	10/27/2025	13:32:20	Justin	Action Level	Lead Paint	Mezzanine	Mez east off 2	West	Wall	White	Drywall	Intact	
925307	290	0	mg/cm2	0.3	Negative	1	2	10/27/2025	13:48:59	Justin	Action Level	Lead Paint	Mezzanine	2nd Floor 37	North	Wall	White	Drywall	Intact	
925307	291	0	mg/cm2	0.3	Negative	1	2	10/27/2025	13:49:19	Justin	Action Level	Lead Paint	Mezzanine	2nd Floor 37	East	Wall	White	Drywall	Intact	
925307	292	0	mg/cm2	0.3	Negative	1	2	10/27/2025	13:49:43	Justin	Action Level	Lead Paint	Mezzanine	2nd Floor 37	South	Wall	White	Drywall	Intact	
925307	293	0	mg/cm2	0.3	Negative	1	2	10/27/2025	13:50:26	Justin	Action Level	Lead Paint	Mezzanine	2nd Floor 38	North	Wall	White	Drywall	Intact	
925307	294	0	mg/cm2	0.3	Negative	1	2	10/27/2025	13:50:49	Justin	Action Level	Lead Paint	Mezzanine	2nd Floor 38	East	Wall	White	Drywall	Intact	
925307	295	0	mg/cm2	0.3	Negative	1	2	10/27/2025	13:51:51	Justin	Action Level	Lead Paint	2nd	2nd Floor 38	North	Beam	Red	Metal	Intact	
925307	296	0.1	mg/cm2	0.3	Negative	1	2	10/27/2025	13:53:24	Justin	Action Level	Lead Paint	2nd	2nd Floor 39	North	Wall	White	Drywall	Intact	
925307	297	0	mg/cm2	0.3	Negative	1	2	10/27/2025	13:53:49	Justin	Action Level	Lead Paint	2nd	2nd Floor 39	West	Wall	White	Drywall	Intact	
925307	298	0	mg/cm2	0.3	Negative	1	2	10/27/2025	13:54:33	Justin	Action Level	Lead Paint	2nd	2nd Floor 40	North	Wall	Gray	Drywall	Intact	
925307	299	0	mg/cm2	0.3	Negative	1	2	10/27/2025	13:55:00	Justin	Action Level	Lead Paint	2nd	2nd Floor 40	East	Wall	Gray	Drywall	Intact	
925307	300	0	mg/cm2	0.3	Negative	1	2	10/27/2025	13:55:25	Justin	Action Level	Lead Paint	2nd	2nd Floor 40	South	Wall	Gray	Drywall	Intact	
925307	301	0	mg/cm2	0.3	Negative	1	2	10/27/2025	13:56:02	Justin	Action Level	Lead Paint	2nd	2nd Floor 41	South	Wall	Gray	Drywall	Intact	
925307	302	0	mg/cm2	0.3	Negative	1	2	10/27/2025	13:56:23	Justin	Action Level	Lead Paint	2nd	2nd Floor 41	West	Wall	Gray	Drywall	Intact	
925307	303	0	mg/cm2	0.3	Negative	1	2	10/27/2025	13:57:10	Justin	Action Level	Lead Paint	2nd	2nd Floor 42	West	Wall	Gray	Drywall	Intact	
925307	304	0	mg/cm2	0.3	Negative	1	2	10/27/2025	13:57:33	Justin	Action Level	Lead Paint	2nd	2nd Floor 42	North	Wall	Gray	Drywall	Intact	
925307	305	0	mg/cm2	0.3	Negative	1	2	10/27/2025	13:58:08	Justin	Action Level	Lead Paint	2nd	2nd Floor 42	West	Door	Varnish	Wood	Intact	
925307	306	0	mg/cm2	0.3	Negative	1	2	10/27/2025	13:58:40	Justin	Action Level	Lead Paint	2nd	2nd Floor 42	West	Door Casing	White	Metal	Intact	

Black = Negative
Blue = Calibration/Null
Red = Positive

Intact = Paint in good condition
Fair = Below De minimis levels
Poor = Above De minimis levels

Company	Viken
Model	Pb200e
Type	XRF Lead Paint Analyzer
Serial Num.	1098
App Version	Pb200i-5.3.1

Lead Based Paint Inspection
Scruggs Stations Warehous Complex
4720 Scruggs Station Road, Jefferson City, Missouri

OCCU-TEC
Protecting People, Places and Performance

Job Id	Reading #	Concentration	Units	3 SD	Result	Action Level	Nom Sec	Date	Time	User	Mode	Analytic Mode	Floor	Room	Side	Component	Color	Substrate	Condition	Misc
925307	307	0	mg/cm2	0.3	Negative	1	2	10/27/2025	14:00:43	Justin	Action Level	Lead Paint	2nd	2nd Floor 42	West		White	Metal	Intact	duct
925307	308	0.9	mg/cm2	0.2	Calibration	1	5	10/27/2025	14:08:13	Justin	Action Level	Lead Paint								
925307	309	0.9	mg/cm2	0.2	Calibration	1	5	10/27/2025	14:08:46	Justin	Action Level	Lead Paint								
925307	310	0.9	mg/cm2	0.2	Calibration	1	5	10/27/2025	14:09:40	Justin	Action Level	Lead Paint								
925307	311	1	mg/cm2	0.2	Calibration	1	5	10/27/2025	14:10:18	Justin	Action Level	Lead Paint								
925307	312	0.9	mg/cm2	0.2	Calibration	1	5	10/27/2025	14:10:51	Justin	Action Level	Lead Paint								

Black = Negative
Blue = Calibration/Null
Red = Positive

Intact = Paint in good condition
Fair = Below De minimis levels
Poor = Above De minimis levels

APPENDIX G
XRF PERFORMANCE CHARACTERISTIC SHEET

Performance Characteristic Sheet

EFFECTIVE DATE: September 1, 2022

MANUFACTURER AND MODEL:

Make: ***Viken Detection*** (previously Heuresis)
Models: ***Model Pb200i, Pb200e***
Source: ***^{57}Co, 5 mCi (nominal – new source)***

FIELD OPERATION GUIDANCE

ACTION LEVEL SETTING:

0.5 mg/cm^2

OPERATING PARAMETERS:

Action Level mode, fixed 5-second reading (nominal), software version Pb 200i-5.0-DEBUG or higher.

Action Level mode, variable-time reading (2-5 seconds nominal), software version Pb 200i-7.0.0 or higher.

XRF CALIBRATION CHECK LIMITS:

0.8 to 1.2 mg/cm^2 (inclusive) at Action Level setting = 1.0 mg/cm^2

SUBSTRATE CORRECTION:

Not applicable

INCONCLUSIVE RANGE OR THRESHOLD:

ACTION LEVEL MODE READING DESCRIPTION	SUBSTRATE	INCONCLUSIVE RANGE (mg/cm^2)
Results not corrected for substrate bias on any substrate	Brick	0.4 – 0.6
	Concrete	0.4 – 0.6
	Drywall	0.4 – 0.6
	Metal	0.4 – 0.6
	Plaster	0.4 – 0.6
	Wood	0.4 – 0.6

BACKGROUND INFORMATION

EVALUATION DATA SOURCE AND DATE:

This sheet is supplemental information to be used in conjunction with Chapter 7 of the HUD *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing*, 2012 Edition ("HUD Guidelines"). Performance parameters shown on this sheet are calculated using test results on building components in the HUD archive. Testing was conducted on 146 test samples in January 2020 and January 2021, with four separate instruments running software version Pb200i 5.0 (DEBUG version) in Action Level test mode. The actual source strength of each instrument in 2020 was approximately 2.9 mCi; source ages were approximately 9 months. The 2021 sources were new with source strength 5 mC1.

OPERATING PARAMETERS

Performance parameters shown in this sheet are applicable only when properly operating the instrument using the manufacturer's instructions and procedures described in Chapter 7 of the HUD Guidelines.

XRF CALIBRATION CHECK:

The calibration of the XRF instrument should be checked ***with the Action Level set to 1.0 mg/cm^2*** using the paint film nearest 1.0 mg/cm^2 in the NIST Standard Reference Material (SRM) used (e.g., for NIST SRM 2579, use the 1.02 mg/cm^2 film; for NIST SRM 2579a, use the 1.04 mg/cm^2 film).

If the average (rounded to 1 decimal place) of three readings is outside the acceptable calibration check range, follow the manufacturer's instructions to bring the instrument into control before XRF testing proceeds.

EVALUATING THE QUALITY OF XRF TESTING:

Randomly select ten testing combinations for retesting from each house or from two randomly selected units in multifamily housing.

Conduct XRF re-testing at the ten testing combinations selected for retesting.

Determine if the XRF testing in the units or house passed or failed the test by applying the steps below. Compute the Retest Tolerance Limit by the following steps:

Determine XRF results for the original and retest XRF readings. In single-family and multi-family housing, a result is defined as a single reading. Therefore, there will be ten original and ten retest XRF results for each house or for the two selected units.

Calculate the average of the original XRF result and the retest XRF result for each testing combination.

Square the average for each testing combination.

Add the ten squared averages together. Call this quantity C.

Multiply the number C by 0.0072. Call this quantity D.

Add the number 0.032 to D. Call this quantity E.

Take the square root of E. Call this quantity F.

Multiply F by 1.645. The result is the Retest Tolerance Limit.

Compute the average of all ten original XRF readings.

Compute the average of all ten re-test XRF readings.

Find the absolute difference of the two averages.

If the difference is less than the Retest Tolerance Limit, the inspection has passed the retest. If the difference of the overall averages equals or exceeds the Retest Tolerance Limit, this procedure should be repeated with ten new testing combinations. If the difference of the overall averages is equal to or greater than the Retest Tolerance Limit a second time, then the inspection should be considered deficient.

Use of this procedure is estimated to produce a spurious result approximately 1% of the time. That is, results of this procedure will call for further examination when no examination is warranted in approximately 1 out of 100 dwelling units tested.

TESTING TIMES:

The nominal reading time recorded in Archive tests averaged 5.39 seconds in fixed time mode and 2.67 seconds in variable-time mode. Nominal reading time means the time the instrument's shutter is open when the ^{57}Co source is new. Actual reading time depends on the age of the source. Since ^{57}Co has a half-life of approximately 9 months, reading time doubles for every 9 months of source age.

CLASSIFICATION OF RESULTS:

XRF results are classified as **positive** if they are **greater than or equal** to 0.6 mg/cm^2, ***negative*** if they are ***less than or equal*** *to* 0.4 mg/cm^2 and ***inconclusive*** if they are ***equal*** to 0.5 mg/ cm^2.

DOCUMENTATION:

This XRF Performance Characteristic Sheet (PCS) was developed by QuanTech, Inc., under a contract with the U.S. Department of Housing and Urban Development, Office of Lead Hazard Control and Healthy Homes.

A report titled *Methodology for XRF Performance Characteristic Sheets* (EPA 747-R-95-008) provides an explanation of the statistical methodology used to develop Performance Characteristic Sheets at the Federal standard (Action Level) of 1.0 mg/cm^2, and provides empirical results from using the recommended inconclusive ranges or thresholds for specific XRF instruments. The report may be downloaded at http://www2.epa.gov/lead/methodology-xrf-performance-characteristic-sheets-epa-747-r-95-008-september-1997. The methodology was subsequently generalized by QuanTech for application to other Action Levels.

APPENDIX H
PROFESSIONAL QUALIFICATIONS

MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

Mike Kehoe
Governor

Kurt U. Schaefer
Director

April 28, 2025

Erin J Anderson
2604 NE Industrial Dr Ste 230
North Kansas City, MO 64117

RE: **Missouri Asbestos Occupation Certification Card**

Enclosed is your certification card for Asbestos Inspector, as issued by the Asbestos Unit of the Missouri Department of Natural Resources' Air Pollution Control Program.

Missouri Certification Number: 7020042525MOII24110
Course Training Date: April 25, 2025
Missouri Certification Approval Date: April 28, 2025
Missouri Certification Expiration Date: April 28, 2026

Note:

- All Missouri-certified asbestos personnel must comply with the following statutes and regulations:
  - Sections 643.225 to 643.250, RSMo;
  - 10 CSR 10-6.241 *Asbestos Projects-Registration, Abatement, Notification, Inspection, Demolition, and Performance Requirements; and*
  - 10 CSR 10-6.250 *Asbestos Projects-Certification, Accreditation and Business Exemption Requirements.*
- To keep your occupation certification up-to-date, you must complete an annual refresher course and submit a renewal application each year.
- In order to be eligible to renew your certification, you must successfully complete a refresher course with a Missouri-accredited training provider within 12 months of the expiration date of your current training certificate. If you exceed this grace period, you will be required to retake a Missouri-accredited initial course in order to be eligible for Missouri certification.

To obtain a copy of the certification renewal application, or review regulations and requirements, please visit our website at http://dnr.mo.gov/env/apcp/asbestos/index.htm.

If you have any questions please call the Air Pollution Control Program at 573-751-4817.

AIR POLLUTION CONTROL PROGRAM

Stephen M. Hall

Director of Air Pollution Control Program

PO Box 176, Jefferson City, MO 651

CERTIFICATION NUMBER:
7020042525MOII24110

THIS CERTIFIES
Erin J Anderson
HAS COMPLETED THE CERTIFICATION REQUIREMENTS FOR
Inspector



APPROVED: **04/28/2025**
EXPIRES: **04/28/2026**
TRAINING DATE: **04/25/2025**

Stephen M. Hall
Director of Air Pollution Control Program

MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

Michael L. Parson
Governor

Dru Buntin
Director

January 9, 2025

Justin E. Arnold
2604 NE Industrial Dr. Ste 230
North Kansas City, MO 64117

RE: **Missouri Asbestos Occupation Certification Card**

Enclosed is your certification card for Asbestos Inspector, as issued by the Asbestos Unit of the Missouri Department of Natural Resources' Air Pollution Control Program.

Missouri Certification Number: 7011010725MOIR13670
Course Training Date: January 07, 2025
Missouri Certification Approval Date: January 09, 2025
Missouri Certification Expiration Date: January 09, 2026

Note:

- All Missouri-certified asbestos personnel must comply with the following statutes and regulations:
  - Sections 643.225 to 643.250, RSMo;
  - 10 CSR 10-6.241 *Asbestos Projects-Registration, Abatement, Notification, Inspection, Demolition, and Performance Requirements; and*
  - 10 CSR 10-6.250 *Asbestos Projects-Certification, Accreditation and Business Exemption Requirements.*
- To keep your occupation certification up-to-date, you must complete an annual refresher course and submit a renewal application each year.
- In order to be eligible to renew your certification, you must successfully complete a refresher course with a Missouri-accredited training provider within 12 months of the expiration date of your current training certificate. If you exceed this grace period, you will be required to retake a Missouri-accredited initial course in order to be eligible for Missouri certification.

To obtain a copy of the certification renewal application, or review regulations and requirements, please visit our website at http://dnr.mo.gov/env/apcp/asbestos/index.htm.

If you have any questions please call the Air Pollution Control Program at 573-751-4817.

AIR POLLUTION CONTROL PROGRAM

Director of Air Pollution Control Program

CERTIFICATION NUMBER:

7011010725MOIR13670

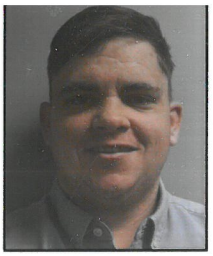
THIS CERTIFIES

Justin E. Arnold

HAS COMPLETED THE CERTIFICATION

REQUIREMENTS FOR

Inspector



APPROVED: **01/09/2025**

EXPIRES: **01/09/2026**

TRAINING DATE: **01/07/2025**

Stephen M. Hall

Director of Air Pollution Control Program

STATE OF MISSOURI
DEPARTMENT OF HEALTH AND SENIOR SERVICES

LEAD OCCUPATION LICENSE REGISTRATION

Issued to:

Erin Anderson

The person, firm or corporation whose name appears on this certificate has fulfilled the requirements for licensure as set forth in the Missouri Revised Statutes 701.300-701.338, as long as not suspended or revoked, and is hereby authorized to engage in the activity listed below.

Lead Inspector
Category of License

Issuance Date:	**09/22/2025**
Expiration Date:	**09/22/2027**
License Number:	**222917-20250818**

Sarah Willson

Sarah Willson
Director
Department of Health and Senior Services

Lead Licensing Program, PO Box 570, Jefferson City, MO 65102

STATE OF MISSOURI
DEPARTMENT OF HEALTH AND SENIOR SERVICES

LEAD ABATEMENT OCCUPATION LICENSE

Issued to:

Justin Arnold

The person, firm or corporation whose name appears on this certificate has fulfilled the requirements for licensure as set forth in the Missouri Revised Statutes 701.300-701.338, as long as not suspended or revoked, and is hereby authorized to engage in the activity listed below.

Lead Risk Assessor
Category of License

Issuance Date:	**8/27/2024**
Expiration Date:	**8/27/2026**
License Number:	**120611-300003622**

Paula F. Nickelson
Director
Department of Health and Senior Services

Lead Licensing Program, PO Box 570, Jefferson City, MO 65102

APPENDIX B

Managing Construction and Demolition Waste -PUB2045

MISSOURI DEPARTMENT OF NATURAL RESOURCES

Managing Construction and Demolition Waste - PUB2045

Waste Management Program

05/14/2021
PUB2045

fact sheet
Division of Environmental Quality

Director: Kyra Moore

This guidance is provided primarily for construction, renovation and demolition contractors, roofing contractors, remodeling businesses, waste haulers, homebuilders and homeowners. Cities and counties that issue building permits may also find this fact sheet helpful. The guidance covers only materials and wastes commonly produced during building construction, renovation and demolition. For information on the management of surface coatings removed from bridges, water towers or other similar outdoor structures, refer to the department's fact sheet, **Environmental Regulations for Paint Removal on Outdoor Structures - PUB0118 (/document-search/environmental-regulations-paint-removal-outdoor-structures-pub0118/pub0118)**.

Management and Disposal Requirements

During construction, renovation and demolition activities you may produce one or more of the following types of materials. Management and disposal requirements differ for each of them:

Clean fill

Clean fill material is uncontaminated soil, rock, sand, gravel, concrete, asphaltic concrete, cinderblocks, brick, minimal amounts of wood and metal, and inert (non-reactive) solids approved by rule or the department for fill, reclamation or other beneficial use. Minimal amounts of wood and metal means the smallest amount possible. For example, reinforced concrete, which contains wire mesh or rebar, may be used as clean fill, but the exposed rebar must be removed before use. Asphaltic concrete that is planned for use as fill should not be

crushed or ground to minimize leaching of any chemicals and toxic metals from the material. Mixed fill materials containing more than minimal amounts of wood and metal wastes, roofing shingles, sheet rock or other construction and demolition wastes are not considered clean fill.

Placement of clean fill materials may be subject to requirements of the department's Water Protection Branch, particularly if it is placed in contact with surface or subsurface waters of the state or if it would otherwise violate water quality standards. For questions about clean fill material placement, contact the Water Protection Program at **573-751-1300 (tel:573-751-1300)**. Note: Municipalities and county government departments may also have restrictions or requirements concerning the use of clean fill materials; check with these entities before beginning a fill project.

Recovered materials

Recovered materials are those wastes that have been removed for reuse (lumber, doors, windows, ceramic tile and glass) and also items that are removed to be made into new products. Potentially recyclable construction, renovation and demolition wastes may include scrap metals, asphalt shingles, sheet rock, lumber, glass and electrical wire. However, if materials are removed from the property where they were generated, the recovered materials must be reused or repurposed into an item(s) for a different use(s) and not simply dumped or used as fill.

If you plan to remove reusable or recyclable materials from construction and demolition waste, the sorting must take place at the construction or demolition site. The wastes cannot be hauled from the site and dumped for later sorting, except at a permitted processing facility or at a facility that has received an approved permit exemption from the Waste Management Program. Although the department strongly encourages the recovery or recycling of potential waste materials whenever possible, these activities must be conducted legally.

Prior to separating certain wastes out to be reused or recycled into different products, research the materials and determine if there is a demand or market for the product(s) you plan to create from the recycled waste. The department's Waste Management Program has information regarding many recycling facilities in Missouri. You may contact the program at **573-751-5401 (tel:573-751-5401)** or search the **Missouri Materials Management Directory (https://recyclesearch.com/profile/mo-directory)** for more information.

Regulated (nonhazardous) construction, renovation and demolition wastes

Regulated nonhazardous construction, renovation and demolition wastes are those that do not meet the definition of clean fill and, for whatever reason, are not able to be recovered for reuse or recycling. Some examples of these wastes are insulation, drywall, wooden paneling, carpet padding, carpeting, linoleum, etc. These construction and demolition wastes must be disposed at a permitted solid waste landfill or processing facility.

Remember these key requirements about regulated non-hazardous construction and demolition wastes:

- In most cases, it is not legal to burn these wastes. Only untreated wood waste may be burned, and this is allowed as long as you apply for and obtain an open burning permit prior to burning the waste. For more information about open burning, review the fact sheet, **Facts on Open Burning Under Missouri Regulations - PUB2047 (/document-search/facts-open-burning-under-missouri-regulations-pub2047/pub2047)**. Contact the department's **regional office (/about-us/division-environmental-quality/regional-office)** nearest to your location for permit information and conditions for burning untreated wood waste. Check with municipal and county government departments in your area to determine any additional burning restrictions and requirements they may have.
- It is not legal to bury the wastes, except in a permitted solid waste landfill
- It is not legal to haul the wastes to private or public property and dump, burn or bury the wastes, even with the landowner's permission

If wastes are burned, buried, or hauled then burned and/ or buried as described in the scenarios above, everyone involved, including the contractor(s), subcontractor(s), waste hauler(s) and the landowner(s) where the burial, dumping, and/or burning occurs may be held liable for these illegal actions (See Sections 260.210, 260.211 and 260.212 RSMo).

Hazardous materials and hazardous wastes

Although you may find a variety of hazardous materials in old buildings, lead-based paint and universal wastes (e.g., mercury-containing equipment and lamps) are usually the most common hazardous wastes that require special handling by demolition contractors. Hazardous wastes resulting from construction, renovation and demolition activities at small and large businesses, institutions, municipalities, churches, schools and other structures not specifically identified must be managed according to the Missouri Hazardous Waste Management Law and Regulations while the waste is on-site, in transport and during final disposal or treatment. Households and farmers are mostly exempt from hazardous waste requirements under Section 260.380.1. RSMo.

It is the generator's responsibility to determine if materials generated during construction, renovation and demolition are hazardous wastes, including any materials believed to be clean fill and planned for use as fill. A hazardous waste determination can be made by applying verifiable historical knowledge of the materials in question or by the analysis of a representative sampling of the waste materials. More information on hazardous waste management in Missouri is provided in the department's, **Handbook for Small Quantity Generators - PUB2174 (/document-search/handbook-small-quantity-generators-pub2174)**.

Nonhazardous waste must be taken to a permitted sanitary landfill for proper disposal. The waste may have to be managed by landfill personnel as a "special waste" and require the completion of a special waste disposal form. For more information about managing special wastes, see the department's fact sheet, **Special Waste - PUB2050 (/document-search/special-waste-pub2050/pub2050)**.

Building components commonly encountered during demolition and renovation that can contain contaminants such as lead and other heavy metals include:

- Paint residue – Paint chips, paint scrapings and contaminated blast residue from building renovations or demolition projects.
- Demolition debris – Painted cinder block or bricks. Metal and boards that have been painted with lead-based or other heavy metal-based paint (note: painted metal and boards may not be used as clean fill).
- Scrap metal – Metal objects that contain lead or other heavy metals.
- Universal waste – Mercury-containing equipment and lamps, (e.g., thermostats and fluorescent light bulbs) and batteries.

Paint Residue

Paint residue should be laboratory-tested before disposal unless there is sufficient historical knowledge of the paint types and whether or not they contained heavy metals to make an accurate determination that the residue is either hazardous or nonhazardous. The appropriate test method is the Toxicity Characteristic Leaching Procedure (TCLP), EPA Method 1311, referenced in the Code of Federal Regulations (CFR), 40 CFR Part 261. The test should include the eight metals noted in 40 CFR Part 261.24 (arsenic, barium, cadmium, chromium, lead, mercury, selenium and silver). Environmental laboratories capable of conducting a TCLP may be found by conducting an internet search of such companies. If one or more of the analytical limits meet(s) or exceed(s) the regulatory limit, the waste must be managed as a hazardous waste.

Demolition Debris

While it is unlikely that a representative sample of demolition debris, including painted block or brick, would fail the TCLP mentioned above, all solid wastes must receive an accurate hazardous waste determination when they are generated. If generator knowledge of the material is insufficient to make an accurate hazardous waste determination, then testing of the debris is needed. Demolition debris should not be chipped, shredded, milled, ground, mulched or similarly processed in a way that would increase their leachability before disposal.

Scrap Metals

When scrap metals are sent to a salvage yard for recycling, it is not necessary to make a hazardous waste determination on those materials. If recycling is not possible, and the metals must be discarded in a solid waste landfill, the metals are subject to a hazardous waste

determination as described above.

Universal Waste

Universal wastes are commonly generated by a wide variety of establishments and include batteries, pesticides, mercury-containing equipment (e.g., thermostats) and lamps (e.g., fluorescent light bulbs). Managing these wastes under the Universal Waste Rule helps reduce the regulatory burden on the waste generator versus management solely as a hazardous waste. More information on universal waste management is available in **The Universal Waste Rule in Missouri - PUB2058 (/document-search/universal-waste-rule-missouri-pub2058/pub2058)**.

Asbestos-containing material

Certain construction, renovation, or demolition wastes, such as asbestos-containing materials, require special handling and disposal procedures at a sanitary landfill. These special procedures mean the waste will be considered a special waste and require additional steps to ensure the waste is managed appropriately during disposal (see the department's fact sheet, **Special Waste - PUB2050 (/document-search/special-waste-pub2050/pub2050)**. The landfill may require submission of a special waste disposal request form, along with test results to prove that the waste is not hazardous, before accepting the waste for disposal.

Before planning a demolition project, bidding a project, letting a bid or beginning the demolition process, it is important to know if the building has any asbestos-containing materials, and who is responsible for removing them. All public, institutional or commercial buildings, and in some instances residential structures, must be inspected for asbestos before renovation or demolition activities. Buildings may contain asbestos in ceiling or floor tile, insulation or soundproofing on ceilings, pipes, ductwork, boilers, on the outside as transite siding or in shingles. The presence of asbestos-containing materials cannot be confirmed just by looking. A sample of the suspected asbestos-containing material must be collected and sent for analysis to determine whether or not asbestos is in a material.

A thorough inspection of any regulated building must be conducted by a Missouri-certified asbestos inspector to determine the presence and condition of asbestos-containing materials. Depending upon the results of the inspection, a registered asbestos abatement contractor may be required to complete the removal and disposal process. For information regarding asbestos demolition, renovation and abatement (removal), please review the department's **Asbestos (/air/business-industry/asbestos)** webpage. For more specific information about managing asbestos-containing materials, please contact the department's Air Pollution Control Program's Asbestos Unit at **573-751-4817 (tel:573-751-4817)**. If the asbestos-containing materials are to go to a solid waste landfill or transfer station for disposal, contact the facility in advance to see if they will accept these materials and find out what special handling or packaging requirements must be used for them to accept the waste.

Other Requirements

Other legal requirements related to managing construction, renovation and demolition wastes include:

- Anyone engaged in building construction, modification or demolition of structures must maintain a record of all sites used for construction and demolition waste disposal for one year. The records must be made available to department team members upon request (see Section 260.210.7 RSMo).
- Cities and counties issuing building permits are required to notify each permittee in writing of the legal requirements for construction and demolition waste disposal (Section 260.210.8 RSMo).
- A person shall be guilty of conspiracy if he knows or should have known that his agent or employee has violated the civil or criminal provisions of the law related to illegal disposal of construction and demolition waste or other solid waste (Section 260.212.9 RSMo).
- Anyone selling, conveying or transferring property that contains construction and demolition waste or other solid waste on the site (whether buried or not), must disclose the existence and location of the waste disposal site to a potential buyer early in the negotiation process and explain the liability for remediation of the waste may be transferred to the new owner (Section 260.213 RSMo).
- Anyone hauling materials that could fall or blow from a vehicle, including construction and demolition waste, must cover the load and secure it so that none of it can become dislodged and fall from the vehicle (Section 307.010 RSMo). In addition, many landfills and transfer stations in Missouri require all incoming loads to be covered. Some facilities accept open loads, but may charge you an extra fee to dispose of them.
- A person commits the crime of littering if they throw or place, or cause to be thrown or placed, any garbage, trash, refuse or rubbish of any kind on the right-of-way of any public road or highway; in or on any waters of the state or the streambanks; and on any public or private property (owned by another and without their consent) (Section 577.070, RSMo).

Penalties for Illegal Disposal of Construction, Renovation and Demolition Wastes

The Missouri Solid Waste Management Law provides for civil penalties for persons who dispose, or allow the disposal of, regulated construction and demolition wastes in unpermitted areas. The law also contains criminal provisions for certain types of illegal construction, renovation and demolition waste disposal. Illegal waste disposal may also result in additional penalties for violations of air, water and hazardous waste management laws, depending on the situation and means of waste disposal. The Revised Statutes of Missouri and the Code of State Regulations give the department's Waste Management Program and the Air Pollution Control Program the

authority to assess penalties for violations of the Solid Waste Management Law and regulations, the Hazardous Waste Management Law and regulations, and the Missouri Air Conservation Law and regulations.

Additional Information

You may obtain additional information about properly managing construction and demolition wastes from the sources listed below.

On the Web

- **Managing Solid Waste Encountered During Excavation Activities - PUB2192 (/document-search/managing-solid-waste-encountered-during-excavation-activities-pub2192/pub2192)**
- **Asbestos Requirements for Demolition and Renovation Projects - PUB2157 (/document-search/asbestos-requirements-demolition-renovation-projects-pub2157/pub2157)**
- **Environmental Regulations for Demolition Project Checklist - PUB2374 (/document-search/environmental-regulations-demolition-project-checklist-pub2374/pub2374)**

Additional Considerations and Information Sources

- Hazardous waste requirements are available in the Missouri Hazardous Waste Management Law, **Sections 260.350 through 260.575 RSMo (https://revisor.mo.gov/main/OneChapter.aspx?chapter=260)** and the **Hazardous Waste Management Commission regulations (https://www.sos.mo.gov/adrules/csr/current/10csr/10csr.asp#10-25)**. Most of the federal environmental requirements in 40 CFR Part 260 are adopted by reference into the Missouri regulations.
- Solid waste requirements are available in the Solid Waste Management Law in **Sections 260.200 through 260.345 RSMo (https://revisor.mo.gov/main/OneChapter.aspx?chapter=260)**, and the Solid Waste Management regulations are in **10 CSR 80 (https://www.sos.mo.gov/adrules/csr/current/10csr/10csr.asp#10-80)**
- **Federal regulations (ecfr.gov/cgi-bin/ECFR?page=browse)** are available at federal depository libraries or may be purchased from a U.S. Government Bookstore, the U.S. Government Printing Office or from a commercial information service such as the Bureau of National Affairs. Federal Regulations.
- Team members from the department's **regional offices (/about-us/division-environmental-quality/regional-office)** for your location can provide additional information and guidance on the air pollution and solid waste management requirements for your construction, renovation and demolition project.

Other Guidance

The **Missouri Department of Health and Senior Services (https://health.mo.gov/)** - Office of Lead Licensing and Accreditation may provide information regarding training, licensure, and work practice standards for lead abatement activities. Disposal is an abatement activity. See Sections 701.300 and 701.338 RSMo.

Please note municipalities and county governments may have their own additional materials and waste management requirements that may be stricter than those discussed above. Check with your local governmental entities before you start your project.

If you have more questions, contact:

Waste Management Program
1730 East Elm Street
PO Box 176
Jefferson City, MO 65102-0176
573-751-5401 (tel:573-751-5401)

Air Pollution Control Program
1659 East Elm Street
PO Box 176
Jefferson City, MO 65102-0176
573-751-4817 (tel:573-751-4817)

Nothing in this document may be used to implement any enforcement action or levy any penalty unless promulgated by rule under chapter 536 or authorized by statute.

For more information

Waste Management Program

1730 E. Elm St.
PO Box 176
Jefferson City, MO 65102-0176
United States

Main
573-751-5401 (tel:573-751-5401)
Toll-free
800-361-4827 (tel:800-361-4827)
Fax
573-526-3902 (tel:573-526-3902)
wmp@dnr.mo.gov (mailto:wmp@dnr.mo.gov)

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APPENDIX C

Environmental Regulations for Demolition Project Checklist - PUB2374

MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

Environmental Regulations for Demolition Project Checklist - PUB2374

Waste Management Program

fact sheet
Division of Environmental Quality

Director: Kyra Moore

05/12/2021
PUB2374

Project Checklist

Disclaimer: The checklist is intended to help those planning a demolition project in Missouri to comply with various laws and regulations intended to protect human health and the environment. This checklist is not intended, nor can it be relied on, to create any rights enforceable by any party in litigation. It is recommended you contact the county or city of jurisdiction to determine if additional local requirements apply to your situation. Contact information for the Missouri Department of Natural Resources and specific programs referenced in the checklist is found at the end of this document.

Pre-Planning

- All public, commercial, and in some cases residential structures, must be inspected by a Missouri certified asbestos inspector prior to beginning any demolition or renovation project. A listing of currently certified asbestos inspectors is available on the department's **asbestos (/air/business-industry/asbestos)** webpage or by calling the Air Pollution Control Program at **573-751-4817 (tel:573-751-4817)**.
- Determine if there are hazardous materials in the building such as lead pipes, lead paint, thermostats, fluorescent bulbs, batteries, pesticides, cleaners and other chemicals that would become hazardous wastes if intended for discard. If so, additional regulations may apply. Refer to the guidance document, **Handbook for Small Quantity Generators - PUB2174 (/document-search/handbook-small-quantity-generators-pub2174)** for information on hazardous waste management in Missouri.

- Hazardous fluorescent bulbs, thermostats, pesticides and batteries in good condition may be managed as universal waste. If not managed as universal waste, these materials would need to be characterized to determine if they are hazardous waste for proper on-site management and disposal. For more information review the department's **The Universal Waste Rule in Missouri - PUB2058 (/document-search/universal-waste-rule-missouri-pub2058/pub2058)** fact sheet.
- Are there abandoned cisterns or wells? If so, additional regulations may apply. For more information, review the department's **Abandoned Wells: Locating, Plugging and Reporting - PUB2900 (/document-search/abandoned-wells-locating-plugging-reporting-pub2900/pub2900)** fact sheet.
- Are there above- or underground petroleum storage tanks? If so, additional regulations may apply. For more information about underground storage tanks, visit **Underground Storage Tank Requirements (/waste-recycling/business-industry/guidance-technical-assistance/underground-storage-tank-requirements)**. For information about above-ground storage tanks, please contact the **Missouri Department of Agriculture (https://agriculture.mo.gov/weights/petroleum/)** by telephone at **573-751-5636 (tel:573-751-5636)**.
- Are there air conditioning units or refrigeration units with refrigerants such as chlorofluorocarbons, or CFCs? If so, contact the CFC Stratospheric Ozone Hotline at **800-296-1996 (tel:800-296-1996)** about managing CFCs.
- Are there light ballasts that may contain Polychlorinated Biphenyls, or PCBs? If so, visit EPA's **Disposal of Fluorescent Light Ballasts (https://www.epa.gov/pcbs/disposal-fluorescent-light-ballasts-flb)** webpage.
- Contact the recycling or waste disposal facility where the recovered materials or demolition waste will be received to ensure the facility can receive the waste and to check for any restrictions or special requirement the facility may have for the waste.

Notifications

- Submit a **Closure Notice for Underground Storage Tanks MO 780-2121 (/document-search/closure-notice-underground-storage-tanks-mo-780-2121)** form 30-days before beginning an underground storage tank closure and notify the department's **Underground Storage Tanks Section (/content/underground-storage-tanks-section)** three days before beginning closure activities.
- Register with the department as a hazardous waste generator if generating or accumulating 220 pounds or more of hazardous waste per month. Refer to the department's **Handbook for Small Quantity Generators - PUB2174 (/document-search/handbook-small-quantity-generators-pub2174)** guidance document for more information, including how to register as a hazardous waste generator.
- Submit an **Asbestos NESHAP Notification of Demolition and Renovation MO 780-1923 (/document-search/asbestos-neshap-notification-demolition-renovation-mo-780-1923)**

form to the department's Air Pollution Control Program at least 10 business days before demolition start date of any regulated structure (public, commercial and in some cases residential). Include a copy of the asbestos inspection report by a Missouri certified asbestos inspector. Submission is required for regulated structures, regardless of whether asbestos is found. Note that local health departments may have stricter requirements.
- If removal or disturbance of greater than 160 square feet, 260 linear feet, or 35 cubic feet of regulated asbestos-containing materials will occur during the demolition project, submit an **Asbestos Project Notification MO 780-1226 (/document-search/asbestos-project-notification-mo-780-1226)** form to the department's Air Pollution Control Program at least 10 business days before the start of the abatement project. Note that local health departments may have stricter requirements.
- Submit an **Water Well/ Heat Pump Plugging Registration Report MO 780-1603 (/document-search/water-well-heat-pump-plugging-registration-report-mo-780-1603)** to the department's Wellhead Protection Section for plugging an abandoned well.

Demolition and Post Demolition Activities

- Recovered materials that can be reused or be made into new products must be used in some way to remain exempt from regulation as solid waste. Potentially recoverable materials include clean fill, metals, plastics, glass, electrical wire, asphalt shingles and wood.
- If light ballasts were manufactured before 1979, or manufactured after 1979 and do not have labels stating they do not contain PCBs, assume they contain PCBs. Carefully remove light ballasts to prevent PCB leaks and remove and contain leaking ballasts in a manner that minimizes contamination. Use a **licensed hazardous waste transporter (/waste-recycling/sites-regulated-facilities/hazardous-infectious-transporters)** to transport PCB waste to a disposal facility.
- Universal wastes must be transported to a universal waste handler or destination facility. For more information, review the department's **The Universal Waste Rule in Missouri - PUB2058 (/document-search/universal-waste-rule-missouri-pub2058/pub2058)** fact sheet.
- Hazardous wastes must be appropriately packaged, marked and labeled and transported to a treatment, storage and disposal facility or certified resource recovery facility. The transporter must have a valid EPA generator identification number and active Missouri hazardous waste transporter license. An EPA identification number can be obtained after submitting a completed **Notice of Regulated Waste Activity MO 780-1164 (/document-search/notification-regulated-waste-activity-mo-780-1164)** form. To apply for a hazardous waste transporter license visit the Missouri Department of Transportation's **Motor Carrier Services (https://www.modot.org/HazWaste)** webpage.
- Properly close petroleum storage tanks in-place or by removal.
- Asbestos-containing materials must be removed by a Missouri registered asbestos contractor prior to demolition if the amount of regulated asbestos containing material is

greater than 160 square feet, 260 linear feet or 35 cubic feet.
- Manage remaining asbestos-containing material in the structure in a manner that will keep it from being broken-up, made friable or becoming regulated asbestos containing material.
- Minimize dust during demolition and prevent dust from leaving property boundaries.
- Intentional burning and other training activities for the purpose of training and instructing fire protection, law enforcement or emergency personnel are exempt from Missouri open burning regulations as long as the exercise conforms to the limitation described in the regulation, doesn't cause hazards to air or vehicular traffic and doesn't cause a violation of any other regulation. This exemption is intended only for fire training exercises and is not for allowing the intentional burning of a structure as a method of disposal. If a structure is already knocked down, it does not meet the conditions for the exemption and the option to be burned as a part of a fire training exercise. The knocked-down structure must instead be taken to a permitted solid waste facility for disposal. Also, structures used for training exercises are still subject to state and federal asbestos regulations.
- All regulated asbestos-containing material and all petroleum-based products (in the case of fire training) such as asphalt shingles and vinyl tile must be removed before beginning the training exercise.
- Properly plug abandoned wells and cisterns.
- Clean fill is uncontaminated soil, rock, sand, gravel, concrete, asphaltic concrete, cinderblock and brick with very small amounts of wood and metal, and other inert solids approved by the department. These materials may be used as fill on-site, with the permission of the property owner. If clean fill will come in contact with surface water or subsurface water, contact the department's Water Protection Program at **573-751-1300 (tel:573-751-1300)** for guidance.
- Major appliances except for microwaves cannot be disposed of in landfills and must be salvaged.
- Demolition debris deemed non-hazardous must be transported to a permitted solid waste landfill or processing facility.
- All asbestos-containing materials must be disposed of in a permitted landfill. Contact the landfill before transporting the materials to obtain special handling requirements.

Additional Resources

- **Managing Construction and Demolition Waste - PUB2045 (/document-search/managing-construction-demolition-waste-pub2045/pub2045)**
- **Missouri Code of State Regulations - Title 10 (https://www.sos.mo.gov/adrules/csr/current/10csr/10csr.asp)**
- **Lead Licensing (http://health.mo.gov/safety/leadlicensing/index.php)** - DHSS

Additional fact sheets and publications are available at **Publications and Fact Sheets (/publications-fact-sheets)**.

Nothing in this document may be used to implement any enforcement action or levy any penalty unless promulgated by rule under chapter 536 or authorized by statute.

For more information

Air Pollution Control Program

1659 E. Elm St.
PO Box 176
Jefferson City, MO 65101
United States

Main
573-751-4817 (tel:573-751-4817)
Toll-free
800-361-4827 (tel:800-361-4827)
Fax
573-751-2706 (tel:573-751-2706)
apcp.receptionist@dnr.mo.gov (mailto:apcp.receptionist@dnr.mo.gov)

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Environmental Remediation Program

1730 E. Elm St.
PO Box 176
Jefferson City, MO 65102-0176
United States

Main
573-751-3176 (tel:573-751-3176)
Toll-free
800-361-4827 (tel:800-361-4827)
Fax
573-751-7869 (tel:573-751-7869)
erp@dnr.mo.gov (mailto:erp@dnr.mo.gov)

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Waste Management Program

1730 E. Elm St.
PO Box 176
Jefferson City, MO 65102-0176

United States

Main
573-751-5401 (tel:573-751-5401)
Toll-free
800-361-4827 (tel:800-361-4827)
Fax
573-526-3902 (tel:573-526-3902)
wmp@dnr.mo.gov (mailto:wmp@dnr.mo.gov)

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Water Protection Program

1101 Riverside Drive
PO Box 176
Jefferson City, MO 65102-0176
United States

Main
573-751-1300 (tel:573-751-1300)
Toll-free
800-361-4827 (tel:800-361-4827)
Fax
573-526-1146 (tel:573-526-1146)
cleanwater@dnr.mo.gov (mailto:cleanwater@dnr.mo.gov)

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