DTMB-0414 (Rev 10/22)

DEPARTMENT OF TECHNOLOGY, MANAGEMENT AND BUDGET
State Facilities Administration
Design and Construction Division

CONSTRUCTION BID ADDENDUM NO. 2

This form identifies an Addendum to Bidding Documents, and incorporates interpretations or clarifications, modifications, acceptance of proposed "or equal" materials, and other information into the Bidding Documents. Addenda will be numbered by the Professional and distributed through www.michigan.gov/SIGMAVSS as an attachment.

TO: **ALL BIDDERS**		DATE ISSUED 7/17/2024
PROJECT NAME Cadillac Place Elevators Upgrade – Phase 1		FILE NUMBER 171_21275_MNB
PROFESSIONAL Daniel Kohler, AIA Hobbs + Black	PROJECT DIRECTOR Chris M. Bahjet	BID OPENING DATE: 8/14/2024

ADDENDUM ITEMS: (attach additional sheets and drawings if required)

1. Extend Bid Due date from 7/24/2024 to 8/14/2024. No change in time.
2. Extend questions deadline from noon 7/19/2024 to noon 7/31/2024.

- **This Addendum include all Hazardous Materials related specifications.**
- **Questions and answers will be in another Addendum.**

Please see attached Addendum 2 additional items and narrative.

ACKNOWLEDGEMENT: This Addendum must be acknowledged by the Bidder in the space provided in the Bid Summary and Bid Form. Failing to acknowledge Addenda may be cause for the Bid to be rejected. Addenda will become part of the Contract Documents.

PROFESSIONAL:	DATE: Click to enter date
APPROVED BY: PROJECT DIRECTOR: Chris Bahjet	DATE: 7 / 16 / 2024

ADDENDUM 2

DATE: July 17, 2024

PROJECT: Cadillac Place Elevators Upgrade – Phase 1

File No.: 171/21275.MNB

PROJECT #: 21323.00

This Addendum is issued for the purpose of modifying and/or clarifying the original drawings and specifications and shall take precedence over them.

All work included herein shall be in accordance with the original drawings and specifications except as specifically noted herein. All incidental items required to provide the following modifications shall be included even though not specifically described.

This Addendum is being sent to all bidders receiving plans and specifications. Receipt of this Addendum shall be noted on Proposal Form in appropriate locations.

SPECIFICATIONS

1. Table of Contents:
   a. Added Section 023000 – Existing Hazardous Materials Report
   b. Added Section 028200 – Asbestos Remediation
   c. Added Section 028300 – Lead Remediation
   d. Added Section 230553 – Identification for HVAC Piping and Equipment - Spec section was published with “Issued for Bids”; however, title was missing from the T.O.C.
2. Technical section “023000 – EXISTING HAZARDOUS MATERIALS REPORT”. The entire section is included in this addendum for insertion into the “Issued for Bids” technical specifications document.
3. Technical section “028200 – ASBESTOS REMEDIATION”. The entire section is included in this addendum for insertion into the “Issued for Bids” technical specifications document.
4. Technical section “028300 – LEAD REMEDIATION”. The entire section is included in this addendum for insertion into the “Issued for Bids” technical specifications document.
5. MICHSPEC section “0003000 – ADVERTISEMENT”. Bid due date extended to 8/14/2024. Final day to accept questions is Noon, 7/31/2024.

DRAWINGS

1. Not applicable for this addendum.

END OF ADDENDUM

Enclosure
cc: All Plan Holders, via SIGMA
Chris Bahjet, DTMB Project Director

SECTION 00030 ADVERTISEMENT

1. Invitation to Bid (ITB) – Your firm is invited to submit a Bid. The State of Michigan as the Owner will receive **bids electronically through the SIGMA VSS website at** https://sigma.michigan.gov/webapp/PRDVSS2X1/AltSelfService until ***2:00 p.m., ET, on 8/14/2024***. The State reserves the right to cancel this Invitation to Bid (ITB) or change the date and time for submitting Bids by announcing same at any time before the established date and time for Bid opening. Bids must remain open for acceptance by the Owner for no less than the Bid hold period. Contractor may agree to extend the Bid hold period. However, any such extension must be based upon no increase in the Bid Price and/or Contract Time.

2. Work Description – The Work, Cadillac Place Elevator Upgrade Phase 1, File No. 171/21275.MNB includes, but is not necessarily limited to: Adding new full room hvac to the penthouse to replace the existing obsolete hvac units. Bringing the hoistway pit up to code by adding code required floor drainage. Upgrading 5 elevators, 15 floors tall with new hoists and re-furbished cabs. Also, hazardous material remediation is included in the hoistways. The site is located at 3044 West Grand Blvd, Detroit, Mi., as shown on the Drawings.

3. Bidding Documents – Sets of Bidding Documents may be obtained at:
https://sigma.michigan.gov/webapp/PRDVSS2X1/AltSelfService

4. Bid Security – Each Bid shall enclose Bid Security, as specified in Section 00100 Instructions to Bidders (and as specified in Section 00310 Bid Bond, if a Bid Bond is enclosed), in the amount of five percent (5%) of the Bidder's Base Bid. *If Bid Security is by check or money order, such certified or cashier's check or money order must be delivered in original copy before the Bid Due Time to:*

State Facilities Administration
Design & Construction Division
3111 W. St. Joseph Street
Lansing, Michigan 48917

All other Bid information must be submitted via SIGMA as per standard bidding procedure.

5. Pre-Bid Conference – A mandatory pre-bid conference will be held at Cadillac Place – 3044 West Grand Blvd, Detroit, Mi., MI on 7/15/2024 at 11:00AM ET. A tour will be held on the same day, starting at 11:00AM ET. All prospective Bidders and other parties interested in the Work are required to attend the tour, if held. Addenda may be issued, in response to issues raised at the pre-bid conference and tour, or as the **Owner** and/or **Professional** may otherwise consider necessary.

An individual is only permitted to represent one bidder at a mandatory Pre-Bid Conference.

FOR CORRECTIONAL FACILITIES ONLY: All contractor/vendor representatives attending a Pre-Bid Walk Through Meeting must submit a Vender/Contractor LEIN Request five business days prior to the meeting date, (Lien Request For CAJ-1037 attached to Bid posting). Send the LEIN Request form, filled out and signed, by email to SmithD76@michigan.gov & FrostS1@michigan.gov . The email "Subject" must include Facility Name, Project Name, Date & Time of Pre-Bid Walk Through Meeting).

6. SIGMA VENDOR NUMBER: If you are bidding a State job for the first time, visit the State of Michigan SIGMA website, https://sigma.michigan.gov/webapp/PRDVSS2X1/AltSelfService, and follow the "SOM VSS User Guide for New Vendors" instructions, located under Forms and Reference Documents. Registration is required for bid submission. **Do not wait until the last minute to submit a proposal**, as the SIGMA system requires the creation of an account and entry of certain information, in addition to uploading and submitting the materials. The SIGMA system **will not** allow a proposal to be submitted after the proposal deadline, even if a portion of the proposal has been updated.

Questions on how to submit information or how to navigate in the SIGMA VSS system can be answered by calling **(517) 373-4111 or (888) 734-9749**.

7. Equal Employment Opportunity – Covenants not to discriminate in employment by contractors, subcontractors and suppliers required by Law are contained in paragraph 14.12 of Section 00100 Instructions to Bidders and paragraph 7.12 of Section 00700 General Conditions and are applicable to the Work and any Sub agreement under the Contract.

8. Contract Times – The Contract Times and the associated liquidated damages are specified in Article 4 of Section 00500 Agreement.

9. Contact Person – All requests or inquiries concerning the Bidding Documents, or the Work shall be addressed to Daniel E. Kohler dkohler@hobbs-black.com.

10. Award – Subject to any agreed extension of the period for holding Bids, Bids shall remain valid for acceptance by the **Owner** for 60 Calendar Days after the date of Bid opening. In addition, the **Owner** expressly reserves the right, within the **Owner's** sole discretion, to reject any or all Bids, to waive any irregularities, to issue post-Bid Addenda and rebid the Work without re-advertising, to re-advertise for Bids, to withhold the award for any reason the **Owner** determines and/or to take any other appropriate action.

END OF SECTION 00030

REPORT

Hazardous Materials Survey

Cadillac Place Passenger Elevators Upgrade Project

3044 W. Grand Blvd., Detroit, Michigan

Hobbs+Black Architects
47450 Woodward Avenue
Pontiac, MI 48342

February 10, 2022 **NTH Project No. 62-210493-00**

NTH Consultants, Ltd.
41780 Six Mile Road, Suite 200
Northville, MI 48168

Issued with addendum 2
7/17/2024

NTH Consultants, Ltd.

Infrastructure Engineering
and Environmental Services

41780 Six Mile Road, Suite 200
Northville, MI 48168
248.553.6300
248.324.5179 Fax

Daniel E. Kohler, AIA
Hobbs+Black Architects
47450 Woodward Avenue
Pontiac, Michigan 48342

February 10, 2022
NTH Project No. 62-210493-00

RE: Report on Hazardous Materials Survey
Cadillac Place Passenger Elevators Upgrade Project
3044 W. Grand Boulevard
Detroit, Michigan

Dear Mr. Kohler:

NTH Consultants, Ltd. (NTH) is pleased to submit this report on Hazardous Materials Survey for the above referenced project. This study was performed at your request in accordance with our proposal (NTH Proposal No. 62-210493), dated November 29, 2021.

We are pleased to be of service you. Should you have any questions or require additional assistance, please call us at (248) 662-2740.

Sincerely,

NTH Consultants, Ltd.

DocuSigned by:
Andrew C. Kelly
01C038231F714DB...

Andrew C. Kelly
Senior Staff Professional

DocuSigned by:
Bhushan C. Modi
9A8ED1C814C943E...

Bhushan C. Modi
Project Manager

ACK/BCM/mam

Attachments

Issued with addendum
7/17/2024

TABLE OF CONTENTS

APPENDICES

1.0 INTRODUCTION

NTH Consultants, Ltd. (NTH) was retained by Hobbs+Black Architects (HBA) to conduct a Hazardous Materials Survey (HMS) of the elevator bank comprising five passenger elevators servicing the Cadillac Place building at 3044 W. Grand Boulevard in Detroit, Michigan. The Michigan Department of Technology, Management, and Budget (DTMB) intends to upgrade the out-of-service elevator bank, identified as the "southeast elevators".

2.0 SCOPE OF SERVICES

The purpose of this HMS was to identify and evaluate, to the extent possible, asbestos-containing materials (ACM) and lead and cadmium-containing paints (LCP and CCP) that were readily visible and accessible. To meet this objective the following tasks were conducted:

Asbestos-Containing Materials (ACM)

- Conducted a walk-through survey of the accessible portions of the project area to identify and quantify suspect ACM. Collected and analyzed bulk samples from suspect ACM in representative areas as determined by the accredited asbestos inspector.

Lead-Containing Paint (LCP) and Cadmium-Containing Paint (CCP)

- Conducted a walk-through survey of the accessible portions of the project area to document and test various painted building components for the presence of lead and/or cadmium in paint. Paint chip samples were collected and submitted for lead and cadmium analyses.

3.0 FIELD INVESTIGATION AND FINDINGS

The following sections present the results of the HMS including a list of homogeneous areas identified as containing asbestos, an approximate quantity of ACM comprising each homogeneous area, and a list of painted surfaces identified as LCP and CCP. The HMS was conducted on January 5, 2022, by Andrew Kelly of NTH. Mr. Kelly is a State of Michigan-Accredited Asbestos Building Inspector (Accreditation No. A48903).

Sample Location Plan showing approximate locations of suspect ACM and paint chip samples are included in Appendix A. Photographs depicting the project area and ACM sample locations are included in Appendix B. The following limiting conditions were encountered during the study:

- The survey did not include destructive testing (that would damage building finishes) to evaluate concealed/hidden hazardous materials.

- The survey was limited to the southeast elevators and did not include evaluation of hazardous materials located outside of the hoistways, pit level and motor level associated with these elevators.

- For safety reasons, the hoistways were not entered but were observed through the elevator pit in the basement, on motor level in the penthouse, and from the elevator lobbies on each floor.

Note: The quantities of ACM and other hazardous materials presented in this report are estimates based on visual observations and available accessibility and should not be relied upon by abatement contractors for bidding purposes. Although efforts were made to observe representative wall and ceiling cavities, ACM, LCP and CCP may be present in the areas that were not accessed. If such suspect materials are discovered during abatement or demolition activities, then those materials shall be assumed to be ACM, LCP or CCP until sampling and analysis proves otherwise.

3.1 Asbestos-Containing Materials

Asbestos is a commercial term for a group of silicate minerals that readily separate into thin, strong fibers that are flexible, heat resistant, and chemically inert. These minerals include chrysotile, amosite, and crocidolite, and to a lesser extent, tremolite, anthophyllite, and actinolite; and any of these minerals that have been chemically treated or altered. An ACM is any material that contains more than 1% asbestos. Asbestos is an environmental and health concern because long-term exposure has been linked to three major respiratory diseases: asbestosis, lung cancer, and mesothelioma. ACM were widely used in the construction of buildings beginning in the 1870s and continuing through the early 1980s.

In accordance with the United States Environmental Protection Agency (USEPA) – CFR Part 61, Subpart M – National Emission Standard for Asbestos, the results of an asbestos evaluation are needed prior to renovation activities in order to establish an appropriate response action/plan. There are three main types of ACM:

- **Thermal System Insulation:** ACM applied to pipes, fittings, boilers, tanks, ducts, or other HVAC components to prevent heat loss or gain.

- **Surfacing Material:** ACM that is sprayed-on, troweled-on, or otherwise applied to surfaces, such as acoustical plaster and fireproofing materials on structural members, or other materials on surfaces for acoustical, decorative, fireproofing, or other purposes.

- **Miscellaneous Materials:** All other ACM, including but not limited to, acoustical ceiling tile, resilient floor tile and coverings, concrete pipes, siding, and roofing materials.

The ACM are further classified as either friable or non-friable materials. Friable materials are those that can be crumbled, pulverized, or reduced to powder by hand pressure, when dry. Non-friable materials can be further classified as Category I or Category II materials. Category I materials include packings, gaskets, resilient floor coverings and asphalt roofing products. Category II materials include all other non-friable materials.

The purpose of the asbestos survey was to identify, sample, and quantify suspect ACM, and to categorize the suspect ACM into individual homogeneous areas. A homogeneous area (HA) is defined as a material that appears similar in terms of color, texture, composition and/or date of application.

NTH personnel identified five (5) homogeneous areas of suspect ACM within the project area. Fifteen (15) bulk samples were collected from these materials for asbestos analysis. Analytical services were provided by APEX Research Inc. (APEX), and the bulk samples were analyzed for asbestos using Polarized Light Microscopy (PLM) method. APEX is accredited by the National Institute of Standards and Technology (NIST) and the National Voluntary Laboratory Accreditation Program (NVLAP) for analysis of asbestos using PLM method.

The following table presents material descriptions, friability of the materials (friable = F, Category I non-friable = NF-I, and Category II non-friable = NF-II), sample locations, category of the sampled materials (surfacing = S, miscellaneous = M or thermal system insulation = TSI), and results of PLM analysis. *If analysis indicated the presence of asbestos in the first analyzed sample, then the remaining samples of that homogenous area were not analyzed and are listed as not analyzed (i.e., laboratory was directed to stop at first positive data).*

Asbestos Survey						
HA No.	**Material Description**	**Sample No.**	**Sample Location**	**F/NF**	**Tyle**	**Asbestos Content**
1	Plaster/Mortar	1A	Elevator Pit Walls	F	S	None detected
		1B	Elevator Pit Walls			None detected
		1C	Elevator Pit Walls			None detected

Asbestos Survey						
HA No.	**Material Description**	**Sample No.**	**Sample Location**	**F/NF**	**Tyle**	**Asbestos Content**
		1D	Elevator Pit Walls			None detected
		1E	Elevator Pit Walls			None detected
		1F	Elevator Pit Walls			None detected
		1G	Elevator Pit Walls			None detected
2	**Paper Door Liner**	**2A**	**Inside Elevator Car Doors**	**F**	**M**	**60% Chrysotile**
		2B	**Inside Elevator Car Doors**			Not Analyzed
3	**Pipe Insulation**	**3A**	**Elevator Penthouse Crawlspace, Steam Pipe**	**F**	**TSI**	**10% Chrysotile 2% Crocidolite**
		3B	**Elevator Penthouse Crawlspace, Steam Pipe**			Not Analyzed
		3C	**Elevator Penthouse Crawlspace, Steam Pipe**			Not Analyzed
4	**Pipe Fitting Insulation**	**4A**	**Elevator Penthouse Crawlspace, Steam Pipe**	**F**	**TSI**	**20% Chrysotile**
		4B	**Elevator Penthouse Crawlspace, Steam Pipe**			Not Analyzed
		4C	**Elevator Penthouse Crawlspace, Steam Pipe**			Not Analyzed
5	**Window Frame Caulk**	**Not sampled**	**Windows behind hoistways**	**NF-II**	**M**	**Assumed***

**Window Frame Caulk (HA# 5) was assumed as ACM since the windows were not accessible for sampling and were observed from the lobby areas on each floor.*

Asbestos Quantities and Locations

The following table presents descriptions of identified and assumed ACM along with the location and approximate/observed quantity.

ACM Data				
HA No.	**Material Description**	**Location**	**Condition/Notes**	**Approximate Quantity**
2	Paper Door Liner	Inside Elevator Car Doors	This friable material was noted to be in good condition.	420 sq. ft.
3	Pipe Insulation	Elevator Penthouse Crawlspace	This friable material was noted to be in good condition.	50 linear feet
4	Pipe Fittings	Elevator Penthouse Crawlspace	This friable material was noted to be in good condition.	5 fittings
5	Window Frame Caulk	Elevator Hoistways – Rear Windows	Unknown/Not accessible	25 sq. ft.*

** Quantity of caulk estimated based on number of windows observed and their approximate sizes. Windows were noted on sixth floor and above.*

3.2 Lead and Cadmium-Containing Paint

A visual survey was performed to document and sample various types and colors of paint applied to the building components. Five paint chip samples were collected and submitted to APEX for lead and cadmium analyses using Atomic Absorption Spectroscopy (AAS) method. The results of paint chip analysis were compared with Michigan Occupational Safety and Health Administration (MIOSHA) standards, which states that LCP and CCP is a paint with detectable levels of lead and cadmium at or above the laboratory method detection limits

The following table presents descriptions of the painted surfaces and analytical results:

Paint Chip Results				
Sample No.	**Paint Color & Description**	**Location(s)**	**Results %**	
			Cadmium	**Lead**
PC-1	Olive green on plaster	Elevator Pit Walls	<0.01%	**1.78%**
PC-2	Dark green on metal beam	Elevator Pit Supports	<0.04%	**0.97%**
PC-3	Black on metal beam	Elevator Pit – Brake Assembly	<0.01%	**0.14%**
PC-4	Gray/brown on concrete floor	Elevator Pit Floor	<0.01%	**0.06%**
PC-5	Blue on metal motor	Penthouse – Elevator Motor #5	<0.01%	**0.11%**

Lead was detected in all five samples and cadmium was not detected in any of the samples. The painted surfaces were observed to be in fair to good condition with some areas of chipped and peeled paint observed in the hoistway at 9th floor and above. Other painted surfaces that could not be evaluated or sampled should be assumed to contain lead and/or cadmium.

4.0 CONCLUSIONS

The HMS of the southeast elevators at the Cadillac Place building located at 3044 W. Grand Boulevard in Detroit, Michigan revealed hazardous materials that are summarized below.

Asbestos-Containing Materials

The following building materials were identified as ACM:

- Paper Door Liner
- Pipe Insulation
- Pipe Fittings
- Window Frame Caulk (assumed)

The assumed material should be treated as ACM unless sampling and analysis proves otherwise.

Lead and Cadmium-Containing Paints

Cadmium was not detected in the analyzed paint chip samples. Lead was detected in all the paint chip samples. Other inaccessible painted surfaces should be assumed to contain lead unless testing proves otherwise. The renovation activities will need to comply with Michigan Occupational Safety and Health Administration (MIOSHA) Part 603 (Lead Exposure in Construction).

Specifications

NTH can prepare technical specifications for removal/abatement of hazardous materials identified in this report. These specifications should be included in the project biddings documents and provided to the contractors prior to initiating abatement/renovation work.

Abatement Contractor and Air Quality Monitoring

A State of Michigan-licensed asbestos abatement and environmental contractor should be retained to abate and manage/dispose hazardous materials identified in this report. The abatement contractors should conduct a pre-bid walk-through survey of the project area to verify the locations and quantities of hazardous materials identified in this report.

Visual observations, verification of removal and cleanup, and air monitoring for asbestos fibers during abatement activity should be performed by NTH to demonstrate compliance with the project specifications.

5.0 LIMITATIONS

The findings and evaluations presented in this report are based on the scope of services defined herein and have been made to assist Hobbs+Black in making a reasonable assessment of risk with respect to the possible presence of hazardous materials within the surveyed buildings. This study was performed in accordance with standards of care and diligence considered to be representative of industrial hygiene practices in this region at the present time.

The results of this assessment cannot and should not be construed as a certification of the final condition, actual quantities, or absence of any hazardous or regulated substances, but rather a diligent and prudent review of available data within an established work scope, and time and budgetary restraints.

This report is intended for the exclusive use of the Hobbs+Black and DTMB. The results of this study may not be relied upon by parties other than those identified above or without the prior knowledge and written consent of NTH Consultants, Ltd.

Through the course of this survey or any hazardous materials survey, there are several obstacles and limitations that can affect the final outcome of the report. These limitations include, but are not limited to, the following factors: access concerns; presence of stored items; materials that are damaged or cannot be intrusively sampled; and materials that have been replaced during previous renovation activities. Due to these limitations, suspect building materials uncovered during demolition/renovation activities and not mentioned in this report should be sampled, analyzed, and dealt with based on the findings, in accordance with the regulations governing such materials.

APPENDIX A

Sample Location Plan

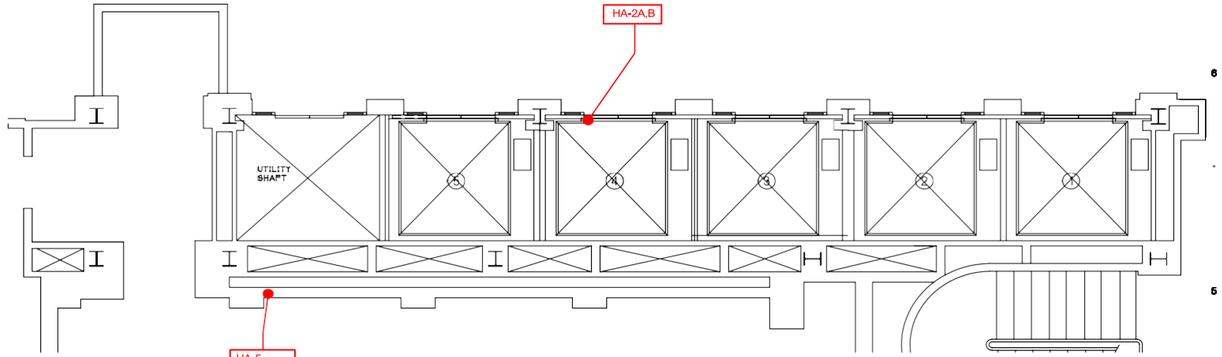
Issued with addendum 2
7/17/2024

LEGEND

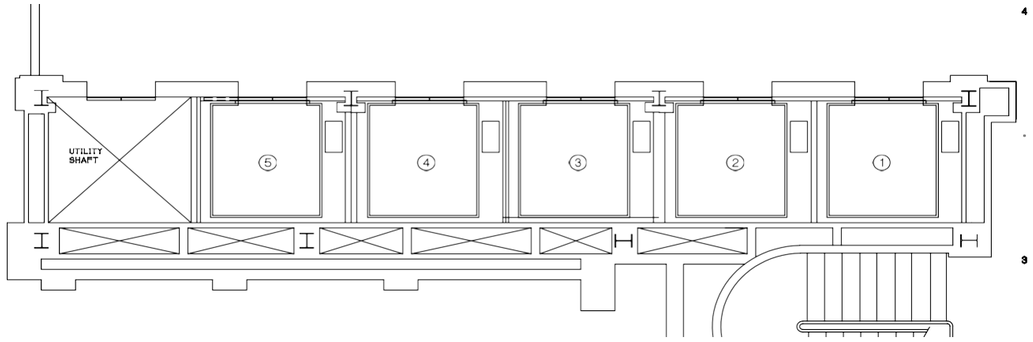
HA-#A,B — APPROXIMATE SUPSECT ACM SAMPLE LOCATION

PC-# — APPROXIMATE PAINT CHIP SAMPLE LOCATION

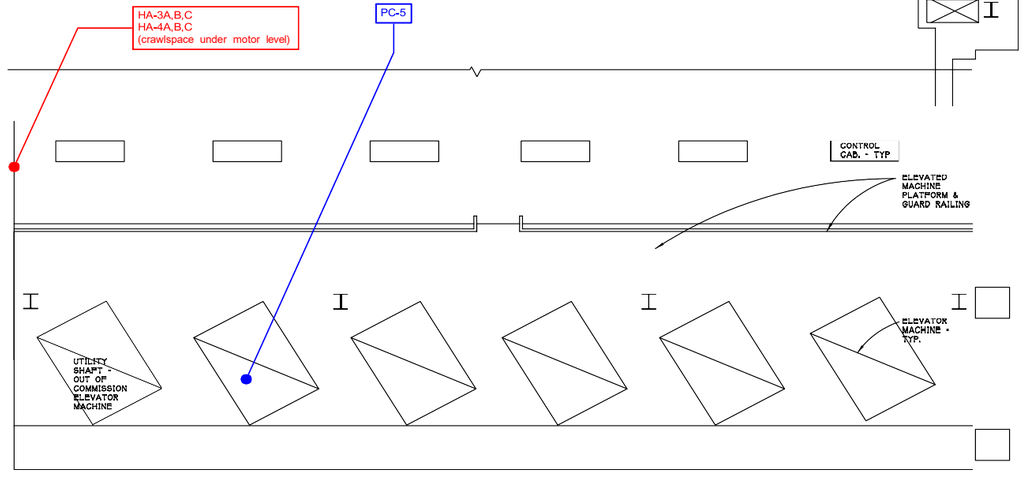
SAMPLE LOCATION PLAN PREPARED BY NTH FROM PLANS PROVIDED BY HOBBS+BLACK ARCHITECTS FOR MICHIGAN DEPARTMENT OF TECHNOLOGY, MANAGEMENT, AND BUDGET



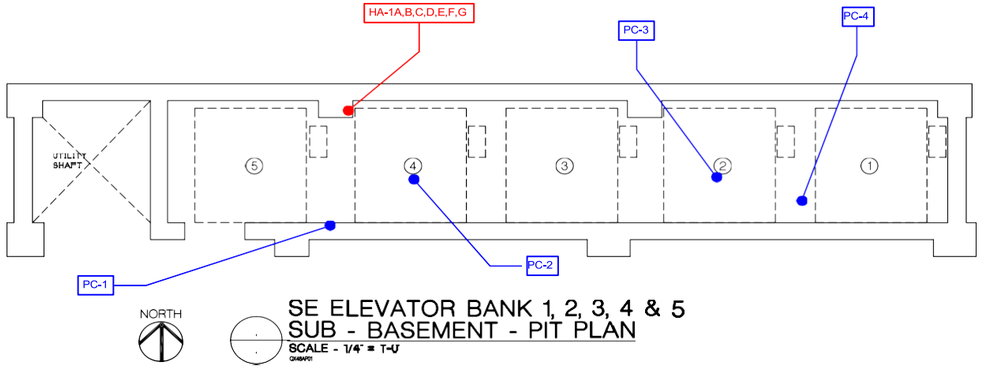
SE ELEVATOR BANK 1, 2, 3, 4 & 5
FLOOR PLAN @ FLOORS 2 - 15
SCALE - 1/4" = 1'-0"



SE ELEVATOR BANK 1, 2, 3, 4 & 5
FIRST FLOOR PLAN
SCALE - 1/4" = 1'-0"



SE ELEVATOR BANK 1, 2, 3, 4 & 5
PARTIAL PENTHOUSE PLAN
SCALE - 1/4" = 1'-0"



SE ELEVATOR BANK 1, 2, 3, 4 & 5
SUB - BASEMENT - PIT PLAN
SCALE - 1/4" = 1'-0"

Issued with addendum 2
7/17/2024

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NTH Consultants, Ltd.
Infrastructure Engineering
and Environmental Services

CAD FILE NAME: 210493-SLP
PLOT DATE: 1/19/2022
DRAWING SCALE: NOT TO SCALE
INCEPTION DATE: 1/5/2022
NTH PROJECT No.: 62-210493-00
DESIGNED BY: ACK
DRAWN BY: ACK
CHECKED BY: CJA

SAMPLE LOCATIONS

CADILLAC PLACE PASSENGER ELEVATOR UPGRADE PROJECT
3044 W. GRAND BLVD.
DETROIT, MICHIGAN

FIGURE: 1

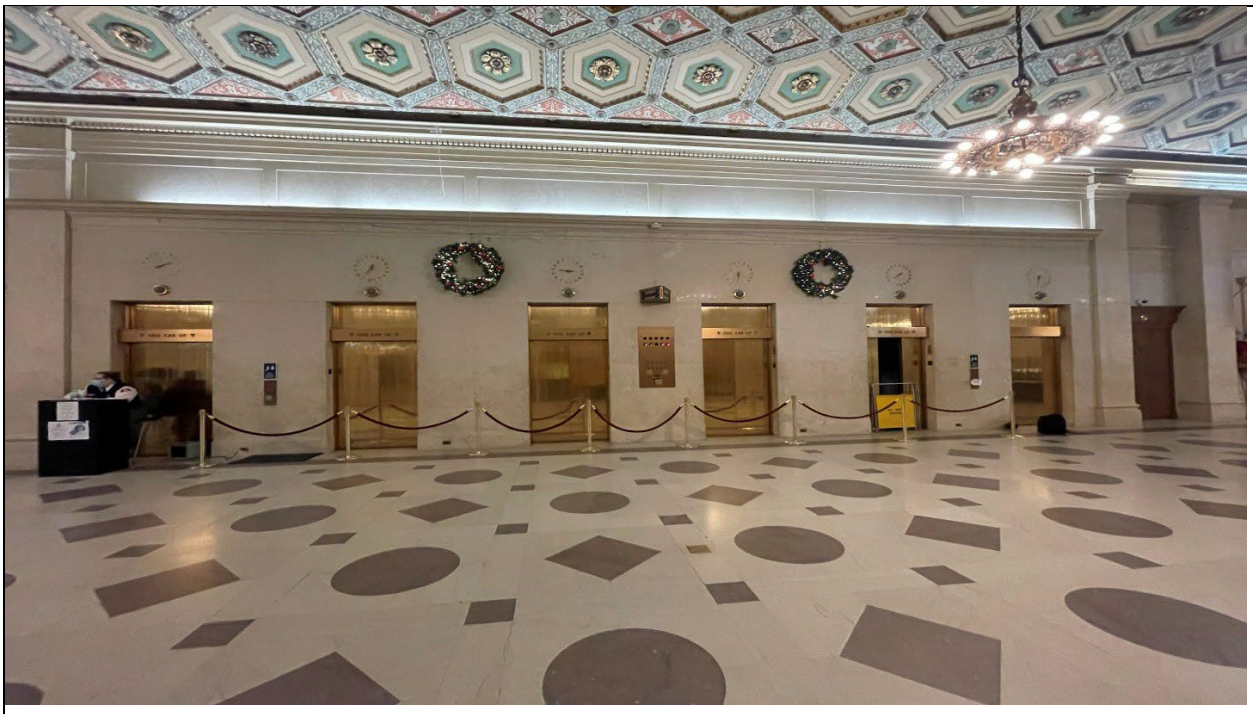
APPENDIX B

Survey Photographs

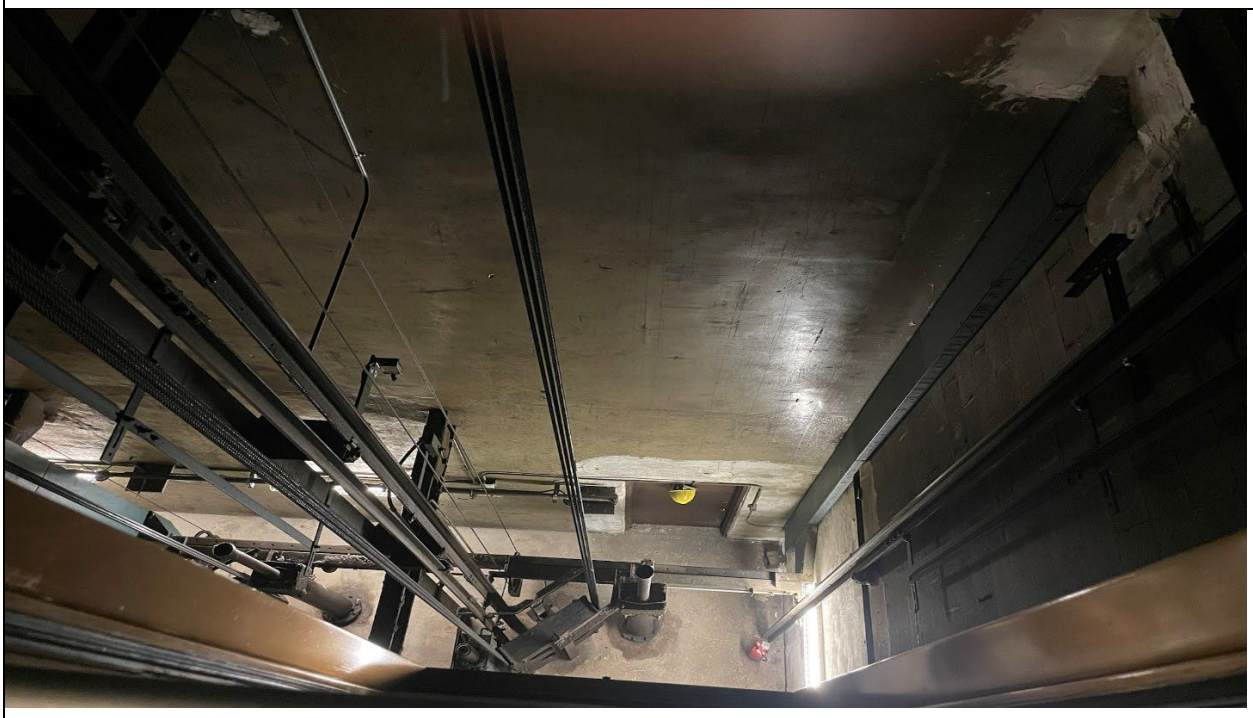
Issued with addendum 2
7/17/2024

SURVEY PHOTOGRAPHS

PROJECT NAME:	Cadillac Place Passenger Elevator Upgrade			PROJECT NO.:	62-210493-00
PROPERTY ADDRESS:	3044 W. Grand Boulevard, Detroit, Michigan				
DATE TAKEN:	January 5, 2022	TAKEN BY:	A. Kelly	PAGE:	1 of 7



Photograph 1. Elevator bank project area from 1st floor lobby.



Photograph 2. View of hoistway and pit level from 1st floor.

Issued with addendum 2
7/17/2024

SURVEY PHOTOGRAPHS

PROJECT NAME:	Cadillac Place Passenger Elevator Upgrade			PROJECT NO.:	62-210493-00
PROPERTY ADDRESS:	3044 W. Grand Boulevard, Detroit, Michigan				
DATE TAKEN:	January 5, 2022	TAKEN BY:	A. Kelly	PAGE:	2 of 7

Photograph 3. HA-1, Plaster/Mortar from elevator pit walls.

Photograph 4. Elevator pit.

SURVEY PHOTOGRAPHS

PROJECT NAME:	Cadillac Place Passenger Elevator Upgrade			PROJECT NO.:	62-210493-00
PROPERTY ADDRESS:	3044 W. Grand Boulevard, Detroit, Michigan				
DATE TAKEN:	January 5, 2022	TAKEN BY:	A. Kelly	PAGE:	3 of 7

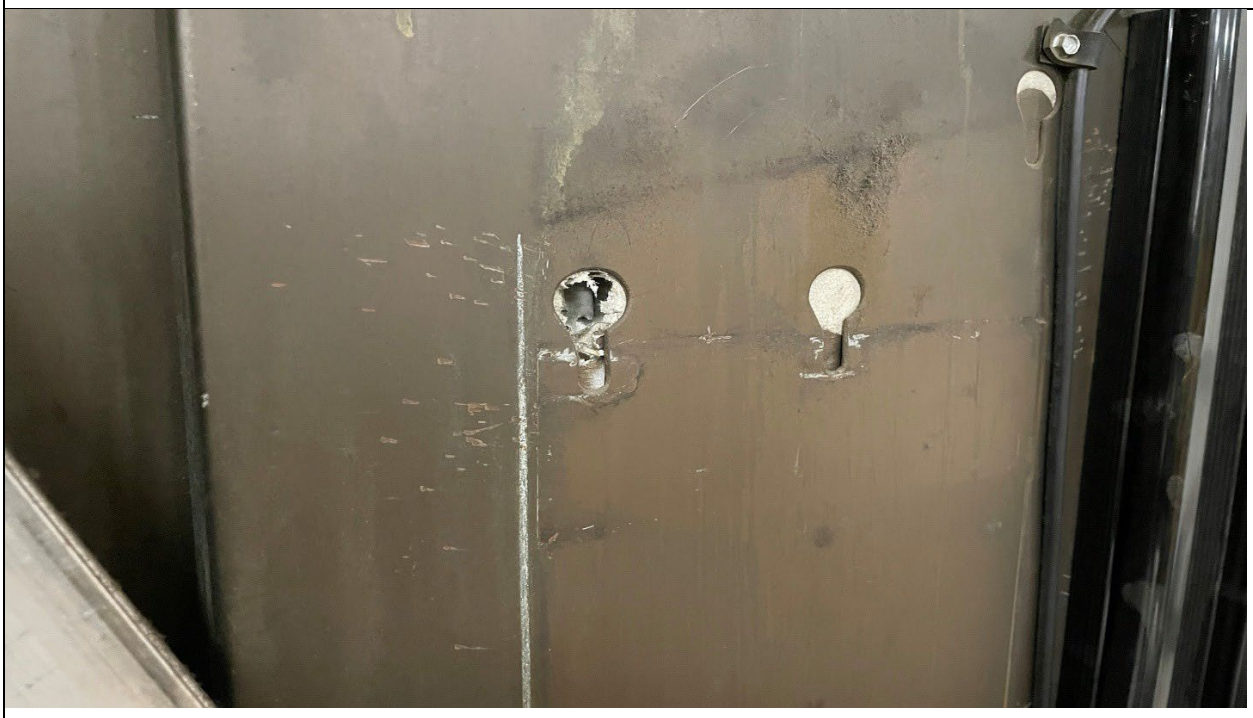
Photograph 5. Vertical view of hoistway from pit level looking up.

Photograph 6. Top of elevator car.

SURVEY PHOTOGRAPHS

PROJECT NAME:	Cadillac Place Passenger Elevator Upgrade			PROJECT NO.:	62-210493-00
PROPERTY ADDRESS:	3044 W. Grand Boulevard, Detroit, Michigan				
DATE TAKEN:	January 5, 2022	TAKEN BY:	A. Kelly	PAGE:	4 of 7

Photograph 7. Side of elevator car.



Photograph 8. HA-2, Paper Door Liner, Inside Elevator Car Doors

SURVEY PHOTOGRAPHS

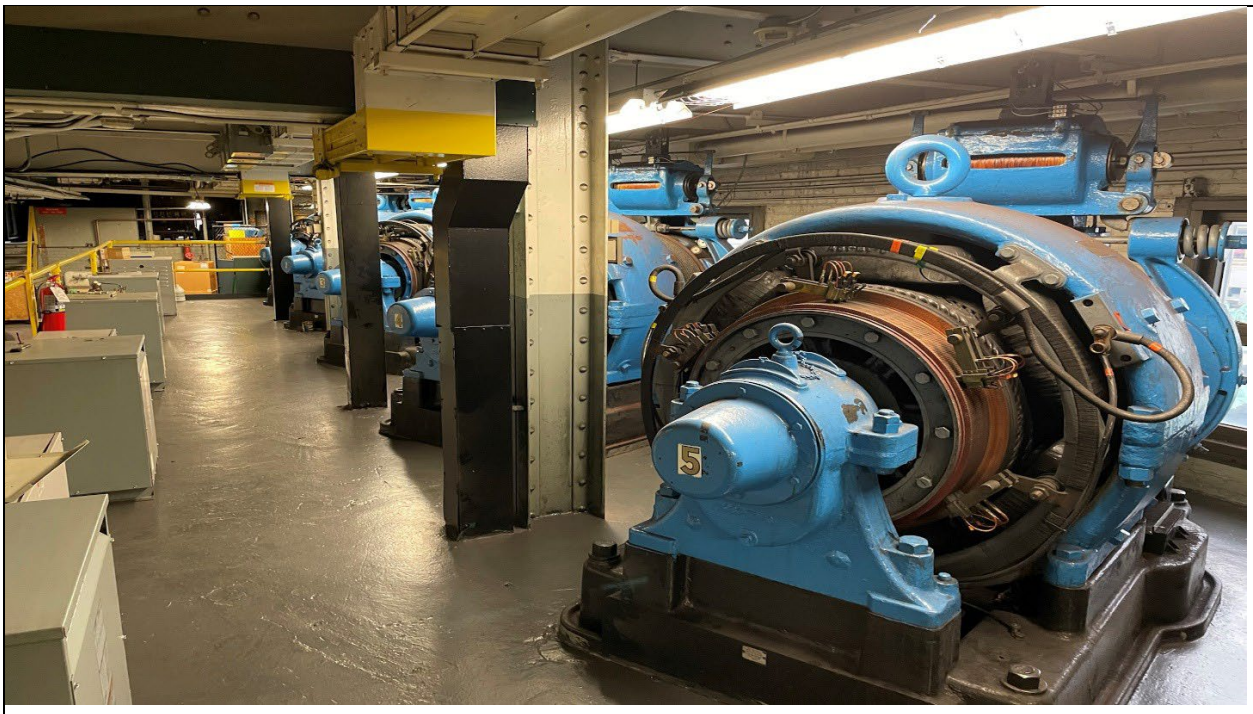
PROJECT NAME:	Cadillac Place Passenger Elevator Upgrade			PROJECT NO.:	62-210493-00
PROPERTY ADDRESS:	3044 W. Grand Boulevard, Detroit, Michigan				
DATE TAKEN:	January 5, 2022	TAKEN BY:	A. Kelly	PAGE:	5 of 7

Photograph 9. Hoistway from upper floors.

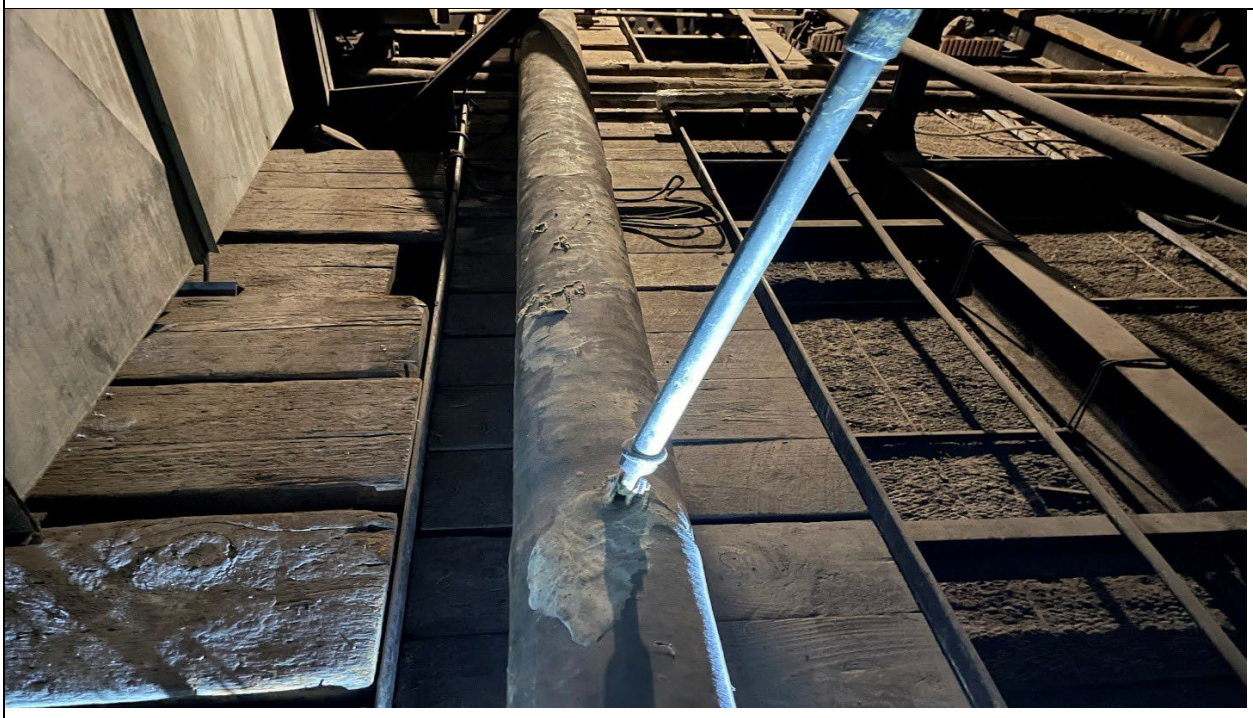
Photograph 10. HA-5, Window Frame Caulk, Hoistway Windows (assumed ACM).

SURVEY PHOTOGRAPHS

PROJECT NAME:	Cadillac Place Passenger Elevator Upgrade			PROJECT NO.:	62-210493-00
PROPERTY ADDRESS:	3044 W. Grand Boulevard, Detroit, Michigan				
DATE TAKEN:	January 5, 2022	TAKEN BY:	A. Kelly	PAGE:	6 of 7



Photograph 11. Elevator penthouse motor level.



Photograph 12. HA-3, Pipe Insulation, Elevator Penthouse Crawlspace Steam Pipe

SURVEY PHOTOGRAPHS

PROJECT NAME:	Cadillac Place Passenger Elevator Upgrade			PROJECT NO.:	62-210493-00
PROPERTY ADDRESS:	3044 W. Grand Boulevard, Detroit, Michigan				
DATE TAKEN:	January 5, 2022	TAKEN BY:	A. Kelly	PAGE:	7 of 7

Photograph 13. HA-3, Pipe Fitting, Elevator Penthouse Crawlspace Steam Pipe

APPENDIX C

Asbestos Laboratory Data

Issued with addendum 2
7/17/2024

Certificate of Laboratory Analysis

Test Method, Polarized Light Microscopy (PLM)

Project : Cadillac Place Elevator

Project # : 62-210493-00

Report To:
Mr. Andrew Kelly
NTH Consultants, LTD
41780 Six Mile Road
Northville, MI 48168

ARI Report # 22-97868
Date Collected: NDG
Date Received: 01/10/22
Date Analyzed: 01/10/22
Date Reported: 01/12/22

Sample Information	Asbestos Type/Percent	Non-Asbestos Material
Lab ID #: 97868 - 01 Cust. #: 1A Material: Plaster/Mortar Location: Elevator Pit Walls Appearance: grey,nonfibrous,homogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Other - 100%
Lab ID #: 97868 - 02 Cust. #: 1B Material: Plaster/Mortar Location: Elevator Pit Walls Appearance: grey,nonfibrous,homogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Other - 100%
Lab ID #: 97868 - 03 Cust. #: 1C Material: Plaster/Mortar Location: Elevator Pit Walls Appearance: grey,nonfibrous,homogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Other - 100%

For Layered Samples, each component will be analyzed and reported separately.

Robert T. Letarte Jr., Laboratory Director

Test Method EPA 40 CFR - Part 763 and/or EPA 600/R-93/116 was used to analyze the above samples. Matrix interference and/or resolution limits may yield false/negative results in certain circumstances. Suspect floor tiles containing <1% should be tested with SEM or TEM. This certificate of analysis relates only to the samples as submitted and to insure the integrity of the results, may only be reproduced in full. This certificate must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government. APEX Research Inc. is not responsible for the accuracy of the results for layered samples or samples comprising multiple materials. Liability limited to cost of analysis.

NVLAP TESTING

NVLAP Lab Code 102118-0

Issued with addendum 2
7/17/2024

APEX Research Inc., 11054 Hi Tech Drive, Whitmore Lake, MI 48189
(734) 449-9990, Fax (734) 449-9991

Certificate of Laboratory Analysis

Test Method, Polarized Light Microscopy (PLM)

Project : Cadillac Place Elevator
Project # : 62-210493-00

Report To:
Mr. Andrew Kelly
NTH Consultants, LTD
41780 Six Mile Road
Northville, MI 48168

ARI Report # 22-97868
Date Collected: NDG
Date Received: 01/10/22
Date Analyzed: 01/10/22
Date Reported: 01/12/22

Sample Information	Asbestos Type/Percent	Non-Asbestos Material
Lab ID #: 97868 - 04 Cust. #: 1D Material: Plaster/Mortar Location: Elevator Pit Walls Appearance: grey,nonfibrous,homogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Other - 100%
Lab ID #: 97868 - 05 Cust. #: 1E Material: Plaster/Mortar Location: Elevator Pit Walls Appearance: grey,nonfibrous,homogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Other - 100%
Lab ID #: 97868 - 06 Cust. #: 1F Material: Plaster/Mortar Location: Elevator Pit Walls Appearance: grey,nonfibrous,homogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Other - 100%

For Layered Samples, each component will be analyzed and reported separately.

Robert T. Letarte Jr., Laboratory Director

Test Method EPA 40 CFR - Part 763 and/or EPA 600/R-93/116 was used to analyze the above samples. Matrix interference and/or resolution limits may yield false/negative results in certain circumstances. Suspect floor tiles containing <1% should be tested with SEM or TEM. This certificate of analysis relates only to the samples as submitted and to insure the integrity of the results, may only be reproduced in full. This certificate must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government. APEX Research Inc. is not responsible for the accuracy of the results for layered samples or samples comprising multiple materials. Liability limited to cost of analysis.

NVLAP TESTING
NVLAP Lab Code 102118-0

Issued with addendum 2
7/17/2024

Certificate of Laboratory Analysis

Test Method, Polarized Light Microscopy (PLM)

Project : Cadillac Place Elevator
Project # : 62-210493-00

Report To:
Mr. Andrew Kelly
NTH Consultants, LTD
41780 Six Mile Road
Northville, MI 48168

ARI Report # 22-97868
Date Collected: NDG
Date Received: 01/10/22
Date Analyzed: 01/10/22
Date Reported: 01/12/22

Sample Information	Asbestos Type/Percent	Non-Asbestos Material
Lab ID #: 97868 - 07 Cust. #: 1G Material: Plaster/Mortar Location: Elevator Pit Walls Appearance: grey,nonfibrous,homogenous Layer: 1 of 1	Asbestos Present: **NO** No Asbestos Observed	Other - 100%
Lab ID #: 97868 - 08 Cust. #: 2A Material: Paper Door Liner Location: Inside Elevator Car Doors Appearance: grey,fibrous,homogenous Layer: 1 of 1	Asbestos Present: **YES** Chrysotile - 60%	Other - 40%
Lab ID #: 97868 - 09 Cust. #: 2B Material: Paper Door Liner Location: Inside Elevator Car Doors Appearance: Layer: of	Asbestos Present: NOT ANALYZED	

For Layered Samples, each component will be analyzed and reported separately.

Robert T. Letarte Jr., Laboratory Director

Test Method EPA 40 CFR - Part 763 and/or EPA 600/R-93/116 was used to analyze the above samples. Matrix interference and/or resolution limits may yield false/negative results in certain circumstances. Suspect floor tiles containing <1% should be tested with SEM or TEM. This certificate of analysis relates only to the samples as submitted and to insure the integrity of the results, may only be reproduced in full. This certificate must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government. APEX Research Inc. is not responsible for the accuracy of the results for layered samples or samples comprising multiple materials. Liability limited to cost of analysis.

NVLAP TESTING
NVLAP Lab Code 102118-0

Issued with addendum 2
7/17/2024

Certificate of Laboratory Analysis

Test Method, Polarized Light Microscopy (PLM)

Project : Cadillac Place Elevator
Project # : 62-210493-00

Report To:
Mr. Andrew Kelly
NTH Consultants, LTD
41780 Six Mile Road
Northville, MI 48168

ARI Report # 22-97868
Date Collected: NDG
Date Received: 01/10/22
Date Analyzed: 01/10/22
Date Reported: 01/12/22

Sample Information	Asbestos Type/Percent	Non-Asbestos Material
Lab ID #: 97868 - 10 Cust. #: 3A Material: Pipe Insulation Location: Elevator Penthouse Crawlspace, Steam Pipe Appearance: white,fibrous,homogenous Layer: 1 of 1	Asbestos Present: **YES** Chrysotile - 10% Crocidolite - 2%	Other - 88%
Lab ID #: 97868 - 11 Cust. #: 3B Material: Pipe Insulation Location: Elevator Penthouse Crawlspace, Steam Pipe Appearance: Layer: of	Asbestos Present: NOT ANALYZED	
Lab ID #: 97868 - 12 Cust. #: 3C Material: Pipe Insulation Location: Elevator Penthouse Crawlspace, Steam Pipe Appearance: Layer: of	Asbestos Present: NOT ANALYZED	

For Layered Samples, each component will be analyzed and reported separately.

Robert T. Letarte Jr., Laboratory Director

Test Method EPA 40 CFR - Part 763 and/or EPA 600/R-93/116 was used to analyze the above samples. Matrix interference and/or resolution limits may yield false/negative results in certain circumstances. Suspect floor tiles containing <1% should be tested with SEM or TEM. This certificate of analysis relates only to the samples as submitted and to insure the integrity of the results, may only be reproduced in full. This certificate must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government. APEX Research Inc. is not responsible for the accuracy of the results for layered samples or samples comprising multiple materials. Liability limited to cost of analysis.

NVLAP TESTING
NVLAP Lab Code 102118-0

Issued with addendum 2
7/17/2024

Certificate of Laboratory Analysis

Test Method, Polarized Light Microscopy (PLM)

Project : Cadillac Place Elevator
Project # : 62-210493-00

Report To:
Mr. Andrew Kelly
NTH Consultants, LTD
41780 Six Mile Road
Northville, MI 48168

ARI Report # 22-97868
Date Collected: NDG
Date Received: 01/10/22
Date Analyzed: 01/10/22
Date Reported: 01/12/22

Sample Information	Asbestos Type/Percent	Non-Asbestos Material
Lab ID #: 97868 - 13 Cust. #: 4A Material: Pipe Fitting Insulation Location: Elevator Penthouse Crawlspace, Steam Pipe Appearance: beige,fibrous,homogenous Layer: 1 of 1	Asbestos Present: **YES** Chrysotile - 20%	Other - 80%
Lab ID #: 97868 - 14 Cust. #: 4B Material: Pipe Fitting Insulation Location: Elevator Penthouse Crawlspace, Steam Pipe Appearance: Layer: of	Asbestos Present: NOT ANALYZED	
Lab ID #: 97868 - 15 Cust. #: 4C Material: Pipe Fitting Insulation Location: Elevator Penthouse Crawlspace, Steam Pipe Appearance: Layer: of	Asbestos Present: NOT ANALYZED	

For Layered Samples, each component will be analyzed and reported separately.

Robert T. Letarte Jr., Laboratory Director

Test Method EPA 40 CFR - Part 763 and/or EPA 600/R-93/116 was used to analyze the above samples. Matrix interference and/or resolution limits may yield false/negative results in certain circumstances. Suspect floor tiles containing <1% should be tested with SEM or TEM. This certificate of analysis relates only to the samples as submitted and to insure the integrity of the results, may only be reproduced in full. This certificate must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government. APEX Research Inc. is not responsible for the accuracy of the results for layered samples or samples comprising multiple materials. Liability limited to cost of analysis.

NVLAP TESTING
NVLAP Lab Code 102118-0

Issued with addendum 2
7/17/2024

APEX Research Inc., 11054 Hi Tech Drive, Whitmore Lake, MI 48189
(734) 449-9990, Fax (734) 449-9991

97868

NTJ-D Consultants, Ltd.
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and Envir<:>r1rr1c- nt:..-,I Services

Cha-in of Custody

Job Number:- 62-2104-93-oo

For Lab Use Only

Client	NTH Consultants, Ltd.		City, Sta e	**Northville, MI**	Zip Code	**48168**	*Bulk Samples Only*
Address	41780 Six Mile Rd., Suite 200		Contact	Andrew Kelly	Phone	**248-662-2682**	0TTP 0 Point Count
Project	Cadillac Place Elevator	!Task 100	Email	Akelly@NTHCcinsultants.com	Fax	**248-324-5179**	Samplers:
Turn Around	D Rush	D 24 Hour D 48 Hour 0 72 Hour D 1 Week			Report to	0 Email D Fax	ACK

Lab ID	Customer ID	Material Type	Material Location	Notes
-1	1A	Plaster	Elevator Pit Walls	
-2	1B	Plaster	Elevator Pit Walls	
-3	1C	Plaster	Elevator Pit Walls	
-4	1D	Plaster	Elevator Pit Walls	
-5	1E	Plaster	Elevator Pit Walls	
-6	11E	il> liister >: . •	Elel fator Pit Walls	
-7	1G	Plaster	Elevator Pit Walls	
-8	2A	Paper Door Liner	Inside Elevator Car Doors	
-9	2B	Paper Door Liner	Inside Elevator Car Doors	
-11	3B	Pipe Insulation	Elevator Penthouse Crawlspace, Steam P ip e	
-12-	pc	iPipe Insulation	iElevatorPenthouseCrawlspace:-Steai:n- Pipe	
-13	4A	Pipe Fitting Insulation	Elevator Penthouse Crawlspace, Steam Pipe	
-14	4B	Pipe Fitting Insulation	Elevator Penthouse Crawlspace, Steam Pipe	
-15	4C	Pipe Fitting Insulation	Elevator Penthouse Crawlspace, Steam Pipe	

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APEX RESEARCH

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Date and Time -a;- 22

Received by
Date and Time Qct:Q7

Relinquished by _____
Date and Time _____

Received by _____
Date and Time _____

Comments	Point Count when results are less than 10%	

APPENDIX D

Paint Chip Laboratory Data

Issued with addendum 2
7/17/2024

Certificate of Analysis - Metals in Paint

Method: EPA SW846-7130M, EPA SW846-7420M

Project: Cadillac Place Elevators

Project #: 62-210493-00

Report to:

Mr. Andrew Kelly
NTH Consultants, Ltd.
41780 Six Mile Rd., Ste. 200
Northville, MI 48168

ARL Report #: 22-L20462
Date Sampled: 01/06/22
Date Received: 01/10/22
Date Analyzed: 01/10/22
Date Reported: 01/13/22

Laboratory ID:	Client ID:	Reporting Limit:	Cadmium:	Lead:
L20462-01	PC-1	0.01%	**Cd -** < 0.01%	**Pb -** 1.78%
	Elevator Pit Walls, Olive Green Paint on Plaster			
L20462-02	PC-2	0.04%	**Cd -** < 0.04%	**Pb -** 0.97%
	Elevator Pit Supports, Dark Green on Metal Beam			
L20462-03	PC-3	0.01%	**Cd -** < 0.01%	**Pb -** 0.14%
	Elevator Pit - Brake Assembly, Black on Metal Beam			
L20462-04	PC-4	0.01%	**Cd -** < 0.01%	**Pb -** 0.06%
	Elevator Pit Floor, Gray/Brown on Concrete Floor			
L20462-05	PC-5	0.01%	**Cd -** < 0.01%	**Pb -** 0.11%
	Penthouse - Elevator Motor #5, Blue on Metal Motor			

Reporting Limit of 0.01% is based on minimum sample weight of 100mg per our SOP, and may vary based on smaller sample size. APEX Research is not responsible for sample collection activities, and results apply to samples as received. Methods have been slightly modified. Samples received in acceptable condition unless otherwise noted. This certificate of analysis relates only to the samples tested and to ensure the integrity of the results, may only be reproduced in full. Liability limited to cost of analysis. APEX Research, Inc. (Laboratory ID# 227441) is accredited by the AIHA Laboratory Accreditation Programs, LLC (AIHA LAP,LLC) in the Environmental Lead Laboratory Accreditation Program for Lead in Paint as documented by the Scope of Accreditation Certificate and associated Scope. Accreditation extends to lead analyses only.

Robert T. Letarte Jr., Laboratory Director

Issued with addendum 2
7/17/2024

APEX Research Inc., 11054 Hi Tech Drive, Whitmore Lake, MI 48189
(734) 449-9990, Fax (734) 449-9991

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NTH ConsuH:ant:s,. Ltd.
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and Envir·onn-.....,c nltal Services

Chain of Custody

Job Number: 62-210493-00

For Lab.Use Only

Client	**NTH Consultants, Ltd.**			City, State	Northville, MI	Zip Code	48168	*Paint Samples Only*
Address	**41780 Six Mile Rd., Suite 200**			Contact	Andrew Kelly	Phone	248-662-2682	OTTP 0 Point Count
Project	Cadillac Place Elevator	Task	00	Email	Akell}'.'.<@NTHConsultants.com	Fax	248-324-5179	Samplers:
Turn Around	0 Rush	0 4 Hour	0 48 Hour	0	72 Hour 0 1 Week	Report to	0 Email 0 Fax	ACK

Lab ID	Customer ID	Material Type	Material Location	Notes
-1	PC-1	Olive Green Paint on Plaster	Elevator Pit Walls	Test for Lead and Cadmium
-2	IPC-2	Dark Green on Metal Beam	Elevator Pit Supports	Test for Lead and Cadmium
-3	IPC-3	Black on Metal Beam	Elevator Pit - Brake Assembly	Test for Lead and Cadmium
-4	IPC-4	Gray/Brown on Concrete Floor	Elevator Pit Floor	Test for Lead and Cadmium
-5	PC-5	Blue on Metal Motor	Penthouse - Elevator Motor #S	Test for Lead and Cadmium
-6				
-7				
-8				
-9				
-10				
-11				
-12				
-13				
-14				
-15				

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JAN 10 2022
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Relinquished by ACK
Date and Time 1/6/22

Received by
Date and Time

Relinquished by _____
Date and Time

Received by _____
Date and Time

Comments

Test for Lead & Cadmium

SECTION 02 82 00

ASBESTOS REMEDIATION

PART 1 – GENERAL

1.01 SUMMARY OF WORK

A. The type of work under this specification involves proper removal and disposal of asbestos-containing materials (ACM) associated with the Cadillac Place Passenger Elevators Upgrade Project. There are five (5) elevators associated with the project and they are identified as the southeast elevator bank. Cadillac Place is located at 3044 W. Grand Boulevard in Detroit, Michigan.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 02 83 00 – Lead Paint Remediation

1.03 REFERENCES

A. A Hazardous Materials Survey (HMS) for the subject project has been conducted by NTH Consultants, Ltd. (NTH) and the findings are presented in the report dated February 10, 2022 (NTH Project No. 62-210493-00). Verify all information.

B. General Applicability of Codes, Regulations, and Standards: Except to the extent that more explicit or more stringent requirements are written directly into the contract documents, all applicable codes, regulations, and standards have the same force and effect (and are made a part of the contract documents by reference) as if copied directly into the contract documents, or as if published copies are bound herewith.

C. The references in this Article may apply to the work under this Section. This list shall not be considered complete, and it is the Contractor's responsibility to perform all work in accordance with applicable Federal, State, and local laws and regulations.

D. Federal Requirements: Requirements that govern asbestos-abatement work or hauling and disposal of asbestos waste materials include, but are not limited to, the following:

1. U.S. Department of Labor, Occupational Safety and Health Administration, (OSHA), including but not limited to:

a. Occupational Exposure to Asbestos, Tremolite, Anthophyllite, and Actinolite; Final Rules Title 29, Part 1910, Section 1001 and Part 1926, Section 1101 of the Code of Federal Regulations (CFR)

b. Respiratory Protection Title 29, Part 1910, Section 134 of the CFR

c. Construction Industry Title 29, Part 1926, of the CFR

d. Access to Employee Exposure and Medical Records Title 29, Part 1910, Section 2 of the CFR

e. Hazard Communication Title 29, Part 1910, Section 1200 of the CFR

f. Specifications for Accident Prevention Signs and Tags Title 29, Part 1910, Section 145 of the CFR

2. U.S. Environmental Protection Agency (EPA) including, but not limited to:

a. Worker Protection Rule 40 CFR Part 763, Subpart G

b. Regulation for Asbestos Title 40, Part 61, Subpart A of the CFR

c. National Emission Standard for Asbestos Title 40, Part 61, Subpart M (Revised Sub-part B) of the CFR

3. U.S. Department of Transportation (DOT) including but not limited to:

a. Hazardous Substances: Final Rule Regulation

b. 49 CFR, Parts 171 and 172

c. State and Local Requirements: Abide by all local requirements that govern asbestos abatement work or hauling and disposal of asbestos waste materials.

E. Michigan Labor and Economic Opportunity (LEO) and Michigan Occupational Safety and Health Administration (MIOSHA) Safety Standards relating to asbestos include but are not limited to:

1. Part 1 General Provision

2. Part 451 Respiratory Protection

3. Part 42 Hazard Communication

4. Part 20 Demolition

5. Part 45 Fall Protection

6. Part 6 Personal Protective Equipment

7. Part 7 Welding & Cutting

8. Part 19 Tools

9. Part 12 Scaffolds & Scaffold Platforms

10. Part 602 Asbestos Standards in Construction

F. National Institute of Occupation Safety and Health (NIOSH 7400) – Asbestos and Other Fibers by Phase Contrast Microscopy (PCM).

1.04 DEFINITIONS

A. Adequately wet: To sufficiently mix or penetrate with liquid to prevent the release of particulates. If visible emissions are observed coming from asbestos-containing material, then that material has not been adequately wetted. However, the absence of visible emissions is not sufficient evidence of being adequately wet.

B. Aerosol: A system consisting of particles, solid or liquid, suspended in air.

C. Air Cell: Insulation, normally used on pipes and ductwork, which is comprised of corrugated cardboard that is frequently comprised of asbestos combined with cellulose or refractory binders.

D. Air Erosion: The passage of air over friable ACM, which may result in the release of asbestos fibers.

E. Air Monitoring: The process of measuring the fiber content in a specific volume of air.

F. Amended Water: Water to which a surfactant has been added. Use a mixture of surfactant and water that results in wetting of the ACM and retardation of fiber release during disturbance of the material equal to or greater than that provided using one (1) ounce of a surfactant consisting of 50% polyoxyethylene ester and 50% polyoxyethylene ether mixed with 5 gallons of water.

G. Asbestos: The asbestos-form varieties of serpentinite (chrysotile), riebeckite (crocidolite), cummingtonite-grunerite, anthophyllite, and actinolite-tremolite. For purposes of determining respiratory and worker protection, both the asbestiform and non-asbestiform varieties of the above minerals, and any of these materials that have been chemically treated and/or altered, shall be considered as asbestos.

H. Asbestos Abatement means any of the following:

1. The wrecking or removal of structural members that contain friable asbestos-containing material.

2. The following practices intended to prevent the escape of asbestos fibers into the atmosphere:

a. Removing friable ACM from pipe, duct, boiler, tank, reactor, furnace, or other structural members.

b. Removing facility components that are asbestos-covered or asbestos-containing.

c. Explanatory Note: These are the phases of asbestos abatement in chronological order:

i. Pre-Abatement: Means the time period covering the commencement of construction of the containments and all other preparations (including any necessary pre-cleaning) taking place prior to the actual abatement of ACM. This abatement phase does not include the transport of materials and equipment to the Site. The transport of materials and equipment to the Site is the only activity that is allowed by an uncertified person.

ii. Active Abatement: Means the time period beginning with the completion of the pre-abatement phase and ending when the area has passed final air sampling and the critical barriers have been completely removed. The active abatement phase includes the actual "gross" removal of ACM and all aspects of "final cleaning" that are conducted prior to the areas being pronounced ready for a final visual inspection. The final visual inspection, final clearance air monitoring, and the removal of critical barriers are the last activities included in the active abatement phase.

iii. Post-Abatement: Means any point in time following the termination of the active abatement phase.

I. Asbestos Abatement Contractor: Any person hired to conduct asbestos abatement.

J. Asbestos-Containing Material (ACM): Surfacing asbestos-containing material, thermal system insulation asbestos-containing material, or miscellaneous asbestos-containing material that is found in or on interior structural members or other parts of a building.

Any material containing more than 1% by weight of asbestos of any type or mixture of types.

K. Asbestos-Containing Waste Material (ACWM): Any material that is or is suspected of being or any material contaminated with an ACM, which shall be removed from a work area for disposal.

L. Authorized Visitor: The Owner, Owner Representative, testing lab personnel, or a representative of any federal, state, and local regulatory or other agency having authority over the project.

M. Barrier: Any surface that seals off the work area to inhibit the movement of fibers.

N. Breathing Zone: A hemisphere forward of the shoulders with a radius of approximately 6 to 9 inches.

O. Ceiling Concentration: The concentration of an airborne substance that shall not be exceeded.

P. Certified Industrial Hygienist (CIH): An industrial hygienist certified in Comprehensive Practice by the American Board of Industrial Hygiene.

Q. Clean Room: An uncontaminated area or room that is a part of the worker decontamination enclosure system, with provisions for storage of workers' street clothes and clean protective equipment.

R. Critical Barrier: A single layer of 6-mil or greater polyethylene sheeting or an equivalent airtight barrier installed initially over all doors, windows, ventilation openings, drains, wall penetrations, etc., as an additional measure to prevent contaminated air from escaping the work area.

S. Curtained Doorway: A device to allow ingress or egress from one room to another while permitting minimal air movement between the rooms.

T. Cutting: To penetrate with a sharp-edged instrument and includes sawing, but does not include shearing, slicing, or punching.

U. Decontamination enclosure system: A series of three (minimum) connected rooms, separated from the work area and from each other by air locks or curtained doorways, for the decontamination of workers and equipment.

V. Demolition: The wrecking or taking out of any load-supporting structural member of a facility together with related handling operations or the intentional burning of any facility.

W. Disposal Bag: Six (6) mil thick leak-tight plastic bags used for transporting asbestos waste from work and to disposal site. Each is labeled as follows:

DANGER
CONTAINS ASBESTOS FIBERS
MAY CAUSE CANCER
CAUSES DAMAGE TO LUNGS
DO NOT BREATHE DUST
AVOID CREATING DUST

X. Duct Tape: Provide duct tape in 2-inch or 3-inch widths as indicated, with an adhesive that is formulated to aggressively stick to sheet polyethylene.

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

1. Bridging encapsulant: An encapsulant that forms a discrete layer on the surface of an in-situ asbestos matrix.

2. Penetrating encapsulant: An encapsulant that is absorbed by the in-situ asbestos matrix without leaving a discrete surface layer.

3. Removal encapsulant: A penetrating encapsulant specifically designed for removal of asbestos-containing materials rather than for in-situ encapsulation.

Z. Encapsulation: The application of a liquid material to asbestos-containing material to control the possible release of asbestos fibers from the material either by creating a membrane over the surface (bridging encapsulant) or by penetrating into the material and binding its components together (penetrating encapsulant).

AA. Enclosure: The construction of an airtight, impermeable, permanent barrier around asbestos-containing material to control the release of asbestos fibers into the air.

BB. Equipment room: A contaminated area or room that is part of the worker decontamination enclosure system, with provisions for storage of contaminated clothing and equipment.

CC. Fiber release episode: Any uncontrolled or unintentional disturbance of ACM resulting in visible emissions.

DD. Filter: A media component used in respirators to remove solid or liquid particles from the inspired air.

EE. Final cleaning: The cleaning of all dust and debris from the work areas near the end of the active abatement phase, immediately prior to the final visual inspection.

FF. Fixed object: A piece of equipment or furniture in the work area that cannot be readily removed from the work area.

GG. Friable: Any material, when dry, that may be crumbled, pulverized, or reduced to powder by hand pressure, including previously non-friable material after such previously non-friable material becomes damaged to the extent that, when dry, it may be crumbled, pulverized, or reduced to powder by hand pressure.

HH. Glove bag: A sack (typically constructed of 6-mil transparent polyethylene or polyvinyl chloride plastic) with two inward projecting long-sleeved gloves that are designed to enclose an object from which an asbestos-containing material is removed.

II. Grinding: To reduce to powder or small fragments, including mechanical chipping or drilling.

JJ. HEPA Filter Vacuum Collection Equipment (or vacuum cleaner):
High efficiency particulate air (HEPA) vacuum cleaner with a filter system capable of collecting and retaining asbestos fibers. Filters shall be of 99.97% efficiency for retaining fibers of 0.3 microns or larger.

KK. Negative Pressure Respirator: A respirator in which the air pressure inside the respiratory-inlet covering is positive during exhalation in relation to the air pressure of the outside atmosphere and negative during inhalation in relation to the air pressure of the outside atmosphere.

LL. Negative Pressure Ventilation System: A local exhaust system, utilizing HEPA filtration, capable of maintaining a negative pressure inside the work area and a constant air flow from adjacent areas into the work area and exhausting that air outside the work area.

MM. Negative Pressure: Air pressure lower than surrounding areas, generally caused by exhausting air from a sealed space (work area).

NN. Personal Monitoring: Sampling of the asbestos fiber concentrations within the breathing zone of an employee.

OO. Phase Contrast Microscopy (PCM): Method used to measure fiber concentrations of air samples.

PP. Pre-cleaning: The cleaning of the work area of visible dust and debris prior to active abatement.

QQ. Polyethylene Sheet: A single polyethylene film in the largest sheet size possible to minimize seams, 4.0 or 6.0-mils thick as indicated, clear, frosted, or black as indicated.

1. Flame-resistant Polyethylene Sheet: Flame resistant polyethylene film conforms to requirements set forth by the National Fire Protection Association Standard 701, Small Scale Fire Test for Flame-resistant Textiles and Films.

2. Reinforced Polyethylene Sheet: Translucent, nylon reinforced or woven polyethylene, laminated, flame resistant, polyethylene film that conforms to requirements set forth by the National Fire Protection Association Standard 701, Small Scale Fire Test for Flame-resistant Textiles and Films.

RR. Project Design: The preparation of plans, specifications, project procedures, containment design/placement, descriptions of engineering controls, and shop drawings for an asbestos-abatement project or response action. It shall include an accurate and detailed scope of work, quantities of material to be removed, removal methods, and air exchange calculations. Drawings shall include locations of ACM to be abated, location of the decontamination unit, waste load out, negative air units, air intake and exhaust, and emergency exits when applicable.

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

TT. Regulated Area: Area established by the Contractor to demarcate areas where asbestos work is conducted, and any adjoining area where debris and waste from such asbestos work accumulate; and a work area within which airborne concentrations of asbestos, exceed or there is a reasonable possibility they may exceed the permissible exposure limit.

UU. Regulated Asbestos-Containing Material (RACM): Any of the following: (a) Friable asbestos material, (b) Category I, non-friable ACM that has become friable, (c) Category I non-friable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading, or (d) Category II non-friable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by forces expected to act on the material during demolition or renovation operations.

1. Category I Non-friable Asbestos-Containing Materials (ACM): Asbestos-containing packings, gaskets, resilient floor covering, and asphalt roofing products containing more than one percent asbestos as determined using Polarized Light Microscopy.

2. Category II Non-friable ACM: Any material, excluding Category I non-friable ACM, containing more than one percent asbestos as determined using Polarized Light Microscopy that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.

VV. Respirator: A device designed to protect the wearer from inhalation of harmful atmospheres.

WW. Shower room: A room between the clean room and the equipment room in the worker decontamination enclosure suitably arranged for complete showering during decontamination.

XX. Spray Cement: Spray adhesive in aerosol cans that is specifically formulated to stick to sheet polyethylene.

YY. Staging area: The holding area or an area near the waste transfer airlock where containerized asbestos waste has been placed prior to removal from the work area.

ZZ. Surfactant: A chemical wetting agent added to water to improve penetration, thus reducing the quantity of water required for a given operation or area.

AAA. Transmission Electron Microscopy (TEM): An analytical technique used for the definitive identification of asbestos.

BBB. Time Weighted Average (TWA): The average concentration of a contaminant in air during a specific time period.

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

DDD. Waste load-out area: A specially constructed airlock system utilized as a short-term storage area for bagged or barreled waste and as a port for transferring waste to the transport vehicle. This area is separate from the decontamination unit.

EEE. Wet Cleaning: The process of eliminating asbestos contamination from building surfaces and objects by using cloths, mops, or other cleaning utensils that have been dampened with amended water or diluted removal encapsulant and, afterwards, thoroughly decontaminated or disposed of as asbestos-contaminated waste.

FFF. Wetting Materials: For wetting prior to disturbance of asbestos-containing material, use either amended water or a removal encapsulant.

GGG. Work Area: The area where asbestos-related work or removal operations are performed and that is defined and/or isolated to prevent the spread of asbestos dust, fibers or debris, and entry by unauthorized personnel. Work area is a Regulated Area as defined by 29 CFR 1926.

HHH. Workday: Means Monday through Friday, not including holidays that falls on any of the days Monday through Friday.

1.05 SUBMITTALS

At least two weeks prior to beginning work, submit the following items. Do not begin work until they are acknowledged as received and accepted by the Owner Representative.

A. Notices: Submit notices required by federal, state, and local regulations, together with proof of timely transmittal, to agency requiring the notice, including a copy of the Notification of Intent to Renovate/Demolish which is required to be submitted to Michigan Department of Environment, Great Lakes, and Energy (EGLE) and LEO.

B. Licenses: Submit copies of all state licenses necessary to conduct the work of this contract, including a copy of the Contractor's license under Michigan Public Act 135 of 1986.

C. For the proposed disposal facility, submit the name, location, 24-hour telephone number, and Federal, State, and local license or permit numbers. Also, provide copies of all licenses and approvals permitting the disposal of asbestos and provide satisfactory evidence that the facility complies with 40 CFR 61.154 and all other applicable laws and regulations for disposal of asbestos.

D. Submit the name and address, and federal, state, and local permit or identification numbers of the proposed transportation contractor.

E. Asbestos Abatement Action Plan. Contractor shall prepare and submit an Asbestos Abatement Action Plan (Plan). The Plan shall be submitted to the Owner Representative for review and approval at least **5 business days prior to the start of the work.** No work shall be allowed until the Plan has been approved. The Plan shall include drawings and narratives, sufficient in detail to demonstrate and indicate the following:

1. Description of materials scheduled for removal in the building.

2. The specific areas of work in the building.

3. Removal methods and work practices to be performed by employees.

4. Locations of critical barriers.

5. Delineation of the regulated area.

6. Personal protection equipment and clothing to be worn by employees.

7. Location of Decontamination Enclosure Systems or Decontamination Area.

8. Personal hygiene and equipment decontamination procedures.

9. Location of waste accumulation.

10. Location of waste dumpster.

11. Location of remote decontamination enclosure system (if applicable).

12. Location of negative air machine exhaust points and path of exhaust ducts.

13. Any variance to the work methods outlined in this specification.

F. Other:

1. Evidence of training of all workers as required by the State of Michigan.

2. Copies of Contractor's written respiratory protection program, engineering controls, and work practices.

3. Copies of all medical approvals for all applicable workers to use respiratory protective equipment.

4. Records of respirator fit testing for all workers.

5. Identification of designated competent person under 29 CFR 1926.1101 and phone numbers for 24-hour contact.

G. Historic Airborne Fiber Data: Submit airborne asbestos fiber count data from an independent air monitoring firm to demonstrate the ability to perform work of this Section while maintaining an airborne fiber count below 0.1 fibers per cubic centimeter in the breathing zone of the individual performing the work. Include the following data for each procedure required by the work:

1. Date of measurements; operations monitored; sampling and analytical methods used and evidence of their accuracy; and number, duration, and results of samples taken.

1.06 GENERAL REQUIREMENTS

A. Contractor Responsibility: Assume full responsibility and liability for compliance with all applicable federal, state, and local regulations pertaining to work practices, hauling, disposal, and protection of workers, visitors to the Site, and persons occupying areas adjacent to the Site. Provide medical examinations and maintain medical records of personnel as required by the applicable Federal, State, and local regulations. Hold the Owner and Owner Representative harmless for failure to comply with any applicable work, hauling, disposal, safety, health, or other regulations on the part of Contractor, Contractor's employees, or subcontractors.

B. Decontamination area location, Contractor parking, dumpster location, and entrances that may be used for the movement of supplies and personnel are subject to the Owner Representative approval.

C. Allow the Owner Representative to inspect and approve all equipment and materials used before the start of any work.

D. Allow the Owner Representative to check or evaluate air monitoring methods, procedures, and quality assurance.

E. All personnel performing work under this specification from pre-clean/prep to and including tear down shall be State of Michigan-certified asbestos workers or contractor supervisors.

F. Asbestos abatement procedures are outlined in this specification document. Contractors may submit alternate abatement procedures for compliance with State and Federal requirements. These procedures will require approval by the Owner Representative prior to commencing abatement activities.

1.07 POTENTIAL ASBESTOS HAZARD

A. The disturbance or dislocation of ACM may cause asbestos fibers to be released into the building's atmosphere, thereby creating a potential health hazard to workers. Apprise all workers, supervisory personnel, subcontractors, and consultants who will be at the Site of the seriousness of the hazard and of proper work procedures, which must be followed.

B. Take appropriate measures as necessary to protect workers from the potential hazard of exposure to airborne asbestos. Such measures include the procedures and methods described herein, and compliance with regulations of applicable federal, state, and local agencies.

1.08 STOP WORK

A. If the Owner Representative presents a written stop work order, immediately stop all work. Do not re-commence work until authorized by the Owner Representative.

1.09 PROJECT COORDINATION

A. Project Superintendent - Provide a full-time Project Superintendent who is experienced in administration and supervision of asbestos abatement projects, including work practices, protective measures for building and personnel, disposal procedures, etc.

1. The Project Superintendent is the Competent Person for the Contractor, as required by OSHA in 29 CFR 1926.1101, and is the Contractor's Representative responsible for compliance with all applicable federal, state, and local regulations.

2. This person must have completed a course at an EPA Training Center or equivalent certificate course in asbestos abatement procedures and have had a minimum of two (2) years on-the-job training. The Project Superintendent shall be accredited as an Asbestos Abatement Supervisor in accordance with the AHERA Regulation 40 CFR, Part 763, Subpart E, Appendix C.

3. Duties of Project Superintendent

a. Coordination: Coordinate the work of all subcontractors and material suppliers.

b. Supervision: Supervise the activities of every phase of the asbestos abatement work taking place on the project.

c. Communication: Establish lines of authority and communication at the Site.

d. Permits: Obtain building and special permits required for asbestos abatement.

e. Location: Be present on the Site at all times when work is being performed.

f. Regulations: Ensure compliance with all applicable federal, state, and local regulations with regard to ACM.

1.10 NOTICES

A. U.S. Environmental Protection Agency / State and Local Agencies

1. Submit notices required by federal, state, and local regulations, together with proof of timely transmittal, to agency requiring the notice. All associated fees are considered incidental to the project.

1.11 AIR MONITORING

A. Personal air monitoring required by federal, state, and local regulations is the work of the Contractor.

B. The Owner Representative shall conduct air monitoring to verify that the buildings beyond the work area and the outside environment remain uncontaminated. The Owner Representative shall also perform clearance sampling.

C. Use Phase Contrast Microscopy (PCM) analysis for air sampling before and during abatement. Transmission Electron Microscopy (TEM) will be used at the discretion of the Owner Representative.

D. PCM Clearance Criteria: All final air sampling results shall be at or below 0.01 fibers per cubic (f/cc) centimeter to achieve clearance.

E. TEM Clearance Criteria: All final air sampling results shall be at or below 70 structures per square millimeter (s/mm2) to achieve clearance.

F. The Clearance Criteria set forth in this Section also serves as airborne fiber concentrations indicative of a release from the work area.

G. The following procedure will be used to resolve disputes regarding fiber types when a project has been stopped due to excessive airborne fiber counts.

1. Airborne Fibers: Includes all fibers regardless of composition as counted by phase contrast microscopy (PCM), unless additional analysis by transmission electron microscopy (TEM) demonstrates to the satisfaction of the Owner Representative that non-asbestos fibers are being counted. "Airborne Fibers" counted in samples analyzed by TEM shall be all asbestos fibers.

2. Phase Contrast Microscopy (PCM): Performed using the NIOSH 7400 method at the Site.

3. Transmission Electron Microscopy (TEM): Performed using the analysis method set forth in the AHERA Regulation 40 CFR, Part 763, Appendix A.

H. Secure air samples before start of work to establish a baseline.

1.12 WORKER TRAINING AND ACCREDITATION

A. AHERA Accreditation: All workers are to be accredited as Abatement Workers as required by the AHERA Regulation 40 CFR 763, Appendix C, Subpart E, April 30, 1987, and Michigan Public Act 440 of 1988.

B. Train, in accordance with 29 CFR 1926, all workers in the dangers inherent in handling asbestos and breathing asbestos dust and in proper work procedures and personal and area protective measures.

C. All on-site personnel working under this specification shall, at a minimum, be State of Michigan Asbestos Workers. The work must be overseen by an on-site State of Michigan Asbestos Contractor Supervisor.

1.13 QUALITY ASSURANCE

A. Contractor shall be experienced in the removal, packaging, handling, transportation, and proper disposal of asbestos containing material and have all necessary local permits and/or approvals.

B. Contractor shall be responsible for the proper handling of material being disposed from the time the Contractor moves the material until the material is disposed off-site at the licensed disposal facility. The Contractor shall be responsible for cleaning up all spills that occur during loading, hauling and final disposal at no cost to the Owner. Contractor shall immediately notify the Owner Representative of any spills and appropriately cleanup and dispose of all material and impacted media required for cleanup.

C. Complete all work required by and in accordance with all applicable federal, state, and local government regulatory agencies and arrange for all notifications and licenses for the removal, packaging, loading, hauling, and final disposal operations.

D. If additional data is required to obtain disposal facility approval, collect, and analyze appropriate samples. Notify the Owner Representative in writing at least one week in advance of sampling with an explanation for the additional testing and the date and time of the sampling so that the Owner Representative will have the opportunity to collect co-located samples.

E. The Owner Representative will observe abatement operations, inspect critical barriers and other enclosures, and conduct air monitoring. If the Owners Representative shuts down the project because the clearance level is exceeded outside of the work area, do not resume until corrections are made.

1.14 PROJECT CLOSEOUT

A. Preliminary Procedures: When requesting inspection for Substantial Completion, list exceptions in the request.

B. Inspection Procedures: On receipt of a request for inspection, the Owner Representative will either proceed with inspection or advise the Contractor of unfilled requirements.

C. The Owner Representative will perform a visual inspection and verify that the work has been substantially completed.

D. Results of the completed visual inspection and clearance sample results will form the basis of requirements for final acceptance.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Protective Equipment – Provide disposable coveralls, head covers, footwear covers, gloves, respirator mask, etc., for on-site personnel and for use by the Owner Representative and other authorized representatives who may inspect the Site.

B. Miscellaneous Materials – Sampling equipment, hand tools, packaging materials, materials to build barriers and enclosures, etc.

C. Sheet Plastic:

1. Polyethylene Sheet

2. Flame-resistant Polyethylene Sheet: Where needed, provide flame resistant polyethylene film. Provide largest size possible to minimize seams, 6.0 mil thick as indicated, frosted or black as indicated.

3. Reinforced Polyethylene Sheet: Where plastic sheet constitutes the only barrier between the Work Area and the building exterior, provide reinforced polyethylene sheet. Provide largest size possible to minimize seams, 6.0 mil thick as indicated, frosted or black as indicated.

D. Glovebags

2.02 EQUIPMENT

A. Manlifts, scaffolding, high efficiency particulate air (HEPA) filtered vacuum, negative air systems, etc.

PART 3 - EXECUTION

3.01 GENERAL PROCEDURES

A. Remove asbestos containing material in strict accordance with the requirements of OSHA 29 CFR 1926.1101 and this Section.

B. Provide asbestos banner tape and warning signs at each visual and physical barrier.

C. Remove additional materials that may be suspected of containing asbestos. Perform all work necessary to remove ACM that is encountered during demolition.

D. Comply with Article 3.08 – Worker Protection.

E. All incoming electrical supplies shall be equipped with ground fault circuit interrupters.

F. Pre-cleaning

1. HEPA vacuum or wet wipe all surfaces in the asbestos abatement work area contaminated with visible dust or debris. Clean movable objects free of dust and debris by HEPA vacuum or wet wiping before removal from the work area.

2. Dispose of all dust and debris, filters, mop heads and other contaminated waste as ACM.

3. After pre-cleaning the work area, begin prep of work area.

4. Pick up and containerize ACM-debris in each work area prior to setting up the work area.

G. Impermeable Drop Cloths

1. Install an impermeable drop cloth (i.e., a clear 6-mil sheet plastic) in all areas where asbestos removal work is to be conducted. Completely cover area around work activity.

2. Remove drop cloth at end of each work shift or as work in an area is completed. Fold plastic toward the center of sheet and pack in disposal bags. Keep material on plastic continuously wet until bagged.

H. Airborne Fiber Counts

1. Use work procedures that result in a fiber count outside the work area less than that indicated in Article 1.11 of this Specification.

a. If airborne fiber counts exceed the specified level, immediately mist the area with amended water to lower fiber counts and revise work procedures to maintain airborne fiber levels within the required limit.

2. Use respiratory protection based on fiber counts as indicated in Article 3.09 of this Specification.

I. On a daily basis, stockpile and clean up all rubbish, trash, debris, etc., caused by work done under this project.

3.02 ACCETPABLE REMOVAL METHODS

A. Use wet removal techniques for all ACM removal.

1. Thoroughly wet, to satisfaction of Owner Representative, ACM to be removed prior to stripping and/or tooling to reduce fiber dispersal into the air. Accomplish wetting by a fine spray (mist) of amended water or removal encapsulant. Saturate material sufficiently to wet to the substrate without causing excess dripping. Allow time for water or removal encapsulant to penetrate material thoroughly. If amended water is used, spray material repeatedly during the work process to maintain a continuously wet condition. If a removal encapsulant is used, apply in strict accordance with manufacturer's written instructions. Perforate outer covering of any installation that has been painted and/or jacketed to allow penetration of amended water or removal encapsulant. Where necessary, carefully strip away while simultaneously spraying amended water or removal encapsulant on the installation to minimize dispersal of asbestos fibers into the air.

2. Mist work area continuously with amended water whenever necessary to reduce airborne fiber levels.

3. Remove saturated ACM in small sections. Do not allow material to dry out. As it is removed, simultaneously pack material while still wet into asbestos disposal bags. Twist the neck of the bags, and seal with minimum three (3) wraps of duct tape. Clean outside and move to wash down station

adjacent to material decontamination unit. Waste shall be double bagged or bagged and placed in a second impermeable container (i.e., cardboard drum).

B. Removal of pipe insulation and pipe fitting insulation, are classified as "Class I asbestos work" under current OSHA's 29 CFR 1926.1101 Asbestos in Construction. Adhere to the following minimum requirements during removal:

1. Remove these materials in accordance with Article 3.04 Work Area Isolation and Article 3.05 Negative Pressure System Requirements for Enclosures or Article 3.07 Glovebag Removal.

a. HVAC system(s) shall be shut down.

C. Removal of elevator door paper line and window caulk are classified as “Class II asbestos work” under OSHA’s 29 CFR 1926.1101 Asbestos in Construction.

1. Caulk: The area around the removal areas shall be cordoned with asbestos banner tape. Construct a decontamination station with HEPA-vacuum adjacent to the regulated area for worker and equipment decontamination. Drop cloths shall be placed under removal areas. The caulk shall be removed using wet methods and hand tools and waste shall be double bagged.

a. The contractor may elect to remove the windows with asbestos caulks and glazes as whole units. The window shall be removed intact and wrapped in polyethylene sheeting before placing in the on-site dumpster.

2. Elevator door paper – if doors are to be replaced: The area around the removal areas shall be cordoned with asbestos banner tape. Construct a decontamination station with HEPA-vacuum adjacent to the regulated area for worker and equipment decontamination. Drop cloths shall be placed under removal areas. Remove elevator doors intact and double-wrapped in polyethylene sheeting before placing in the on-site refuse dumpster.

3. Elevator door paper – if paper needs to be abated: Construct a regulated area consisting of banner tape, polyethylene drop-cloths, and adjacent decontamination area with HEPA-vacuum. where the elevator doors can be abated. Remove the elevator door intact and transfer to the regulated area. Carefully disassemble the doors to expose the paper. Remove the paper using wet methods and double bag the waste.

3.03 AIR MONITORING – TEST SERVICES

A. The purpose of air monitoring outside of the work area is to detect faults in the work area isolation such as:

1. Contamination of the building outside of the work areas with airborne asbestos fibers.

2. Failure of filtration or rupture in the negative pressure system.

3. Contamination outside the buried structure demolition area.

B. Background and Perimeter Area Air-Monitoring: The Owner Representative will monitor airborne fiber counts outside of the work area. Perimeter area monitoring must meet clearance criteria in Article 1.11 or not exceed background levels representing the same area before the asbestos work began. The results of such monitoring will be made known to the Owner no later than 48 hours from the end of the work shift represented by such monitoring.

C. Sample Analysis

1. Sample analysis will be performed using PCM before, during and after asbestos abatement. TEM analysis will be performed if deemed necessary by the Owner or Owner Representative.

2. Provide a microscope and technician at the Site or send samples daily by overnight mail to a testing laboratory so that verbal reports on air samples can be obtained within 24 hours.

D. Personal Monitoring

1. Perform all monitoring to meet MIOSHA requirements (Part 602. Asbestos Standards is Construction) for maintenance of time-weighted average (TWA) fiber counts for types of respiratory protection provided. Submit results within 1 week of receipt of data.

3.04 WORK AREA ISOLATION

A. General

1. When required by the acceptable removal method, completely isolate the work area from other parts of the building to prevent asbestos-containing dust or debris from passing beyond the isolated area. Should the area beyond the work area(s) become contaminated with asbestos-containing dust or debris, determined through visible observations or perimeter air monitoring results, immediately notify the Owner Representative, and

clean those areas in accordance with the proper procedures. Perform all such required cleaning or decontamination at no additional cost to Owner.

2. Place all tools, scaffolding, staging, etc. necessary for the work in the area to be isolated before erection of plastic sheeting temporary enclosure. Remove all uncontaminated removable furniture, equipment, and/or supplies from the work area before commencing work, or completely cover with two (2) layers of 6-mil polyethylene sheeting securely taped in place with duct tape. Such furniture and equipment shall be considered outside the work area unless covering plastic or seal is breached.

3. Disable Ventilating Systems and any other system that brings air into or out of the work area. Disable the system by disconnecting wires, removing circuit breakers, by lockable switch or other positive means that will prevent accidental premature restarting of equipment.

4. Comply with Article 3.09 – Respiratory Protection.

5. The Owner Representative must visually observe and approve all work area set-up before commencing any removal activities.

6. Allow for work area clearance in accordance with Article 3.10 prior to dismantling the enclosure.

B. Control of Access

1. Permit access to the work area only through the Decontamination Unit. Close off all other means of access and seal. Display warning signs on the clean side of the sealed access.

2. Physical Barrier: Where the area adjacent to the work area is accessible to the public, construct a solid barrier on the public side of the sheeting to protect the sheeting. Construct barrier with nominal 2-inch by 4-inch (2” x 4”) wood or metal studs 16-inch (16”) on center, securely anchored to prevent movement, covered with minimum 1/4-inch (0.25”) thick hardboard, 1/2-inch (0.5”) gypsum wall board, or 1/2-inch (0.5”) plywood.

3. Provide asbestos banner tape and warning signs at each visual and physical barrier.

C. Critical Barriers

1. Completely separate the work area from other portions of the building and the outside by sheet plastic barriers at least 6-mil in thickness, or by sealing with duct tape.

2. Individually seal all ventilation openings (supply and exhaust), lighting fixtures, clocks, doorways, windows, convectors and speakers, and other openings into the work area with duct tape alone or with polyethylene sheeting at least 6-mil in thickness, taped securely in place with duct tape. Maintain seal until all work, including project decontamination, is completed. Take care in sealing off lighting fixtures to avoid melting or burning of sheeting. Use flame resistant or reinforced polyethylene sheet where required.

3.05 NEGATIVE PRESSURE ENCLOSURES

A. The negative pressure enclosure shall consist of the following components:

1. Personnel decontamination unit, which consists of a dirty room, shower, and clean room. Attach the decontamination unit to the enclosure.

2. Enclosure: Construct an enclosure where the abatement work is to be performed in accordance with this section.

3. Change Room: Provide an approximately 3-foot by 3-foot Change Room, with additional space as required for storage, attached to each enclosure. Fabricate Change Room from 6-mil sheet plastic in the same manner as the first layer of the work room. Locate so that access to the Work Area is through the Change Room.

4. Step-Off Area: Cover floor in front of entry to Change Room with one layer of 6-mil sheet plastic. Securely anchor sheet plastic to prevent slipping.

5. Flapped Door Construction: Provide flapped door as entry to Change Room and entry from Change Room to Work Room. Fabricate each flapped door from overlapping contacting layers of sheet plastic.

a. Fasten each layer on the top and one side. Fabricate each flap three-inches (3") longer than door opening. Reinforce free side and bottom of each sheet with duct tape. Alternate sides that are fastened on each layer. Form arrows pointing to entry side from duct tape on inside and outside of door.

B. Construction:

1. Cover walls with two-layers of polyethylene sheeting, overlapping in alternate layers with three-layers of polyethylene sheeting covering the floor. Note: Floor requirements listed below are not applicable for removal of floor tile and mastic within enclosures.

2. Use fire resistant polyethylene sheeting if the potential for fire hazard exists.

3. If flooring materials are not scheduled for abatement, and after flooring material scheduled for abatement has been removed, cover floors with three-layers of 6-mil (minimum) polyethylene sheeting.

4. Polyethylene sheeting shall be sized to minimize seams. If the floor area necessitates seams, space successive layers of sheeting to reduce the potential for water to penetrate to the flooring material. Seams shall not be located at wall/floor joints.

5. Floor sheeting shall extend, at minimum, 12-inches (12") up the side walls of the work area.

6. Cover walls with a minimum of two-layers of 4-mil polyethylene sheeting. Where polyethylene sheeting must remain attached to porous wall surfaces for more than 48 hours, use furring strips (or the equivalent) in addition to duct tape and/or spray glue to secure the wall plastic in place.

7. Place critical barriers of 6-mil polyethylene sheeting over penetrations to outside work areas (vents, windows, holes, etc.).

8. Size polyethylene for walls to minimize seams. Stager seams and separate seams by a distance of at least 6-feet where possible.

9. Overlap polyethylene floor sheeting by a minimum of 24-inches beyond the wall/floor joint to provide a better seal against water damage and to enhance the negative pressure strategy.

10. Where construction of barrier wall frames is required, space the 2-inch by 4-inch studs on 24-inch centers and cover with two (2) layers of 6-mil fire resistant polyethylene sheeting attached to the framing. If the attachment medium penetrates the sheeting, seal the penetration with duct tape.

C. Pressure Differential

1. Provide a fully operational negative air system within the work area maintaining continuously a pressure differential across work area enclosures of -0.020 inches of water. Demonstrate to the Owner Representative the pressure differential by use of a pressure differential meter or a manometer before disturbance of any ACM. At all times, the differential of the work area to the clean area shall be, at a minimum, -0.020 inches of water and shall be recorded using a strip chart recorder or its equivalent. In addition, smoke tubes shall always be readily available on the outside of containment barriers so that airflow direction may be

determined. At all times airflow direction shall be from the exterior of the containment barriers into the interior of the containment barriers. If at any time the pressure differential falls below –0.020 inches of water, work shall stop until negative pressure is above –0.020 inches of water.

D. Preparation of the Work Area

1. Determining the Ventilation Requirements: Provide fully operational negative pressure systems supplying a minimum of one (1) air change every 15 minutes. Determine the volume in cubic feet of the work area by multiplying floor area by ceiling height. Determine total ventilation requirement in cubic feet per minute (CFM) for the work area by dividing this volume by the air change rate.

2. Ventilation Required (CFM) = Volume of work area (cu. ft.) / 15 min.

3. Determine number of units needed to achieve 15-minute change rate by dividing the ventilation requirement by capacity of exhaust unit(s) used. Capacity of a unit for purposes of this section is the capacity in cubic feet per minute with fully loaded filters (pressure differential which causes loaded filter warning light to come on) in the machines labeled operating characteristics.

4. Number of Units Needed = Ventilation Requirement (CFM) / Capacity of Unit with Loaded Filters (CFM)

5. Add one (1) additional unit as a backup in case of equipment failure or machine shutdown for filter changing.

6. Location of exhaust units: Locate exhaust unit(s) so that makeup air enters work area primarily through decontamination facilities and traverses work area as much as possible. This may be accomplished by positioning the exhaust unit(s) at a maximum distance from the worker access opening or other makeup air sources.

7. Place the end of unit or its exhaust duct through an opening in the plastic barrier or wall covering. The plastic around the unit or duct shall then be sealed with tape.

8. Vent outside of building unless authorized by the Owner Representative.

E. Use of the Negative Static Pressure System

1. General: A dedicated minimum 115V-20A circuit shall service each unit with overload device tied into an existing building electrical panel that has sufficient spare capacity to accommodate the load of all negative pressure

units connected. Dedication of an existing circuit may be accomplished by shutting down existing loads on the circuit.

2. Testing the System: Test negative pressure system before any asbestos-containing material is wetted or removed. After the work area has been prepared, the decontamination facility is set up, and the exhaust unit(s) installed, start the unit(s) (one at a time). Demonstrate operation and testing of negative pressure system to Owner Representative.

3. Demonstrate Operation of the negative pressure system to the Owner Representative will include, but not be limited to, the following:

   a. Plastic barriers and sheeting move lightly in toward work area.

   b. Curtain of decontamination units move lightly in toward work area.

   c. There is a noticeable movement of air through the decontamination unit. Use smoke tube to demonstrate air movement from Clean Room to Shower Room, from Shower Room to Equipment Room, and from Equipment Room to Work Area.

   d. Use smoke tubes to demonstrate a positive motion of air across all areas in which work is to be performed.

   e. Use a differential pressure meter or manometer to demonstrate a pressure difference of at least 0.02 inches of water across every barrier separating the Work Area from the balance of the buildings or outside.

   f. Modify the Negative Static Pressure System as necessary to successfully demonstrate the above.

F. Use of System during Abatement Operations:

1. Start exhaust units before beginning work (before any asbestos-containing material is disturbed). After abatement work has begun, run units continuously to maintain a constant negative pressure until decontamination of the work area is complete. Do not turn off units at the end of the work shift or when abatement operations temporarily stop.

2. Start abatement work at a location farthest from the exhaust units and proceed toward them. If an electric power failure occurs, immediately stop all abatement work, and do not resume until power is restored and exhaust units are operating again.

3. At completion of abatement work, allow exhaust units to run to remove airborne fibers that may have been generated during abatement work and cleanup and to purge the work area with clean makeup air. The units will be required to run until clearance by the Owner Representative is given.

G. Dismantling the System -When a final inspection and the results of final air tests indicate that the area has been decontaminated, exhaust units may be removed from the work area. Before removal from the work area, remove and properly dispose of pre-filter, and seal intake to the machine with 6-mil polyethylene to prevent environmental contamination from the filters.

H. Extension of Work Area

1. Extension of Work Area: If the enclosure barrier is breached in any manner that could allow the passage of asbestos debris or airborne fibers, then add the affected area to the work area, and enclose it as required by this Specification.

I. If the integrity of the enclosure fails, immediately cease asbestos abatement activities until the fault is corrected. Do not re-commence work until authorized by the Owner Representative.

1. Results of perimeter air monitoring exceeding Clearance Criteria shall be evidence of enclosure failure.

2. Visual observation of damage to the enclosure shall be evidence of enclosure failure.

3.06 WORKER ENTRY AND DECONTAMINIATION/MATERIAL DECONTAMINATION

A. Entry to Work Room: Every time that a worker enters the Work Room, require adherence to the following procedure:

1. Outside of the Change Room, remove all street clothes and don clean coveralls and respirator. A swimsuit or second disposable suit may be worn beneath outer coveralls.

2. Ensure that the entry is completely closed after entering the Change Room.

3. Ensure that the entry is completely closed after entering the Work Room.

B. Worker Decontamination: Every time that a worker leaves the work area, require adherence to the following procedure:

1. Maintain a bucket of clean potable water in the Work Area. Do not amend with a wetting agent.

2. Remove contaminated suit inside the Work Area. Leave respirator in place.

3. Wash hands, face, and surface of respirator with water and wet paper towels. Use caution to avoid breaking seal between respirator face piece and face.

4. Proceed with respirator in place to Change Room.

5. Be sure that entry to Work Area is completely closed.

6. In the Change Room, don clean disposable suit leaving respirator in place.

7. When exiting the Change Room, be sure that entry to Change Room is completely closed.

8. At end of workday, decontaminate fully in accordance with Article 3.08 Worker Protection.

9. For work in enclosures, workers must exit through the decontamination unit and shower prior to entering the clean room/area.

C. Material Decontamination: Require that the following procedure be used in removing equipment and bagged debris from the Work Room.

1. Three workers are required: one in the Work Room, one in the Change Room, and one in the Step-Off Area.

2. Remove equipment and bagged debris from the enclosure in separate operations.

3. Worker in Work Room cleans equipment and bagged debris and hands one piece of equipment or one bag of debris at a time to worker in Change Room.

4. Worker in Change Room wet-cleans each piece of equipment or bag and stores them in Change Room. Seal equipment completely in 6-mil sheet plastic in the Change Room.

5. When the amount of stored material in the Change Room becomes large enough that the worker cannot clean incoming material without contacting previously cleaned material, close the door between the Work and Clean Room.

6. The worker in the Changing Room then passes each item into a new disposal bag held open (by the worker on the Step Off Area) in the doorway between the Changing Room and Step Off Area. The worker on the Step-Off Area places each bag in a sealed cart for transport to the load-out area.

7. Transport all bags through the building in clean, sealed containers that have never been in an asbestos Work Area, Enclosure, or Decontamination Unit.

3.07 GLOVEBAG REMOVAL

A. Glovebag

1. Use the glovebag technique for removal of pipe and pipe fitting insulation. Provide a glove bag that consists of a specially designed 6 to 12-mil bag fitted with long sleeved gloves, a tool pouch, a small opening for water, and a small opening for a HEPA vacuum hose. Use the glove bag for removal of pipe insulation following the "single use" only technique - one bag to one spot of asbestos. Do not move the bag along the pipe. The Owner Representative has the authority to inspect and approve all glove bags proposed for use before use on the job.

2. Use two people to perform glove bag removal. Do not perform removal with a glove bag on hot pipes because the heat can cause the bag to melt.

3. Remove ACM inside a glove bag according to the following procedure:

a. Mix amended water according to the manufacturer's instructions.

b. Wear appropriate respiratory protection and protective clothing.

c. Inspect pipe where the work will be performed prior to removal. If the insulation is damaged in locations that cannot be handled inside the glove bag, wrap these areas in polyethylene and secure with duct tape.

d. Place one layer of duct tape around the pipe at each location where the ends of the glove bag will be.

e. Slit open the top and sides of the glove bag to accommodate the pipe.

f. Place the required tools into the pouch located inside the glove bag. This will usually include bone saw, utility knife, rags, scrub brush, wire cutters, tin snips, steel wool pad, and pre-wetted cloth.

g. Place the glove bag around the pipe and seal the plastic edges with duct tape.

h. Fill the bag with smoke, using a smoke tube and aspirator bulb, seal off the water hose port, and gently squeeze the glove bag from top to bottom. If any leaks exist, the smoke will exit through the leaks. Repair leaks in the glove bag with duct tape. Retest with smoke, as necessary. The smoke leak test is recommended, but other methods will be considered but shall be submitted to the Owner Representative for approval before use.

i. Caution: Some glove bags have a ready-made hose port at midpoint or lower on the bag. If this is the case, do not use that port, but carefully seal it off with duct tape. Next, cut another port of equal size near the top of the bag for the water wand use and insert the wand of the garden sprayer through the hose port and tape the plastic tightly around the wand.

j. Place one person's hands into the long-sleeved gloves, while the second person directs the garden sprayer at the work. Thoroughly wet material to be worked on with amended water or penetrating encapsulant and allow soaking in. Wet adequately to penetrate and soak material through to substrate.

k. A flexible cable-saw or bone-saw may be used to cut through the asbestos at each end of the section to be removed. A bone saw is a serrated, heavy gauge wire with ring-type handles at each end. While cutting, keep the asbestos thoroughly soaked with amended water.

l. Slit the section of insulation from end to end using a utility knife. Make the slit shall along the bottom of the pipe and keep continuously wetted.

m. Rinse the tools with water inside the glove bag and place back into the pouch.

n. Lift the insulation off the pipe and lower it carefully to the bottom of the glove bag.

o. Using a brush, wool pad, rags, and water, clean the pipe of remaining residue.

p. Clean, re-usable tools may be removed from pouch, depending upon type of glove bag. Place tools on glove inside the bag. Pull

glove out of bag. Twist and seal the glove on the sleeve portion. Cut the glove sleeve through the twisted/taped section. Cover ends with duct tape. Place the tool pouch with the tools in a bucket of water, open underwater and clean and dry the tools. Discard rags as asbestos waste and filter water to 5 microns.

q. Remove the water wand from the bag and attach the nozzle of the HEPA vacuum. Briefly operate the vacuum to collapse the bag.

r. Twist the bottom part of the bag and secure with duct tape.

s. Remove the hose and seal the opening.

t. Slip a 6-mil disposal bag over the glove bag, remove the glove bag from the pipe, and fold down into the disposal bag.

u. Remove the disposable clothing and place it into the disposal bag.

v. Collapse the bag with a HEPA vacuum twist top of bag, seal with at least three (3) wraps of duct tape, bend over and seal again with at least three (3) wraps of duct tape.

w. Apply an encapsulant and after the encapsulant sets, brush a second coat of encapsulant on to completely seal the exposed ends of the insulation.

4. NOTE - The procedure outlined is a known and proven procedure. Other alternative methods and procedures may be acceptable, but only with approval by the Owner Representative.

3.08 WORKER PROTECTION

A. General

1. Provide worker protection as required by the most stringent LARA, OSHA, and/or EPA standards applicable to the work. The procedures listed in this item are to be adhered to regardless of fiber count in the work area. Before beginning work with any material, provide workers with the required protective equipment.

2. Always require that appropriate protective equipment be used.

3. Each time the work area is entered, remove all street clothes in the Changing Room of the Personnel Decontamination Unit and put on new disposable coverall, new head cover, and a clean respirator. Proceed to the equipment room and put on work boots.

B. Decontamination Procedures - Require all workers to adhere to the following personal decontamination procedures whenever they leave the work area:

1. When exiting area, remove disposable coveralls, disposable head covers, and disposable footwear covers or boots in the Equipment Room.

2. The following procedure is required as a minimum:

a. Thoroughly wash hair, hands, and face (and other exposed skin).

b. Carefully wash face piece of respirator inside and out.

c. Proceed to outside work area.

C. Within Work Area

1. Do not allow workers to eat, drink, smoke, or chew gum or tobacco in the work area. To eat, chew, drink, or smoke, the workers shall follow the decontamination procedure described above, and then dress in street clothes before entering the non-work areas of the building.

3.09 RESPIRATORY PROTECTION

A. General

1. Respiratory Protection Program: Comply with OSHA 29 CFR 1910 and 1926 (also MIOSHA Part 451), and MIOSHA Part 602 Asbestos.

2. Always require that respiratory protection be used when there is any possibility of disturbance of asbestos-containing materials whether intentional or accidental.

3. Require that a respirator be worn by anyone in a work area at all times, regardless of activity, during a period that starts with any operation which could cause airborne fibers until the area has been cleared for re-occupancy in accordance with Article 3.10 – Work Area Clearance.

4. Regardless of airborne fiber, require that the minimum level of respiratory protection used will be a half-face and air purifying respirators with high efficiency filters.

5. Do not allow the use of single use, disposable, or quarter face respirators for any purpose.

B. Fit Testing

1. Initial Fitting: Provide initial fitting of respiratory protection during a respiratory protection course of training. “Fit type” respirators are to be worn by each individual. Allow an individual to use only those respirators for which he/she has been trained and fit.

2. On a Weekly Basis: Check the fit of each worker's respirator by having irritant smoke blown onto the respirator from a smoke tube.

3. Upon Each Wearing: Require that each time an air-purifying respirator is put on, it be checked for fit with a positive and negative pressure fit test in accordance with the manufacturer's instructions.

C. Type of Respiratory Protection Required

1. Provide Respiratory Protection as indicated in this Article. Using paragraph E of this Article, determine the proper level of protection by dividing the airborne fiber count in the work area by the "protection factors" given below. The level of respiratory protection that supplies an airborne fiber level inside the respirator, at the breathing zone of the wearer, at or below the permissible exposure limit (PEL) is the minimum level of protection allowed.

D. Permissible Exposure Limits (PEL)

1. 8-Hour Time Weighted Average (TWA) of asbestos fibers to which any worker may be exposed shall not exceed 0.1-fibers/cubic centimeter.

2. 30-Minute Exposure Limit (EL): 1.0 fibers/cubic centimeter.

3. Fibers: For purposes of this Section, fibers are defined as all fibers regardless of composition as counted in the OSHA Reference Method (ORM), NIOSH 7400 procedures, or asbestos fibers of any size as counted using a transmission electron microscope.

Airborne Fiber Concentration	**Required Respiratory Protection**
Not in excess of 1.0f/cc	Half-mask air purifying with HEPA Cartridges; minimum requirement for all activities
Not in excess of 5.0f/cc	Full facepiece respirator with HEPA filters
Not in excess of 10.0f/cc	Any tight fitting, full facepiece

		PAPR with HEPA filters
	Not in excess of 100f/cc	Full facepiece supplied air operated in pressure demand mode
	In excess of 100f/cc	Any supplied air respirator operated in the pressure-demand mode, equipped with auxiliary SCBA

E. Air Purifying Respirators

1. Negative pressure - half or full-face mask: Supply a sufficient quantity of respirator filters approved for asbestos so that workers can change filters routinely. Require that respirators be wet-rinsed each time a worker leaves the work area. Store respirators and filters at the Site in the Changing Room and protect totally from exposure to asbestos prior to their use.

2. Powered air purifying - half or full-face mask: Supply a sufficient quantity of high efficiency respirator filters approved for asbestos so that workers can change filters at any time that flow through the face piece decreases to the level at which the manufacturer recommends filter replacement. Require that regardless of flow, filter cartridges be replaced according to the subjectivity of the employee or the written respiratory program of the Contractor. Require that HEPA elements in filter cartridges be protected from wetting during showering. Require entire exterior housing of respirator, including blower unit, filter cartridges, hoses, battery pack, face mask, belt, and cords to be washed each time a worker leaves the work area. Use caution to avoid shorting battery pack during washing.

3.10 WORK AREA CLEARANCE

A. Summary

1. Air testing and other requirements that must be met for decontamination of the Work Area before release of Contractor and re-occupancy of the work area are specified in this Article.

2. Decontaminate air in the Work Area that has been, or may have been, contaminated by the elevated airborne asbestos fiber levels generated during abatement activities, or which may previously have had elevated fiber levels due to asbestos containing materials in the space.

3. Clean and decontaminate all surfaces (ceiling, walls, floor, etc.) of the Work Area and all furniture or equipment in the Work Area.

4. Perform visual inspection and complete Certificate of Visual Inspection.

5. The Owner Representative will perform final clearance sampling.

6. Clean, decontaminate, and remove temporary facilities installed prior to abatement work, including critical barriers erected by work of Article 3.04 – Work Area Isolation Enclosures.

B. Start of Work

1. Previous Work: During completion of the asbestos abatement work specified in other Articles, a layer of polyethylene sheeting will have been removed and disposed of along with any gross debris generated by the asbestos abatement work.

2. Start of Work: Work of this Article begins with cleaning of the enclosure. At start of work the following will be in place:

a. Two layers of polyethylene sheeting on floor.

b. Critical Barrier which forms the sole barrier between the work area and other portions of the building or the outside.

c. Critical Barrier Sheeting over lighting fixtures and clocks, ventilation openings, doorways, convectors, speakers, and other openings.

C. First Cleaning

1. First Cleaning: Conduct a first cleaning of all surfaces of the work area, including items of remaining sheeting, tools, scaffolding and/or staging, by use of damp-cleaning and mopping, and/or a High Efficiency Particulate Air (HEPA) filtered vacuum. Do not perform dry dusting or dry sweeping.

2. Use each surface of a cleaning cloth once only and then dispose of as contaminated waste.

3. Continue this cleaning until there is no visible debris from removed materials or residue on plastic sheeting or other surfaces.

D. Final Cleaning: Conduct a final cleaning of all surfaces in the work area in the same manner as the first cleaning.

E. Visual Inspection

1. The Owner Representative shall perform a Complete Visual Inspection of the entire work area including decontamination unit, all plastic sheeting, seals over ventilation openings, doorways, windows, and other openings; look for debris from any sources, residue on surfaces, dust, or other matter. If any such debris residue, dust or other matter is found, repeat final cleaning, and continue decontamination procedure from that point.

   When the area is visually clean, complete the Certificate of Visual Inspection. Visual inspection is not complete until confirmed in writing, on the certification, by the Owner Representative performing the abatement air monitoring.

F. Encapsulation: After a satisfactory visible inspection by the Owner Representative, the abated surfaces shall be sealed with an encapsulant.

G. Final Air Sampling / Clearance Criteria

1. Phase Contrast Microscopy (PCM):

   a. Upon receipt of the Certificate of Visual Inspection, the Owner Representative will, within 24 hours, collect air samples in accordance with the PCM methods and frequency set forth in 40 CFR Part 763 Subpart E and Article 1.11. The Owner Representative will have the samples analyzed in accordance with the procedures for PCM set forth in 40 CFR Part 763 Subpart E and Article 1.11. The analyst will be NIOSH 582 certified.

   b. If Clearance Criteria is not met, repeat Final Cleaning and visual inspection. Resubmit Certificate of Visual Inspection and have the Contractors Consultant perform clearance sampling again.

   c. If Clearance Criteria is met, remove the interior polyethylene wall of the negative pressure enclosure, leaving in place only the Critical Barriers separating the work area from the rest of the building and the operating negative pressure system.

   d. Remove small quantities of residual material found upon removal of the plastic sheeting with a HEPA filtered vacuum cleaner and local area protection. If significant quantities, as determined by the Owner Representative are found, then decontaminate the entire area affected as specified herein for the Final Cleaning.

2. Transmission Electron Microscopy (TEM) – if deemed necessary by the Owner Representative.

a. Upon receipt of the Certificate of Visual Inspection, the Owner Representative will, within 24 hours, collect air samples in accordance with the TEM methods and frequency set forth in 40 CFR Part 763 Subpart E and Article 1.11. The Owner Representative will have the samples analyzed in accordance with the procedures for TEM set forth in 40 CFR Part 763 Subpart E and Article 1.11.

b. If Clearance Criteria is not met, repeat Final Cleaning, and continue decontamination procedure, including clearance sampling from that point.

c. If Clearance Criteria is met, remove the interior of the decontamination unit, leaving in place only the Critical Barriers separating the work area from the rest of the building and the operating negative pressure system.

d. Remove small quantities of residual material found upon removal of the plastic sheeting with a HEPA filtered vacuum cleaner and local area protection. If significant quantities, as determined by the Owner Representative, are found, then decontaminate the entire area affected as specified herein for the Final Cleaning.

H. Completion of Abatement Work

1. Asbestos Abatement Work is complete upon meeting the work area clearance criteria and fulfilling the following:

a. Remove all equipment, materials, and debris from the Site.

b. Dispose of all asbestos-containing waste material as specified in Article 3.11.

c. Repair or replace all interior finishes damaged during the course of asbestos abatement work.

d. Fulfill Project Closeout Requirements of Article 1.14 and Article 3.10.

I. Certificate of Visual Inspection: Complete the appended “Certificate of Visual Inspection” with the Owner Representative for signature. Submit with air sampling results and keep on file for the length of the project.

CERTIFICATE OF VISUAL INSPECTION

The Contractor hereby certifies that he has visually inspected the work area (all surfaces including pipes, beams, ledges, walls, ceiling and floor, decontamination unit, polyethylene sheets, etc.) in accordance with Article 3.10 E and has found no dust, debris, or residue.

By: _____
(Signature)

Date: _____

Name: _____

Title: _____

OWNER REPRESENTATIVE CERTIFICATION

The Owner Representative hereby certifies that he/she has accompanied the Contractor on his visual inspection and verifies that this inspection has been thorough and to the best of his knowledge and belief, the Contractor's certification above is a true and honest one.

By: _____
(Signature)

Date: _____

Name: _____

Title: _____

Company: _____

3.11 OFF-SITE TRANSPORTATION AND DISPOSAL

A. All waste shall be disposed of only at approved disposal facilities.

B. Load drums, bags, and wrapped components that have been removed from the work area into an enclosed or covered truck/trailer for transportation. If a rented vehicle is used, notify the Owner of the vehicle of its intended use, and give a copy of the notification which shall be given to the Owner Representative.

C. All vehicles hauling material to the disposal site shall comply with applicable MDOT regulations. Vehicles shall be properly licensed under and comply with all applicable federal, state, and local laws and regulations.

D. Maintain the enclosed cargo area of the vehicle free of debris and line with two layers of 6-mil polyethylene sheeting to prevent contamination from leaking or damaged containers. Install floor sheeting first and extend up to the sidewalls. Lap the wall sheeting over the floor sheeting and tape into place.

E. Provide proper tools/equipment to safely expedite container handling. Place drums on level surfaces in the cargo area and pack tightly together to prevent shifting and tipping. Secure large structural components to prevent shifting.

F. Protect personnel handling asbestos-containing waste by disposable clothing, including head, body, and foot protection, and at a minimum, half-face piece, air-purifying, dual cartridge respirators equipped with high efficiency filters.

G. Prior to loading, provide the Owner Representative with one manifest for each load of material. Each manifest will be pre-printed with the Site name and address, the Owner's name and address, the name of the landfill, the name of the transporter, and the landfill approval number.

H. During loading, the Owner Representative will provide a manifest signed on behalf of the Owner for each load.

I. Transport contaminated material to a Type II landfill disposal facility licensed to accept asbestos for disposal.

J. Dispose of asbestos-containing waste material and debris that is packaged in accordance with the provision of this Specification at the approved landfill in accordance with the regulatory requirements of the NESHAP and any applicable state and local guidelines and regulations.

K. Within 24 hours of the load leaving the Site, provide the Owner Representative an original manifest and any other documentation indicating receipt signed by the landfill.

L. Obtain and provide certification by and other satisfactory evidence from the owner(s) or operators(s) of the waste disposal facility(ies) attesting to the fact that all disposal activities were conducted and concluded in conformance with the requirements of 40 CFR 61 Subpart M and all other applicable laws and regulations.

END OF SECTION

SECTION 02 83 00

LEAD PAINT REMEDIATION

PART 1 – GENERAL

1.01 SUMMARY OF WORK

A. The type of work under this specification involves scrapping of loose paint or removal of any paint for elevator upgrade activities that may require welding, torch cutting, sandblasting, etc. There are five (5) elevators associated with the project that are scheduled to be upgraded and they are identified as the southeast elevator bank. Cadillac Place is located at 3044 W. Grand Boulevard in Detroit, Michigan.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 02 82 00 - Asbestos Remediation

1.03 REFERENCES

A. A Hazardous Materials Survey (HMS) for the subject project has been conducted by NTH Consultants, Ltd. (NTH) and the findings are presented in the report dated February 10, 2022 (NTH Project No. 62-210493-00). Verify all information.

B. General Applicability of Codes, Regulations, and Standards: Except to the extent that more explicit or more stringent requirements are written directly into the contract documents, all applicable codes, regulations, and standards have the same force and effect (and are made a part of the contract documents by reference) as if copied directly into the contract documents, or as if published copies are bound herewith.

C. The references in this Article may apply to the work under this Section. This list shall not be considered complete, and it is the Contractor's responsibility to perform all work in accordance with all Federal, State, and local laws and regulations.

D. Michigan Labor and Economic Opportunity (LEO) and Michigan Occupational Safety and Health Administration (MIOSHA) Safety Standards relating to lead include but are not limited to:

1. Part 1 General Provision

2. Part 451 Respiratory Protection

3. Part 42 Hazard Communication

4. Part 20 Demolition

5. Part 45 Fall Protection

6. Part 6 Personal Protective Equipment

7. Part 7 Welding & Cutting

8. Part 19 Tools

9. Part 12 Scaffolds & Scaffold Platforms

10. Part 451 Respiratory Protection

11. Part 603 Lead Exposure in Construction

E. Code of Federal Regulations:

1. 40 CFR 50, "National Primary and Secondary Ambient Air Quality Standards"

2. 40 CFR 117, "Determination of Reportable Quantities for Hazardous Substances"

3. 40 CFR 122, "EPA Administered Permit Program: The National Pollutant Discharge Elimination System"

4. 40 CFR 261, "Identification and Listing of Hazardous Waste"

5. 40 CFR 262, "Standards Applicable to Generators of Hazardous Waste"

6. 40 CFR 263, "Standards Applicable to Transporters of Hazardous Waste"

7. 40 CFR 264, "Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities"

8. 40 CFR 265, "Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities"

9. 40 CFR 268, "Land Disposal Restrictions"

10. 40 CFR 300, "National Oil and Hazardous Substances Pollution Contingency Plan."

11. 40 CFR 302, "Designation, Reportable Quantities, and Notification."

F. State of Michigan:

1. Michigan Codified Laws Annotated MCLA 299.9101 - 299.11107 "Michigan Hazardous Waste Management"

G. National Institute for Occupational Health and Safety: NIOSH Method 7082, "Lead".

H. American Society for Testing and Materials

1. ASTM D3335, "Test Method for Low Concentrations for Lead, Cadmium, and Cobalt in Paint by Atomic Absorption Spectroscopy.

I. EPA (Environmental Protection Agency) Publications:

1. SW-846, Test Methods for Evaluating Solid Waste - Physical/Chemical Methods.

2. EPA Method 3050, "Acid Digestion of Sediments, Sludges, and Soils."

J. SSPC (Steel Structures Painting Council):Guide 61 (CON) Guide for Containing Debris Generated During Paint Removal Operations.

K. "Industrial Lead Paint Removal Handbook", 2nd Edition, Kenneth A. Trimmer.

1.04 GENERALREQUIREMENTS

A. Contractor Responsibility: Assume full responsibility and liability for compliance with all applicable federal, state, and local regulations pertaining to work practices, hauling, disposal, and protection of workers, visitors to the site, and persons occupying areas adjacent to the site. Provide medical examinations and maintain medical records of personnel as required by the applicable Federal, State, and local regulations. Hold the Owner and Owner’s Consultant harmless for failure to comply with any applicable work, hauling, disposal, safety, health, or other regulation on the part of Contractor, Contractor’s employees, or subcontractors.

B. Decontamination area location, dumpster location, and entrances that may be used for the movement of supplies and personnel are subject to the Owner and Owner’s Consultant approval.

C. Allow the Owner’s Consultant to inspect and approve all equipment and materials used before the start of any work.

D. Allow the Owner's Consultant to check or evaluate field/air monitoring methods, procedures, and quality assurance

1.05 DEFINITIONS

A. Abatement: Any set of measures designed to permanently eliminate LBP or LCP, or to eliminate lead paint hazards for an expected design life of at least 20 years. Abatement includes the removal of LBP or LCP and associated dust hazards, the replacement of components or fixtures painted with LBP or LCP, and the removal or permanent covering of soil-lead hazards; and all preparation, cleanup, disposal, and post abatement clearance testing activities associated with such measures.

B. Accreditedlaboratory: A laboratory that has been evaluated and given approval to perform a specified measurement or task (such as the American Industrial Hygiene Association or National Lead Laboratory Accreditation Program), usually for a specific property or analyze for a specified period of time.

C. BreathingZone: A hemisphere forward of the shoulders with a radius of approximately 6 to 9 inches around the nose and mouth of the face.

D. CompetentPerson: An agent of the Contractor who is a Competent Person as defined by OSHA in 29 CFR 1926.62. This person must be capable of identifying existing and predictable lead hazards in the surroundings or working conditions and who has authorization by the Contractor to take prompt corrective measures to eliminate them.

E. Lead-ContainingPaint (LCP) Surface: Paint containing any amount of lead by weight at or above the laboratory method detection limit.

G. Lead-Based Paint(LBP)Surface: Paint having a lead content of greater than or equal to 0.50% by weight.

H. EngineeringControls: Measure which are put into place at the work site to implement containment and control and/or the reduction of lead dust exposure.

I. Encapsulation The application of a covering or coating that acts as a barrier between the LBP or LCP and the environment and that relies for its durability on adhesion between the encapsulant and the painted surface, and on the integrity of the existing bonds between paint layers and between the paint and the substrate.

J. Enclosure: The use of rigid, durable construction materials that are mechanically fastened to the substrate in order to act as a barrier between LBP or LCP and the environment.

K. Field Blank: A non-exposed sample of the medium used for testing, such as a

wipe or filter, which is analyzed like other samples to determine whether (1) samples are contaminated with lead before samples are collected (e.g., at the factory, or at the testing site), (2) the samples are contaminated after sample collection (e.g., during transportation to the laboratory or in the laboratory).

L. FinalClearanceInspection: An inspection by a qualified inspector to determine whether abatement and cleanup are complete and unit tests pass the final clearance standards as set forth herein.

M. Generator: The facility owner, operator, or person who first creates or produces the hazardous waste. Generator size statuses are:

1. Large Quantity Generator: Generates over 2,200 pounds (1,000 kilograms) of hazardous waste or 2.2 pounds of acutely hazardous waste per month or stores more than 13,200 (6,000 kilograms) pounds of waste or more than 2.2 pounds of acutely hazardous waste at the site at any one time.

2. Small Quantity Generator: Generates more than 220 pounds (100 kilograms), but less than 2,200 pounds (1,000 kilograms) of hazardous waste per month and accumulates less than 13,200 pounds (6,000 kilograms) at any one time.

3. Conditionally Exempt Small Quantity Generator: Generates less than 220 pounds (100 kilograms) of hazardous waste per month and accumulates no more than 1,000 kilograms (2,200 pounds) of hazardous waste at any time.

N. HazardousWaste: Paint debris is classified as hazardous waste due to the characteristic of toxicity, if after testing by Toxicity Characteristic Leaching Procedures (TCLP), the leachate contains any of the elements in the concentrations listed below (or greater):

Arsenic	5 ppm	Lead	5 ppm
Barium	100 ppm	Mercury	0.2 ppm
Chromium	5 ppm	Silver	5 ppm

Note: Other characteristics can cause a material to be hazardous as defined in 40 CFR 261 and must be taken into consideration. The list above includes only those elements typically associated with paint solids. If chemical strippers are used, the debris may be hazardous waste, due to characteristics of the chemical(s), or if the pH is less than or equal to 2 or greater than or equal to 12.5.

O. HEPA- High Efficiency Particulate Air: A filter capable of filtering out particles of 0.3 microns or greater from a body of air at 99.97% efficiency or

greater.

P. High-Phosphate Detergent: Detergent that contains at least 5% tri-sodium phosphate (TSP).

Q. Lead Dust Contamination: Dust containing lead at levels above the clearance criteria, generated by the deterioration of lead-based paint, by environmental factors or by the abatement of leaded surfaces.

R. Monitoring: A systematic means of inspection to assure compliance with the safety standards contained herein, which shall include, but not limited to, visual inspection, air sampling, and surface lead dust sampling by the Owner's Consultants.

S. Negative Pressure Respirator: A respirator in which the air pressure inside the respiratory inlet covering is positive during exhalation in relation to the air pressure of the outside atmosphere and negative during inhalation in relation to the air pressure of the outside atmosphere.

T. PersonalSamples(forsamplinglead dust): Air samples collected from within the breathing zone of a worker, but outside the respirator. The samples are collected with a personal sampling pump, pulling 1 to 4 liters/minute of air.

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

V. RegulatedArea: Area established by the Contractor where the airborne concentrations exceed or may reasonably be expected to exceed the MIOSHA Lead Action Level of 30.0 $\mu g/m^3$. The regulated area is demarcated and/or isolated to prevent the spread of lead dust or debris, and entry by unauthorized personnel.

W. TCLP (ToxicityCharacteristicLeachingProcedure): A test defined in Appendix II of 40 CFR 261 that is designed to identify wastes likely to leach hazardous concentrations of particular toxic constituents into the ground water as a result of improper management.

X. Time WeightedAverage(TWA): The average concentration of a contaminant in air during a specific time period.

Y. Wet Cleaning(Wet Detergent Wash):The process of eliminating lead and cadmium dust contamination from building surfaces and objects by using cloths, mops, or other cleaning utensils which have been dampened with a solution of water and trisodium phosphate (TSP) or appropriate substitute and afterwards

thoroughly decontaminated or disposed of as lead contaminated waste.

Z. Work Area: The area where LBP or LCP removal or related work is performed, where dust collection or abrasive recycling equipment is located, and locations where LBP or LCP debris is handled or transferred to storage containers. Work areas are defined and/or isolated to prevent the spread of lead dust, or debris and entry by unauthorized personnel. Regulated areas are within work areas.

AA. WorkPractice: A procedure followed by workers, which is intended to minimize exposure to the worker and the environment.

1.06 SUBMITTALS

At least 2 weeks prior to beginning work, submit a written plan which includes the following items. Do not begin work until they are acknowledged as received.

A. Abatement: The written plan shall include methods to be employed for surface preparation, LBP or LCP abatement, area set up, and collection of debris.

1. Describe the proposed methods and locations for abatement for each type of substrate.

2. Include details for establishing regulated areas. When designing the system, thoroughly examine building components to verify their ability to support containment system; include wind loads (if applicable).

3. If required, detail the methods and procedures for lead abatement of historically significant features.

B. ProgramsfortheProtectionofAmbientAirandWater: The written plan shall include information regarding testing and evaluation programs that will be used to confirm that the work does not violate Federal, State, or local regulations. Refer to Article 1.07 for acceptance criteria.

1. AirQuality: The following shall be addressed:

a. VisibleEmissions: Submit a written plan for the observations that will be made to verify that the visible emissions criteria of this Specification are not exceeded.

b. PersonalMonitoringandNegativeExposureAssessment: The Contractor shall submit a program that identifies the proposed activities for the use of personal monitors in accordance with Part 603 Lead Exposure in Construction Standard and NIOSH Method 7082.The duration of monitoring, provisions for

background monitoring, laboratory qualifications, and evaluation procedures to be employed shall be included.

C. Handling,DisposalandAnalysisofDebris:

1. Handling and SiteStorage: The written plan shall address handling and site storage of LBP or LCP debris in accordance with the requirements of 40 CFR 262 and 40 CFR 265. The plan will at a minimum include container requirements, contingency plan, labeling and personnel training, storage area inspections, and emergency response.

2. SamplingandTestingofDebris: Written procedures that will be followed for the sampling and testing of debris to determine if it is a hazardous waste. The sampling procedure shall be in accordance with the requirements of SW 846, with the analysis accomplished by TCLP, as defined in Appendix II of 40 CFR 261. The plan shall include the name of the testing laboratory to be utilized. The testing laboratory shall hold certifications or accreditations relevant to the testing and documentation of such shall be included in the plan.

3. Transportation: The written plan shall show how waste will be properly transported in accordance with the requirements of 40 CFR 263 and other state and federal regulations. The name of the transporter shall be included.

4. For the proposed disposal facility, submit the name, location, 24-hour telephone number, and Federal, State, and local license or permit numbers.

5. Submit the name and address, and federal, state, and local permit or identification numbers of the proposed transportation contractor.

6. Submit, for review Owner's Consultant prior to Owner's signature, the disposal facility's approval application (waste profile) filled out in its entirety, inclusive of landfill required laboratory data. Within 5 days, the Owner's Consultant will either return the Owner signed waste profile to the Contractor or reject the application. The Contractor is responsible for the contents of the waste profile, and disposal facility rejection of an Owner signed waste profile shall not be cause for additional compensation.

7. Submit the approved waste profile after receiving disposal facility approval prior to beginning work. The approval shall contain the disposal facility's waste approval number.

8. Equipment Decontamination: A written plan for the decontamination of reusable items prior to removal from the project site, or for the proper testing and disposal of the materials if decontamination is not possible or desirable.

D. WorkerProtection:

1. The written plan shall address worker protection consistent with MIOSHA, Part 603 - Lead Exposure in Construction including, but not limited to, exposure assessments and methods for selection of appropriate respiratory protection, personal protective equipment, hygiene facilities and practices, and medical surveillance.

1.07 CRITERIA FOR CONTROL OF LEAD DUST EMISSIONS

A. Ambient Air Quality- Particulate Matter and Visible Emissions: Monitor and control ambient air particulate matter and visible emissions in accordance with the following criteria:

1. Visible Emissions: Visible emissions shall be used as a criterion for project shut down until corrections to the containment, removal methods or the regulated area are made. The Owner's Consultant has the authority to shut down the project if any visible emissions are observed outside the containment, work, or regulated area.

B. Air Monitoring to Establish Regulated Areas:

1. Determine the extent of the regulated area surrounding activities where exposures may exceed the MIOSHA Lead Action Level of 30.0 $\mu g/m^3$.

2. Emissions in excess of MIOSHA's Lead Action Level over an eight-hour period shall be cause for shut down of the project until corrections are made to comply with these levels.

C. Water Quality: Do not allow the release of lead into bodies of water or storm sewers. Stop work if spills or emissions are observed entering into bodies of water or are found in areas where storm water run-off could carry the debris into bodies of water or storm sewers.

1. Provide protection at drains to prevent paint debris from entering the storm sewer system.

D. ClearanceCriteria:

1. Clearance will be conducted using a visual inspection of the work area and surrounding areas to ensure that no dust or debris remains.

a. If criteria are met, the work area may be released for general use.

b. If the clearance criteria are not met, the work area(s) shall be re-cleaned by the contractor and the clearance inspection repeated at no cost to the project.

1.08 WORKER TRAINING AND CERTIFICATION

A. LARA MIOSHA-Required Training: All workers are to be trained in the dangers inherent in handling, breathing or ingesting lead dust and in the proper work procedures and personal and area protective measures prior to the time of initial job assignment and at least annually thereafter in accordance with Part 603.

1.09 RELEASES

A. Contractor shall be responsible for the proper handling of material being disposed from the time the Contractor removes the material until the material is disposed of site in a landfill. The Contractor shall be responsible for cleaning up all spills that occur during loading, hauling and final disposal at no cost to the Owner. The Contractor shall immediately notify the Owner's Consultant of any spills and appropriately clean up and dispose of all material and impacted media required for cleanup.

1.10 RECORD KEEPING AND REMOVAL MANAGEMENT

A. Document and maintain records of the removal process. Submit the records to the Owner, for their use upon completion of the removal and prior to final payment. The records shall clearly describe in non-technical language where the lead was found, and how it was removed.

B. Records shall include a detailed written description of the abatement, including the abatement methods used, locations of room and/or components where abatement occurred, and reasons for selecting particular abatement methods for each component.

1.11 QUALITY ASSURANCE

A. Contractor will be experienced in the removal, packaging, handling, transportation, and proper disposal of LBP or LCP and have all necessary local permits and/or approvals.

B. Contractor shall be responsible for the proper handling of material being disposed from the time the Contractor moves the material until the material is disposed of site at the licensed disposal facility. The Contractor shall be responsible for cleaning up all spills that occur during loading, hauling and final disposal at no cost to the Owner. The Contractor shall immediately notify the Owner's Consultant of any spills and appropriately clean up and dispose of all material and impacted media required for cleanup.

C. Do all work required by and in accordance with all applicable federal, state, and local government regulatory agencies and arrange for all permits and licenses for the packaging, loading, hauling, and final disposal operations.

1.12 OWNER'S CONSULTANT'S ROLE

A. The Owner's Consultant, will perform the following activities:

1. Review the Contractor's submittals for compliance with the specifications.

2. Conduct air monitoring outside of the regulated area. Perform sampling in accordance with NIOSH 7082. Send samples to an accredited laboratory with a 24-hour turn-around-time. Shut down the project if the Action Level is exceeded and do not resume until corrections to the containment, removal methods or the regulated area are made.

3. Perform clearance visual inspection.

4. Periodically monitor for visible emissions from the work area and regulated area.

B. The Owner or Owner's Consultant has the right to stop any work that does not comply with the intent of the specifications. If the Owner presents a written stop work order, immediately stop all work. Do not re-commence work until authorized by the Owner.

PART 2 – PRODUCTS

2.01 EQUIPMENT

A. HEPA Vacuums: Utilize HEPA vacuums to clean surfaces during and after lead remediation.

1. Relatedattachments: As necessary for the conditions encountered, and including items such as brushes of various sizes, crevice tools, and angular tools.

B. Air-filtrationdevices(AFDs): Utilize AFDs in containments and work and regulated areas to filter air and keep dust levels down.

C. Other equipment, including personal safety equipment, as necessary to comply with the requirements of this specification.

2.02 MATERIALS

A. The following materials may be used to set up the work area:

1. Polyethylene sheeting:4-mil and 6-mil thickness.

2. Polyethylene spray glue: Product MSDS shall be approved by the OWNER'S CONSULTANT.

3. Heavy duty tape (e.g., duct tape) to fasten plastic sheets;

4. Staple gun with heavy duty staples for fastening plastic sheets;

5. Miscellaneous materials such as storage drums, framing lumber, masking, as necessary to meet the requirements of this specification.

B. Non-flammable chemical paint strippers that do not contain methylene chloride.

PART 3 - EXECUTION

3.01 GENERAL PROCEDURES

A. Provide on-site, full time competent person (or persons) to ensure that the worker protection program is effective.

B. Site Preparation: Prior to work start:

1. Ensure the ventilation system in the vicinity of the work area is off.

2. Demarcate work areas and regulated areas by use of ropes, tape, walls, or other similar means, and post appropriate warning signs; maintain egress. At a minimum, provide barrier warning tape at the perimeter of the work area and post warning signs with the following:

"DANGER
LEAD WORK AREA
MAY DAMAGE FERTILITY OR THE UNBORN CHILD
CAUSES DAMAGE TO THE CENTRAL NERVOUS SYSTEM
DO NOT EAT, DRINK OR SMOKE IN THIS AREA"

3. When activities are used for removal which are likely to cause airborne concentrations to exceed the MIOSHA Lead Action Level, erect containment to protect surfaces and contain and control dust and debris as specified in Article 3.03.

4. When possible, remove components whole (i.e., radiators pipe hangers, etc.), without disturbing the paint.

5. Conduct an on-site safety meeting to discuss possible workplace/work practice hazards.

C. Prohibited on-site removal methods:

1. Open flame burning or torching (includes propane-fueled heat grids).

2. Machine sanding or grinding without HEPA local vacuum exhaust tool.

3. Uncontained hydro-blasting or high-pressure wash.

4. Dry sanding or scraping (except in limited circumstances as permitted by Federal regulations).

5. Abrasive blasting or sandblasting without HEPA local vacuum exhaust tool.

6. Heat guns operating above 1,100°F.

7. Methylene chloride chemical paint removers.

8. Other methods prohibited by Federal, State, or local regulations.

D. Approved Removal Methods: Mitigation of lead-bearing substances shall employ only the following methods:

1. Replacement. Any component part of a building may be abated by removing the component whole (without disturbing paint) and replacing it with a part free of lead -bearing substances.

2. Removal. Paint shall be removed from the substrate using the following techniques:

a. Offsite chemical stripping;

b. Heat gun (The temperature of the heat gun shall not exceed 1,100°F);

c. Nonflammable chemical strippers which do not contain methylene chloride;

d. Wet scraping or sanding;

e. Sander equipped with HEPA vacuum;

f. Vacuum-blasting in exterior work areas only;

g. Mechanical paint removal systems equipped with a HEPA vacuum.

E. Exercise caution to avoid the release of dust into the air. Contain dust and debris on polyethylene sheeting. Prevent emissions from the regulated area in excess of the MIOSHA Lead Action Limit. These activities include, but are not limited to manual demolition, scraping, sanding, abrasive blasting, welding, cutting, and torch cutting. Use of chemical paint stripper does not require a containment.

F. HEPA vacuum and wet wipe the exterior of the filled waste containers before removing from the work area to remove residual contamination. If plastic bags are used, bag again as they come out of the work area.

G. Limit access to the work area to those persons trained and protected in accordance with Article 1.08 and the submitted worker protection program.

H. Require persons entering a regulated area to wear appropriate respiratory protection in accordance with appropriate Federal and State laws and regulations, and with this Specification.

I. Perform personal/exposure air monitoring on employees for compliance with MIOSHA's Part 603 Lead Exposure in Construction. The Owner's Consultant has the authority to shut down the project if the personal air monitoring results indicated that workers' respiratory protection is inadequate until workers wear respirator with appropriate protection factors and/or engineering controls are implemented to reduce exposures to lead dust.

J. Do not allow unacceptable activities within the work area including, but not limited to, eating, drinking, smoking, chewing tobacco or gum, or applying cosmetics.

K. Provide access to the Owner's Consultant and allow them to utilize ladders, lifts, or other equipment to access above-grade areas for inspections and tests.

3.02 CONTROLLING DISPERSAL

A. Limiting access: Prior to satisfactory clearance inspection, limit access to the work areas to the following:

1. Contractor and designated employees;

2. State, county, or local enforcement officials, or their designees;

3. Inspectors representing the Owner;

4. Owner's Consultant

B. Limiting Tracking of Dust and Debris:

1. Require people entering the work area to wear disposable coveralls, and shoe covers. The coveralls and shoe covers shall be removed upon leaving the work area and placed with removal waste.

2. Remove waste from work areas at times when worker traffic is low. Select transit and hauling routes to minimize interaction with non-lead workers.

C. Regularly clean all tools, equipment, and worker protection equipment to minimize worker exposure and the risk of transferring lead outside of the work area.

3.03 CLEAN-UP

A. Conduct prompt clean-up of dust and debris using a HEPA vacuum and wet methods using a lead specific cleaner on a continuous basis.

B. Conduct cleaning of all tools and equipment using a HEPA vacuum and wet methods using a lead specific cleaner prior to leaving the containment area.

C. At the end of each shift and upon completion, clean drop cloth and any dust or debris on the ground using a HEPA vacuum and wet methods using a lead specific cleaner.

D. Upon completion, clean all surfaces (horizontal and vertical) in the work area using a HEPA vacuum and wet methods using a lead specific cleaner following a "top to bottom, back your way out" approach.

E. Clean at least four (4) feet beyond the contained work area.

3.04 DISPOSAL

A. Dispose of any dust or debris in leak-tight 6-mil thick poly bags.

B. Dispose of drop cloth by misting, folding inwards, securing with duct tape, and placing in leak-tight 6-mil thick poly bags.

C. Dispose of all other work-related items (e.g., PPE, mops, wipes, filters, etc.) in leak-tight 6-mil thick poly bags.

D. If items are too large to fit into bags, wrap items in plastic and seal with tape prior to removal from the plastic containment area.

E. Seal poly bags with duct tape in a gooseneck configuration.

F. Use a HEPA vacuum and wet methods using a lead specific cleaner to clean the outside of the bags and larger wrapped items before removing them from the plastic containment area.

G. Move bags out of the work area into a designated secure storage area.

H. Dispose of wastewater in accordance with local, state, and Federal regulatory requirements.

I. Submit a representative bag of waste prepared in accordance with laboratory requirements for testing to an EPA accredited lab for Toxicity Characteristic Leaching Procedure (TCLP) analysis.

1. If the concentration of lead is equal to or greater than 5.0 mg/l as determined by the TCLP, the handling and disposal of hazardous waste must be conducted in accordance with applicable local, state, and the Resource Conservation and Recovery Act (RCRA) regulations applicable to the activity being conducted.

2. Do not store hazardous waste on-site for more than 90 days (or 180 days for a small-quantity generator; 270 days for a small-quantity generator that transports waste greater than 200 miles) without an RCRA permit.

3. Label all waste bags and larger items with appropriate hazardous material disposal information.

4. If the material is determined to be non-hazardous, it may be treated as a municipal solid waste, construction debris, or scrap metal as appropriate.

J. Carefully place the containers into the truck or dumpster used for disposal. Ensure that all waste is transported in covered vehicles to an appropriate landfill based on the results of the waste determination.

3.05 CLEARANCE

A. Following the completion of final clean-up, coordinate with the Owner's Consultant for clearance inspection of the area.

B. Clearance will be conducted using a visual inspection of the work area and surrounding areas to ensure that no dust or debris remains.

C. If criteria are met, the work area may be released for general use.

D. If the clearance criteria are not met, the work area(s) shall be re-cleaned by the contractor and the clearance inspection repeated at no cost to the project.

END OF SECTION