SECTION 02 2600

HAZARDOUS MATERIALS ASSESSMENT

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. The Hazardous Materials Assessment for the proposed construction is included with these Contract Documents.

1.2 USE OF INFORMATION

A. The Hazardous Materials Assessment is provided for the Contractor's information and use in the planning and performance of work in areas containing hazardous or potentially hazardous materials as outlined in Paragraph 1.03.

1. The information provided in the Hazardous Materials Assessment is based on samples collected in various locations of the building. Thus, the Owner and/or its Representative cannot guarantee or warrant that actual conditions encountered might not vary from the information presented in these reports.
2. The data reported in the Hazardous Materials Assessment is accurate to the best of the Owner's and it's Representative's knowledge. The requirements contained in these specifications and in the relevant state and federal regulations pertaining to the performance of work in areas containing hazardous or potentially hazardous materials provide guidance for the contractor for performance of work in these areas. The Owner and its Representative disclaim all responsibility for the Contractor's erroneous conclusions regarding the information presented in these reports; the requirements contained in these specifications; and the requirements of applicable state and federal regulations pertaining to performance of work in these areas.
3. The Contractor shall be responsible for obtaining additional information if Contractor deems it necessary to carry out the work.

B. It is highly recommended that the contractor visit the site to acquaint themselves with existing conditions.

C. Attached Hazardous Materials Assessment

1.3 HAZARDOUS MATERIALS NOTIFICATION:

A. Notification of Potential Hazards: Asbestos, lead and other potentially hazardous materials are present in the building that may impact the work of all trades. Regulated air contaminants, including asbestos and lead, are also present in settled and concealed dust in and on architectural, structural, mechanical, and electrical components or systems throughout the building. All trades shall coordinate with other trades and conduct their work to prevent worker exposure or site contamination. Refer to Specification Divisions 0, 1 and 2 for specific information concerning disturbing, removing, and disposing of these materials and the installation of new materials or components. This notification is provided in accordance with EPA and OSHA requirements.

PART 2 - PRODUCTS
Not Used

PART 3 - EXECUTION
Not Used

HAZARDOUS MATERIALS ASSESSMENT

SNOWDEN ADMINISTRATIVE OFFICE BUILDING
ALASKA COURT SYSTEM

ANCHORAGE, ALASKA

Surveyed
February 18, 2022 & March 1, 2022

Report Date
April 1, 2022

EHS-ALASKA, INC.
ENGINEERING, HEALTH & SAFETY CONSULTANTS
11901 BUSINESS BLVD., SUITE 208
EAGLE RIVER, ALASKA 99577-7701

HAZARDOUS MATERIALS ASSESSMENT
SNOWDEN ADMINISTRATIVE OFFICE BUILDING MECHANICAL UPGRADES

ANCHORAGE, ALASKA

TABLE OF CONTENTS

APPENDICES

HAZARDOUS MATERIALS ASSESSMENT
SNOWDEN ADMINISTRATIVE OFFICE BUILDING MECHANICAL UPGRADES

ANCHORAGE, ALASKA

OVERVIEW

The Snowden Administrative Office Building, located in Anchorage, Alaska, was surveyed for the presence of asbestos-containing materials (ACM), and other potentially hazardous materials as a part of the design services for the Mechanical Upgrades Project for the Alaska Court System. The survey also provided a "good faith" inspection for hazardous materials that may be disturbed during the construction. The proposed work includes the disturbance, demolition, removal, and disposal of lead-containing paints and/or lead-containing materials that is incidental to the renovation and remodeling project. Mr. John H. Lamont and Mr. Chris T. Ottosen of EHS-Alaska, Inc. (EHS-Alaska) conducted the inspections in February and March of 2022. It will be the contractor's responsibility to take this baseline data, and to conduct hazardous materials removal in compliance with all regulatory requirements. This assessment includes data from previous inspections of the facility.

A. GENERALIZED REQUIREMENTS FOR HAZARDOUS MATERIALS

Potentially hazardous materials have been identified in Snowden Administrative Office Building that will be affected by the proposed renovations. Those materials include asbestos, lead, polychlorinated bi-phenyls (PCBs), mercury, and radioactive materials. Not all materials were tested for potentially hazardous components, other potentially hazardous materials, including those exterior to the building, such as contamination from underground fuel tanks may be present, but are not part of this report.

Buildings or portions of buildings that were constructed prior to 1978 which are residences, or contain day care facilities, kindergarten classes or other activities frequently visited by children under 6 years of age are classified as *child occupied facilities*. All work which is NOT classified as "minor repair and maintenance activities" (as defined by the regulations), that takes place in the *"child occupied"* portions of facilities must comply with the requirements of 40 CFR 745. This building is not classified as a *child occupied facility* and therefore the requirements of 40 CFR 745 are not applicable.

Only the materials that will be directly affected by this project are required to be removed. The quantities and types of materials are incorporated into the design documents for this renovation. The removal and disposal of potentially hazardous materials are highly regulated, and it is anticipated that removal and disposal of asbestos, lead and chemical hazards will be conducted by a subcontractor to the general contractor who is qualified for such removal. It is anticipated that the general contractor and other trades will be able to conduct their work using engineering controls and work practices to control worker exposure and to keep airborne contaminants out of occupied areas of the building. Refer to Section 01 35 45, Airborne Contaminant Control.

Settled and concealed dusts in areas not subject to routine cleaning are present throughout the building, including the roof, and inside and on top of architectural, mechanical, electrical, and structural elements, and those dusts have been identified to contain regulated air contaminants. This should not be read to imply that there is an existing hazard to building occupants (normal occupants of the building as opposed to construction workers working in the affected areas).

However, depending on the specific work items involved and on the means and methods employed when working in the affected areas, construction workers could be exposed to regulated air contaminants from those dusts in excess of the OSHA Permissible Exposure Limits (PELs).

The settled and concealed dusts were examined by an EPA Certified Building Inspector but were not sampled. The inspector determined that the dusts are not "asbestos debris" from an asbestos-containing building material (ACBM). Based on similar sampling from similar buildings, the inspector also determined that the dusts are unlikely to contain more than one percent (1%) asbestos by weight, and therefore are not an asbestos-containing material (ACM). Reference 40 CFR 763.83.

NOTE: Asbestos-containing roofing debris and remnant puck mastics were noted above the suspended ceiling system Stairs/Corridor 206, and it is likely that the dusts in these areas may contain more than one percent (1%) asbestos by weight, and therefore would be classified as an asbestos-containing material (ACM). Reference 40 CFR 763.83.

"Awareness training" (typically 2 hours) and possibly respiratory protection will be required for all Contractor Personnel who will be disturbing the dusts. The extent of the training and protective measures will depend upon the airborne concentrations measured during air monitoring of the contractors work force, which depends on the means and methods employed to control the dusts. The air monitoring may be discontinued following a "negative exposure assessment" showing that worker exposures are below the OSHA permissible exposure limits for the type of work and means and methods employed. Previous air monitoring from similar jobs with similar conditions may be used as historical data to establish a "negative exposure assessment."

B. BUILDING DESCRIPTION

The Snowden Administrative Office Building was originally the Anchorage Times Building and was constructed in 1946. In 1950 a press room addition was added to the west side of the original building and in 1956 a second level was added over the 1946 and 1950 construction. In 1967 the second level was remodeled and in 1968 a 3-story addition was added to the east side of the original 1946 construction. In 1976 there was a mail room addition added to the east of the 1968 addition completing what is now the footprint of the Snowden Administrative Building.

Another renovation occurred in 1991 when the building was still being operated by the Anchorage Times, but the record drawings for the 1995 demolition and renovation project shows that the Alaska Court System was occupying the building. Since then, there was a major renovation in 1998 which included asbestos abatement of pipe fittings, pipe insulation, flooring, and sprayed-on ceiling texture in portions of all eras of construction except the 1976 mail room addition on the east side. However, it was reported that there was a boiler room found under the first floor (likely the 1946 section) that was abandoned in place with all of the ACBM remaining and capped off at the first floor. The 1998 project also removed identified PCB-containing electrical components such as transformer, switches, circuit breakers, and ballast. Although the 1998 demolition and renovation project was extensive, it is expected that ACM pipe insulation will be found in inaccessible areas.

A minor renovation occurred 2004-2006 and a reroof project over the 2-story portion occurred in 2018.

Heating is supplied by 2 natural gas boilers that were refurbished in 1996. The heating system included a mixture of fin tube, unit heaters, cabinet unit heaters, and heat distribution heat piping. Some of the assumed ACM cementitious insulation over the heat piping was previously abated but some was identified in the areas that could not be accessed and it is likely that there will be more hidden in all portions of the building affected by this project where previous abatement was incomplete or did not occur.

The original vinyl asbestos flooring was reportedly removed during the 1998 renovation and carpet was currently installed throughout on concrete; ceramic tiles and sheet vinyl flooring in the restrooms was present. The concrete floors have a smooth plaster finish on the bottom side as seen from above the suspended ceiling panels and it is likely the finish that was installed in 1998 after the spray-on ceiling texture was abated according to abatement drawings. Remnant "puck" mastic was noted on top of some of the suspended ceiling tiles from the now removed glue-on ceiling tiles. Walls were finished with gypsum wallboard and a non-ACM medium orange peel finish and some of the concrete walls had what appeared to be a spray-applied cementitious texture.

C. SAMPLING AND ANALYSIS

1. Asbestos-Containing Materials

The survey included sampling of suspect ACM materials that had not been sampled in prior asbestos surveys, or samples of materials where previous sampling had been inconsistent. Additional testing of materials pertinent to the project, including asbestos and lead in dust samples was conducted and is included in this report.

The samples were analyzed for the presence of asbestos using polarized light microscopy (PLM), analysis, as recommended by EPA, to determine the composition of suspected ACMs (EPA method 600/M4-82-020). Only materials containing more than 1% total asbestos were classified as "asbestos-containing" based on EPA and OSHA criteria. Samples analyzed to have less than 10% asbestos were "point-counted" by the laboratory for more accuracy. Samples listed as having a "Trace by Point Count" had asbestos fibers found in the material, but the fibers were not present at the counting grids. Table 1 in Part D below contains a summary list of the asbestos bulk samples and the applicable results.

The Bulk Asbestos samples were analyzed for asbestos content by International Asbestos Testing Laboratories (IATL), Mt. Laurel, New Jersey a National Voluntary Laboratory Accreditation Program (NVLAP) accredited laboratory.

EPA regulations under 40 CFR 763 require the use of PLM to determine whether or not a material contains asbestos. While PLM analysis does a good job for most materials, it does have some limitations. Fibers may be undetectable if their small size prevents visibility under a standard optical microscope, or if they are bound in an organic matrix to the point that the fibers are obscured. At the discretion of the building inspector and the client, some types of samples may be analyzed or re-analyzed by what is called Transmission Electron Microscopy for Non-Friable Organically Bound (TEM NOB) materials. TEM NOB is the definitive method for determining if asbestos is present, but TEM NOB use is not required by the EPA. TEM NOB analysis was not done for this project.

Field survey data sheets and laboratory reports of the bulk samples are included in Appendix A. Drawings showing sample locations are included as Appendix D.

2. Lead-Containing Materials

Nearly all surfaces in the building were coated with paint and most surfaces had been repainted. EHS-Alaska tested representative paints throughout the affected areas of the building using an Heuresis Pb200i X-Ray Fluorescence (XRF) lead paint analyzer (Serial # 1770 with software version 4.0-21). The lead testing conducted was not a Lead-Based Paint Inspection or Screening as defined by Department of Housing and Urban Development (HUD) or EPA regulations but was done to test surfaces that may be representative of those likely to be affected by this project. If surfaces and materials other than those tested are identified, the Contractor shall test and treat appropriately. Refer to the Lead Analyzer Test Results Table in Appendix C that identifies the surfaces tested, and the results. All surfaces affected by this project may not have been tested and therefore additional sampling may be required to refute the presence of lead-containing materials regulated by 29 CFR 1926.62 or lead-based paints in child occupied facilities regulated by 40 CFR 745. The Lead Test Locations are shown in Appendix D.

The survey included wipe samples of dust in the building taken in March 2022. The lead dust samples were typically taken adjacent to the dust samples for asbestos described above. Dust was collected using ASTM E1728-99 protocol from a surface that measured 100 square centimeters (1 sampled was irregular and measure 5.7 cm x 20.3 cm), using a towelette, manufactured especially for lead dust sampling. The dust on the wipe was then analyzed at the laboratory using Flame Atomic Absorption Spectrometry, (FAAS), according to the EPA SW 846:6010:7420 method. The lead content was reported as a concentration of micrograms of lead per square foot of surface sampled ($\mu g/ft^2$). Table 3 in Part D below contains a summary list of the lead dust samples and the applicable results.

EPA and HUD have defined lead-based paint as any paint or other surface coating that contains lead equal to or in excess of 1.0 milligram per square centimeter (mg/cm^2) or 0.5 percent by weight. XRF results are classified as positive (lead is present at 1.0 mg/cm^2 or greater), negative (less than 1.0 mg/cm^2 of lead was present) or inconclusive (the XRF could not make a conclusive positive or negative determination). Tests that were invalid due to operator error are shown as void tests.

A Performance Characteristic Sheet (PCS) for the Heuresis Pb200i is available upon request. This PCS data provides supplemental information to be used in conjunction with Chapter 7 of the “HUD Guidelines”. Performance parameters provided in the PCS are applicable when operating the instrument using the manufacturer’s instructions and the procedures described in Chapter 7 of the “HUD Guidelines”. The instrument was operated in accordance with manufacturer’s instructions and Chapter 7 of the HUD Guidelines. No substrate correction is required for this instrument. There is no inconclusive classification for this instrument when using the 1.0 mg/cm^2 threshold.

3. Testing of Paints and Sealants for PCB’s

No testing of paints or sealants for PCB’s was authorized for this project, and no sampling occurred.

D. SURVEY RESULTS

1. Asbestos-Containing Materials

The following Table 1A lists the samples taken in February 2022 at the Snowden building, and the results of the laboratory analysis. Asbestos field survey data sheets and laboratory reports are included as Appendix A. Refer to Appendix D for sample locations.

TABLE 1A

SAMPLE NUMBER	*MATERIAL*	*LOCATION*	*ASBESTOS CONTENT*
820-0222-A01	LCT-1: 2' x 4' straight sided ceiling tile with high density of random fissures 1/4"-1/2" long and 1/16"-1/8" holes.	First floor: Micrographics Room 149 at entry way from Audio Area Room 145. Photo 48	None Detected
820-0222-A02	White joint compound	First floor: Vestibule 150 above egress door on gypsum wallboard wall (GWB). Photo 56	None Detected
820-0222-A03	WT-1: spray-applied white wall texture, medium orange peel appearance	First floor: Vestibule 150, from overspray above ceiling grid above the exit door. Photo 56	None Detected
820-0222-A04	WT-2: spray-applied white cementitious-like wall texture	First floor: Work/Break Area Room 152, north end of the east wall above hall opening, above ceiling grid, on west face of the original 1946 era poured concrete wall. Photo 87	None Detected
820-0222-A05	White joint compound	First floor: Work/Break Area Room 152, north end of the east wall above hall opening, on GWB on metal ceiling grid mounted on the textured concrete. Photo 88	None Detected
820-0222-A06	Gypsum wall board	First floor: Work/Break Area Room 152, north end of the east wall above hall opening, on metal ceiling grid mounted on the textured concrete. Photo 88	None Detected
820-0222-A07	Black dampproofing on interior face of original 1946 era concrete wall	First floor: east face of concrete wall between Work/Break Area Room 152 and hall to the east, exposed above the ceiling grid. Photo 109	None Detected

SAMPLE NUMBER	*MATERIAL*	*LOCATION*	*ASBESTOS CONTENT*
820-0222-A08	White plaster finish and scratch coat	First floor: east face of concrete wall between Work/Break Area Room 152 and hall to the east, on the furred out 5/8" thick plaster board, above the ceiling grid. Photo 112	None Detected
820-0222-A09	White plaster finish coat	First floor: east face of concrete wall between Work/Break Area Room 152 and hall to the east, on the furred out 5/8" thick plaster board, above the ceiling grid. Photo 112	None Detected
820-0222-A10	Pliable grey-green duct seam sealant	First floor hall between 160 and 153, above ceiling on large E-W aligned round metal duct seam, near hanger. Photo 118	None Detected
820-0222-A11	Pliable grey-green duct seam sealant on circular ductwork	First floor hall between 160 and 153, above ceiling on joint between the large supply air duct and smaller round duct to 153. Photo 119	None Detected
820-0222-A12	LCT-1: 2' x 4' straight sided ceiling tile with high density of random fissures 1/4"-1/2" long and 1/16"-1/8" holes.	HR Files Room 153, ceiling tile at the south end of the west portion of the ceiling. Photo 125	None Detected
820-0222-A13	White plaster finish and scratch coat	HR Open Office Area 162, east end of north wall on plaster wall with wire mesh. Photo 137	None Detected
820-0222-A14	White plaster finish coat adjacent	HR Open Office Area 162, east end of north wall on plaster wall with wire mesh. Photo 137	None Detected
820-0222-A15	Black dampproofing on interior face of original 1946 era concrete wall	HR Open Office Area 162. North end of east wall on original 1946 era concrete wall. Photo 138	None Detected
820-0222-A16	LCT-2: 2' x 4' with beveled edges and false 2' x 2' appearance with 1/8" oblong holes and 1/16" dots	First floor: Lobby Room 134 at stairwell access corridor. Photo 142	None Detected

SAMPLE NUMBER	*MATERIAL*	*LOCATION*	*ASBESTOS CONTENT*
820-0222-A17	WT-2: spray-applied cementitious-like wall texture	Conference Room 126, SW corner inside the pipe chase, on the east face of the original 1946 era concrete wall. Photo 184	None Detected
820-0222-A18	Pliable white sealant	Conference Room 126, SW corner inside the pipe chase, on waste clean-out. Photo 190	None Detected
820-0222-A19	WT-1: spray-applied wall texture, medium orange peel texture **IGNORE SILVER FOIL**	Conference Room 126, SW corner inside the pipe chase on pipe insulation, Photo 191	None Detected
820-0222-A20	LCT-2: 2' x 4' with beveled edges and false 2' x 2' appearance with 1/8" oblong holes and 1/16" dots	First floor: Conference Room 126 ceiling near center of north wall. Photo 178	None Detected
820-0222-A21	Pliable grey-green duct seam sealant	Men's Restroom 128 on bottom side of rectangular duct near the penetration through the south concrete wall, above the ceiling. Photo 198	None Detected
820-0222-A22	Pliable red fire caulk	Men's Restroom 128 around insulated pipe penetration in south textured concrete wall, above the ceiling. Photo 199	None Detected
820-0222-A23	White joint compound	Men's Restroom 128. Above ceiling grid near center of south wall on GWB. Photo 200	None Detected
820-0222-A24	Remnant "hard fitting" pipe insulation	Elevator Lobby Area 133. Above suspended ceiling in NE portion of lobby at abandoned pipe penetration in concrete ceiling between first and second floors. Photo 238	None Detected
820-0222-A25	Black dampproofing on interior face of original 1946 era concrete wall	Corridor 143 above suspended ceiling, on concrete wall, south side near wall common to stair 141. Photo 245	None Detected

SAMPLE NUMBER	*MATERIAL*	*LOCATION*	*ASBESTOS CONTENT*
820-0222-A26	LCT-3: 2' x 4' with 3/16" wide x 1/4"-2" long squiggly E-W directional fissures and high density 1/16" holes	Supplies/IT Area 147: ceiling along room 147A, left of door. Photo 250	None Detected
820-0222-A27	WT-2: spray-applied cementitious-like wall texture	Corridor 143 above suspended ceiling, on concrete beam, south side near wall common to stair 141. Photo 246	None Detected
820-0222-A28	White "popcorn-like" spray-applied ceiling texture	Supplies/IT Area 147 near center of area, NE of center column on concrete ceiling above suspended ceiling. Photo 255	None Detected
820-0222-A29	White plaster finish coat	Supplies/IT Area 147 near center of area, NE of center column on concrete ceiling above suspended ceiling. Photo 255	None Detected
820-0222-A30	Gypsum board patch	Supplies/IT Area 147 near center of NW quadrant above suspended ceiling at hole in concrete ceiling/floor exhibiting water damage. Photo 256	None Detected
820-0222-A31	White joint compound	Supplies/IT Area 147 near center of NW quadrant above suspended ceiling along paper taped seam in GWB at hole in concrete ceiling/floor exhibiting water damage. Photo 256	None Detected
820-0222-A32	White plaster finish coat on concrete ceiling	General Services Area 148 NE portion of the SW quadrant above suspended ceiling near concrete seam edge. Photo 261	None Detected
820-0222-A33	Unfinished gypsum board	General Services Area 148: left of center above suspended ceiling along the north wall common to 153, from the cut out section of the GWB hard lid attached to wood floor joists. Photo 269	None Detected

SAMPLE NUMBER	*MATERIAL*	*LOCATION*	*ASBESTOS CONTENT*
820-0222-A34	White joint compound	General Services Area 148: left of center above suspended ceiling along the north wall common to 153, from the cut out section of the GWB hard lid attached to wood floor joists. Photo 269	None Detected
820-0222-A35	Remnant “hard fitting” pipe insulation	General Services Area 148: left of center above suspended ceiling along the north wall common to 153, on pipe in joist bay above the GWB hard lid. Photo 270	None Detected
820-0222-A36	Remnant “hard fitting” pipe insulation	General Services Area 148: laying on N-S aligned I-beam flange above suspended ceiling near center of north wall common to 153. Photo 270	None Detected
820-0222-A37	LCT-1: 2’ x 4’ straight sided ceiling tile with high density of random fissures 1/4”-1/2” long and 1/16”-1/8” holes.	General Services Area 148: on ceiling near center of north wall common to 153. Photo 272	None Detected
820-0222-A38	Overspray from WT-1: spray-applied texture, medium orange peel appearance	General Services Area 148 above ceiling grid on east face of built-up column with metal studs covered with GWB near middle of room. Photo 281	None Detected
820-0222-A39	White joint compound	General Services Area 148 above ceiling grid on east face of built-up column with metal studs covered with GWB near middle of room. Photo 281	None Detected
820-0222-A40	White plaster finish coat	General Services Area 148 above ceiling grid, south of built-up column above suspended ceiling on concrete above metal I-beam. Photo 280	None Detected
820-0222-A41	White joint compound	Audio Area 145 on north face of north built-up column with GWB, above suspended ceiling. Photo 284	None Detected

SAMPLE NUMBER	*MATERIAL*	*LOCATION*	*ASBESTOS CONTENT*
820-0222-A42	WT-2: spray-applied cementitious-like wall texture	Audio Area 145 on east wall above door to Corridor 143, west face of the original 1946 era concrete walls. Photo 288	None Detected
820-0222-A43	Pliable grey-green duct seam sealant.	Audio Area 145 on seam of round duct at 22 degree joint above suspended ceiling, north of AHU-5. Photo 282	None Detected
820-0222-A44	Pliable grey seam sealant	Audio Area 145. on west side of air handling unit 5, in SE quadrant above suspended ceiling. Photo 291	None Detected
820-0222-A45	Pliable grey-green duct seam sealant	Corridor 303 on seam of round duct near center of corridor, west of door above ceiling. Photo 363	None Detected
820-0222-A46	White rope gasket; hard red mastic,	Mechanical Room 307 on boiler burner B-2 housing. Photo 357	None Detected
820-0222-A47	White joint compound	Facilities Managers Office 305 north GWB wall above suspended ceiling west of column. Photo 365	None Detected
820-0222-A48	Remnant white joint compound	Facilities Managers Office 305 on rectangular duct above suspended ceiling at north wall west of column. Photo 365	None Detected
820-0222-A49	WT-1: spray-applied wall texture, medium orange peel appearance	Facilities Managers Office 305 Overspray on duct. Photo 365	None Detected
820-0222-A50	LCT-4: 2’ x 4’ with 1/16” wide x 1/8”-1/2” long thin randomly dispersed fissures and 1/32”-1/8” holes	Facilities Managers Office 305 ceiling along north GWB wall west of column. Photo 367	None Detected
820-0222-A51	White joint compound	Facilities Managers Office 305 near room center on GWB for metal stud wall above the ceiling grid, near the metal hanging joist. Photo 366	None Detected

SAMPLE NUMBER	*MATERIAL*	*LOCATION*	*ASBESTOS CONTENT*
820-0222-A52	Unfinished gypsum wallboard	Facilities Managers Office 305 near room center on GWB for metal stud wall above the ceiling grid. Photo 369	None Detected
820-0222-A53	Pliable grey seam seal	Mechanical Room 307 SE corner between sections of AHU-1. Photo 378	1.6% Chrysotile
820-0222-A54	White, tight weave coated duct wrap from duct leaving AHU-1; and mastic-like backing on wrap **DO NOT ANALYZE YELLOW FIBERGLASS**	Mechanical Room 307 on duct running south from AHU-1; and mastic-like backing on wrap. Photo 370	None Detected
820-0222-A55	Thick large woven duct white wrap. **DO NOT ANALYZE YELLOW FIBERGLASS**	Third floor: Mechanical Room 307 wrap on AHU-1, top along south end. Photo 371	None Detected
820-0222-A56	White, tight weave coated duct wrap; with mastic-like backing on wrap. **DO NOT ANALYZE YELLOW FIBERGLASS**	Mechanical Room 307 on duct between AHU-1/AHU-2. Photo 373	None Detected
820-0222-A57	Tan duct wrap mastic. **DO NOT ANALYZE YELLOW FIBERGLASS**	Mechanical Room 307 on duct between AHU-1/AHU-2 between duct and insulation. Photo 375	None Detected
820-0222-A58	Tan duct wrap mastic. **DO NOT ANALYZE YELLOW FIBERGLASS**	Third floor: Mechanical Room 307 holding insulation to AHU-2, south side. Photo 374	None Detected
820-0222-A59	Pliable beige seam seal	Mechanical Room 307, panel seam on north side of between sections of AHU-2. Photo 379	4.1% Chrysotile
820-0222-A60	Tan duct wrap mastic	Third floor: Mechanical Room 307 duct along north wall, between duct insulation and duct. Photo 380	None Detected
820-0222-A61	White joint compound; gypsum wall board	Mechanical Room 307, north end of west wall on unfinished GWB wall. Photo 381	J.C. = 2.9% Chrysotile; None Detected in GWB
820-0222-A62	White fire-eye sealant for boiler B-1	Mechanical Room 307 north side of Boiler B-1. Photo 382	None Detected

SAMPLE NUMBER	*MATERIAL*	*LOCATION*	*ASBESTOS CONTENT*
820-0222-A63	Hard black boiler breech sealant from boiler B-1	Mechanical Room 307 west end of north side of boiler B-1. Photo 383	None Detected
820-0222-A64	Red fire caulk	Third floor: Mechanical Room 307 at concrete floor penetration near center of east wall. Photo 384	None Detected
820-0222-A65	White joint compound	Mechanical Room 307: South end of west untextured GWB wall. Photo 386	2.1% Chrysotile
820-0222-A66	Unfinished gypsum wall board at west wall in mechanical room. Lab also reported joint compound	Mechanical Room 307: South end of west untextured GWB wall. Photo 387	J.C. = 2.3% Chrysotile; None Detected in GWB
820-0222-A67	Brown wall seam mastic	Mechanical Room 307 south end of east wall between concrete column and vertical wood trim. Photo 388	None Detected
820-0222-A68	Remnant grey ceiling grid mastic	Mechanical Room 307 south end of east wall south of concrete column . Photo 389	2.5% Chrysotile
820-0222-A69	Thick-weaved white coated wrap	Mechanical Room 307 south half of east wall above B-2, north of concrete column near duct penetration in CMU wall. Photo 390	None Detected
820-0222-A70	Pliable white door frame sealant	Mechanical Room 307 at south door between door frame and concrete wall. Photo 391	None Detected
820-0222-A71	White wall texture	Mechanical Room 307 south end of east CMU wall. Photo 396	None Detected
820-0222-A72	White wall texture	Mechanical Room 307 north end of east CMU wall. Photo 397	None Detected
820-0222-A73	White wall texture	Mechanical Room 307 center of east CMU wall. Photo 398	None Detected
820-0222-A74	White and grey concrete coating	Mechanical Room 307 base of concrete column at the south end of the west wall. Photo 399	None Detected

SAMPLE NUMBER	*MATERIAL*	*LOCATION*	*ASBESTOS CONTENT*
820-0222-A75	White joint compound	Elevator Lobby 301 above the suspended ceiling grid, north wall, west of door to stairs 300 on paper taped seam in GWB. Photo 400	None Detected
820-0222-A76	Pliable black built-up roof material	Elevator Lobby 301 above suspended ceiling in elevator lobby. Photo 401	None Detected
820-0222-A77	White joint compound	Supply Room 302: East end of north wall, above suspended ceiling on textured GWB. Photo 402	2.6% Chrysotile
820-0222-A78	Black asphalt-impregnated fiber board	Supply Room 302 center of north wall. Exposed above suspended ceiling. Photo 403	None Detected
820-0222-A79	Pliable black mastic for asphalt-impregnated fiber board	Supply Room 302 center of north wall. Exposed above suspended ceiling. Photo 403	None Detected
820-0222-A80	Hard lay-in ceiling tile	North vestibule into Mechanical Room 307: above “attic hatch.” Remnant pieces of former ceiling tiles laying on new metal-framed ceiling with GWB. Photo 448	None Detected
820-0222-A81	White plaster finish coat on exterior of building	West exterior wall adjacent to Mechanical Room 307 along north edge of wall to Stairwell 311. Photo 468	None Detected
820-0222-A82	Black pliable “corner-seal” at bird screen	West exterior wall adjacent to Mechanical Room 307 along north edge of northern outside supply air intake louver. Photo 469	None Detected
820-0222-A83	White pliable “corner-seal” at louver frame	West exterior wall adjacent to Mechanical Room 307 along south edge of combustion intake louver. Photo 470	None Detected
820-0222-A84	White pliable “corner-seal” at bird screen	West exterior wall adjacent to Mechanical Room 307. south edge of outside supply air intake louver. Photo 471	None Detected

SAMPLE NUMBER	*MATERIAL*	*LOCATION*	*ASBESTOS CONTENT*
820-0222-A85	Hard black seal at parapet to wall	West exterior wall adjacent to Mechanical Room 307 between the combustion air and outside air louver. Photo 472	None Detected
820-0222-A86	White plaster finish coat on poured concrete wall	West exterior wall adjacent to Mechanical Room 307, wall section south of the southern outside air louver. Photo 476	None Detected
820-0222-A87	White plaster finish and scratch coat on poured concrete wall	West exterior wall adjacent to Mechanical Room 307, wall section between the two outside intake air louvers south of the combustion air louver. Photo 477	None Detected
820-0222-A88	Hard white sealant at conduit penetration	West exterior wall adjacent to Mechanical Room 307, wall section south of the southern outside air louver. Photo 478	None Detected
820-0222-A89	Crumbly white furnace seam seal	Roof of Mechanical Room 307: Exterior furnace on north side of the mechanical room roof. Photo 487	None Detected
820-0222-A90	Crumbly grey furnace seam seal	Roof of Mechanical Room 307: Exterior furnace on north side of the mechanical room roof. Photo 488	None Detected
820-0222-A91	Pliable grey duct flange sealant	Roof of Mechanical Room 307. Duct on roof from AHU-1, north rectangular exhaust duct. Photo 496	None Detected
820-0222-A92	Hard black sealant at flashing on parapet wall	Roof of Mechanical Room 307. West parapet wall on roof, flashing connection near ladder. Photo 497	None Detected
820-0222-A93	Pliable grey-green duct seam sealant on circular ductwork	Supply Room 302: above suspended ceiling. Circular E-W aligned duct. Photo 498	None Detected
820-0222-A94	Pliable grey-green duct seam sealant on rectangular ductwork	Supply Room 302: above suspended ceiling. Rectangular N-S aligned duct. Photo 499	None Detected

SAMPLE NUMBER	*MATERIAL*	*LOCATION*	*ASBESTOS CONTENT*
820-0222-A95	Tan duct wrap mastic holding insulation to duct **DO NOT ANALYZE YELLOW FIBERGLASS**	Corridor 409: above suspended ceiling at north end of hall on N-S aligned duct. Photo 515	None Detected
820-0222-A96	LCT-2: 2' x 4' with beveled edges and false 2' x 2' appearance with 1/8" oblong holes and 1/16" dots	Corridor 409: at north end of hall across from Janitorial Room 212, south of Conference Room 213. Photo 516	None Detected
820-0222-A97	Hard tan puck mastic **DO NOT ANALYZE CONCRETE**	Stairs/Corridor 206: above suspended ceiling on east side of 1946 era poured concrete wall. Photo 531	2.4% Chrysotile
820-0222-A98	Remnant white joint compound	Stairs/Corridor 206: above suspended ceiling on west side of 1946 era poured concrete wall. Photo 542	None Detected
820-0222-A99	Remnant gypsum wall board	Stairs/Corridor 206: above suspended ceiling on west side of 1946 era poured concrete wall. Photo 542	None Detected
820-0222-A100	Hard black built-up roof material above suspended ceiling	Stairs/Corridor 206: above suspended ceiling on west side of 1946 era poured concrete wall. Photo 534	15% Chrysotile
820-0222-A101	White joint compound	Open Office Space Area Second Floor: southeast quadrant of open office space area adjacent to Telephone Room 232. Photo 545	None Detected
820-0222-A102	LCT-1: 2' x 4' straight sided ceiling tile with high density of random fissures 1/4"-1/2" long and 1/16"-1/8" holes.	Open Office Space Area Second Floor: southeast quadrant of open office space area adjacent to Telephone Room 232. Photo 553	None Detected
820-0222-A103	Pliable grey-green duct seam sealant on rectangular ductwork	Open Office Space Area Second Floor: southeast quadrant of open office space area adjacent to Telephone Room 232 Photo 553	None Detected
820-0222-A104	Pliable off-white sealant on air handling unit-4	Fan Room 229F: face of mechanical equipment, on west side of room. Photo 573	None Detected

SAMPLE NUMBER	*MATERIAL*	*LOCATION*	*ASBESTOS CONTENT*
820-0222-A105	Pliable white seam seal on air handling unit-4	Fan Room 229F: seam of mechanical equipment, on west side of room. Photo 574	None Detected
820-0222-A106	Thick-weaved beige coated wrap at air duct	Fan Room 229F: cloth wrap on mechanical equipment, supply air duct on south wall of room. Photo 577	None Detected
820-0222-A107	Pliable grey seam seal on air handling unit-3	Fan Room 229F: seam of mechanical equipment, on north side of room. Photo 575	None Detected
820-0222-A108	White joint compound	Open Office Space Area Second Floor: Adjacent to Fan Room 227B, above suspended ceiling grid at patch in ceiling. Photo 579	1.7% Chrysotile
820-0222-A109	Unfinished gypsum wall board. Lab also reported joint compound	Open Office Space Area Second Floor: Adjacent to Fan Room 227B, above suspended ceiling grid at patch in ceiling. Photo 579	J.C. = 1.5% Chrysotile; None Detected in GWB
820-0222-A110	FT-5: 12x12-inch off-white w/ black stripes; with sticky yellow mastic; and remnant black mastic	Fan Room 227B: southeast corner of room to the right of the door. Photo 596	None Detected
820-0222-A111	Pliable white seam seal from air handling unit-6	Fan Room 227B: mechanical equipment, inside cavity at filter hatch. Photo 595	None Detected
820-0222-A112	Pliable green carpet mastic	Supplies Room 226: east side of room taken in front of copier. Photo 603	None Detected
820-0222-A113	Black dampproofing on interior face of original 1946 era concrete wall	Kitchen Area 225: above suspended ceiling grid, east side of kitchen area, on west face of poured concrete wall. Photo 604	None Detected
820-0222-A114	Pliable grey-green duct seam sealant	Waiting Area 220: above suspended ceiling on rectangular ductwork. Photo 611	None Detected
820-0222-A115	CGCT-1: 12x12-inch depressed “jigsaw” pattern concealed grid ceiling tile	Admin Director Room 216: jostled ceiling tiles previously disturbed in hall accessing area 219. Photo 625	None Detected

SAMPLE NUMBER	*MATERIAL*	*LOCATION*	*ASBESTOS CONTENT*
820-0222-A116	Hard black built-up roof material above suspended ceiling	Rules Attorney Room 248: above suspended ceiling north quadrant of room. Photo 627	None Detected
The testing method used (polarized light microscopy [PLM]) is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. Before this material can be considered or treated as non-asbestos containing, confirmation should be made by quantitative transmission electron microscopy (TEM).			

Table 1B includes samples taken in November 2017 in support of the Snowden Roof Replacement project, and the results of the laboratory analysis. Note, some of these materials may have been removed by the previous project but are included here to illustrate similar materials from the eras of construction. Asbestos field survey data sheets and laboratory reports are included in Appendix A. Refer to Appendix D for sample locations.

TABLE 1B

SAMPLE NUMBER	*MATERIAL*	*LOCATION*	*ASBESTOS CONTENT*
AB17-8243A	Black tar	Top of Penthouse	None Detected
AB17-8243B	Black felt	Top of Penthouse	None Detected
AB17-8243C	Black tar	Top of Penthouse	None Detected
AB17-8243D	Black felt	Top of Penthouse	None Detected
AB17-8243E	Black tar	Top of Penthouse	None Detected
AB17-8243F	Black felt	Top of Penthouse	None Detected
AB17-8243G	Black tar	Top of Penthouse	None Detected
AB17-8244A	Black tar	Inside of Penthouse	None Detected
AB17-8244B	Black felt	Inside of Penthouse	None Detected
AB17-8244C	Black tar	Inside of Penthouse	None Detected
AB17-8244D	Black felt	Inside of Penthouse	None Detected
AB17-8244E	Black tar	Inside of Penthouse	None Detected
AB17-8244F	Black felt	Inside of Penthouse	None Detected
AB17-8244G	Black tar	Inside of Penthouse	None Detected
AB17-8244H	Black felt	Inside of Penthouse	None Detected
AB17-8244I	Black tar	Inside of Penthouse	None Detected
AB17-8244J	Black felt	Inside of Penthouse	None Detected
AB17-8244K	Black tar	Inside of Penthouse	None Detected
AB17-8244L	Brown “fesco”	Inside of Penthouse	None Detected
AB17-8245	Off-white GWB	Penthouse	None Detected
AB17-8246	Off-white Duct Cloth	Penthouse	95% Chrysotile
AB17-8247A	Black tar	Mech Curb In	None Detected
AB17-8247B	Brown felt	Mech Curb In	None Detected

SAMPLE NUMBER	*MATERIAL*	*LOCATION*	*ASBESTOS CONTENT*
AB17-8247C	Black tar	Mech Curb In	None Detected
AB17-8248A	Silver “silverseal”	At 4B	5% Chrysotile
AB17-8248B	Black tar	At 4B	None Detected
AB17-8248C	Black felt	At 4B	None Detected
AB17-8248D	Black tar	At 4B	None Detected
AB17-8248E	Brown felt	At 4B	None Detected
AB17-8248F	Black tar	At 4B	None Detected
AB17-8248G	Brown felt	At 4B	None Detected
AB17-8248H	Black tar	At 4B	None Detected
AB17-8248I	Brown “fesco”	At 4B	None Detected
AB17-8249A	Black tar	At 4A	None Detected
AB17-8249B	Brown felt	At 4A	None Detected
AB17-8249C	Black tar	At 4A	None Detected
AB17-82450	Black mastic	Hot Stack	None Detected
AB17-82451	Black mastic	Mech Curb	8% Chrysotile
AB17-82452A	Black tar	Head Wall	None Detected
AB17-82452B	Black felt	Head Wall	None Detected
The testing method used (polarized light microscopy [PLM]) is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. Before this material can be considered or treated as non-asbestos containing, confirmation should be made by quantitative transmission electron microscopy (TEM).			

Table 1C includes samples taken in October 2001 on the roof of the Snowden building and the results of the laboratory analysis. Note, some of these materials may have been removed by the previous project but are included here to illustrate similar materials from the eras of construction. Asbestos field survey data sheets and laboratory reports are included in Appendix A. Refer to Appendix D for sample locations.

TABLE 1C

SAMPLE NUMBER	*MATERIAL*	*LOCATION*	*ASBESTOS CONTENT*
Roof 2			
AKR2-A01	Black tar on wood	Near Southeast corner of roof	None Detected
AKR2-A02	Brown “fesco;” lower board of roof material	Near Southeast corner of roof	None Detected
AKR2-A03	Top two layers of bottom 5 layers	Near Southeast corner of roof	None Detected
AKR2-A04	Bottom 3 layers of bottom 5 layers	Near Southeast corner of roof	None Detected

SAMPLE NUMBER	*MATERIAL*	*LOCATION*	*ASBESTOS CONTENT*
AKR2-A05	Upper board of roof material	Near Southeast corner of roof	None Detected
AKR2-A06	Bottom 2 layers of top 4 layers	Near Southeast corner of roof	None Detected
AKR2-A07	Top 2 layers of top 4 layers	Near Southeast corner of roof	None Detected
AKR2-A08	Top layer of flashing with tar	Near Southeast corner of roof	None Detected
AKR2-A09	Bottom flashing layer	Inside of Penthouse	None Detected
AKR2-A10	Black Parapet wall cap sealant	Inside of Penthouse	1.9% Chrysotile
AKR2-A11	Grey/black Parapet wall cap sealant	Inside of Penthouse	None Detected
Roof 3			
AKR3-A01	Base paper with tar	Southeast corner of roof	None Detected
AKR3-A02	Bottom “fesco” board	Southeast corner of roof	None Detected
AKR3-A03	Top “fesco” board	Southeast corner of roof	None Detected
AKR3-A04	Tar	Southeast corner of roof	None Detected
AKR3-A05	Bottom 4 layers with tar	Southeast corner of roof	None Detected
AKR3-A06	Fabric mesh	Southeast corner of roof	None Detected
AKR3-A07	Top 4 layers with tar	Southeast corner of roof	None Detected
AKR3-A08	Grey/black parapet wall sealant	West parapet wall near South end	3.3% Chrysotile
AKR3-A09	Black parapet wall cap sealant	West parapet wall near North end	3.7% Chrysotile
AKR3-A10	Flashing, top layer	West parapet wall near center	None Detected
AKR3-A11	Flashing, lower layer	West parapet wall near center	None Detected
Roof 6			
AKR6-A01	Base layer with tar	Center of roof toward West end	None Detected
AKR6-A02	“Fesco” board	Center of roof toward West end	None Detected
AKR6-A03	Bottom 2 layers of roof	Center of roof toward West end	None Detected
AKR6-A04	Top 2 layers of roof	Center of roof toward West end	None Detected
AKR6-A05	Black tar and fabric mesh	Northwest corner at joint of roof and parapet wall	4.5% Chrysotile
AKR6-A06	Black tar at seam flashing	South parapet, West of center	10% Chrysotile
AKR6-A07	Flashing	South parapet, West of center	None Detected
Roof 7			
AKR7-A01	Fiberglass board facing	Southwest quadrant of roof, South of air duct	None Detected

SAMPLE NUMBER	*MATERIAL*	*LOCATION*	*ASBESTOS CONTENT*
AKR7-A02	Bottom roof layers	Southwest quadrant of roof, South of air duct	None Detected
AKR7-A03	Mesh and tar	Southwest quadrant of roof, South of air duct	None Detected
AKR7-A04	Top roof layers	Southwest quadrant of roof, South of air duct	None Detected
AKR7-A05	Black sealant	Southwest corner	None Detected
AKR7-A06	Grey/black parapet wall sealant	South wall, West of center	None Detected
AKR7-A07	Black penetration sealant	Flashing on air handler	None Detected
AKR7-A08	Flashing	West wall, South of center	6.8% Chrysotile
AKR7-A09	Black parapet seam sealant	North wall, center	None Detected
Roof 8			
AKR8-A01	Base layer with tar	Northwest corner of roof	None Detected
AKR8-A02	“Fesco” board	Northwest corner of roof	None Detected
AKR8-A03	Bottom roof layers	Northwest corner of roof	None Detected
AKR8-A04	Top roof layers	Northwest corner of roof	None Detected
AKR8-A05	Grey/black sealant on parapet wall seam	North parapet wall, center	None Detected
AKR8-A06	Parapet wall flashing	North parapet wall, center	None Detected
Roof 9			
AKR9-A01	Base paper and tar	Center of roof near S end	Trace, < 1%
AKR9-A01 Reanalyzed by TEM	Base paper and tar	Center of roof near S end	2.2% Chrysotile Tar paper
AKR9-A02	Fesco	Center of roof near S end	None Detected
AKR9-A03	Bottom roof layers	Center of roof near S end	None Detected
AKR9-A04	Fabric mesh and tar	Center of roof near S end	None Detected
AKR9-A05	Top roof layers	Center of roof near S end	None Detected
AKR9-A06	Top flashing layers with mesh	S wall toward W end	6 % Chrysotile in black tar layer
AKR9-A07	Bottom flashing layers	S wall toward W end	None Detected
AKR9-A08	Black tarry sealant	E wall near N end	10 % Chrysotile
Roof 10			
AKR10-A01	Base paper and tar	Between Northeast corner and center of roof	None Detected

SAMPLE NUMBER	*MATERIAL*	*LOCATION*	*ASBESTOS CONTENT*
AKR10-A02	"Fesco"	Between Northeast corner and center of roof	None Detected
AKR10-A03	Bottom roof layers	Between Northeast corner and center of roof	None Detected
AKR10-A04	Fabric mesh and tar	Between Northeast corner and center of roof	None Detected
AKR10-A05	Top roof layers	Between Northeast corner and center of roof	None Detected
AKR10-A06	Black penetration sealant	Vent, Northeast of center	None Detected
AKR10-A07	Grey/black sealant	Vent in Southeast corner	7% Chrysotile
AKR10-A08	Black parapet wall cap sealant	South parapet wall, near West end	5.1% Chrysotile
AKR10-A09	Top flashing layer	North parapet wall, just West of center	None Detected
AKR10-A10	Bottom flashing layer	North parapet wall, just west of center	None Detected
AKR10-A11	Grey/black flashing sealant	AC, East bay, Southwest corner of front work area	4.5% Chrysotile
Roof 11			
AKR11-A01	Base layer and tar	West side of roof, just North of center	None Detected
AKR11-A02	"Fesco" board	West side of roof, just North of center	None Detected
AKR11-A03	Bottom layers	West side of roof, just North of center	None Detected
AKR11-A04	Top layers	West side of roof, just North of center	None Detected
AKR11-A05	Top flashing layers	West parapet wall, North of center	None Detected
AKR11-A06	Bottom flashing layers	West parapet wall, North of center	None Detected
AKR11-A07	Ridge cap sealant	West parapet wall, North of center	5.7% Chrysotile
AKR11-A08	Grey/black flashing sealant	South parapet wall, West of center	4.5% Chrysotile
AKR11-A09	Black seam sealant	Small vent, Northwest of center of roof	6.2% Chrysotile
AKR11-A10	Grey/black penetration sealant	Small vent, Northwest of center of roof	3.5% Chrysotile

SAMPLE NUMBER	*MATERIAL*	*LOCATION*	*ASBESTOS CONTENT*
The testing method used (polarized light microscopy [PLM]) is not consistently reliable in detecting asbestos in floor coverings and similar non-friable organically bound materials. Before this material can be considered or treated as non-asbestos containing, confirmation should be made by quantitative transmission electron microscopy (TEM).			

The following materials have been found to contain asbestos in this or previous surveys or were assumed to contain asbestos.

1. Remnant flooring mastics (assumed ACM).
2. Joint compound in gypsum wallboard systems on the ceilings and walls.
3. Flange gaskets on piping (assumed ACM).
4. Beige and gray sealants at joints between sections of interior air handling units (confirmed ACM).
5. Silver “asbestoseal” flex connectors at fans and air handling units (assumed ACM).
6. Hard and chalky insulation heating, domestic water, and roof drain piping, mostly at valves and fittings (previously found to be ACM).
7. Boiler gaskets (assumed ACM).
8. Remnants of asbestos-containing roofing materials, roof patching tars and sealants, and tar paper at roof deck (assumed ACM).
9. Remnants of built-up roofing (above suspended ceiling on 2nd level of west addition, confirmed ACM).
10. Remnants of asbestos-containing roofing patching tars at HVAC and plumbing vents and other roof penetrations (assumed ACM).
11. Exterior waterproofing of foundation walls (assumed ACM).
12. Interior dampproofing of concrete and CMU walls (assumed ACM).
13. Gray-Green mastic of ceiling tile “L” channel at walls (confirmed ACM).
14. Remnant Tan “puck” mastic of (assumed) removed glue-on ceiling tiles (confirmed ACM).
15. “Silverseal” roof coating (found in previous re-roof project and likely removed).

The effects of the above asbestos-containing materials on the proposed renovation are discussed below.

Floor Tiles and Floor Tile Mastics
Most of the exposed flooring was carpet over concrete but it is likely that remnant of the original ACM VAT mastics that was previously abated may be found under the carpet in areas where the original flooring was installed. The flooring is unlikely to be disturbed by this project.

Gypsum Board Joint Compound
Gypsum board joint compound in areas that had not been previously renovated such as the mechanical room, open office space on the 2nd level, 3rd floor supply room 302, and storage rooms was asbestos-containing. It is also likely that some of the original wall were covered over with new finishes. Any incidental work that might disturb the joint compound in these areas of the building is required to be done by trained asbestos workers.

Flange Gaskets and Valve Packing
Due to their age, gaskets and valve packing on mechanical equipment throughout the buildings, but mostly in mechanical and fan rooms, are assumed to be asbestos-containing. These

materials are difficult to sample without disassembly of equipment and consequently limited sampling was performed. These materials were in good condition but may become friable during removal for replacement. The gaskets and packings will be partially removed by this project.

Duct Sealants
Beige and gray sealants at joints of AHU-1 and AHU-2 was found to contain asbestos. Duct sealants in other areas of the building were none detected for asbestos. The sealant was in good condition and was not friable and will be partially removed by this project.

Vibration Isolation/ Flexible Duct Connector Cloth
Flexible duct connector cloth in ducts near fan units was previously identified and determined to contained asbestos, but they were apparently removed. The flexible duct connector cloth in mechanical room 307 appeared to be black vinyl material that was in good condition and was not friable and will be partially removed by this project.

Pipe Insulation
It was reported that abatement of insulation on piping occurred throughout the 1946, 1950, 1956, and 1967 portions of the building in 1998. Some remnant pipe insulation was noted and sampled, and it did not contain insulation. The original boiler room under the 1946 portion was abandoned in place and the piping was capped off at the first floor level. Due to the age of construction, some concealed asbestos-containing insulation on piping may be uncovered during the HVAC upgrades project. If any concealed piping is found to have hard and chalky or other insulation suspected of containing asbestos, those materials shall be sampled prior to disturbance.

Pipe Fitting Insulation
It was reported that abatement of pipe fitting insulation (“hard fittings”) occurred in 1998 but some is likely concealed above the ceilings, plumbing chases, and in mechanical spaces. Several “hard fittings” were noted above the 3rd floor restrooms, and it is likely that they will also be found in other areas. The insulation is generally in good condition but is considered.

Boiler Gaskets and Sealants
The original boiler was reported to have been abandoned in place in the basement boiler room below the 1946 portion of the building. Due to their age, gaskets, and sealants on the original boiler the boilers in Mechanical Room 307 are assumed to be asbestos-containing. These materials are difficult to sample without disassembly of equipment and consequently limited sampling was performed. These materials were in good condition but may become friable during removal for replacement. The gaskets and sealants are unlikely to be disturbed in the original boiler but will be partially removed in Mechanical Room 307 by this project.

Roofing
Roofing over the 1976 and the west portion that was reroofed in 2018 is a rubberized EPDM type roof which does not contain asbestos. The roofing over the 3rd level (1967) is of an unknown date, but is also a single ply membrane. Residual asbestos-containing roofing materials, roof patching tars and sealants, and tar paper original roof is assumed to still exist beneath the newer roof on the roof deck and on flashing and other equipment penetrating the roof deck. The roofing materials will be partially removed by this project.

Roofing Material

Residual asbestos–containing built-up roofing debris was confirmed above the stair/corridor 206 and it may be present above the ceiling in other areas. The materials is not friable. Some of the suspended ceilings will be partially removed by this project.

Exterior Foundation Wall Damp-proofing Sealant
The foundation water-proofing is assumed to contain asbestos. The sealants are assumed to be not friable and in good condition. The tarry sealants are unlikely to be disturbed by this project.

Wall Damp-proofing Sealant
A black damp-proofing sealant was identified on the original 1946 concrete walls that was non-detected for asbestos but not all walls or eras were sampled. The sealant was not friable and was in good condition. The tarry sealants may be disturbed for new penetrations during this project.

Grid Mastics, "Puck" Mastic
A remnant of the grid mastic for the ceiling "L" channel was found along the west wall in Mechanical Room 307 and remnants of a "puck" mastic was also found above the 2nd floor ceiling between the 1967 and 1956 construction. Both were confirmed to contained asbestos. The Mastics were in good condition and were not friable and will be partially removed by this project.

2. Asbestos in Dusts

The settled and concealed dusts were examined by an EPA Certified Building Inspector but no samples for asbestos in dusts were authorized for this project. Based on their visual inspection and experience from similar buildings, the inspector determined that the typical settled and concealed dusts are not "asbestos debris" from an asbestos-containing building material (ACBM). Based on similar sampling from similar buildings, the inspector also determined that the dusts are unlikely to contain more than one percent (1%) asbestos by weight, and therefore are not an asbestos-containing material (ACM).

3. Lead-Containing Materials

Lead-Testing
EHS-Alaska tested paint and other materials throughout the affected areas of the building using a Heuresis XRF lead paint analyzer. Lead in paints tested varied from a trace amount to 2.7 mg/cm^2. Lead in other materials tested varied from a trace amount to 0.4 mg/cm^2. Refer to the Lead Analyzer Test Results Table in Appendix C that identifies the surfaces tested, and the results. The Lead Test Locations are shown in the Drawings in Appendix D.

Paints
There were varying lead contents found in the paints, based on what surfaces they are on, with most surfaces containing little lead (but are still classified as lead-containing materials by OSHA). The highest levels of lead were found on structural members and miscellaneous steel, with lower levels on walls and other painted surfaces, and lowest levels on pre-finished materials.

Lead based paints (paint containing more than 1.0 mg/cm^2 of lead) were identified in the project on steel components such as structural steel beams and flashing. It is anticipated that other

components which are hidden, concealed, or otherwise not tested may be painted with lead-based paint. Lead was detected at very low levels in most of the painted wall and ceiling surfaces. XRF testing is not able to "prove" that "no" lead exists in the paint. Low levels of lead found by XRF testing does not mean that the paints are free of lead, the paints may contain lead. At least an initial exposure determination of potential worker exposures for all disturbance of lead-containing materials is required unless laboratory analysis shows that there is zero detectable lead in the materials being disturbed (which requires special analysis). However, these paints may not present a hazard to occupants or workers performing renovation or demolition if lead-safe work practices are followed.

Ceramic Wall Tile and Glazing
Only low concentrations of lead were found in the glazing of ceramic wall and floor tiles, as well as glazing of ceramic plumbing fixtures. The concentrations of lead in ceramic glazing compounds should not be compared to lead-based paint criteria, as the glazing is inherently less likely to cause lead to be present in dusts or on surfaces, where it can be ingested. Lead in ceramic tile glazing may not pose a hazard to occupants, or workers performing renovation or demolition if lead-safe work practices are followed. All ceramic tiles and fixtures in the facility should be assumed to contain lead.

Plastic Components
Only low concentrations of lead were found in plastic components, such as plastic window frames, and "Formica" plastic laminate panels. The concentrations of lead in plastic compounds should not be compared to lead-based paint criteria. Lead in plastic compounds may have surface deterioration and if not cleaned regularly, lead may be present in dusts or on surfaces, where it can be ingested. Lead in plastic compounds may not pose a hazard to occupants, or workers performing renovation or demolition if good work practices are followed.

Metallic Lead in Batteries, Pipe Solder and Flashing
Metallic lead items identified in the building included lead soldering at the sheet metal roof flashings, lead solder at copper piping, and poured lead sealants at bell and spigot joints of waste and vent piping and lead acid batteries in emergency lights and other battery backup equipment. If removed during renovation or demolition they should be recycled or disposed of as hazardous waste.

Settled and Concealed Dust
Lead dust wipes were collected throughout the facility in areas of heavy dust. Lead content varied from <93 µg/ft^2 to 49,000 µg/ft^2. The high levels found are not typical for dusts in areas that are not routinely cleaned in most buildings of this age and may present a hazard to workers if proper work practices and engineering controls are not used.

Lead Dusts

Portions of the dusts in the building were sampled for lead content. The following Table 3A lists the lead dust samples taken in March 2022, and the results of the laboratory analysis. Lead Dust field survey data sheets and laboratory reports are included as Appendix B. Refer to Appendix D for sample locations.

TABLE 3A

SAMPLE NUMBER	*DESCRIPTION*	*LOCATION*	*RESULTS LEAD/SF µg/ft²*
820-0322-LD01	10cm x 10cm horizontal wipe on metal, area = 0.1076ft²	Third Floor Mechanical Room 307: top of air handling unit-1. Photo 645 date:02/18	230 µg/ft²
820-0322-LD02	10cm x 10cm horizontal wipe on cloth, area = 0.1076ft²	Third Floor Mechanical Room 307: top of wrapped duct suppling mechanical equipment. Photo 644 date:02/18	1,000 µg/ft²
820-0322-LD03	10cm x 10cm horizontal wipe on metal, area = 0.1076ft²	Third Floor Supplies Room 302: top of light fixture above suspended ceiling. Photo 06 date:03/01	280 µg/ft²
820-0322-LD04	10cm x 10cm horizontal wipe on metal, area = 0.1076ft²	Second Floor Conference Room 213: top of rectangular duct above ceiling. Photo 14 date:03/01	230 µg/ft²
820-0322-LD05	10cm x 10cm horizontal wipe on metal, area = 0.1076ft²	Second Floor Women's Restroom 210: top of light fixture above suspended ceiling. Photo 23 date:03/01	790 µg/ft²
820-0322-LD06	10cm x 10cm horizontal wipe on metal, area = 0.1076ft²	Second Floor Fan Room 227B: on top of air handling unit-6. Photo 29 date:03/01	<93 µg/ft²
820-0322-LD07	10cm x 10cm horizontal wipe on metal, area = 0.1076ft²	First Floor IT/Storage Room 147: on top of rectangular duct above suspended ceiling. Photo 35 date:03/01	790 µg/ft²
820-0322-LD08	5.715cm x 20.32cm horizontal wipe on metal, area = 0.125ft²	First Floor Storage Room 148: on red iron beam above suspended ceiling. Photo 45 date:03/01	49,000 µg/ft²
820-0322-LD09	10cm x 10cm horizontal wipe on metal, area = 0.1076ft²	First Floor Vestibule Area 129: top of rectangular duct above suspended ceiling. Photo 64 date:03/01	880 µg/ft²

4. PCB-Containing Materials

Light Ballasts

Older fluorescent lights typically have PCB-containing ballasts. PCB-containing ballasts in fluorescent lights were banned in 1978, but manufacturers were allowed to use up existing stocks, and lights may have been reused from other facilities. The survey included examination of what were considered to be representative light fixtures, but not all fixtures were able to be accessed. All lights shall be inspected during removal or relocation. Unless ballasts were marked "No PCBs," they must be assumed to contain PCBs and must be disposed of as a hazardous waste when removed for disposal. Only fluorescent light fixtures marked "No PCBs"

were found in the building. The fluorescent light fixtures are unlikely to be disturbed by this project.

Older HID lights may have PCB-containing ballasts. Due to height restrictions and sealed ballast enclosures, the HID fixtures were not able to be accessed. All HID lights shall be inspected during removal or relocation. If ballasts are not marked "No PCBs," we suggest contacting the manufacturer of the lights to determine if the ballasts contain PCB's or assume that they contain PCB's and be disposed of as a hazardous waste. The HID light fixtures are unlikely to be disturbed by this project.

Bulk Products
Some older paints, sealants and other building materials may contain measurable amounts of PCB's. PCB use in paints and sealants was supposed to have been discontinued in 1979. The EPA does not require the sampling of bulk products, and no sampling of "Bulk Products" were authorized for this project.

5. Mercury-Containing Materials

Fluorescent Lamps
Fluorescent lamps use mercury to excite the phosphor crystals that coat the inside of the lamp. These lamps contain from 15 to 48 milligrams of mercury depending on their age and manufacturer. The Fluorescent light fixtures are unlikely to be disturbed by this project.

Thermostats
Older thermostats or other electrical switches that may contain mercury were noted in the building.

High Intensity Discharge Lamps
High Intensity Discharge (HID) lamps use mercury and sodium vapors in the lamp, and also typically have lead-containing solders at the bases. These lamps contain varying amounts of mercury depending on their age and manufacturer. The HID light fixtures are unlikely to be disturbed by this project.

All mercury-containing items being removed by this project are required to be disposed of as hazardous waste or recycled.

6. Other Hazardous Materials

Soil Contamination
The scope of work for EHS-Alaska, Inc. did not include investigation of soils for petroleum or other contaminations.

Heat Transfer Fluids
The existing heating is assumed to contain heat transfer fluids, including glycol or other boiler treatment chemicals. Any heat transfer fluids removed from the heating system shall be recovered and properly disposed of or recycled.

E. REGULATORY CONSTRAINTS

1. Asbestos-Containing Materials

The Federal Occupational Safety and Health Administrative (29 CFR 1926.1101) and the State of Alaska Department of Labor (8 AAC 61) have promulgated regulations requiring testing for airborne asbestos fibers; setting allowable exposure limits for workers potentially exposed to airborne asbestos fibers; establishing contamination controls, work practices, and medical surveillance; and setting worker certification and protection requirements. These regulations apply to all workplace activities involving asbestos-containing materials.

The EPA regulations, issued as Title 40 of the Code of Federal Regulations, Part 61 (40 CFR 61), Subpart M under the National Emission Standards for Hazardous Air Pollutants (NESHAP), established procedures for handling ACM during asbestos removal and waste disposal.

The EPA regulations require an owner (or the owner's contractor) to notify the EPA of asbestos removal operations and to establish responsibility for the removal, transportation, and disposal of asbestos-containing materials.

The disposal of asbestos waste is regulated by the EPA, the Alaska Department of Environmental Conservation, and the disposal site operator. Wastes being transported to the disposal site must be sealed in leak tight containers prior to disposal and must be accompanied by disposal permits and waste manifests.

2. Dusts with Asbestos

Settled and concealed dusts above ceilings, and at other areas that are not routinely cleaned (such as inside ducts and at roofs, etc.) are assumed to have measurable concentrations of asbestos. Based on sampling of similar settled and concealed dusts at similar buildings, those dusts are assumed to contain less than 1 percent asbestos. Normal settled and concealed dusts are distinct and treated differently from debris resulting from damaged asbestos-containing materials.

Background levels of asbestos in dusts for a particular location will depend on many factors, including whether or not asbestos occurs naturally in soils in the area.

Likely sources of asbestos in dusts include natural occurrences of asbestos

The types of asbestos found in settled and concealed dusts often contain actinolite, anthophyllite and tremolite forms of asbestos which are not commonly found in bulk samples taken of materials from buildings. Those forms of asbestos may come from natural occurrences of asbestos in an outside source, such as rock or ore deposits, which appear to be common in the Anchorage area.

Because the type of disturbance, concentration of asbestos in the dusts, cohesiveness of the dusts and room sizes will change, the airborne asbestos levels expected during the project will depend on the contractor’s means and methods of conducting the work. The mere presence of asbestos in the dusts does not necessarily imply that a “hazard” exists which would require the use of specially trained workers to “abate” the “hazard.” All dusts will likely be required to be removed from the areas where asbestos-containing materials are being removed (abatement areas) in order to achieve clearances. The dusts in the other areas are to be controlled so as to limit worker exposures and prevent contamination of occupied areas of the building.

There is no established correlation between settled or adhered dusts with measurable concentrations of asbestos and airborne concentrations. The definition in the OSHA regulations

of asbestos-containing materials as those materials that contain 1 percent or more asbestos by weight, apply to cohesive materials and not to dusts. The OSHA regulations are essentially "performance based," if workers are exposed above the permissible exposure limits, then all of the requirements in the regulations become effective.

3. Lead-Containing Materials

The EPA Standard 40 CFR 745, Lead-Based Paint Poisoning Prevention in Certain Residential Structures, defines lead–based paint hazards and regulates lead based paint activities in target housing and child-occupied facilities. The requirements of this regulation include training certification, pre-work notifications, work practice standards and record keeping. Areas in facilities built before 1978 that are typically classified as child occupied facilities may include but are not limited to: residential homes, day care facilities, preschools, kindergarten classrooms, restrooms, multipurpose rooms, cafeterias, gyms, libraries, and other areas routinely used by children under 6 years of age. New training requirements for Firms (Contractors) and Renovators (Workers) became effective on April 22, 2010. The building is not classified as a child occupied facility therefore the requirements of 40 CFR 745 do not apply.

The requirements apply to renovation, repair or painting activities that are NOT classified as "minor repair and maintenance activities" (as defined by the regulations), which take place in the *"child occupied"* portions of facilities. It is anticipated that only small amounts of lead based paint (if present) will be required to be disturbed for this renovation work, and the work would be classified as minor repair and maintenance activities, therefore most requirements of 40 CFR 745 do not apply.

Federal OSHA (29 CFR 1926.62) and the State of Alaska (8 AAC Chapter 61) have promulgated regulations that apply to all construction work where employees may be exposed to lead. The disturbance of any surfaces painted with lead-containing paint requires lead-trained personnel, personnel protective procedures, and air monitoring until exposure levels can be determined. If initial monitoring verifies that the work practices being used are not exposing workers, monitoring and protection procedures may be relaxed. Experience has shown that some paints in most buildings will contain low concentrations of lead and disturbance of those paints are still regulated under the OSHA lead standard, 29 CFR 1926.62. Low levels of lead found by XRF testing does not mean that the paints are free of lead, the paints may contain lead, and OSHA regulations apply during any disturbance of measurable amounts of lead present in paints.

Because the type of disturbance, quantity of lead dusts, cohesiveness of the dusts and room sizes will change, the airborne lead levels expected during the project will depend on the contractor's means and methods of conducting the work. The mere presence of lead in the dusts does not necessarily imply that a "hazard" exists which would require the use of specially trained workers to "abate" the "hazard." As a comparison, "clearance" lead dust concentrations established at the conclusion of a "lead abatement project" in child occupied facilities, are required to be <10.0 µg/ft^2 for floors, <100.0 µg/ft^2 for windowsills, and <400.0 µg/ft^2 for window troughs.

The dust sampled in the building contained from <93 µg/ft^2 to 49,000.0 µg/ft^2, however, none of the samples were taken at the floors, windowsills, or window troughs, but were taken in areas that were typically inaccessible, and are unlikely to be disturbed during normal occupancy. The highest concentration found was in the first floor storage room 148, on top of the structural steel beam that had heavy loadings of dust, presumably from past days when there were printing

presses operating. Clearance sampling meeting the requirements of 40 CFR 745 will be required if the work goes beyond the minimum amounts of disturbance of lead-based paints established by those regulations. No portions of Snowden Administrative Building would be classified as a "Child Occupied Facility."

There is no established correlation between settled or adhered lead dust concentrations and airborne concentrations. The OSHA regulations are essentially "performance based," if workers are exposed above the permissible exposure limits, then all of the requirements in the regulations become effective.

The EPA requires that actual construction or demolition debris that contains lead or lead-containing paint or other heavy metals be tested using the TCLP test to determine if the waste must be treated as hazardous waste. All federal, state, and local standards regulating lead and lead-containing wastes are required to be followed during the renovation or demolition of portions of this building. Lead-acid batteries and other batteries are classified by the EPA as Universal Wastes. The EPA encourages that all Universal Wastes be recycled in accordance with 40 CFR 273, or in the case of lead-acid batteries, in accordance with 40 CFR 266, subpart G.

If the TCLP tests done on the waste stream(s) that are produced by the contractor are found to be classified as hazardous wastes, then those waste stream(s) will have to be packaged for shipping and disposal in accordance with hazardous waste and transportation regulations. Because there are no hazardous waste landfills in Alaska, this report assumes that any hazardous waste disposal would take place in Seattle or elsewhere in the Pacific Northwest.

4. PCB-Containing Materials

The EPA has promulgated regulations (40 CFR Part 761) that cover the proper handling and disposal of PCB-containing materials. If any PCB-containing equipment is discovered and if they will be removed, those materials are required to be disposed of at fully permitted hazardous waste facilities. The EPA regulates liquid PCBs differently from non-liquid materials. Workers who remove or handle PCB-containing or PCB-contaminated materials or who transport or dispose of PCB wastes must be trained and certified in hazardous waste operations and emergency response (HAZWOPER) as required by 29 CFR 1910.120 and the State of Alaska Department of Labor (8 AAC 61). The Department of Transportation under 49 CFR Parts 100-199 regulates the marking, packaging, handling and transportation of hazardous materials. All federal, state, and local standards regulating PCBs and PCB waste must be followed during this project.

5. Mercury-Containing Materials

Thermostats and mercury-containing lamps are classified by the EPA as Universal Wastes. The EPA encourages that all Universal Wastes be recycled in accordance with 40 CFR 273. Mercury and mercury-containing products are considered hazardous waste if TCLP testing of the waste for mercury confirms the mercury content to be greater than the EPA criteria of 0.2 mg/l.

6. Other Hazardous Materials

Chemical Hazards
The EPA has promulgated regulations (40 CFR Parts 260 to 299 amongst others) that cover the proper handling and disposal of waste chemicals, including listed wastes, which are ignitable, corrosive, reactive, toxic, or an acute hazardous waste or wastes that exhibit the characteristics of toxicity. All construction workers who are required to remove or handle chemical hazards or to transport or dispose of chemical wastes shall be trained and certified as required by the U.S. Department of Labor (29 CFR 1910.120) and the State of Alaska Department of Labor (8 AAC 61). Transportation of chemical hazards are regulated by Department of Transportation regulations under 49 CFR Parts 171 to 178 amongst others.

Waste heat transfer fluids (such as used heating/cooling system glycol or other circulating heating/cooling fluids) are a potentially hazardous waste and are required to be TCLP tested prior to disposal to determine if the fluids are classified as hazardous or non-hazardous waste per the EPA's RCRA regulations governing hazardous wastes. According to a study performed by the University of Northern Iowa, standard TCLP analysis using ICP SW 6010 testing procedures commonly report levels of Arsenic and Selenium over regulatory thresholds due to interferences in the matrix. That report concluded that additional analysis should be performed to refute the presence of Arsenic or Selenium over the regulatory levels by either mass spectrometry using method SW 6020, or by graphite furnace using method SW 7060. Some heat transfer fluids may also contain potentially hazardous additives that modify the properties of the fluids for use in a particular system. It is recommended that the contractor consult with the persons responsible for maintaining the system to determine if any additives that may be potentially hazardous were used in the system to further determine disposal requirements.

F. RECOMMENDATIONS

1. Asbestos-Containing Materials

The asbestos-containing materials identified in the building are typically in intact condition and are classified as both friable and non-friable ACM. All asbestos-containing materials that will be disturbed by the planned renovation work are required to be removed by trained asbestos workers. If any asbestos-containing materials are found that will be disturbed by the planned renovations, they are required to be removed by trained asbestos workers. Refer to Section 02 82 33 Removal and Disposal of Asbestos Containing Materials.

2. Dusts with Asbestos

Dusts with measurable concentrations of asbestos are assumed to be present, but are not classified as asbestos-containing materials, or as debris from asbestos-containing materials. Workers disturbing dusts are required to have hazard communication training in accordance with OSHA regulations but are not required to receive 40 hours of training, which is required for asbestos workers. The contractor will need to choose means and methods to control worker exposures to airborne contaminants. At least an initial exposure assessment or data from previous air monitoring is needed to show that worker exposures are maintained below the OSHA permissible exposure limits (PELs). Refer to Section 01 35 45 Airborne Contaminant Control.

3. Lead-Containing Materials

Federal OSHA (29 CFR 1926.62) and the State of Alaska (8 AAC Chapter 61) have promulgated regulations that apply to all construction work where employees may be exposed to lead, including disturbance of paints with low concentrations of lead.

Worker exposure to lead may be able to be controlled below the OSHA permissible exposure limit if proper engineering controls and procedures are used during renovation. Lead is a potentially hazardous waste, and the EPA requires that all wastes that contains lead be tested to determine if they must be treated as hazardous waste. A TCLP test of the waste stream(s) produced by the Contractor's means and methods are required to be performed to determine if those wastes will be classified as hazardous or non-hazardous. Refer to Section 01 35 45 Airborne Contaminant Control and Section 02 83 33 Removal and Disposal of Materials Containing Lead.

4. PCB-Containing Materials

If any PCB-containing ballasts are discovered, and they are removed or replaced, they will need to be removed, handled, packaged, and disposed of in accordance with all regulations. Refer to Section 02 84 18 Removal and Disposal of Chemical Hazards.

5. Mercury-Containing Materials

If any mercury-containing materials are removed or replaced, they will need to be removed, handled, packaged and disposed of in accordance with all regulations. If mercury-containing lamps and thermostats are handled and disposed of in accordance with the Universal Waste Regulations, no TCLP test is required. If the Contractor chooses to perform a TCLP test of fluorescent lamps, the test shall be conducted in accordance with the requirements of ANSI/NEMA Standard Procedure for Fluorescent Lamp Sample Preparation and Toxicity Characteristic Leaching Procedure, C78.LL 1256-2003 or latest version. Refer to Section 02 84 18 Removal and Disposal of Chemical Hazards.

6. Other Hazardous Materials

Heat transfer fluids will need to be removed, handled, packaged and disposed of in accordance with all regulations. If any heat transfer fluids are removed or replaced, they will need to be removed, handled, packaged and disposed of in accordance with all regulations. Refer to Section 02 84 18 Removal and Disposal of Chemical Hazards.

G. LIMITATIONS

The conclusions and recommendations contained in this report are based upon professional opinions with regard to the subject matter. These opinions have been arrived at in accordance with currently accepted environmental consulting and engineering standards and practices and are subject to the following inherent limitations:

1. Accuracy of Information

The laboratory reports utilized in this assessment were provided by the accredited laboratories cited in this report. Although the conclusions, opinions, and recommendations are based in part, on such information, our services did not include the verification of accuracy or authenticity of such reports. Should such information provided be found to be inaccurate or unreliable,

EHS-Alaska, Inc. reserves the right to amend or revise its conclusions, opinions, and/or recommendations.

2. Site Conditions

This limited survey did not include investigation of the entire site and may not be valid outside the survey area. The intent of this survey was to identify common hazardous materials that may be disturbed during routine maintenance or renovations. This survey is not intended to be utilized as the sole design document for abatement. This survey was conducted while the site was occupied. All inspections were performed with furniture, equipment and/or stored items in place. The scope of work for this survey did not include identification of all potentially hazardous materials that may be present at this site and was limited to the scope of work agreed upon with our client. Although a concerted effort was made to identify those common hazardous materials likely to be affected by this project, some hazardous materials may have been hidden by furniture, equipment or stored items and may not have been identified. The survey investigated representative materials and items, such as lights and mechanical components. Variations may occur between materials and items that appear to be the same but are actually of different construction or materials. Other asbestos-containing or potentially hazardous materials may be present in the facilities that were concealed by structural members, walls, ceilings, or floor coverings, or in materials where testing was not conducted.

3. Changing Regulatory Constraints

The regulations concerning hazardous materials are constantly changing, including the interpretations of the regulations by the local and national regulating agencies. Should the regulations or their interpretation be changed from our current understanding, EHS-Alaska, Inc. reserves the right to amend or revise its conclusions, opinions, and/or recommendations.

THIS PAGE IS INTENTIONALLY LEFT BLANK

APPENDIX A

Asbestos Bulk Sample
Field Survey Data Sheets
and
Laboratory Reports

Field Data Sheets and Laboratory Reports

Refer to Summarized Results in this Report

Reports are Available for Review
Or Electronically Through the ACS Offices,

APPENDIX B

Dust Sampling for Lead
And Laboratory Reports

EHS ALASKA INCORPORATED

EHS-LDlaska, Inc.
11901 Business Blvd., Suite 208, Eagle River, AK 99577
(907) 694-1383 • (907) 694-1382 fax
e-mail • ehsak@ehs-LDlaska.com

PROJECT NO:	PROJECT NAME:	FACILITY:	COLLECTION DATE:
7903-01	Alaska Court System (ACS) Snowden Building HVAC	Snowden Building at 820 W 4th Avenue in Anchorage, Alaska	02/18/22 03/01/22

CHAIN OF CUSTODY RECORD

ANALYSIS REQUESTED:
- ☐ PLM BULK
- ☐ PLM DUST
- ☐ TEM BULK
- ☒ LEAD DUST
- ☐ LEAD TCLP
- ☐ LEAD PPM
- ☐ TEM MICROVAC DUST (ASTM 5756)

TYPE:	TURNAROUND:	DISPOSAL:	QUANTITY
☐ ASBESTOS ☒ LEAD	3 DAYS	NORMAL	11

COLLECTED BY (signature)

John Lamont
PRINTED NAME

T-30203-41066 / 20220011
CERT# / AHERA#

FedEx
SHIPPING METHOD

FedEx: 7761 9053 1810
COURIER (signature)
03/04/2022 1030 am
DATE/TIME

IATL
SELECTED LABORATORY

SAMPLES ACCEPTED BY

RECEIVED
DATE/TIME
03/9/22

ANALYST'S SIGNATURE

DATE MAR 7 2022

03/9/22

SPECIAL INSTRUCTIONS / COMMENTS:

LAB: RETURN A SIGNED COPY OF THIS FORM WITH THE FINAL REPORT TO EHS-LDLASKA, INC.

See sample location drawing for more detailed explanation of exact locations.

Ghost Wipe Lot 02C1 092519 Expires 0323

IATL - By

FIELD SURVEY DATA

EHS SAMPLE NO. / LAB ID NO	SAMPLE DESCRIPTION (COLOR, MATERIAL TYPE, LAYERS, FRIABILITY)	LOCATION/COMMENTS (INCLUDING PHOTO/XREF)	RESULTS FOR EHS-LDLASKA USE ONLY
820-0322-LD01 7379733	10cm x 10cm horizontal wipe on metal, area = 0.1076ft²	Third Floor Mechanical Room 307: top of air handling unit-1. Photo 645 date:02/18	230 µg/ft²
820-0322-LD02 7379734	10cm x 10cm horizontal wipe on cloth, area = 0.1076ft²	Third Floor Mechanical Room 307: top of wrapped duct suppling mechanical equipment. Photo 644 date:02/18	1000 µg/ft²
820-0322-LD03 7379735	10cm x 10cm horizontal wipe on metal, area = 0.1076ft²	Third Floor Supplies Room 302: top of light fixture above suspended ceiling. Photo 06 date:03/01	280 µg/ft²
820-0322-LD04 7379736	10cm x 10cm horizontal wipe on metal, area = 0.1076ft²	Second Floor Conference Room 213: top of rectangular duct above ceiling. Photo 14 date:03/01	230 µg/ft²
820-0322-LD05 7379737	10cm x 10cm horizontal wipe on metal, area = 0.1076ft²	Second Floor Women's Restroom 210: top of light fixture above suspended ceiling. Photo 23 date:03/01	790 µg/ft²
820-0322-LD06 7379738	10cm x 10cm horizontal wipe on metal, area = 0.1076ft²	Second Floor Fan Room 227B: on top of air handling unit-6. Photo 29 date:03/01	<93 µg/ft²
820-0322-LD07 7379739	10cm x 10cm horizontal wipe on metal, area = 0.1076ft²	First Floor IT/Storage Room 147: on top of rectangular duct above suspended ceiling. Photo 35 date:03/01	790 µg/ft²
820-0322-LD08 7379740	5.715cm x 20.32cm horizontal wipe on metal, area = 0.125ft²	First Floor Storage Room 148: on red iron beam above suspended ceiling. Photo 45 date:03/01	49,000 µg/ft²

EHS ALASKA INCORPORATED

EHS-LDlaska, Inc.
11901 Business Blvd., Suite 208, Eagle River, AK 99577
(907) 694-1383 • (907) 694-1382 fax
e-mail • ehsak@ehs-LDlaska.com

PROJECT NO:	PROJECT NAME:	FACILITY:	COLLECTION DATE:
7903-01	Alaska Court System (ACS) Snowden Building HVAC	Snowden Building at 820 W 4th Avenue in Anchorage, Alaska	02/18/22 03/01/22

FIELD SURVEY DATA

EHS SAMPLE NO. LAB ID NO	SAMPLE DESCRIPTION, (COLOR, MATERIAL TYPE, LAYERS, FRIABILITY)	LOCATION/COMMENTS (INCLUDING PHOTO/XREF)	RESULTS FOR EHS-LDLASKA USE ONLY
820-0322-LD09 7379741	10cm x 10cm horizontal wipe on metal, area = 0.1076ft²	First Floor Vestibule Area 129: top of rectangular duct above suspended ceiling. Photo 64 date:03/01	880 µg/ft²
820-0322-FB01 7379742	Field Blank	Wiped on hands	<10 µg/ft²
820-0322-FB02 7379743	Field Blank	Wiped on hands	<10 µg/ft²
END	**END**	**END**	

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: EHS Alaska Incorporated
11901 Business Blvd., Ste 208
Eagle River AK 99577

Client: EHS511

Report Date: 3/9/2022
Report No.: 655063 - Lead Wipe
Project: Alaska Court System (ACS) Snowden Bldg HVAC
Project No.: 7903-01

LEAD WIPE SAMPLE ANALYSIS SUMMARY

Lab No.: 7379733 **Client No.:** 820-0322-LD01	**Location:** 3rd Fl Mechanical Rm 307, Top Of Air Handling Unit-1	**Area:** 0.11 ft² **Result:** 230 µg/ft²
Lab No.: 7379734 **Client No.:** 820-0322-LD02	**Location:** 3rd Fl Mechanical Rm 307, Top Of Wrapped Duct Suppling Mechanical Equipment	**Area:** 0.11 ft² **Result:** 1000 µg/ft²
Lab No.: 7379735 **Client No.:** 820-0322-LD03	**Location:** 3rd Fl Supplies Rm 302, Top Of Light Fixture Above Suspended Ceiling	**Area:** 0.11 ft² **Result:** 280 µg/ft²
Lab No.: 7379736 **Client No.:** 820-0322-LD04	**Location:** 2nd Fl Conference Rm 213, Top Of Rectangular Duct Above Ceiling	**Area:** 0.11 ft² **Result:** 230 µg/ft²
Lab No.: 7379737 **Client No.:** 820-0322-LD05	**Location:** 2nd Flr Women's Restroom 210, Top Of Light Fixture Above Suspended Ceiling	**Area:** 0.11 ft² **Result:** 790 µg/ft²
Lab No.: 7379738 **Client No.:** 820-0322-LD06	**Location:** 2nd Fl Fan Rm 227B, On Top Of Air Handling Unit-6	**Area:** 0.11 ft² **Result:** <93 µg/ft²
Lab No.: 7379739 **Client No.:** 820-0322-LD07	**Location:** 1st Fl IT/Storage Rm 147, On Top Of Rectangular Duct Above Suspended Ceiling	**Area:** 0.11 ft² **Result:** 790 µg/ft²
Lab No.: 7379740 **Client No.:** 820-0322-LD08	**Location:** 1st Fl Storage Rm 148, On Red Iron Beam Above Suspended Ceiling	**Area:** 0.13 ft² **Result:** 49000 µg/ft²
Lab No.: 7379741 **Client No.:** 820-0322-LD09	**Location:** 1st Fl Vestibule Area 129, On Top Of Rectangular Duct Above Suspended Ceiling	**Area:** 0.11 ft² **Result:** 880 µg/ft²
Lab No.: 7379742 **Client No.:** 820-0322-LD10	**Location:** Field Blank	**Area:** Blank **Result:** <10 µg

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 3/7/2022
Date Analyzed: 03/09/2022
Signature: Chad Shaffer
Analyst: Chad Shaffer

Approved By: Frank Ehrenfeld
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: EHS Alaska Incorporated
11901 Business Blvd., Ste 208
Eagle River AK 99577

Client: EHS511

Report Date: 3/9/2022
Report No.: 655063 - Lead Wipe
Project: Alaska Court System (ACS) Snowden Bldg HVAC
Project No.: 7903-01

LEAD WIPE SAMPLE ANALYSIS SUMMARY

Lab No.: 7379743 **Location:** Field Blank **Area:** Blank
Client No.: 820-0322-LD11 **Result:** <10 µg

Please refer to the Appendix of this report for further information regarding your analysis.

Date Received: 3/7/2022
Date Analyzed: 03/09/2022
Signature: Chad Shaffer
Analyst: Chad Shaffer

Approved By: Frank Ehrenfeld
Frank E. Ehrenfeld, III
Laboratory Director

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client: EHS Alaska Incorporated
11901 Business Blvd., Ste 208
Eagle River AK 99577

Client: EHS511

Report Date: 3/9/2022
Report No.: 655063 - Lead Wipe
Project: Alaska Court System (ACS) Snowden Bldg HVAC
Project No.: 7903-01

Appendix to Analytical Report:

Customer Contact: Cali Swatlowski
Method: AAS - SW 846: 3050B: 7000B

This appendix seeks to promote greater understanding of any observations, exceptions, special instructions, or circumstances that the laboratory needs to communicate to the client concerning the above samples. The information below is used to help promote your ability to make the most informed decisions for you and your customers. Please note the following points of contact for any questions you may have.

iATL Customer Service: customerservice@iatl.com
iATL Office Manager: wchampion@iatl.com
iATL Account Representative: Semih Kocahasan
Sample Login Notes: See Batch Sheet Attached
Sample Matrix: Dust Wipes
Exceptions Noted: See Following Pages

General Terms, Warrants, Limits, Qualifiers:

General information about iATL capabilities and client/laboratory relationships and responsibilities are spelled out in iATL policies that are listed at www.iATL.com and in our Quality Assurance Manual per ISO 17025 standard requirements. The information therein is a representation of iATL definitions and policies for turnaround times, sample submittal, collection media, blank definitions, quantification issues and limit of detection, analytical methods and procedures, sub-contracting policies, results reporting options, fees, terms, and discounts, confidentiality, sample archival and disposal, and data interpretation.

iATL warrants the test results to be of a precision normal for the type and methodology employed for each sample submitted. iATL disclaims any other warrants, expressed or implied, including warranty of fitness for a particular purpose and warranty of merchantability. iATL accepts no legal responsibility for the purpose for which the client uses test results. Any analytical work performed must be governed by our Standard Terms and Conditions. Prices, methods and detection limits may be changed without notification. Please contact your Customer Service Representative for the most current information.

This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA LAP LLC, or any agency of local, state or province governments nor of any agency of the U.S. government.

Information Pertinent to this Report:

Analysis by AAS: SW 846: 3050B: 7000B, 2010

Certification:
- NATIONAL LEAD LABORATORY ACCREDITATION PROGRAM (NLLAP)
- AIHA-LAP, LLC No. 100188
- NYSDOH-ELAP No. 11021

Threshold Limits
-USEPA Dust Level Hazard Standards 3/08/2021
-Floor: 10 micrograms/ft^2
-Window Sills: 100micrograms/ft^2
-Window Well/Trough: 400micrograms/ft^2

This report meets the standards set forth in the EPA's National Lead Laboratory Accreditation Program (NLLAP) through the Laboratory Quality System Requirements (LQSR) Revision 3.0 November 5, 2007. All Environmental Lead Proficiency Analytical Testing (ELPAT) is through the AIHA-PAT established program.

iATL INTERNATIONAL
ASBESTOS TESTING LABORATORIES

9000 Commerce Parkway Suite B
Mt. Laurel, New Jersey 08054
Telephone: 856-231-9449
Email: customerservice@iatl.com

CERTIFICATE OF ANALYSIS

Client:	EHS Alaska Incorporated	Report Date:	3/9/2022
	11901 Business Blvd., Ste 208	Report No.:	655063 - Lead Wipe
	Eagle River AK 99577	Project:	Alaska Court System (ACS) Snowden Bldg HVAC
		Project No.:	7903-01
Client:	EHS511		

Regulatory limit varies by surface location (EPA/HUD guidelines). Unless otherwise stated, results assume one square foot sampled.

Method requires submittal of blanks.

Sample results are not corrected for contamination by field or analytical blanks.

All results are based on the samples as received at the lab. iATL assumes that appropriate sampling methods have been used and that the data upon which these results are based have been accurately supplied by the client.

Method Detection Limit (MDL) per EPA Method 40CFR Part 136 Appendix B. Reporting Limit (RL) based upon Lowest Standard Determined (LSD) in accordance with AIHA-ELLAP policies.

LSD= 0.2 ppm; MDL= 4.7 micrograms/ft^2; RL= 10.0 micrograms/ft^2; (based upon 1.0 square foot sampled).

The EPA 403 Final Rule (40 CFR 745.63) requires that all wipe samples of settled dust shall be collected using a wipe that meets ASTM E1792.

Disclaimers / Qualifiers:

There may be some samples in this project that have a "NOTE:" associated with a sample result. We use added disclaimers or qualifiers to inform the client about something that requires further explanation. Here is a complete list with highlighted disclaimers pertinent to this project. For a full explanation of these and other disclaimers, please inquire at customerservice@iatl.com.

NOTE: Incomplete digestion of wipe material may result in low recovery of lead. The EPA403 Final Rule (40 CFR 745.63) requires that all wipe samples of settled dust shall be collected using a wipe that meets ASTM E1792. Results for wipes not meeting ASTM E1792 are not recognized within the Accreditation Program.

< less than sign, signifies none-detected below the empirical value based upon sub-sampled mass. This is often below the Reporting Limit (see above).

APPENDIX C

Lead Analyzer Test Results

LEAD ANALYZER TEST RESULTS

Heuresis Pb200i, Serial No. 1770

NO.	SITE	INSPECTOR	FLOOR	ROOM	COMPONENT	SUBSTRATE	CONDITION	COLOR	DURATION	TIME	RESULTS		
											LBP	mg/cm^2	+/- ERROR
1	SNOWDEN	LAMONT	0	0	CALIBRATION	0	0	GREEN	5	3/01/22 09:58:59	NEGATIVE	0.7	0.2
2	SNOWDEN	LAMONT	0	0	CALIBRATION	0	0	GREEN	2	3/01/22 10:00:19	NEGATIVE	0.4	0.3
3	**SNOWDEN**	**LAMONT**	**0**	**0**	**CALIBRATION**	**0**	**0**	**GREEN**	**5**	**3/01/22 10:02:18**	**POSITIVE**	**1**	**0.2**
4	**SNOWDEN**	**LAMONT**	**0**	**0**	**CALIBRATION**	**0**	**0**	**GREEN**	**5**	**3/01/22 10:02:56**	**POSITIVE**	**1**	**0.2**
5	**SNOWDEN**	**LAMONT**	**0**	**0**	**CALIBRATION**	**0**	**0**	**GREEN**	**5**	**3/01/22 10:03:32**	**POSITIVE**	**1**	**0.2**
6	SNOWDEN	LAMONT	3	BOILER ROOM	DOOR FRAME	METAL	INTACT	WHITE	2	3/01/22 10:04:31	NEGATIVE	0.1	0.3
7	SNOWDEN	LAMONT	3	BOILER ROOM	DOOR TRIM	METAL	INTACT	BROWN	2	3/01/22 10:05:55	NEGATIVE	0.4	0.3
8	SNOWDEN	LAMONT	3	BOILER ROOM	ELECTRICAL PANEL	METAL	INTACT	GRAY	2	3/01/22 10:06:29	NEGATIVE	0.3	0.3
9	SNOWDEN	LAMONT	3	BOILER ROOM	WALL	CMU	FAIR	WHITE	2	3/01/22 10:07:45	NEGATIVE	-0.1	0.3
10	SNOWDEN	LAMONT	3	BOILER ROOM	FLOOR	CONCRETE	POOR	GRAY	2	3/01/22 10:08:25	NEGATIVE	0.3	0.3
11	SNOWDEN	LAMONT	3	BOILER ROOM	BOILER	METAL	INTACT	GRAY	2	3/01/22 10:09:08	NEGATIVE	0	0.3
12	SNOWDEN	LAMONT	3	BOILER ROOM	MECHANICAL EQUIP	METAL	INTACT	GRAY	2	3/01/22 10:10:04	NEGATIVE	0.1	0.3
13	SNOWDEN	LAMONT	3	BOILER ROOM	EQUIPMENT	METAL	INTACT	RED	2	3/01/22 10:10:50	NEGATIVE	0.3	0.3
14	SNOWDEN	LAMONT	3	BOILER ROOM	EQUIPMENT	METAL	INTACT	RED	2	3/01/22 10:13:10	NEGATIVE	0.5	0.3
15	SNOWDEN	LAMONT	3	BOILER ROOM	DOOR FRAME	METAL	INTACT	WHITE	2	3/01/22 10:14:05	NEGATIVE	0.2	0.3
16	SNOWDEN	LAMONT	3	BOILER ROOM	DOOR FRAME	WOOD	INTACT	BROWN	2	3/01/22 10:14:36	NEGATIVE	0.1	0.3
17	SNOWDEN	LAMONT	3	BOILER ROOM	MECHANICAL EQUIP	METAL	INTACT	GRAY	2	3/01/22 10:15:16	NEGATIVE	0.1	0.3
18	SNOWDEN	LAMONT	3	BOILER ROOM	ELECTRICAL PANEL	METAL	INTACT	GRAY	2	3/01/22 10:15:52	NEGATIVE	0.1	0.3
19	SNOWDEN	LAMONT	3	BOILER ROOM	FLOOR	CONCRETE	POOR	GRAY	2	3/01/22 10:17:02	NEGATIVE	0.2	0.3
20	SNOWDEN	LAMONT	3	BOILER ROOM	ELECTRICAL PANEL	METAL	INTACT	GRAY	2	3/01/22 10:18:13	NEGATIVE	0.1	0.3
21	SNOWDEN	LAMONT	3	BOILER ROOM	COLUMN	CONCRETE	FAIR	WHITE	2	3/01/22 10:18:51	NEGATIVE	0.4	0.3
22	SNOWDEN	LAMONT	3	BOILER ROOM	WALL	CMU	FAIR	WHITE	2	3/01/22 10:19:22	NEGATIVE	0.1	0.3
23	SNOWDEN	LAMONT	3	BATHROOM	TOILET	CERAMIC	INTACT	WHITE	2	3/01/22 10:20:35	NEGATIVE	0	0.3
24	SNOWDEN	LAMONT	3	BATHROOM	WALL	FRP	INTACT	WHITE	2	3/01/22 10:21:25	NEGATIVE	0.1	0.3
25	SNOWDEN	LAMONT	3	BATHROOM	CEILING	DRYWALL	INTACT	WHITE	2	3/01/22 10:23:16	NEGATIVE	0.1	0.3
26	SNOWDEN	LAMONT	3	BATHROOM	CEILING	DRYWALL	INTACT	WHITE	2	3/01/22 10:23:34	NEGATIVE	0.1	0.3
27	SNOWDEN	LAMONT	3	BATHROOM	COVE BASE	PLASTIC	INTACT	BLUE	2	3/01/22 10:24:16	NEGATIVE	0.2	0.3
28	SNOWDEN	LAMONT	3	BATHROOM	COUNTERTOP	FORMICA	INTACT	BLUE	2	3/01/22 10:25:07	NEGATIVE	0.2	0.3
29	SNOWDEN	LAMONT	3	BATHROOM	PARTITION	METAL	INTACT	BEIGE	2	3/01/22 10:26:13	NEGATIVE	0.1	0.3
30	SNOWDEN	LAMONT	3	BATHROOM	SINK	CERAMIC	INTACT	WHITE	2	3/01/22 10:27:00	NEGATIVE	-0.2	0.3
31	SNOWDEN	LAMONT	3	STAIRWAY	DOOR	METAL	INTACT	BEIGE	2	3/01/22 10:28:09	NEGATIVE	0.2	0.3
32	SNOWDEN	LAMONT	3	STAIRWAY	DOOR FRAME	METAL	INTACT	BEIGE	2	3/01/22 10:28:36	NEGATIVE	0.2	0.3
33	SNOWDEN	LAMONT	3	STAIRWAY	FLOOR	RUBBER	INTACT	GRAY	2	3/01/22 10:29:22	NEGATIVE	0.4	0.3
34	SNOWDEN	LAMONT	3	STAIRWAY	HAND RAIL	METAL	INTACT	WHITE	2	3/01/22 10:30:01	NEGATIVE	0.1	0.3
35	SNOWDEN	LAMONT	3	STAIRWAY	WALL	DRYWALL	INTACT	WHITE	2	3/01/22 10:30:43	NEGATIVE	0.2	0.3
36	SNOWDEN	LAMONT	3	STAIRWAY	WALL	DRYWALL	INTACT	WHITE	2	3/01/22 10:31:02	NEGATIVE	0.2	0.3
37	SNOWDEN	LAMONT	3	BOILER ROOM	BEAM	METAL	FAIR	RED	2	3/01/22 10:34:40	NEGATIVE	0.2	0.3
38	SNOWDEN	LAMONT	3	BOILER ROOM	PIPE	METAL	FAIR	RED	2	3/01/22 10:35:32	NEGATIVE	0.2	0.3
39	SNOWDEN	LAMONT	2	STAIRWAY	WALL	DRYWALL	INTACT	WHITE	2	3/01/22 11:02:02	NEGATIVE	0.2	0.3
40	SNOWDEN	LAMONT	2	STAIRWAY	HAND RAIL	METAL	INTACT	WHITE	2	3/01/22 11:03:06	NEGATIVE	0.2	0.3
41	SNOWDEN	LAMONT	2	STAIRWAY	RISER	RUBBER	INTACT	GRAY	2	3/01/22 11:03:48	NEGATIVE	0.1	0.3
42	SNOWDEN	LAMONT	2	STAIRWAY	DOOR FRAME	METAL	INTACT	WHITE	2	3/01/22 11:04:35	NEGATIVE	0.2	0.3
43	SNOWDEN	LAMONT	2	STAIRWAY	DOOR TRIM	METAL	INTACT	TAN	2	3/01/22 11:05:14	NEGATIVE	0.2	0.3
44	SNOWDEN	LAMONT	2	STAIRWAY	WALL	DRYWALL	INTACT	WHITE	2	3/01/22 11:06:23	NEGATIVE	0.2	0.3
45	SNOWDEN	LAMONT	2	LOBBY	WALL	DRYWALL	INTACT	WHITE	2	3/01/22 11:12:07	NEGATIVE	0.1	0.3
46	SNOWDEN	LAMONT	2	LOBBY	COUNTERTOP	FORMICA	INTACT	BEIGE	2	3/01/22 11:14:03	NEGATIVE	0.1	0.3
47	SNOWDEN	LAMONT	2	LOBBY	WINDOW FRAME	METAL	INTACT	BLACK	2	3/01/22 11:14:56	NEGATIVE	0.1	0.3

LEAD ANALYZER TEST RESULTS

NO.	SITE	INSPECTOR	FLOOR	ROOM	COMPONENT	SUBSTRATE	CONDITION	COLOR	DURATION	TIME	RESULTS		
											LBP	mg/cm^2	+/- ERROR
48	SNOWDEN	LAMONT	2	LOBBY	COLUMN	DRYWALL	INTACT	WHITE	2	3/01/22 11:15:31	NEGATIVE	0	0.3
49	SNOWDEN	LAMONT	2	LOBBY	DOOR TRIM	METAL	INTACT	WHITE	2	3/01/22 11:16:40	NEGATIVE	0.1	0.3
50	SNOWDEN	LAMONT	2	LOBBY	DOOR	METAL	INTACT	BLACK	2	3/01/22 11:17:43	NEGATIVE	0.4	0.3
51	SNOWDEN	LAMONT	2	LOBBY	WINDOW SILL	METAL	INTACT	WHITE	2	3/01/22 11:19:04	NEGATIVE	0.1	0.3
52	SNOWDEN	LAMONT	2	CORRIDOR	WINDOW CASING	METAL	INTACT	WHITE	2	3/01/22 11:22:06	NEGATIVE	0.1	0.3
53	SNOWDEN	LAMONT	2	CORRIDOR	COLUMN	DRYWALL	INTACT	WHITE	2	3/01/22 11:23:10	NEGATIVE	0.1	0.3
54	SNOWDEN	LAMONT	2	FAN ROOM	MECHANICAL EQUIP	METAL	INTACT	GRAY	2	3/01/22 11:24:48	NEGATIVE	0.2	0.3
55	SNOWDEN	LAMONT	2	FAN ROOM	ELECTRICAL PANEL	METAL	INTACT	GRAY	2	3/01/22 11:26:22	NEGATIVE	0.1	0.3
56	SNOWDEN	LAMONT	2	FAN ROOM	ELECTRICAL PANEL	METAL	INTACT	OFF-WHITE	2	3/01/22 11:26:53	NEGATIVE	0.2	0.3
57	SNOWDEN	LAMONT	2	FAN ROOM	DUCT	CLOTH	FAIR	OFF-WHITE	2	3/01/22 11:28:03	NEGATIVE	0.1	0.3
58	SNOWDEN	LAMONT	2	FAN ROOM	PAD	METAL	INTACT	GREEN	2	3/01/22 11:29:45	NEGATIVE	0.2	0.3
59	SNOWDEN	LAMONT	2	FAN ROOM	DOOR FRAME	METAL	INTACT	WHITE	2	3/01/22 11:31:17	NEGATIVE	0.2	0.3
60	SNOWDEN	LAMONT	2	FAN ROOM	DOOR	WOOD	INTACT	VARNISH	2	3/01/22 11:31:46	NEGATIVE	0	0.3
61	SNOWDEN	LAMONT	2	OFFICE	WALL	DRYWALL	INTACT	VARNISH	2	3/01/22 11:32:39	NEGATIVE	0.1	0.3
62	SNOWDEN	LAMONT	2	STORAGE	WALL	DRYWALL	INTACT	VARNISH	2	3/01/22 11:36:47	NEGATIVE	0.2	0.3
63	SNOWDEN	LAMONT	2	STORAGE	WALL	DRYWALL	INTACT	VARNISH	2	3/01/22 11:37:09	NEGATIVE	0.2	0.3
64	SNOWDEN	LAMONT	2	STORAGE	CONDUIT	METAL	INTACT	GRAY	2	3/01/22 11:37:53	NEGATIVE	0.1	0.3
65	SNOWDEN	LAMONT	2	KITCHEN	COUNTERTOP	FORMICA	INTACT	OFF-WHITE	2	3/01/22 11:44:06	NEGATIVE	0.3	0.3
66	SNOWDEN	LAMONT	2	KITCHEN	CABINET	FORMICA	INTACT	OFF-WHITE	2	3/01/22 11:44:52	NEGATIVE	0.2	0.3
67	SNOWDEN	LAMONT	2	KITCHEN	WALL	DRYWALL	INTACT	WHITE	2	3/01/22 11:45:45	NEGATIVE	0.2	0.3
68	SNOWDEN	LAMONT	2	HALL	DOOR FRAME	METAL	INTACT	WHITE	2	3/01/22 11:47:19	NEGATIVE	0.2	0.3
69	SNOWDEN	LAMONT	2	HALL	DOOR TRIM	METAL	INTACT	GRAY	2	3/01/22 11:47:50	NEGATIVE	0.1	0.3
70	SNOWDEN	LAMONT	2	HALL	DOOR FRAME	METAL	INTACT	BLACK	2	3/01/22 11:54:07	NEGATIVE	0.3	0.3
71	SNOWDEN	LAMONT	2	HALL	DOOR	WOOD	INTACT	VARNISH	2	3/01/22 11:54:42	NEGATIVE	0.1	0.3
72	SNOWDEN	LAMONT	2	HALL	WALL	VINYL	INTACT	WHITE	2	3/01/22 11:56:07	NEGATIVE	0.2	0.3
73	SNOWDEN	LAMONT	2	HALL	WINDOW CASING	WOOD	INTACT	WHITE	2	3/01/22 11:57:30	NEGATIVE	0.2	0.3
74	SNOWDEN	LAMONT	2	HALL	DOOR FRAME	WOOD	INTACT	WHITE	2	3/01/22 11:58:22	NEGATIVE	0.1	0.3
75	SNOWDEN	LAMONT	2	HALL	DOOR	WOOD	INTACT	WHITE	2	3/01/22 11:58:47	NEGATIVE	0	0.3
76	SNOWDEN	LAMONT	2	HALL	HAND RAIL	METAL	INTACT	WHITE	2	3/01/22 12:00:58	NEGATIVE	0	0.3
77	SNOWDEN	LAMONT	2	HALL	WALL	DRYWALL	INTACT	WHITE	2	3/01/22 12:03:45	NEGATIVE	0.1	0.3
78	SNOWDEN	LAMONT	2	HALL	WALL	DRYWALL	INTACT	YELLOW	2	3/01/22 12:04:26	NEGATIVE	0.2	0.3
79	SNOWDEN	LAMONT	2	OFFICE	RADIATOR	METAL	INTACT	OFF-WHITE	2	3/01/22 12:05:28	NEGATIVE	0.1	0.3
80	SNOWDEN	LAMONT	2	OFFICE	WINDOW FRAME	METAL	INTACT	BROWN	2	3/01/22 12:06:05	NEGATIVE	0	0.3
81	SNOWDEN	LAMONT	2	OFFICE	WALL	DRYWALL	INTACT	BEIGE	2	3/01/22 12:07:08	NEGATIVE	0.2	0.3
82	SNOWDEN	LAMONT	2	OFFICE	RADIATOR	METAL	INTACT	BLACK	2	3/01/22 12:08:00	NEGATIVE	0.1	0.3
83	SNOWDEN	LAMONT	2	OFFICE	WINDOW FRAME	WOOD	INTACT	BEIGE	2	3/01/22 12:08:53	NEGATIVE	0.1	0.3
84	SNOWDEN	LAMONT	2	HALL	DOOR FRAME	METAL	INTACT	OFF-WHITE	2	3/01/22 12:10:34	NEGATIVE	0.1	0.3
85	SNOWDEN	LAMONT	2	HALL	DOOR	METAL	INTACT	OFF-WHITE	2	3/01/22 12:10:58	NEGATIVE	0.1	0.3
86	SNOWDEN	LAMONT	2	HALL	HAND RAIL	METAL	INTACT	OFF-WHITE	2	3/01/22 12:11:47	NEGATIVE	0.1	0.3
87	SNOWDEN	LAMONT	2	EXTERIOR	WALL	CMU	INTACT	OFF-WHITE	2	3/01/22 12:12:36	NEGATIVE	0.2	0.3
88	SNOWDEN	LAMONT	2	CORRIDOR	WALL	DRYWALL	INTACT	WHITE	2	3/01/22 12:13:49	NEGATIVE	0.2	0.3
89	SNOWDEN	LAMONT	2	OFFICE	PARTITION	METAL	INTACT	WHITE	2	3/01/22 12:15:21	NEGATIVE	0.4	0.3
90	SNOWDEN	LAMONT	2	OFFICE	WINDOW FRAME	FORMICA	INTACT	WHITE	2	3/01/22 12:17:14	NEGATIVE	0.2	0.3
91	SNOWDEN	LAMONT	2	OFFICE	WINDOW FRAME	METAL	INTACT	BLACK	2	3/01/22 12:17:44	NEGATIVE	0.1	0.3
92	SNOWDEN	LAMONT	2	OFFICE	RADIATOR	METAL	INTACT	OFF-WHITE	2	3/01/22 12:18:23	NEGATIVE	0.1	0.3
93	SNOWDEN	LAMONT	2	CORRIDOR	MECHANICAL EQUIP	METAL	INTACT	BEIGE	2	3/01/22 12:19:26	NEGATIVE	0	0.3
94	SNOWDEN	LAMONT	2	CORRIDOR	MECHANICAL EQUIP	METAL	INTACT	BEIGE	2	3/01/22 12:30:20	NEGATIVE	0.1	0.3
95	SNOWDEN	LAMONT	2	MEETING ROOM	MECHANICAL EQUIP	WOOD	INTACT	DK BROWN	2	3/01/22 12:33:31	NEGATIVE	0.2	0.3

LEAD ANALYZER TEST RESULTS

NO.	SITE	INSPECTOR	FLOOR	ROOM	COMPONENT	SUBSTRATE	CONDITION	COLOR	DURATION	TIME	RESULTS		
											LBP	mg/cm^2	+/- ERROR
96	SNOWDEN	LAMONT	2	MEETING ROOM	DOOR TRIM	METAL	INTACT	DK BROWN	2	3/01/22 12:34:26	NEGATIVE	0.1	0.3
97	SNOWDEN	LAMONT	2	MEETING ROOM	WALL BOARD	WOOD	INTACT	DK BROWN	2	3/01/22 12:35:12	NEGATIVE	0	0.3
98	SNOWDEN	LAMONT	2	BATHROOM	WALL	DRYWALL	INTACT	WHITE	2	3/01/22 12:57:40	NEGATIVE	0.1	0.3
99	SNOWDEN	LAMONT	2	BATHROOM	WALL	PLASTIC	INTACT	GRAY	2	3/01/22 12:58:44	NEGATIVE	0.3	0.3
100	SNOWDEN	LAMONT	2	BATHROOM	FLOOR	CERAMIC	INTACT	OFF-WHITE	2	3/01/22 12:59:40	NEGATIVE	0.2	0.3
101	SNOWDEN	LAMONT	2	BATHROOM	TOILET	CERAMIC	INTACT	WHITE	2	3/01/22 13:00:28	NEGATIVE	0	0.3
102	SNOWDEN	LAMONT	2	BATHROOM	SINK	CERAMIC	INTACT	WHITE	2	3/01/22 13:01:10	NEGATIVE	-0.3	0.3
103	SNOWDEN	LAMONT	2	BATHROOM	COUNTERTOP	FORMICA	INTACT	BLUE	2	3/01/22 13:02:00	NEGATIVE	0.3	0.3
104	SNOWDEN	LAMONT	2	CORRIDOR	WALL	DRYWALL	INTACT	WHITE	2	3/01/22 13:03:17	NEGATIVE	0.2	0.3
105	SNOWDEN	LAMONT	2	CORRIDOR	WALL	DRYWALL	INTACT	WHITE	2	3/01/22 13:05:07	NEGATIVE	0.2	0.3
106	SNOWDEN	LAMONT	2	CORRIDOR	HAND RAIL	METAL	INTACT	WHITE	2	3/01/22 13:06:07	NEGATIVE	0.1	0.3
107	SNOWDEN	LAMONT	2	FAN ROOM	MECHANICAL EQUIP	METAL	INTACT	BEIGE	2	3/01/22 13:25:39	NEGATIVE	0.2	0.3
108	SNOWDEN	LAMONT	2	FAN ROOM	MECHANICAL EQUIP	METAL	INTACT	GRAY	2	3/01/22 13:26:15	NEGATIVE	0.1	0.3
109	SNOWDEN	LAMONT	1	STAIRWAY	WALL	DRYWALL	INTACT	WHITE	2	3/01/22 13:35:41	NEGATIVE	0.1	0.3
110	SNOWDEN	LAMONT	1	STAIRWAY	HAND RAIL	METAL	INTACT	WHITE	2	3/01/22 13:36:20	NEGATIVE	0	0.3
111	SNOWDEN	LAMONT	1	STAIRWAY	RISER	WOOD	INTACT	WHITE	2	3/01/22 13:36:51	NEGATIVE	0.1	0.3
112	SNOWDEN	LAMONT	1	STAIRWAY	RAILING	WOOD	INTACT	VARNISH	2	3/01/22 13:37:46	NEGATIVE	0.2	0.3
113	SNOWDEN	LAMONT	1	UTILITY	WALL	CMU	INTACT	WHITE	2	3/01/22 13:41:37	NEGATIVE	0.3	0.3
114	SNOWDEN	LAMONT	1	UTILITY	WALL	CMU	INTACT	WHITE	2	3/01/22 13:41:55	NEGATIVE	0.3	0.3
115	SNOWDEN	LAMONT	1	UTILITY	WALL	CMU	INTACT	WHITE	2	3/01/22 13:42:24	NEGATIVE	0.1	0.3
116	SNOWDEN	LAMONT	1	UTILITY	WALL	CMU	INTACT	WHITE	2	3/01/22 13:42:47	NEGATIVE	0.1	0.3
117	SNOWDEN	LAMONT	1	UTILITY	DOOR FRAME	METAL	INTACT	WHITE	5	3/01/22 13:43:24	NEGATIVE	0.7	0.2
118	SNOWDEN	LAMONT	1	UTILITY	DOOR	METAL	INTACT	WHITE	2	3/01/22 13:44:04	NEGATIVE	0.1	0.3
119	SNOWDEN	LAMONT	1	UTILITY	EQUIPMENT	METAL	INTACT	WHITE	2	3/01/22 13:44:45	NEGATIVE	0.1	0.3
120	SNOWDEN	LAMONT	1	UTILITY	EQUIPMENT	METAL	INTACT	GRAY	2	3/01/22 13:45:16	NEGATIVE	0.1	0.3
121	SNOWDEN	LAMONT	1	UTILITY	EQUIPMENT	METAL	INTACT	RED	2	3/01/22 13:49:56	NEGATIVE	0.1	0.3
122	SNOWDEN	LAMONT	1	UTILITY	ELECTRICAL PANEL	METAL	INTACT	GRAY	2	3/01/22 13:50:50	NEGATIVE	0.1	0.3
123	SNOWDEN	LAMONT	1	UTILITY	ELECTRICAL PANEL	METAL	INTACT	GRAY	2	3/01/22 13:51:20	NEGATIVE	0.1	0.3
124	SNOWDEN	LAMONT	1	GARAGE	WALL	CMU	INTACT	WHITE	2	3/01/22 13:52:28	NEGATIVE	0.1	0.3
125	SNOWDEN	LAMONT	1	GARAGE	WALL	CMU	INTACT	WHITE	2	3/01/22 13:52:47	NEGATIVE	0.2	0.3
126	SNOWDEN	LAMONT	1	GARAGE	ELECTRICAL PANEL	METAL	INTACT	GRAY	2	3/01/22 13:53:56	NEGATIVE	0.1	0.3
127	SNOWDEN	LAMONT	1	HALL	FLOOR	CERAMIC	FAIR	OFF-WHITE	2	3/01/22 13:55:03	NEGATIVE	0.2	0.3
128	SNOWDEN	LAMONT	1	HALL	FLOOR	CERAMIC	FAIR	WHITE	2	3/01/22 13:55:36	NEGATIVE	-0.2	0.3
129	SNOWDEN	LAMONT	1	HALL	SINK	CERAMIC	INTACT	WHITE	2	3/01/22 13:56:07	NEGATIVE	0.1	0.3
130	SNOWDEN	LAMONT	1	HALL	COUNTERTOP	FORMICA	INTACT	BLUE	2	3/01/22 13:56:46	NEGATIVE	0.2	0.3
131	SNOWDEN	LAMONT	1	CEILING SPACE	WALL	CONCRETE	INTACT	BLACK	2	3/01/22 14:01:45	NEGATIVE	0.3	0.3
132	SNOWDEN	LAMONT	1	CEILING SPACE	WALL	DRYWALL	INTACT	WHITE	2	3/01/22 14:02:56	NEGATIVE	0.2	0.3
133	SNOWDEN	LAMONT	1	STAIRWAY	WALL	DRYWALL	INTACT	WHITE	2	3/01/22 14:06:18	NEGATIVE	0.1	0.3
134	SNOWDEN	LAMONT	1	STAIRWAY	RADIATOR	METAL	INTACT	WHITE	2	3/01/22 14:06:58	NEGATIVE	0.1	0.3
135	SNOWDEN	LAMONT	1	STAIRWAY	DOOR FRAME	METAL	INTACT	BEIGE	2	3/01/22 14:07:37	NEGATIVE	0.1	0.3
136	SNOWDEN	LAMONT	1	STAIRWAY	DOOR	METAL	INTACT	BEIGE	2	3/01/22 14:08:00	NEGATIVE	0.1	0.3
137	SNOWDEN	LAMONT	1	STAIRWAY	COVE BASE	METAL	INTACT	GRAY	2	3/01/22 14:08:46	NEGATIVE	0.1	0.3
138	**SNOWDEN**	**LAMONT**	**1**	**CEILING SPACE**	**BEAM**	**METAL**	**FAIR**	**TAN**	**2**	**3/01/22 14:12:37**	**POSITIVE**	**2.5**	**0.3**
139	SNOWDEN	LAMONT	1	CEILING SPACE	CEILING	PLASTER	POOR	TAN	2	3/01/22 14:13:19	NEGATIVE	0.1	0.3
140	SNOWDEN	LAMONT	1	CEILING SPACE	COLUMN	METAL	FAIR	RED	5	3/01/22 14:16:34	NEGATIVE	0.9	0.2
141	SNOWDEN	LAMONT	1	STORAGE	ELECTRICAL PANEL	METAL	INTACT	WHITE	2	3/01/22 14:19:39	NEGATIVE	0.1	0.3
142	SNOWDEN	LAMONT	1	STORAGE	ELECTRICAL PANEL	METAL	INTACT	WHITE	2	3/01/22 14:21:46	NEGATIVE	0.1	0.3
143	SNOWDEN	LAMONT	1	STORAGE	ELECTRICAL PANEL	METAL	INTACT	WHITE	2	3/01/22 14:22:56	NEGATIVE	0.1	0.3

LEAD ANALYZER TEST RESULTS

NO.	SITE	INSPECTOR	FLOOR	ROOM	COMPONENT	SUBSTRATE	CONDITION	COLOR	DURATION	TIME	RESULTS		
											LBP	mg/cm^2	+/- ERROR
144	SNOWDEN	LAMONT	1	STORAGE	ELECTRICAL PANEL	METAL	INTACT	WHITE	2	3/01/22 14:23:19	NEGATIVE	0.1	0.3
145	SNOWDEN	LAMONT	1	STORAGE	ELECTRICAL PANEL	METAL	INTACT	WHITE	2	3/01/22 14:24:44	NEGATIVE	0.2	0.3
146	SNOWDEN	LAMONT	1	STORAGE	ELECTRICAL PANEL	METAL	INTACT	WHITE	2	3/01/22 14:25:34	NEGATIVE	0.3	0.3
147	SNOWDEN	LAMONT	1	STORAGE	ELECTRICAL PANEL	METAL	INTACT	WHITE	2	3/01/22 14:26:41	NEGATIVE	0.2	0.3
148	SNOWDEN	LAMONT	1	STORAGE	ELECTRICAL PANEL	METAL	INTACT	WHITE	2	3/01/22 14:28:02	NEGATIVE	0.1	0.3
149	SNOWDEN	LAMONT	1	CORRIDOR	ELECTRICAL PANEL	METAL	INTACT	GRAY	2	3/01/22 14:32:05	NEGATIVE	0.1	0.3
150	SNOWDEN	LAMONT	1	CORRIDOR	ELECTRICAL PANEL	METAL	INTACT	LT BROWN	2	3/01/22 14:33:23	NEGATIVE	0.1	0.3
151	SNOWDEN	LAMONT	1	OFFICE	EQUIPMENT	METAL	INTACT	GRAY	2	3/01/22 14:36:39	NEGATIVE	0.1	0.3
152	SNOWDEN	LAMONT	1	OFFICE	EQUIPMENT	METAL	INTACT	GRAY	2	3/01/22 14:37:02	NEGATIVE	0.1	0.3
153	SNOWDEN	LAMONT	1	OFFICE	EQUIPMENT	METAL	INTACT	GRAY	2	3/01/22 14:37:32	NEGATIVE	0.1	0.3
154	SNOWDEN	LAMONT	1	OFFICE	WALL	DRYWALL	INTACT	GRAY	2	3/01/22 14:40:42	NEGATIVE	0.2	0.3
155	SNOWDEN	LAMONT	1	OFFICE	FLOOR TILE	CERAMIC	INTACT	WHITE	2	3/01/22 14:42:40	NEGATIVE	0.3	0.3
156	SNOWDEN	LAMONT	1	OFFICE	RADIATOR	METAL	INTACT	WHITE	2	3/01/22 14:44:12	NEGATIVE	0.1	0.3
157	**SNOWDEN**	**LAMONT**	**1**	**STORAGE**	**BEAM**	**METAL**	**FAIR**	**RED**	**2**	**3/01/22 14:48:10**	**POSITIVE**	**2.7**	**0.3**
158	SNOWDEN	LAMONT	1	STORAGE	CEILING	PLASTER	INTACT	OFF-WHITE	2	3/01/22 15:24:31	NEGATIVE	0.3	0.3
159	SNOWDEN	LAMONT	1	STORAGE	ELECTRICAL PANEL	METAL	INTACT	GRAY	2	3/01/22 15:26:15	NEGATIVE	0.1	0.3
160	SNOWDEN	LAMONT	1	STORAGE	WALL	DRYWALL	INTACT	GRAY	2	3/01/22 15:26:49	NEGATIVE	0.2	0.3
161	SNOWDEN	LAMONT	1	UTILIDOR	DOOR	METAL	INTACT	GRAY	2	3/01/22 15:28:25	NEGATIVE	0.1	0.3
162	SNOWDEN	LAMONT	1	UTILIDOR	DOOR	METAL	INTACT	GRAY	2	3/01/22 15:28:46	NEGATIVE	0.1	0.3
163	SNOWDEN	LAMONT	1	UTILIDOR	RADIATOR	METAL	INTACT	GRAY	2	3/01/22 15:29:30	NEGATIVE	0.2	0.3
164	SNOWDEN	LAMONT	1	EXTERIOR	BEAM	METAL	INTACT	YELLOW	2	3/01/22 15:30:38	NEGATIVE	0.2	0.3
165	SNOWDEN	LAMONT	1	OFFICE	ELECTRICAL PANEL	METAL	INTACT	GRAY	2	3/01/22 15:32:40	NEGATIVE	0.4	0.3
166	SNOWDEN	LAMONT	1	MEETING ROOM	WALL	PLASTER	INTACT	OFF-WHITE	2	3/01/22 15:51:35	NEGATIVE	0.2	0.3
167	SNOWDEN	LAMONT	1	MEETING ROOM	WALL	PLASTER	INTACT	OFF-WHITE	2	3/01/22 15:52:17	NEGATIVE	0.1	0.3
168	SNOWDEN	LAMONT	1	MEETING ROOM	CABINET	VINYL	INTACT	OFF-WHITE	2	3/01/22 15:53:33	NEGATIVE	0.1	0.3
169	SNOWDEN	LAMONT	1	MEETING ROOM	COUNTERTOP	FORMICA	INTACT	BEIGE	2	3/01/22 15:54:15	NEGATIVE	0.3	0.3
170	SNOWDEN	LAMONT	1	MEETING ROOM	WALL	DRYWALL	INTACT	OFF-WHITE	2	3/01/22 15:55:49	NEGATIVE	0.1	0.3
171	SNOWDEN	LAMONT	1	MEETING ROOM	WALL	DRYWALL	INTACT	OFF-WHITE	2	3/01/22 15:56:30	NEGATIVE	0.2	0.3
172	SNOWDEN	LAMONT	1	LOBBY	WALL	DRYWALL	INTACT	OFF-WHITE	2	3/01/22 15:57:50	NEGATIVE	0.2	0.3
173	SNOWDEN	LAMONT	1	OFFICE	WALL	DRYWALL	INTACT	OFF-WHITE	2	3/01/22 15:58:27	NEGATIVE	0.2	0.3
174	SNOWDEN	LAMONT	1	OFFICE	WINDOW SILL	METAL	INTACT	BLACK	2	3/01/22 15:59:04	NEGATIVE	0.1	0.3
175	SNOWDEN	LAMONT	1	OFFICE	RADIATOR	METAL	INTACT	WHITE	2	3/01/22 16:00:11	NEGATIVE	0.2	0.3
176	SNOWDEN	LAMONT	1	CEILING SPACE	WALL	CONCRETE	INTACT	BLACK	2	3/01/22 16:02:47	NEGATIVE	0.2	0.3
177	SNOWDEN	LAMONT	1	CEILING SPACE	WALL	PLASTER	INTACT	TAN	2	3/01/22 16:03:59	NEGATIVE	0.2	0.3
178	SNOWDEN	LAMONT	1	CEILING SPACE	WALL	CONCRETE	INTACT	WHITE	2	3/01/22 16:06:35	NEGATIVE	0.3	0.3
179	SNOWDEN	LAMONT	1	OFFICE	WALL	DRYWALL	INTACT	WHITE	2	3/01/22 16:07:32	NEGATIVE	0.2	0.3
180	SNOWDEN	LAMONT	1	EXTERIOR	FLASHING	METAL	INTACT	BEIGE	2	3/01/22 16:11:27	NEGATIVE	0.2	0.3
181	SNOWDEN	LAMONT	1	EXTERIOR	LADDER	METAL	FAIR	BEIGE	2	3/01/22 16:11:59	NEGATIVE	0.2	0.3
182	SNOWDEN	LAMONT	1	EXTERIOR	ELECTRICAL PANEL	METAL	INTACT	GRAY	2	3/01/22 16:12:44	NEGATIVE	0.1	0.3
183	SNOWDEN	LAMONT	1	EXTERIOR	WALL	CONCRETE	INTACT	BEIGE	2	3/01/22 16:13:20	NEGATIVE	0	0.3
184	SNOWDEN	LAMONT	1	EXTERIOR	MECHANICAL EQUIP	METAL	INTACT	BEIGE	2	3/01/22 16:14:42	NEGATIVE	0.1	0.3
185	SNOWDEN	LAMONT	1	EXTERIOR	FLASHING	METAL	INTACT	BLUE	2	3/01/22 16:15:24	NEGATIVE	0.3	0.3
186	SNOWDEN	LAMONT	1	EXTERIOR	FLASHING	METAL	INTACT	BLUE	2	3/01/22 16:16:42	NEGATIVE	0.2	0.3
187	**SNOWDEN**	**LAMONT**	**1**	**EXTERIOR**	**FLASHING**	**METAL**	**INTACT**	**BLUE**	**5**	**3/01/22 16:18:42**	**POSITIVE**	**1.1**	**0.2**
188	**SNOWDEN**	**LAMONT**	**0**	**0**	**CALIBRATION**	**0**	**0**	**0**	**5**	**3/01/22 16:19:28**	**POSITIVE**	**1.1**	**0.2**
189	**SNOWDEN**	**LAMONT**	**0**	**0**	**CALIBRATION**	**0**	**0**	**0**	**5**	**3/01/22 16:20:02**	**POSITIVE**	**1.1**	**0.2**
190	**SNOWDEN**	**LAMONT**	**0**	**0**	**CALIBRATION**	**0**	**0**	**0**	**5**	**3/01/22 16:20:34**	**POSITIVE**	**1**	**0.2**

LEAD ANALYZER TEST RESULTS

NO.	SITE	INSPECTOR	FLOOR	ROOM	COMPONENT	SUBSTRATE	CONDITION	COLOR	DURATION	TIME	RESULTS		
											LBP	mg/cm^2	+/- ERROR

Table Heading Descriptions:

Duration: This is the nominal time in "source" seconds that each sample was analyzed.

LBP: Results are shown as positive (POS $\geq$ 1.0 mg/cm^2) or negative (NEG < 1.0 mg/cm^2). Positive results are shown in bold print.

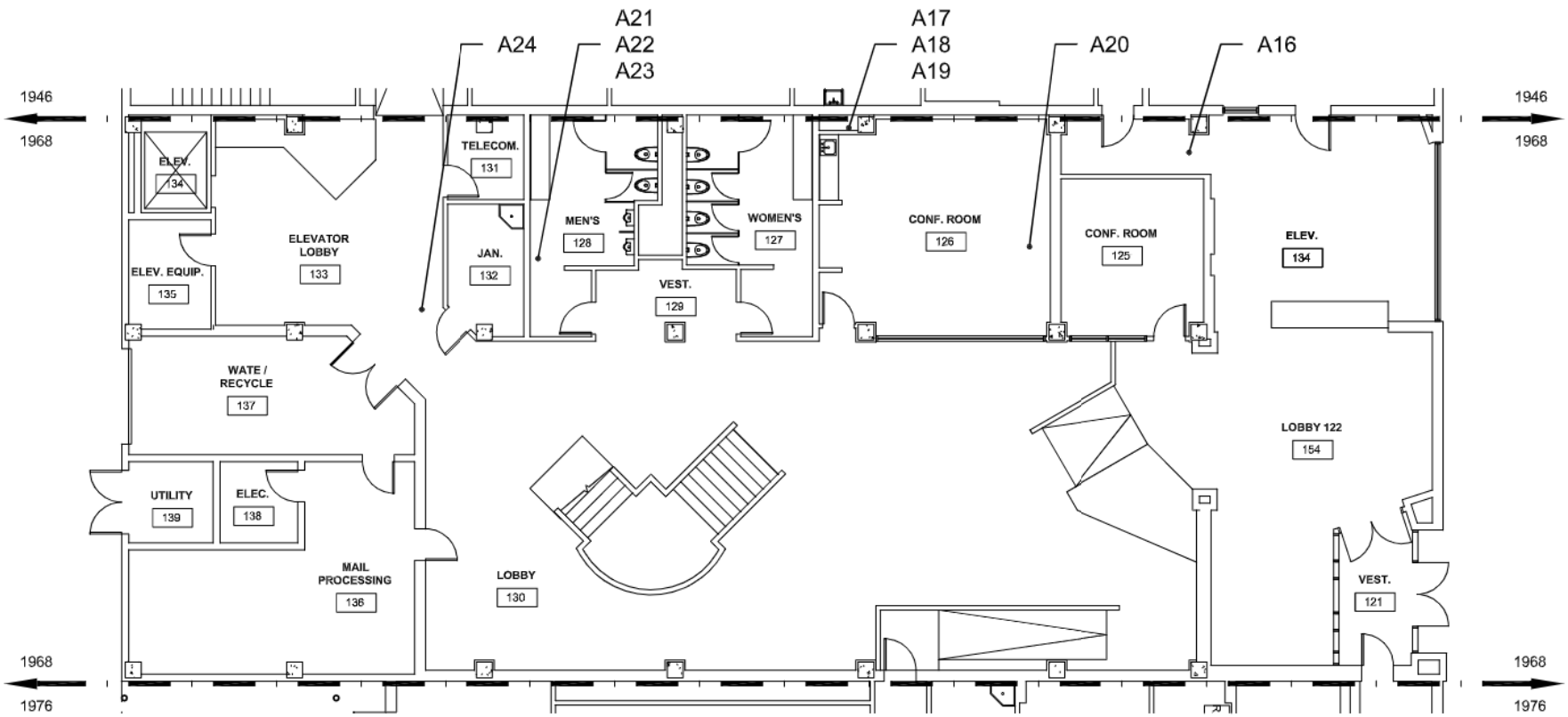
mg/cm2: This is the testing results produced by the Heuresis Pb200i instrument in milligrams of lead per square centimeter (mg/cm^2). The EPA defines lead based paint as paint containing lead at 1.0 mg/cm^2 or greater. A negative number is a result of an internal computation made by the instrument and should be interpreted as zero. Even though paint may be termed negative (less than 1.0 mg/cm^2) by EPA definition, disturbance of the paint may still be regulated by OSHA under 29 CFR 1926.62. Where lead is present at any level, appropriate engineering controls, work practices and personal protective equipment should be used until a negative exposure assessment can be determined. <LOD indicates that the lead present was less than the limits of detection of the instrument (very little or no lead present).

VOID: This indicates that the test was intentionally terminated by the operator due to operator error (e.g. - operator moved analyzer while testing).

Substrate: Where ceramic is shown as a substrate, lead content is typically from the glazing on the tile unless the tile is painted.

APPENDIX D

Drawings of Sample Locations



1
C-1

FIRST FLOOR LOBBY AREA
NTS

NOT IN SCOPE

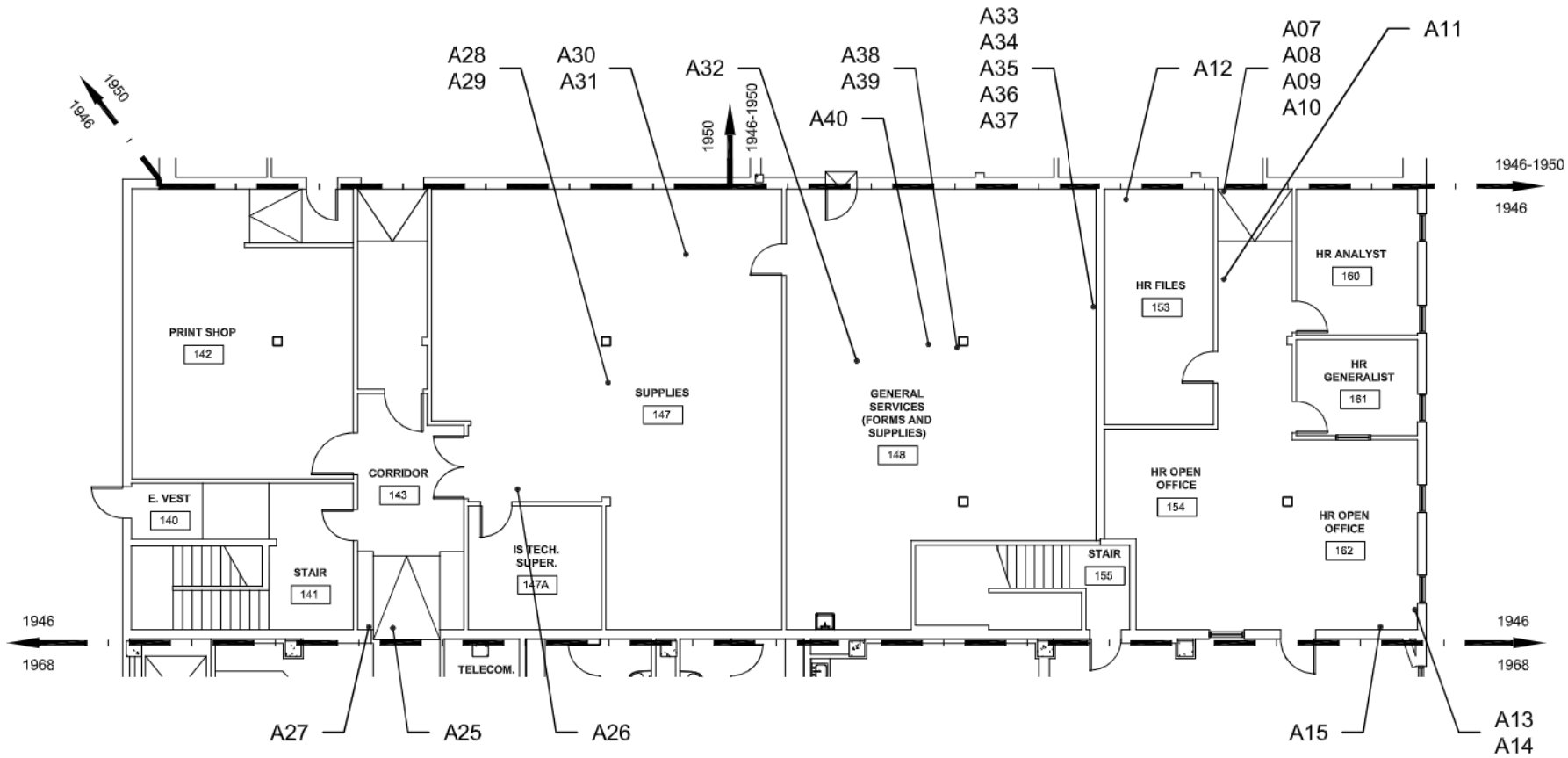
LEGEND

AXX ASBESTOS TEST LOCATION

AXX LAB TEST RESULTS POSITIVE FOR ASBESTOS

REFER TO TESTING SUMMARY IN REPORT FOR FULL DETAILS. ALL SAMPLES HAVE 820-0222- PREFIX.

ALASKA COURT SYSTEM	SNOWDEN BUILDING 820 W 4TH AVE, ANCHORAGE ASBESTOS SAMPLE LOCATIONS	EHS ALASKA INCORPORATED ENGINEERING, HEALTH & SAFETY CONSULTANTS	DRAWN: JHL CHECK: RAF	DATE: 02/17-18/22
			FILE #: 7903-SL	DWG.NO: C-1



1
C-2

FIRST FLOOR IT & HR AREA
NTS

NOT IN SCOPE

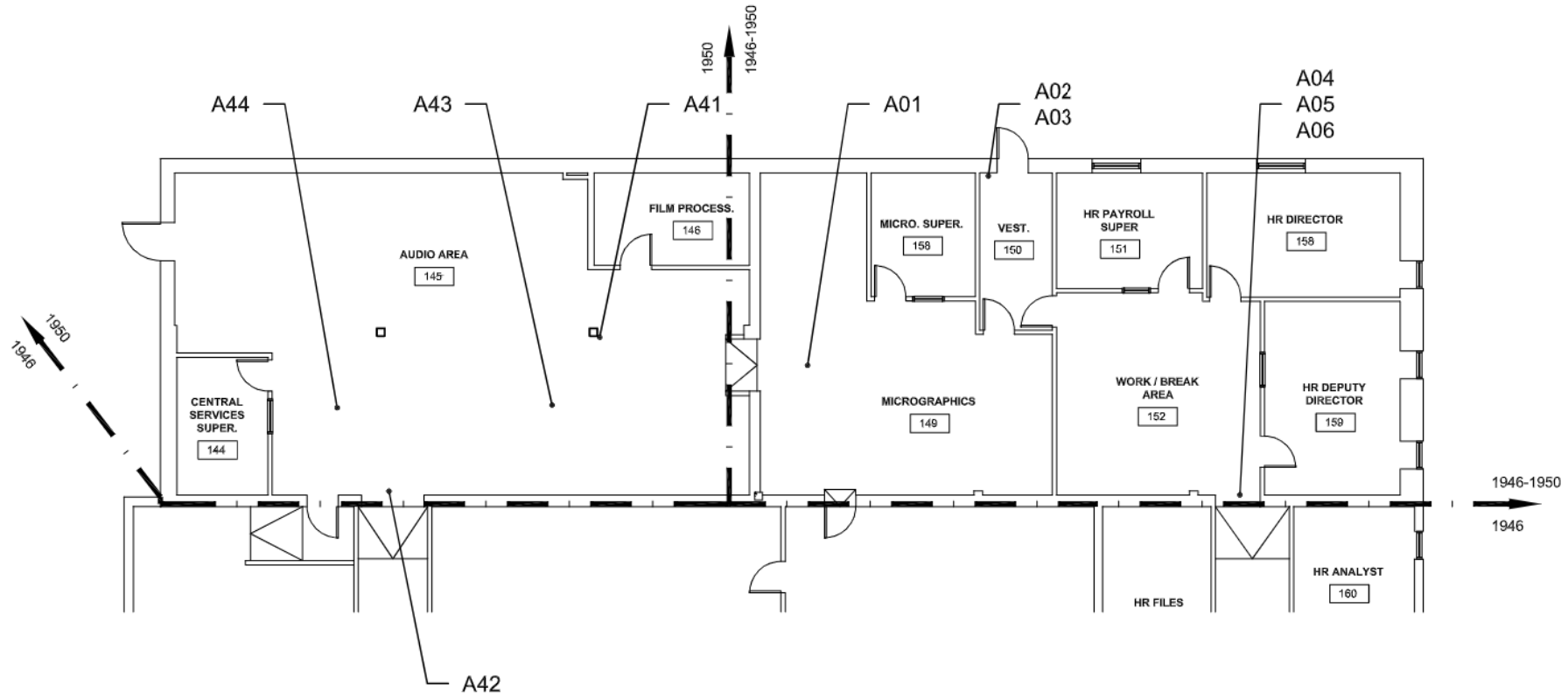
LEGEND

AXX ASBESTOS TEST LOCATION

AXX LAB TEST RESULTS POSITIVE FOR ASBESTOS

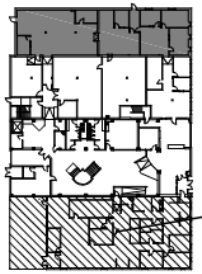
REFER TO TESTING SUMMARY IN REPORT FOR FULL DETAILS. ALL SAMPLES HAVE 820-0222- PREFIX.

ALASKA COURT SYSTEM	SNOWDEN BUILDING 820 W 4TH AVE, ANCHORAGE ASBESTOS SAMPLE LOCATIONS	EHS ALASKA INCORPORATED ENGINEERING, HEALTH & SAFETY CONSULTANTS	DRAWN: JHL CHECK: RAF DATE: 02/17-18/22 FILE #: 7903-SL DWG.NO: C-2



1
C-3

FIRST FLOOR SERVICES AREA
NTS



NOT IN SCOPE

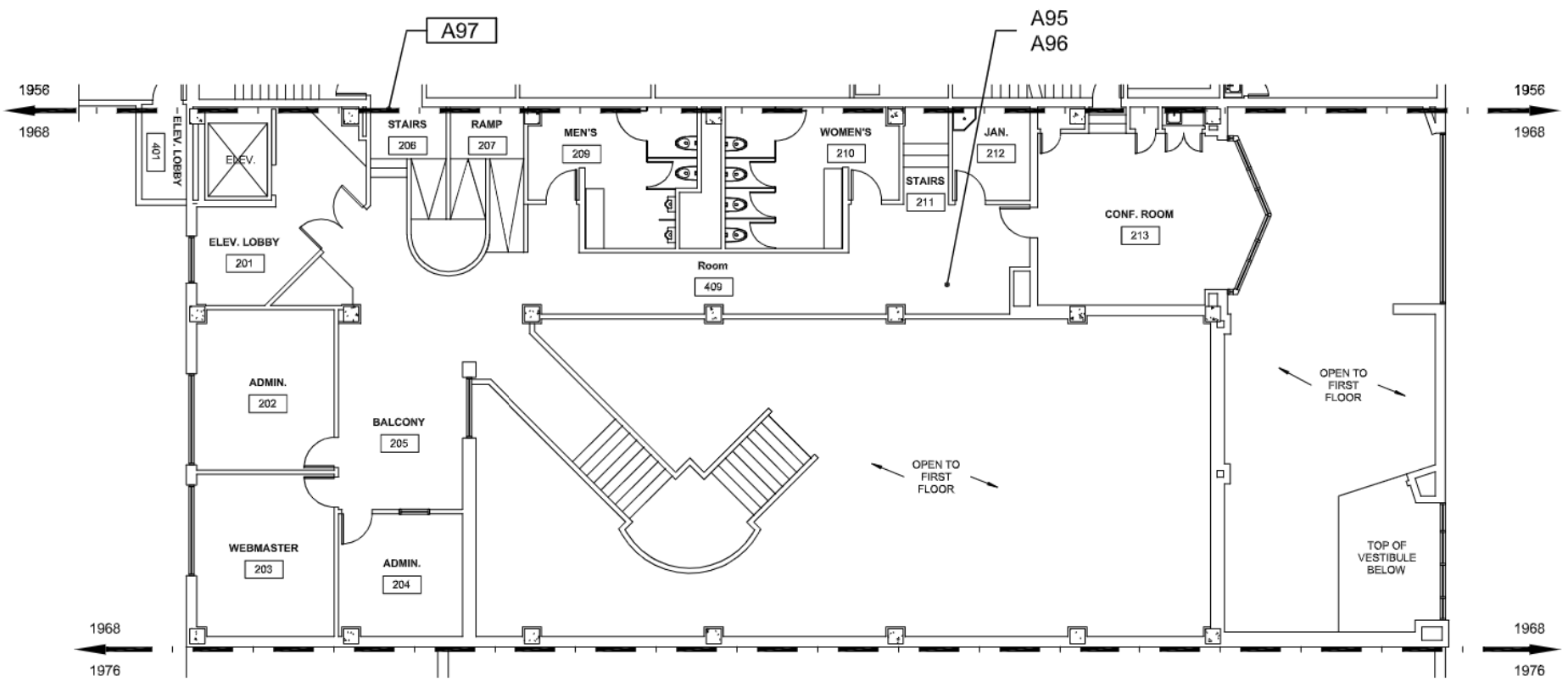
LEGEND

AXX ASBESTOS TEST LOCATION

AXX LAB TEST RESULTS POSITIVE FOR ASBESTOS

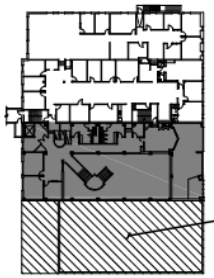
REFER TO TESTING SUMMARY IN REPORT FOR FULL DETAILS. ALL SAMPLES HAVE 820-0222- PREFIX.

ALASKA COURT SYSTEM	SNOWDEN BUILDING 820 W 4TH AVE, ANCHORAGE ASBESTOS SAMPLE LOCATIONS	EHS ALASKA INCORPORATED ENGINEERING, HEALTH & SAFETY CONSULTANTS	DRAWN: JHL CHECK: RAF FILE #: 7903-SL	DATE: 02/17-18/22 DWG.NO: C-3



1
C-4

SECOND FLOOR LOBBY AREA
NTS



NOT IN SCOPE

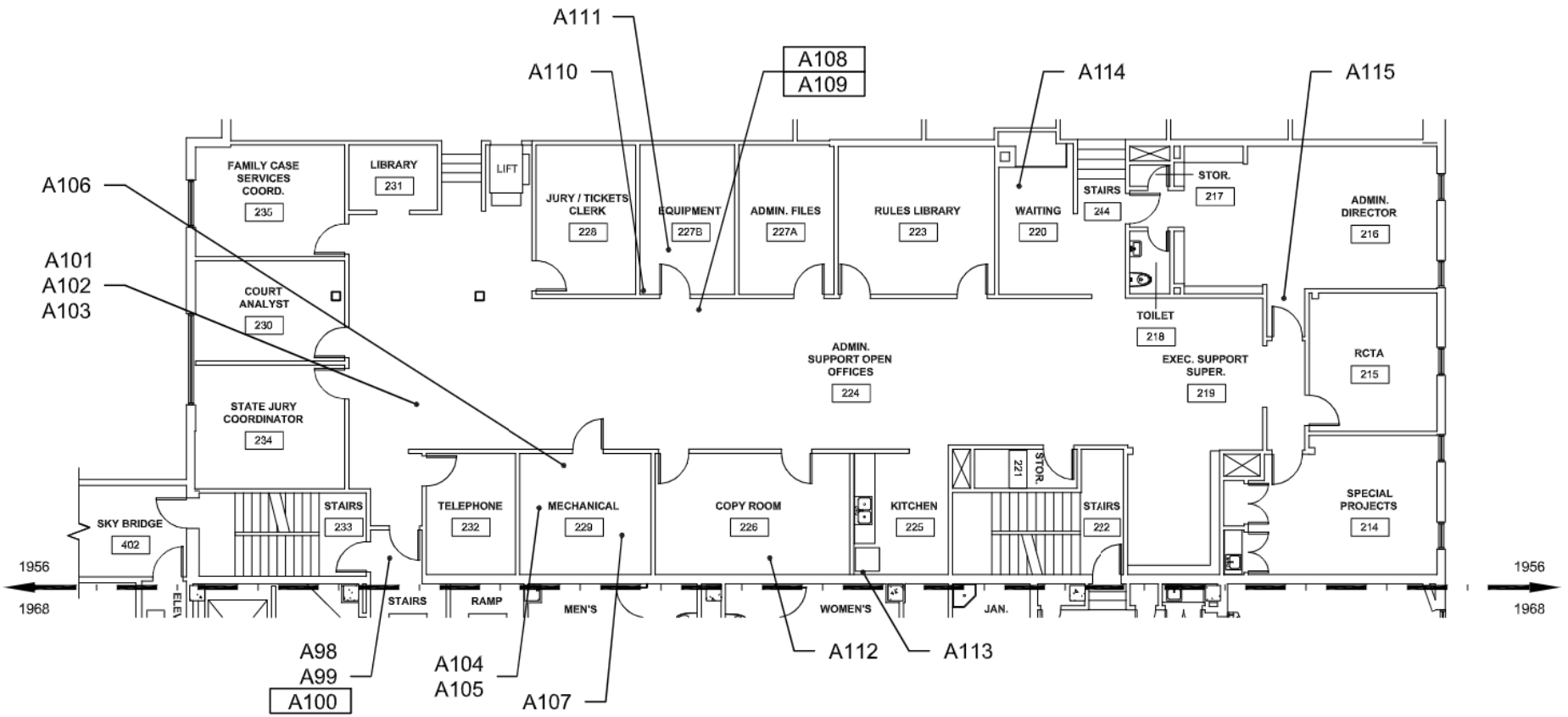
LEGEND

AXX ASBESTOS TEST LOCATION

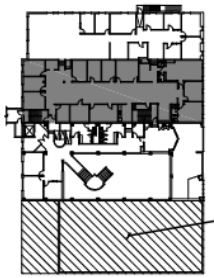
AXX LAB TEST RESULTS POSITIVE FOR ASBESTOS

REFER TO TESTING SUMMARY IN REPORT FOR FULL DETAILS. ALL SAMPLES HAVE 820-0222- PREFIX.

ALASKA COURT SYSTEM	SNOWDEN BUILDING 820 W 4TH AVE, ANCHORAGE ASBESTOS SAMPLE LOCATIONS	EHS ALASKA INCORPORATED ENGINEERING, HEALTH & SAFETY CONSULTANTS	DRAWN: JHL CHECK: RAF	DATE: 02/17-18/22
			FILE #: 7903-SL	DWG.NO: C-4



1 / C-5 SECOND FLOOR ADMIN AREA
NTS



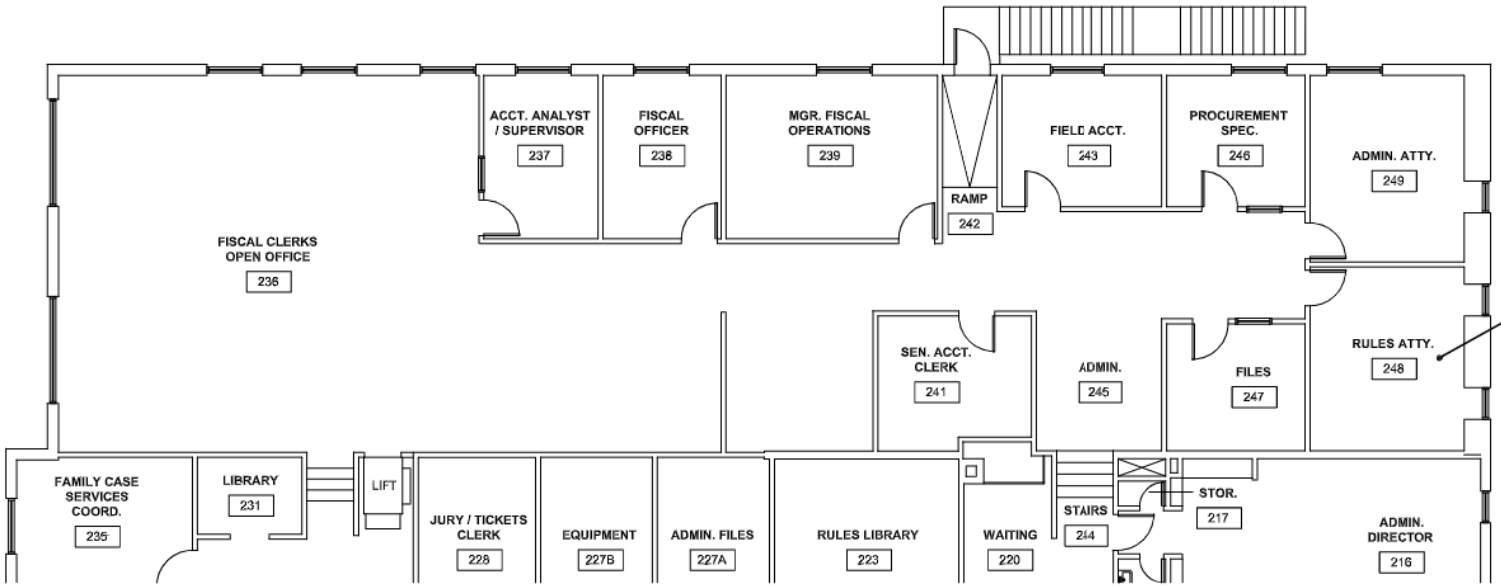
LEGEND

AXX ASBESTOS TEST LOCATION

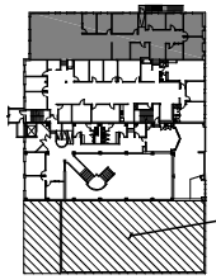
AXX LAB TEST RESULTS POSITIVE FOR ASBESTOS

REFER TO TESTING SUMMARY IN REPORT FOR FULL DETAILS. ALL SAMPLES HAVE 820-0222- PREFIX.

ALASKA COURT SYSTEM	SNOWDEN BUILDING 820 W 4TH AVE, ANCHORAGE ASBESTOS SAMPLE LOCATIONS	EHS ALASKA INCORPORATED ENGINEERING, HEALTH & SAFETY CONSULTANTS	DRAWN: JHL CHECK: RAF FILE #: 7903-SL	DATE: 02/17-18/22 DWG.NO: C-5



1
C-6
SECOND FLOOR ACCT. AREA
NTS

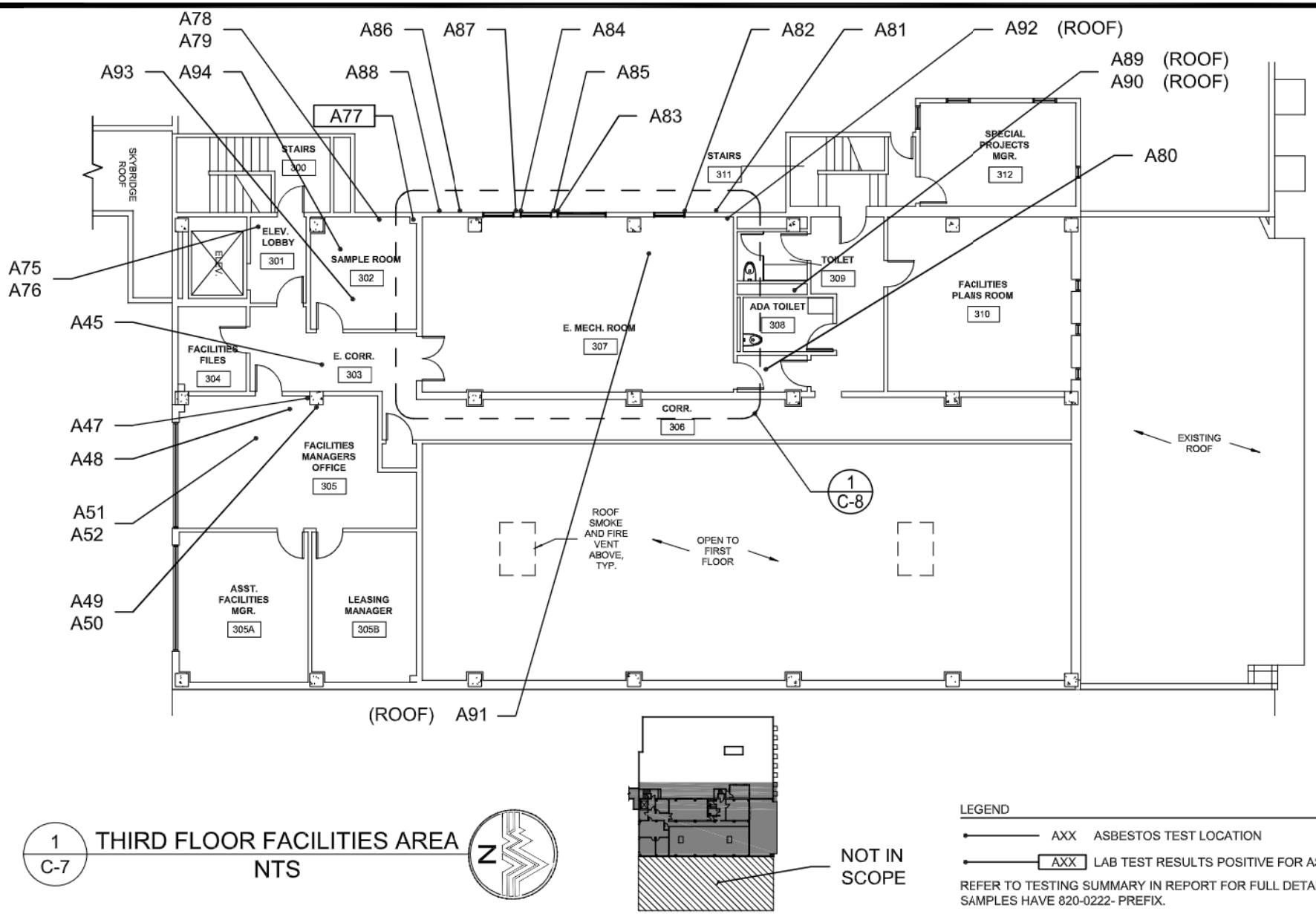


LEGEND

- AXX ASBESTOS TEST LOCATION
- AXX LAB TEST RESULTS POSITIVE FOR ASBESTOS

REFER TO TESTING SUMMARY IN REPORT FOR FULL DETAILS. ALL SAMPLES HAVE 820-0222- PREFIX.

ALASKA COURT SYSTEM	SNOWDEN BUILDING 820 W 4TH AVE, ANCHORAGE ASBESTOS SAMPLE LOCATIONS	EHS ALASKA INCORPORATED ENGINEERING, HEALTH & SAFETY CONSULTANTS	DRAWN: JHL CHECK: RAF DATE: 02/17-18/22 FILE #: 7903-SL DWG.NO: C-6



1/C-7 THIRD FLOOR FACILITIES AREA
NTS

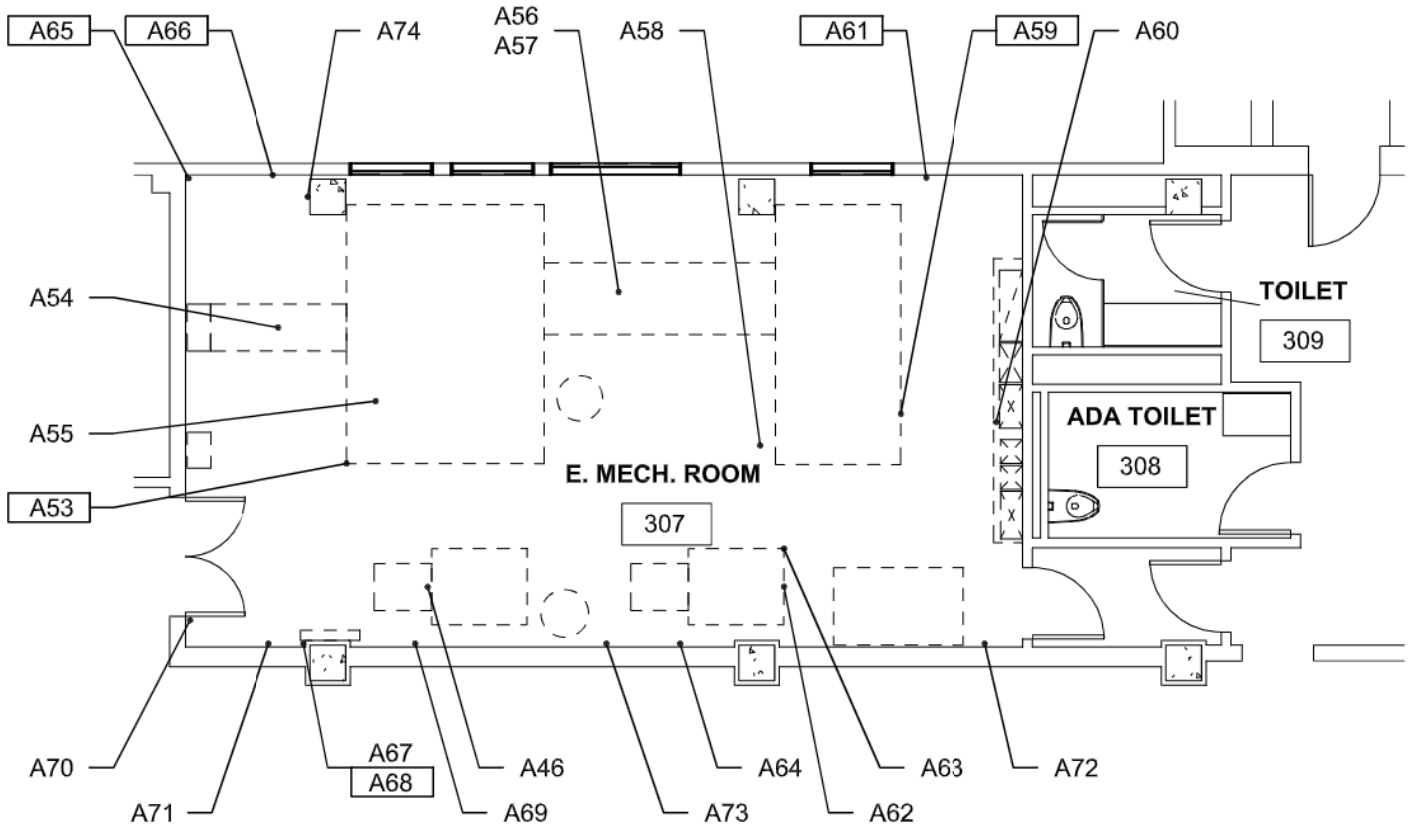
LEGEND

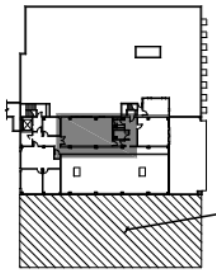
AXX ASBESTOS TEST LOCATION

AXX LAB TEST RESULTS POSITIVE FOR ASBESTOS

REFER TO TESTING SUMMARY IN REPORT FOR FULL DETAILS. ALL SAMPLES HAVE 820-0222- PREFIX.

ALASKA COURT SYSTEM	SNOWDEN BUILDING 820 W 4TH AVE, ANCHORAGE ASBESTOS SAMPLE LOCATIONS	EHS ALASKA INCORPORATED ENGINEERING, HEALTH & SAFETY CONSULTANTS	DRAWN: JHL CHECK: RAF FILE #: 7903-SL	DATE: 02/17-18/22 DWG.NO: C-7





NOT IN SCOPE

1
C-8

MECHANICAL ROOM 307
NTS

N

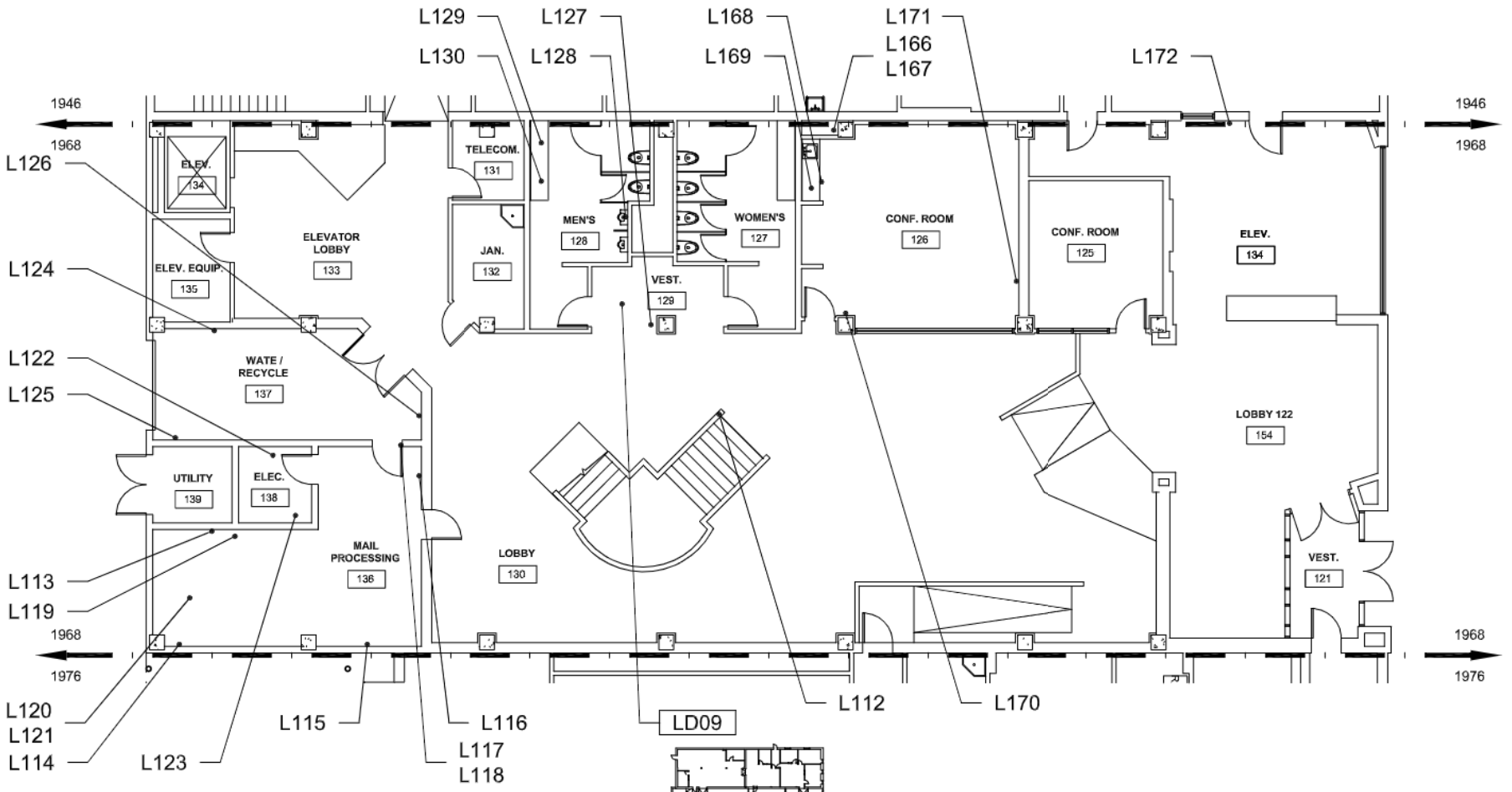
LEGEND

AXX ASBESTOS TEST LOCATION

AXX LAB TEST RESULTS POSITIVE FOR ASBESTOS

REFER TO TESTING SUMMARY IN REPORT FOR FULL DETAILS. ALL SAMPLES HAVE 820-0222- PREFIX.

ALASKA COURT SYSTEM	SNOWDEN BUILDING 820 W 4TH AVE, ANCHORAGE ASBESTOS SAMPLE LOCATIONS	EHS ALASKA INCORPORATED ENGINEERING, HEALTH & SAFETY CONSULTANTS	DRAWN: JHL CHECK: RAF	DATE: 02/17-18/22
			FILE #: 7903-SL	DWG.NO: C-8



1
C-9

FIRST FLOOR LOBBY AREA
NTS

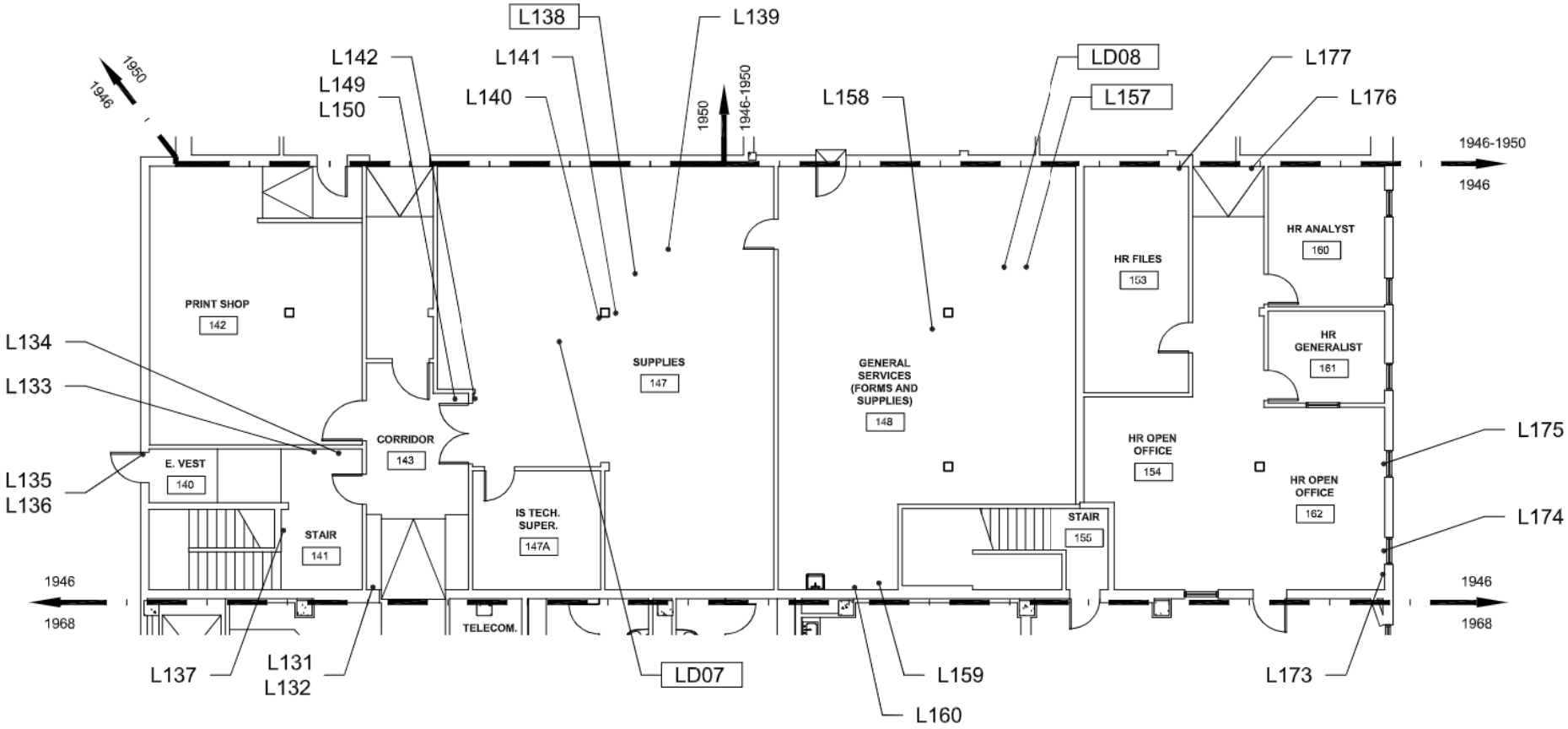
NOT IN SCOPE

LEGEND

- LXX LEAD TEST LOCATION
- LXX LEAD TEST CONTAINING ≥1.0 mg/cm² OF LEAD
- LDXX LEAD DUST TEST LOCATION
- LDXX LEAD DUST LEVELS GREATER THAN 200 µg/ft²

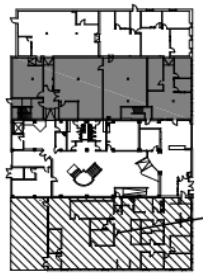
REFER TO TESTING SUMMARY IN REPORT FOR FULL DETAILS. ALL LEAD DUST SAMPLES HAVE 820-0322- PREFIX.

ALASKA COURT SYSTEM	SNOWDEN BUILDING 820 W 4TH AVE, ANCHORAGE LEAD SAMPLE LOCATIONS	EHS ALASKA INCORPORATED ENGINEERING, HEALTH & SAFETY CONSULTANTS	DRAWN: JHL CHECK: RAF DATE: 02/17-18/22 FILE #: 7903-SL DWG.NO: C-9



1
C-10

FIRST FLOOR IT/HR AREA
NTS



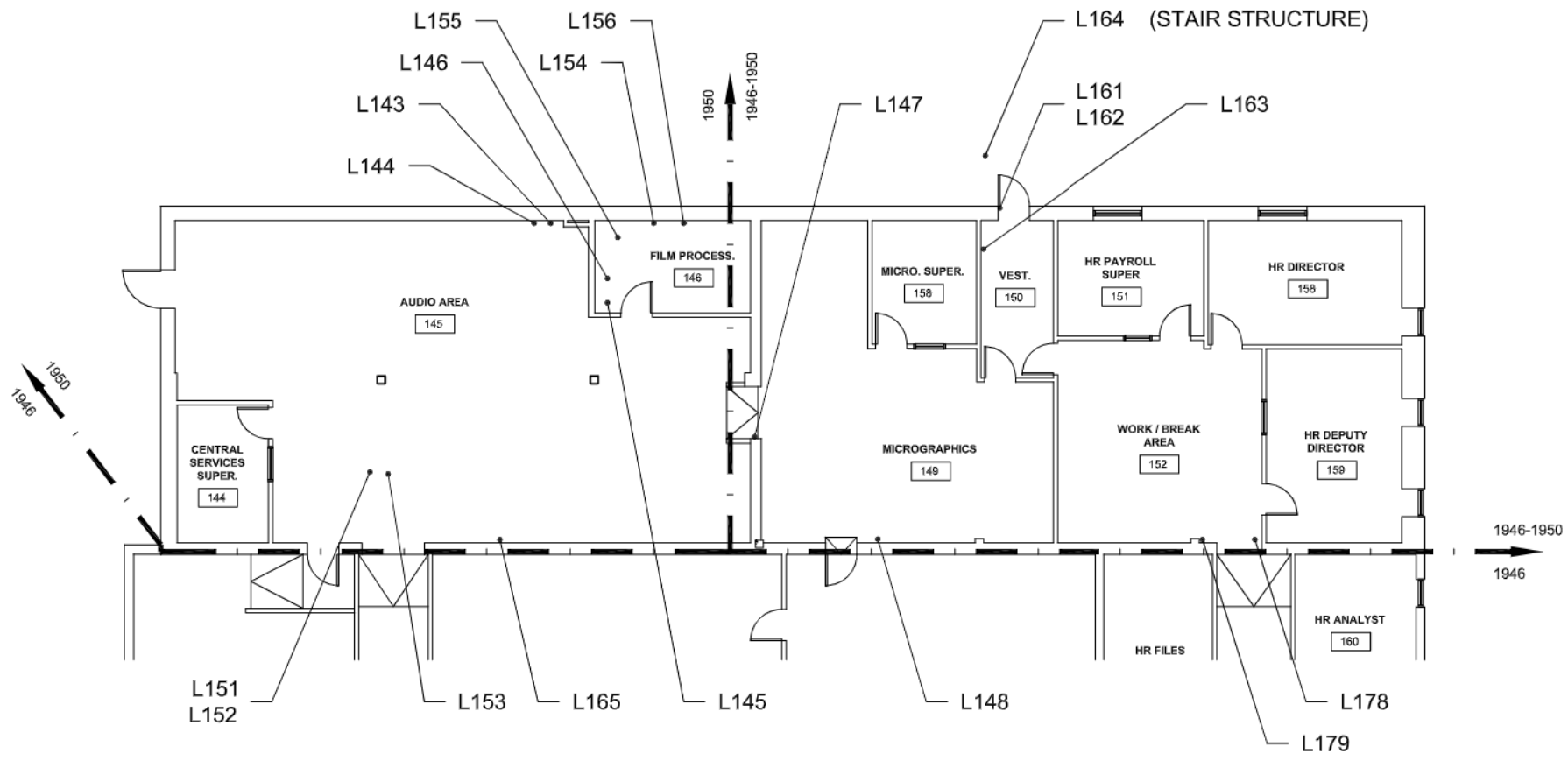
NOT IN SCOPE

LEGEND

- LXX LEAD TEST LOCATION
- LXX LEAD TEST CONTAINING ≥1.0 mg/cm² OF LEAD
- LDXX LEAD DUST TEST LOCATION
- LDXX LEAD DUST LEVELS GREATER THAN 200 µg/ft²

REFER TO TESTING SUMMARY IN REPORT FOR FULL DETAILS. ALL LEAD DUST SAMPLES HAVE 820-0322- PREFIX.

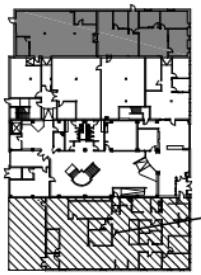
ALASKA COURT SYSTEM	SNOWDEN BUILDING 820 W 4TH AVE, ANCHORAGE LEAD SAMPLE LOCATIONS	EHS ALASKA INCORPORATED ENGINEERING, HEALTH & SAFETY CONSULTANTS	DRAWN: JHL CHECK: RAF DATE: 02/17-18/22 FILE #: 7903-SL DWG.NO: C-10



1
C-11

FIRST FLOOR SERVICES AREA
NTS

N



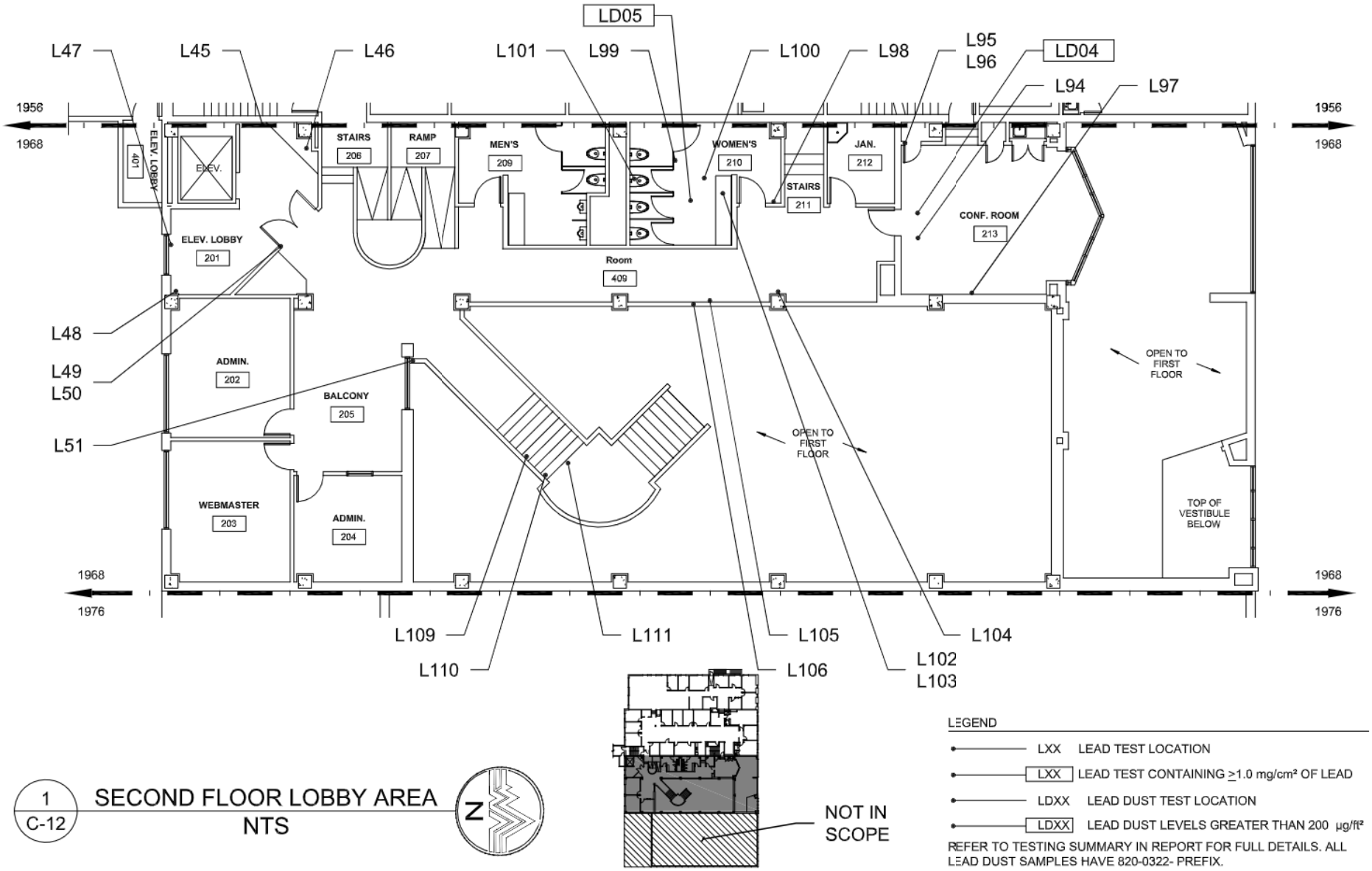
NOT IN SCOPE

LEGEND

- LXX LEAD TEST LOCATION
- LXX LEAD TEST CONTAINING ≥1.0 mg/cm² OF LEAD
- LDXX LEAD DUST TEST LOCATION
- LDXX LEAD DUST LEVELS GREATER THAN 200 µg/ft²

REFER TO TESTING SUMMARY IN REPORT FOR FULL DETAILS. ALL LEAD DUST SAMPLES HAVE 820-0322- PREFIX.

ALASKA COURT SYSTEM	SNOWDEN BUILDING 820 W 4TH AVE, ANCHORAGE LEAD SAMPLE LOCATIONS	EHS ALASKA INCORPORATED ENGINEERING, HEALTH & SAFETY CONSULTANTS	DRAWN: JHL CHECK: RAF DATE: 02/17-18/22 FILE #: 7903-SL DWG.NO: C-11



NOT IN SCOPE

1
C-12

SECOND FLOOR LOBBY AREA
NTS

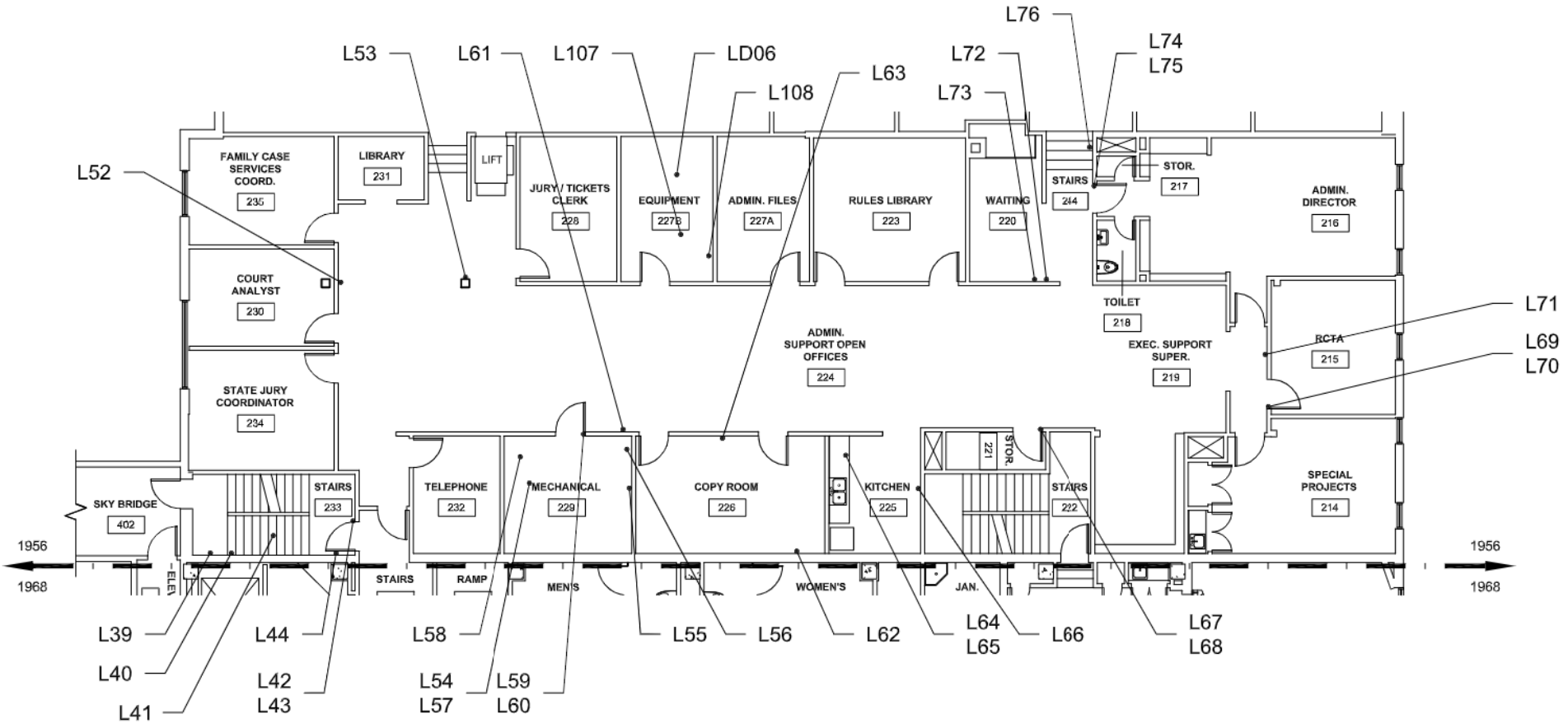
N

LEGEND

- LXX LEAD TEST LOCATION
- LXX LEAD TEST CONTAINING ≥1.0 mg/cm² OF LEAD
- LDXX LEAD DUST TEST LOCATION
- LDXX LEAD DUST LEVELS GREATER THAN 200 µg/ft²

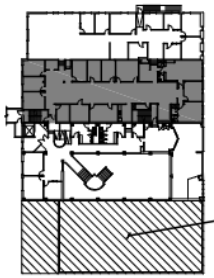
REFER TO TESTING SUMMARY IN REPORT FOR FULL DETAILS. ALL LEAD DUST SAMPLES HAVE 820-0322- PREFIX.

ALASKA COURT SYSTEM	SNOWDEN BUILDING 820 W 4TH AVE, ANCHORAGE LEAD SAMPLE LOCATIONS	EHS ALASKA INCORPORATED ENGINEERING, HEALTH & SAFETY CONSULTANTS	DRAWN: JHL CHECK: RAF DATE: 02/17-18/22 FILE #: 7903-SL DWG.NO: C-12



1
C-13

SECOND FLOOR ADMIN AREA
NTS



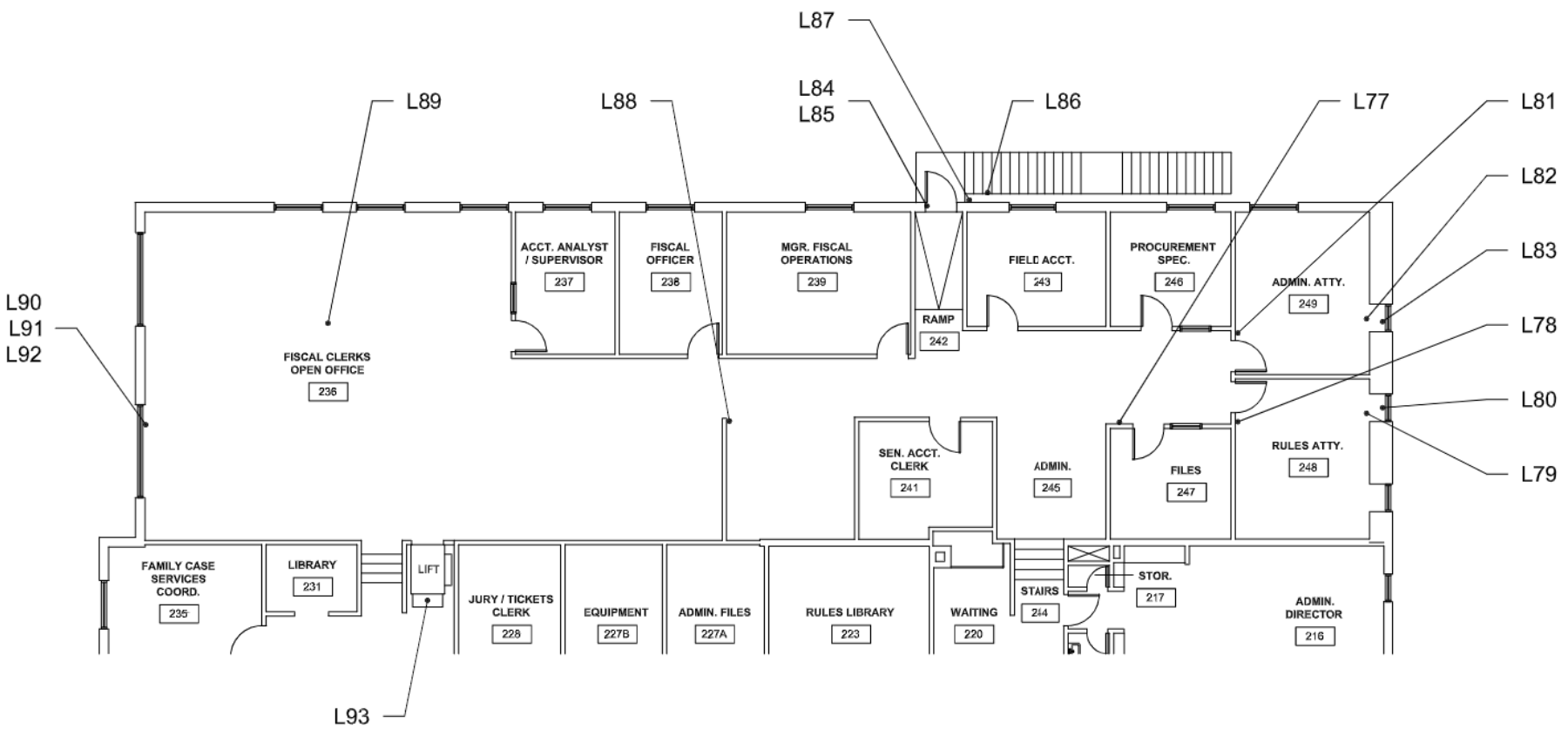
NOT IN SCOPE

LEGEND

- LXX LEAD TEST LOCATION
- LXX LEAD TEST CONTAINING ≥1.0 mg/cm² OF LEAD
- LDXX LEAD DUST TEST LOCATION
- LDXX LEAD DUST LEVELS GREATER THAN 200 µg/ft²

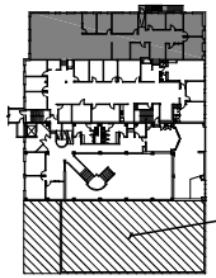
REFER TO TESTING SUMMARY IN REPORT FOR FULL DETAILS. ALL LEAD DUST SAMPLES HAVE 820-0322- PREFIX.

ALASKA COURT SYSTEM	SNOWDEN BUILDING 820 W 4TH AVE, ANCHORAGE LEAD SAMPLE LOCATIONS	EHS ALASKA INCORPORATED ENGINEERING, HEALTH & SAFETY CONSULTANTS	DRAWN: JHL CHECK: RAF DATE: 02/17-18/22 FILE #: 7903-SL DWG.NO: C-13



1
C-14

SECOND FLOOR ACCT. AREA
NTS



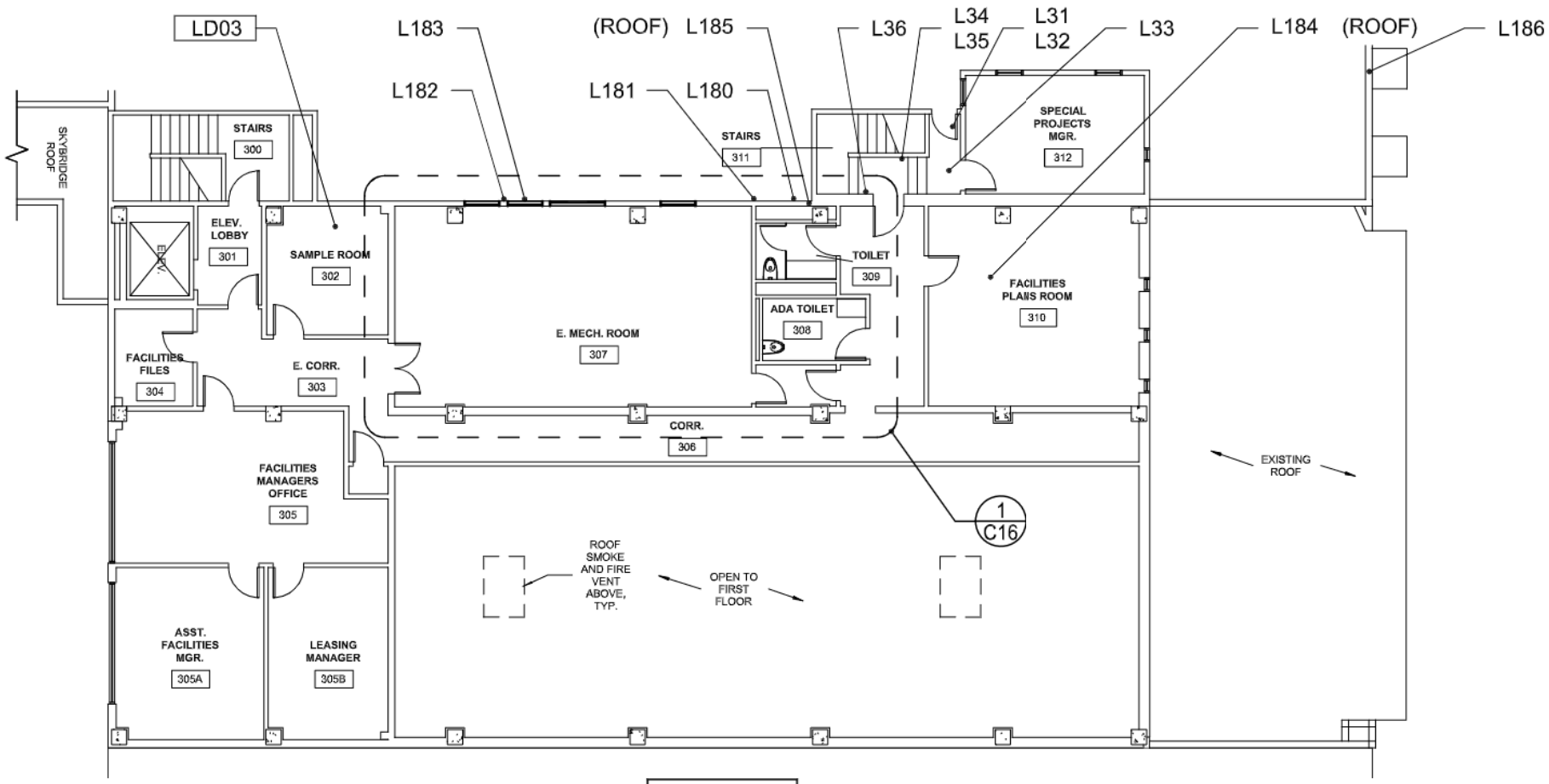
NOT IN SCOPE

LEGEND

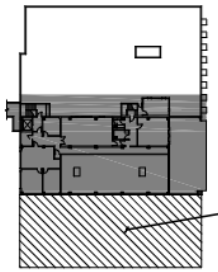
- LXX LEAD TEST LOCATION
- LXX LEAD TEST CONTAINING ≥1.0 mg/cm² OF LEAD
- LDXX LEAD DUST TEST LOCATION
- LDXX LEAD DUST LEVELS GREATER THAN 200 µg/ft²

REFER TO TESTING SUMMARY IN REPORT FOR FULL DETAILS. ALL LEAD DUST SAMPLES HAVE 820-0322- PREFIX.

ALASKA COURT SYSTEM	SNOWDEN BUILDING 820 W 4TH AVE, ANCHORAGE LEAD SAMPLE LOCATIONS	EHS ALASKA INCORPORATED ENGINEERING, HEALTH & SAFETY CONSULTANTS	DRAWN: JHL CHECK: RAF DATE: 02/17-18/22 FILE #: 7903-SL DWG.NO: C-14



1/C-15 THIRD FLOOR FACILITIES AREA
NTS



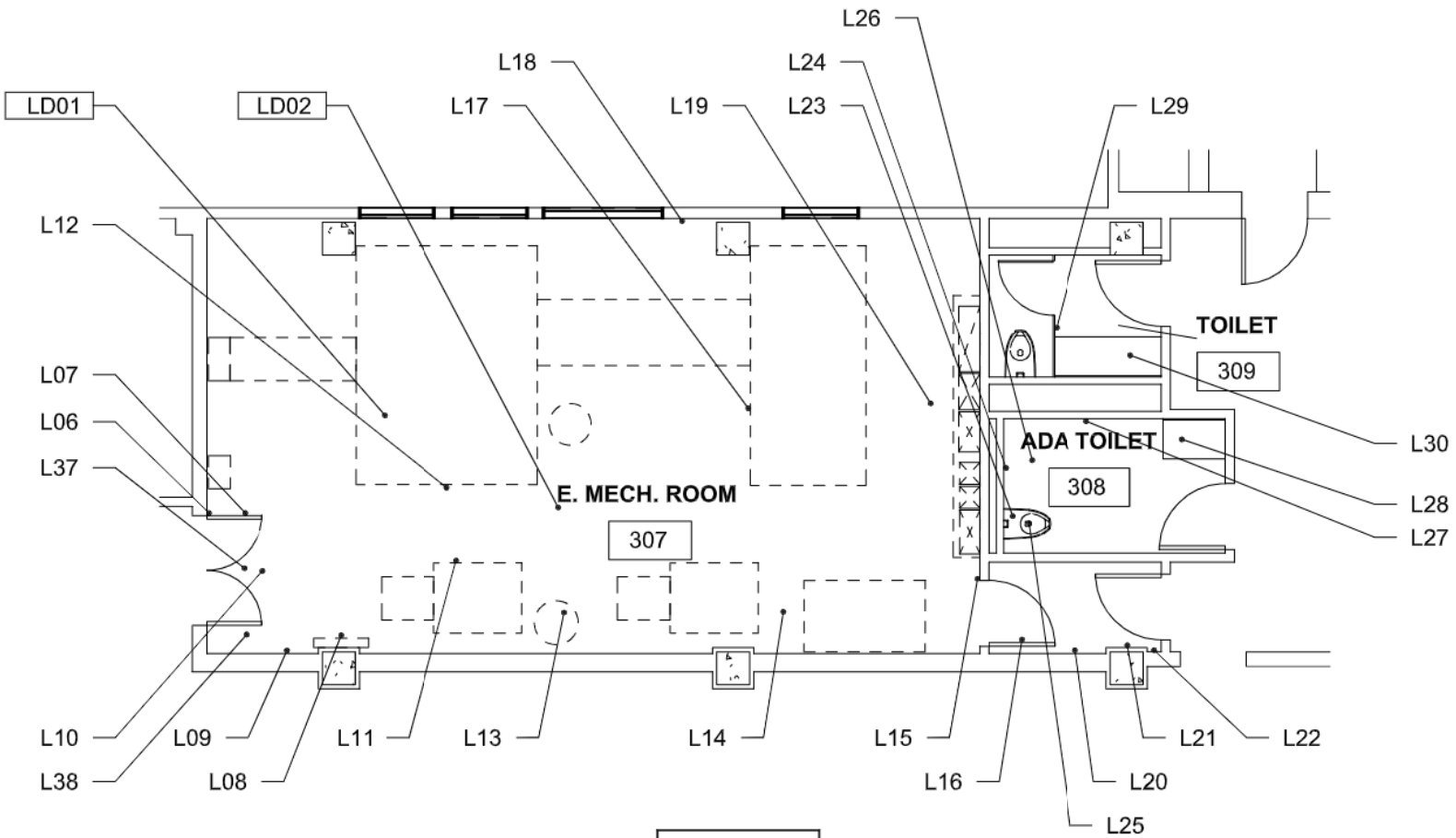
NOT IN SCOPE

LEGEND

- LXX LEAD TEST LOCATION
- LXX LEAD TEST CONTAINING ≥1.0 mg/cm² OF LEAD
- LDXX LEAD DUST TEST LOCATION
- LDXX LEAD DUST LEVELS GREATER THAN 200 µg/ft²

REFER TO TESTING SUMMARY IN REPORT FOR FULL DETAILS. ALL LEAD DUST SAMPLES HAVE 820-0322- PREFIX.

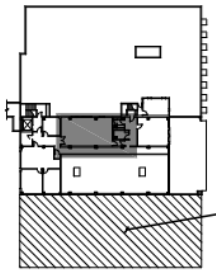
ALASKA COURT SYSTEM	SNOWDEN BUILDING 820 W 4TH AVE, ANCHORAGE LEAD SAMPLE LOCATIONS	EHS ALASKA INCORPORATED ENGINEERING, HEALTH & SAFETY CONSULTANTS	DRAWN: JHL CHECK: RAF DATE: 02/17-18/22 FILE #: 7903-SL DWG.NO: C-15



1
C-16

MECHANICAL ROOM 307
NTS

N



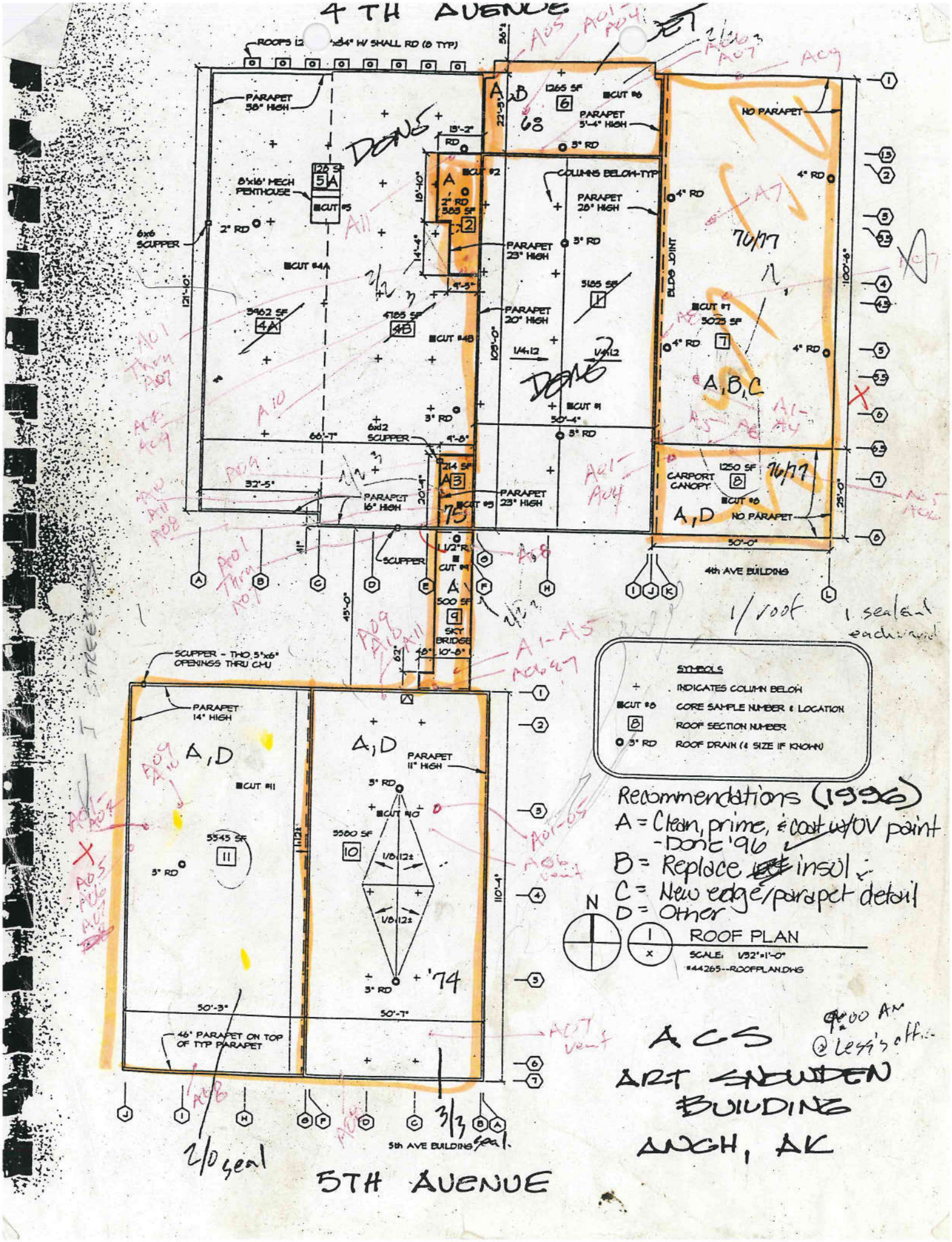
NOT IN SCOPE

LEGEND

- LXX — LEAD TEST LOCATION
- LXX — LEAD TEST CONTAINING ≥1.0 mg/cm² OF LEAD
- LDXX — LEAD DUST TEST LOCATION
- LDXX — LEAD DUST LEVELS GREATER THAN 200 µg/ft²

REFER TO TESTING SUMMARY IN REPORT FOR FULL DETAILS. ALL LEAD DUST SAMPLES HAVE 820-0322- PREFIX.

ALASKA COURT SYSTEM	SNOWDEN BUILDING 820 W 4TH AVE, ANCHORAGE LEAD SAMPLE LOCATIONS	EHS ALASKA INCORPORATED ENGINEERING, HEALTH & SAFETY CONSULTANTS	DRAWN: JHL CHECK: RAF	DATE: 02/17-18/22
			FILE #: 7903-SL	DWG.NO: C-16


4TH AVENUE
PARAPET 36" HIGH
8'x16' MECH PENTHOUSE
6x6 SCUPPER
PARAPET 28" HIGH
PARAPET 23" HIGH
PARAPET 20" HIGH
NO PARAPET
CARPORT CANOPY
6x12 SCUPPER
PARAPET 16" HIGH
SCUPPER
4th AVE BUILDING
SCUPPER - THO 5"x6" OPENINGS THRU CMU
PARAPET 14" HIGH
PARAPET 11" HIGH
46" PARAPET ON TOP OF TYP PARAPET
5th AVE BUILDING
5TH AVENUE
SYMBOLS
INDICATES COLUMN BELOW
CORE SAMPLE NUMBER & LOCATION
ROOF SECTION NUMBER
ROOF DRAIN (& SIZE IF KNOWN)
Recommendations (1996)
A = Clean, prime, & coat w/UV paint - Done '96
B = Replace insul.
C = New edge/parapet detail
D = Other
ROOF PLAN
SCALE: 1/32"=1'-0"
#44265--ROOFPLAN.DWG
ACS
ART SNOWDEN BUILDING
ANCH, AK

SECTION 02 4100
DEMOLITION

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Building demolition excluding removal of hazardous materials and toxic substances.

B. Selective demolition of building elements for alteration purposes.

1.2 RELATED REQUIREMENTS

A. Section 01 1000 - Summary: Limitations on Contractor's use of site and premises.

B. Section 01 1000 - Summary: Description of items to be salvaged or removed for re-use by Contractor.

C. Section 01 5000 - Temporary Facilities and Controls: Site fences, security, protective barriers, and waste removal.

D. Section 01 7000 - Execution and Closeout Requirements: Project conditions; protection of bench marks, survey control points, and existing construction to remain; reinstallation of removed products; temporary bracing and shoring.

1.3 REFERENCE STANDARDS

A. 29 CFR 1926 - Safety and Health Regulations for Construction Current Edition.

1.4 SUBMITTALS

A. See Section 01 3000 Submittals, for submittal procedures.

B. Site Plan: Showing:
   1. Areas for temporary construction and field offices.

C. Demolition Plan: Submit demolition plan as specified by OSHA and local authorities.
   1. Indicate extent of demolition, removal sequence, bracing and shoring, and location and construction of barricades and fences.
   2. Identify demolition firm and submit qualifications.
   3. Submit demolition plan for review for all floors and ceilings.

D. Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.

PART 2 - NOT USED

PART 3 - EXECUTION

3.1 SCOPE

A. Remove other items indicated, for salvage, relocation, and recycling.

3.2 GENERAL PROCEDURES AND PROJECT CONDITIONS

A. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
   1. Obtain required permits.
   2. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
   3. Provide, erect, and maintain temporary barriers and security devices.
   4. Use physical barriers to prevent access to areas that could be hazardous to workers or the public.
   5. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
   6. Do not close or obstruct roadways or sidewalks without permit.
   7. Conduct operations to minimize obstruction of public and private entrances and exits; do not obstruct required exits at any time; protect persons using entrances and exits from removal operations.
   8. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon or limit access to their property.

B. Do not begin removal until receipt of notification to proceed from Owner.

C. Protect existing structures and other elements that are not to be removed.
   1. Provide bracing and shoring.
   2. Prevent movement or settlement of adjacent structures.
   3. Stop work immediately if adjacent structures appear to be in danger.

D. Minimize production of dust due to demolition operations; do not use water if that will result in ice, flooding, sedimentation of public waterways or storm sewers, or other pollution.

E. Hazardous Materials: Comply with 29 CFR 1926 and state and local regulations.

3.3 EXISTING UTILITIES

A. Coordinate work with utility companies; notify before starting work and comply with their requirements; obtain required permits.

B. Protect existing utilities to remain from damage.

C. Do not disrupt public utilities without permit from authority having jurisdiction.

D. Do not close, shut off, or disrupt existing life safety systems that are in use without prior written notification to Owner. Reference section 01 1400 Work Restrictions for additional information.

E. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without prior written notification to Owner. Reference section 01 1400 Work Restrictions for additional information.

F. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.

G. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.

3.4 SELECTIVE DEMOLITION FOR ALTERATIONS

A. Drawings showing existing construction and utilities are based on casual field observation and existing record documents only.
   1. Verify that construction and utility arrangements are as indicated.
   2. Report discrepancies to Architect before disturbing existing installation.
   3. Beginning of demolition work constitutes acceptance of existing conditions that would be apparent upon examination prior to starting demolition.

B. Maintain weatherproof exterior building enclosure except for interruptions required for replacement or modifications; take care to prevent water and humidity damage.

C. Remove existing work as indicated and as required to accomplish new work.
   1. Remove items indicated on drawings.

D. Services (Including but not limited to HVAC, Plumbing, Fire Protection, Electrical, and Telecommunications): Remove existing systems and equipment as indicated.
   1. Maintain existing active systems that are to remain in operation; maintain access to equipment and operational components.
   2. Where existing active systems serve occupied facilities but are to be replaced with new services, maintain existing systems in service until new systems are complete and ready for service.
   3. Verify that abandoned services serve only abandoned facilities before removal.
   4. Remove abandoned pipe, ducts, conduits, and equipment, including those above accessible ceilings; remove back to source of supply where possible, otherwise cap stub and tag with identification.

E. Protect existing work to remain.
   1. Prevent movement of structure; provide shoring and bracing if necessary.
   2. Perform cutting to accomplish removals neatly and as specified for cutting new work.
   3. Repair adjacent construction and finishes damaged during removal work.
   4. Patch as specified for patching new work.

3.5 DEBRIS AND WASTE REMOVAL

A. Remove debris, junk, and trash from site.

B. Leave site in clean condition, ready for subsequent work.

C. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION

SECTION 02 8233

REMOVAL AND DISPOSAL OF ASBESTOS CONTAINING MATERIALS

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. The work requires the disturbance, demolition, removal, and disposal of the following asbestos-containing materials (ACM) from the Snowden Admin Building Mechanical Upgrades as shown on the drawings and as specified herein. Bulk samples have been taken of suspect materials in this facility and the results are documented in Section 02 26 00, Hazardous Materials Assessment:
   1. Remnant flooring mastics (assumed ACM).
   2. Carpeting mastics (assumed ACM).
   3. Joint compound in gypsum wallboard systems on the ceilings and walls.
   4. Heat pipe insulation (assumed ACM).
   5. Ventilation system duct sealants.
   6. Silver flex connectors at fans and air handling units.
   7. Flange gaskets on piping.
   8. Hard and chalky insulation at end caps of larger pipe valves and fittings.
   9. Boiler gaskets and stack insulation.
   10. Remnants of asbestos-containing patching tars and sealants, and tar paper.
   11. Remnants of built-up roofing (above suspended ceiling on 2nd level of west addition).
   12. Asbestos-containing sound dampening tars at older roof mounted exhaust fans.
   13. Gray-green mastic of ceiling tile “L” channel at walls (confirmed ACM).
   14. Remnant tan “puck” mastic of (assumed) removed glue-on ceiling tiles (confirmed ACM).
   15. “Silverseal” (found in previous re-roof project and likely removed).

B. In addition to the above materials, the following materials are located in other areas of the building, and may require disturbance for auxiliary support, such as electrical and mechanical equipment and installation of equipment. Not all ACM is to be removed from these areas, only that required to complete the project work need be removed:
   1. Gray Putty-like insulation on refrigeration piping.
   2. Ventilation system sealants (found in white and gray sealants at larger plenums).
   3. Various colors of 12”x 12” Floor tile (assumed ACM).
   4. Incandescent light fixture heat shields.
   5. Asbestos-containing sound dampening tars at older roof mounted exhaust fans.

C. Quantities of ACM and hazardous materials shown on drawings are based on a comprehensive survey of the building and take-offs from scale drawings. The Hazardous Material Assessment and quantities provided are considered a baseline for bid purposes. It is the contractor’s responsibility to remove and dispose of all ACMs affected by the project from the site in accordance with applicable regulations. The contractor shall immediately notify the owner if other ACM or additional quantities are discovered. Quantities of materials removed shall be documented on a daily basis and shall include all materials removed and locations, in the units used on the drawings. Unit pricing shall be provided in the bid for all identified hazardous material in case additional quantities are discovered.

D. Disturbance of asbestos-containing materials required for installation of wiring and equipment for this project typically will fall within different classes of asbestos work depending on the Contractor's means and methods. HEPA vacuuming and/or wet wiping shall be used to immediately clean up all dust and debris generated during the work regardless of the work classification. The following are clarifications of work classifications regarding the removal and disturbance of various common asbestos-containing materials.

1. Gypsum board with asbestos-containing joint compound.
   a. If non-textured, non-painted gypsum board wall and ceiling systems are encountered and workers can visually identify the asbestos-containing joint compound and they can safely perform the work without disturbing the joint compound, then the work is not classified as asbestos work. Workers are required to have asbestos awareness training (2 hours minimum) in compliance with 40 CFR 763.92, because they are working in close proximity to ACM.
   b. Installation of fasteners through painted or textured gypsum board walls and ceilings with asbestos-containing joint compound where no cutting or pre-drilling is required is classified as Class 3 asbestos work. Workers must meet all requirements of 29 CFR 1926.1101 for Class 3 work, which includes a minimum of 16 hours of training.
   c. Cutting, drilling or disturbing painted or textured gypsum board walls or ceilings with asbestos-containing joint compound is classified as Class 2 asbestos work. Workers must meet all requirements of 29 CFR 1926.1101 for Class 2 work, which includes 40 hours of training.
2. Disturbance of asbestos-containing ceiling tile mastics is classified as Class 2 asbestos work.
3. Disturbance of asbestos-containing plaster or textured coating on gypsum wall board is classified as Class 1 asbestos work.
4. Disturbance of asbestos-containing pipe insulation is classified as Class 1 asbestos work. It is classified as Class 3 asbestos work if less than a glove-bag of asbestos is disturbed.
5. Disturbance of asbestos-containing gaskets is classified as Class 2 asbestos work.
6. Disturbance of cement asbestos board is classified as Class 2 asbestos work.
7. Disturbance of asbestos-containing flooring materials or mastics is classified as Class 2 asbestos work.

E. Notification of Potential Hazards: Asbestos, lead and other potentially hazardous materials are present in the building that may impact the work of all trades. Regulated air contaminants, including asbestos and lead, are also present in settled and concealed dust in and on architectural, structural, mechanical and electrical components or systems throughout the building. All trades shall coordinate with other trades and conduct their work to prevent worker exposure or site contamination. Refer to Specification Divisions 0, 1 and 2 for specific information concerning disturbing, removing and disposing of these materials and the installation of new materials or components. This notification is provided in accordance with EPA and OSHA requirements.

F. Asbestos-containing materials may have come loose and fallen onto or into, floors, ceilings, walls, chases, wall cavities or mechanical, electrical and structural system components. The Contractor shall immediately notify the Owner if and when they encounter worn, damaged, or deteriorated ACM as evidenced by dust or debris adjacent to ACM materials.

G. Work may be required while faculty are occupying the building. Work during occupied periods involving disturbance of asbestos-containing materials inside the building shall be performed using critical barriers and negative air pressure enclosures. Access to work area from within the building shall be blocked to prevent unauthorized or inadvertent entry by faculty. Access to work area shall be secured by lock when work is not ongoing.

H. All work shall comply with Environmental Protection Agency (EPA) AHERA standard, 40 CFR 763. Clearance sampling is required if the necessary disturbance of asbestos-containing material is not classified as "Small-Scale, Short-Duration" work as defined in 40 CFR 763, and is not required for work that only involves the disturbance of dusts with asbestos. Visual inspections are required for all work disturbing or removing asbestos. The Contractor shall schedule the work so that only 1 set of visual inspection and clearances are required to comply with 40 CFR 763. If additional clearances are necessary, the contractor is required to pay all additional costs of visual inspections and clearance testing beyond the number noted above. Clearances will include a minimum of five aggressive clearance samples analyzed by PCM or TEM as appropriate for the amount of asbestos removed. Clearance air samples shall include a minimum of five (5) Transmission Electron Microscopy (TEM) samples from each affected space, taken using aggressive methods as outlined in Appendix A to 40 CFR 763 and analyzed in accordance with 40 CFR 763.90.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Section 02 26 00 Hazardous Materials Assessment

B. Section 01 35 45 Airborne Contaminant Control

C. Section 02 83 33 Removal and Disposal of Materials Containing Lead

D. Section 02 84 18 Removal and Disposal of Chemical Hazards

1.3 DEFINITIONS AND ABBREVIATIONS: Definitions and abbreviations are provided in the applicable publications listed in Paragraph 1.04 of this section.

1.4 APPLICABLE PUBLICATIONS: The publications listed below form a part of this specification to the extent referenced.

A. General Requirements: All work shall be performed in compliance with the International Building, Fire, Fuel Gas, Mechanical, Residential, Energy Conservation and Administrative Code; Uniform Plumbing Code; the National Electrical Code; and the publications listed in this section that are in effect at the time of the bidding of this contract.

B. Title 29 Codes of Federal Regulations (CFR), Department of Labor (USDOL)

Part 1910	General Occupational Safety and Health Standards
Part 1926	Safety and Health Regulations for Construction

C. Title 40 CFR, Environmental Protection Agency (EPA)

Part 61	National Emission Standards for Hazardous Air Pollutants
Part 311	Worker Protection
Part 763	Asbestos

D. Title 49 CFR, Department of Transportation (DOT)

Part 171	General Information, Regulations and Definitions
Part 172	Hazardous Materials Communication and Regulations
Part 173	General Requirements for Shipments and Packaging
Part 177	Carriage by Public Highway
Part 178	Specifications for Packaging
Part 382	Requirements for Drug Testing
Part 383	Commercial Driver's License Standards

E. State of Alaska Administrative Codes (AAC)

8 AAC 61	Occupational Safety and Health Standards
18 AAC 60	Solid Waste Management

F. State of Alaska Statutes

AS 18.31	Health and Safety - Asbestos
AS 45.50.477	Titles Relating to Industrial Hygiene

G. Public Law 101-637
Asbestos School Hazard Abatement Reauthorization Act

H. Federal Standards

313E	Safety Data Sheets

I. American National Standard Institute (ANSI)

Z9.2	Local Exhaust Systems
Z87.1	Eye and Face Protection
Z88.2	Practices for Respiratory Protection

J. American Society for Testing and Materials (ASTM)

D-4397	Polyethylene Sheeting

K. International Code Council
International Building (IBC), Fire, Fuel Gas, Mechanical, Residential, Energy Conservation and Administrative Codes Current Standards

L. National Fire Protection Association (NFPA)

NFPA 701	Fire Tests for Flame Resistant Textiles and Films

M. National Institute of Occupational Safety and Health (NIOSH)
Manual of Analytical Methods, Current Edition

N. Underwriters Laboratories (UL)

UL 586	High-Efficiency, Particulate, Air (HEPA) Filter Units

1.5 QUALITY ASSURANCE

A. On-site Observation:
   1. The safety and protection of the Contractor's employees, sub-contractor's employees, Owner's employees, the facility, and the public is the sole responsibility of the Contractor.
   2. The Owner, the Owner's Representative or representatives of State or Federal agencies may make unannounced visits to the site during the work. The contractor shall make available two complete sets of clean, protective clothing for such visitor use. If the work requires the use of PAPR or Supplied Air Respirators, the contractor shall provide respirators to the visitor to ensure compatibility with fresh batteries or supplied air system. It is the visitor's responsibility to ensure medical qualification, training, and current "fit test" prior to using any respirator provided by the Contractor.
   3. If the Owner or agency visitor determines that practices are in violation of applicable regulations, they will immediately notify the Contractor that operations must cease until corrective action is taken. Such notification will be followed by formal confirmation.
   4. The Contractor shall stop work after receiving such notification. The work may not be restarted until the Contractor receives written authorization from the Owner.
   5. All costs resulting from such a stop work order shall be borne by the Contractor and shall not be a basis for an increase in the contract amount or an extension of time.

B. Air Monitoring: Air monitoring during the work shall be performed as follows:
   1. The Contractor shall hire Independent Testing Laboratories to collect and evaluate all air samples that are the responsibility of the Contractor. The Contractor shall direct its laboratories, in writing, to release air monitoring data, and all other pertinent data and records, to the Owner. A copy of this written direction shall be submitted to the Owner along with the information required by Paragraph 1.13 of this Specification.
   2. The Contractor shall be responsible for monitoring its employees for potential exposure to airborne asbestos fibers as required by this specification and all applicable regulations.
   3. The Contractor shall be responsible for work area monitoring and environmental monitoring outside the work area as required by this specification.
   4. The Owner may perform air monitoring inside the building, inside the work areas, and on the Contractor's employees while asbestos work is underway and at any time during the work.
   5. Final inspection and clearance air monitoring shall be conducted the Contractor's Independent Testing Laboratory. The Independent Testing Laboratory may not be hired by the Abatement Subcontractor to perform final visual inspections and clearance air monitoring.
   6. The Contractor shall have its Independent Testing Laboratories archive all air samples until the successful completion of the project.

C. Additional Sampling of Suspect Materials:

1. The Contractor and all Subcontractors shall be vigilant during demolition and construction in the event additional suspect asbestos or hazardous materials are encountered. If suspect asbestos or hazardous materials not previously identified are encountered, the contractor shall stop work that may be affected by this material and immediately notify the Owner. The Owner or the Owner's Representative will provide recommendations and additional testing if necessary. All sampling by the Contractor shall be at their own cost.
2. The Contractor and all Subcontractors shall notify the Owner prior to any bulk sampling of suspect asbestos-containing material or other hazardous materials to allow the Owner or Owner's Representative to be present during such sampling. All results of bulk sampling conducted by the Contractor or Subcontractors shall be submitted to the Owner.

1.6 PROTECTION OF EXISTING WORK TO REMAIN: Perform asbestos removal in the project work areas without contamination of adjacent work or the facility.

1.7 MEDICAL REQUIREMENTS

A. Institute and maintain a medical surveillance program for employees in accordance with 29 CFR 1926.1101 and 29 CFR 1910.134.

B. Institute and maintain a random drug testing program, as required by 49 CFR 382, for all drivers of vehicles transporting asbestos or hazardous materials.

1.8 TRAINING: Employ only workers who are trained and certified as required by 8 AAC 61.600, 29 CFR 1910, 29 CFR 1926, 40 CFR 763, and 49 CFR 383 to remove, encapsulate, barricade, transport, or dispose of asbestos.

1.9 PERMITS AND NOTIFICATIONS: Secure necessary permits for asbestos removal, hauling, and disposal and provide timely notification as required by federal, state, and local authorities.

1.10 SAFETY AND ENVIRONMENTAL COMPLIANCE: Comply with laws, ordinances, rules, and regulations of federal, state, and local authorities regarding handling, storing, transporting, and disposing of hazardous materials and all other construction activities.

1.11 RESPIRATOR PROGRAM: Establish a respirator program as required by ANSI Z88.2 and 29 CFR 1910.134.

1.12 HAZARD COMMUNICATION PROGRAM: Implement a hazard communication program in accordance with 29 CFR 1910.1200.

1.13 SUBMITTALS

A. The Contractor shall submit the following documentation to the Owner for review, approval or rejection. Work shall not begin until submittals are approved.
   1. Shop drawings.
   2. Work plan.
   3. Liability insurance policy and performance bond.
   4. Schedule.
   5. Testing laboratory and laboratory personnel.

6. Disposal site designations and disposal authorizations.
7. Waste transporter designation.
8. Notifications and certifications.
9. "Competent Person" designation and experience.
10. Request for substitutions.

B. Shop drawings shall show:
   1. Boundaries of each regulated work area.
   2. Location and construction of decontamination areas.
   3. Location of temporary site storage facilities.
   4. Location of air monitoring stations, both in and outside of the work area.
   5. Emergency egress route(s).
   6. Location of negative pressure exhaust systems, if required.

C. The work plan shall include procedures for:
   1. Work area setup and protection.
   2. Worker protection and decontamination.
   3. Initial exposure assessment procedures.
   4. Asbestos removal procedures.
   5. Waste load-out, transport, and disposal procedures.
   6. Air monitoring procedures.
      a. Air monitoring procedures shall include the number of daily samples and the target volumes of each type of sample.
      b. Clearance air monitoring procedures and protocols for each work area.
   7. Determination by the Certified Project Designer of the estimated quantities of ACM and PACM to be removed, and determination of clearance requirements for each different type or phase of work.
   8. Emergency procedures.
   9. The Work Plan shall be prepared, signed and dated by an Environmental Protection Agency (EPA) Certified Project Designer.

D. Insurance Policy and Bond: Submit copies of the Contractor's or Subcontractor's insurance policy and performance bond. Submittal requirement is only to ensure that the insurance certificate(s) show specific coverage for the potentially hazardous materials being handled by this project. The insurance and bond amounts and certificate holder requirements are addressed in other portions of the contract documents and are not covered as part of this submittal requirement.

E. Schedule: Submit construction schedule by work area.

F. Independent Testing Laboratories and Laboratory Personnel: Submit the name, location, and phone number of proposed independent testing laboratories, and the names and certifications of the industrial hygiene technicians. Include the laboratory's accreditation. Not all laboratories will require all accreditations.
   1. The Independent Testing Laboratories shall be acceptable to Owner.
   2. The laboratories shall be proficient in the National Institute of Occupational Safety and Health (NIOSH) Proficiency in Analytical Testing (PAT) program and shall be accredited by the National Institute of Science and Technology (NIST) under their National Voluntary Laboratory Accreditation Program (NVLAP) for bulk asbestos analysis and airborne asbestos fibers as appropriate. NVLAP accreditation for bulk asbestos analysis may be waived if the microscopists are

listed in the American Industrial Hygiene Association (AIHA) Asbestos Analyst Registry (AAR).

3. Provide a current list of their microscopists who have participated in the latest PAT and NVLAP programs and provide the names of microscopists and evidence that they have completed the NIOSH 582 course or equivalent. Provide latest AAR report of performance for microscopists.
4. Provide name(s) and resume(s) of proposed on-site industrial hygiene technician(s) showing academic degrees and Alaska Abatement Certificate(s). If On-Site analysis will be done, the microscopists shall be listed in the American Industrial Hygiene Association (AIHA) Asbestos Analyst Registry (AAR), or equivalent.

G. Disposal Site: Submit the name and location of the proposed Alaska Department of Environmental Conservation/ U.S. Environmental Protection Agency (DEC/EPA) permitted disposal site. Submit authorization to dispose of asbestos waste by the proposed disposal site operator.

H. Waste Transporter: Submit the name and address of the proposed waste transporter.

I. Representations: Submit a signed statement by the Contractor that records of employees' work assignments, certifications, respirator fit tests, and medical records are accurate, up-to-date, and available for inspection.

J. Notifications and Certificates:
1. Submit a copy of the written "Notification of Demolition and Renovation" to the Environmental Protection Agency. (If required by NESHAP).
2. Submit a State of Alaska Department of Labor (ADOL) approved copy of the written ADOL notification of proposed workers.
3. Submit a copy of Project Designer's current certification.

K. Competent Person: Submit the name and certifications of the Contractor's proposed Competent Person and a list of their previous projects. Certify by signed statement that the Competent Person has the knowledge and training to supervise the work in compliance with the publications listed in Paragraph 1.04 above.

L. Substitutions: Submit requests for substitutions of materials, equipment and methods.

M. Updated Project Information: Submit changes to the submitted project information at least 24 hours prior to the effective time of change for the following:
1. Updated schedules.
2. Change in Competent Person.
3. ADOL approval for additional workers.
4. Changes to work plan.
5. Revisions to the EPA notification.

1.14 TEST REPORTS: Contractor shall submit periodic test reports, daily logs, monitoring results as specified herein. Submit two (2) copies of the following information within twenty-four (24) hours after the end of a shift:

A. Initial Exposure Assessment(s): Submit the results of the Contractor's initial exposure assessment(s).

B. Daily Air Monitoring: Submit daily, all results of Contractor's air monitoring (submit no later than 24 hours after the end of the shift). Submittal shall consist of negative air pressure recordings, daily monitoring report, field data sheets, the analytical laboratory's results, and sketch of sample locations. Submit all results of any sampling of bulk materials to Owner within 24 hours of receipt of results. Bulk sample submittal shall consist of daily monitoring report, field data sheets, and the analytical laboratory's results, and sketch of sample locations, as well as the current certification of the asbestos Building Inspector who conducted the sampling.

C. Project Daily Logs: Submit the previous day's Daily Logs. Logs shall include regulated area sign-in sheets and list of asbestos-containing materials removed including quantities and locations of those materials, in the units used on the drawings. Claims for additional quantities will not be addressed unless daily quantities are submitted.

D. Clearance Air Monitoring: Submit draft results of Contractor's clearance air monitoring for each work area for Owner's review and approval prior to releasing the work area to unprotected workers. FAX or electronic submittals are acceptable. Submittal shall include the following:
   1. A signed and dated copy of the final visual inspection report (completed prior to clearance air monitoring) certifying that all dust and debris have been removed from the work area and that all ACM to be removed as required by the contract, were removed. Visual inspection reports are required for all removal, even if clearance air monitoring is not required.
   2. Documentation that clearance air sample collection complied with 40 CFR 763, contract specifications and the approved work plan.
   3. Drawings of the work area with sampling locations clearly marked. Work area drawings shall be clearly identified as to their location within the facility.
   4. Field data sheets for sampling including: sample locations, calibration device serial number, initial and final pump calibration readings, pump time on and off, initial and final sampling flow rate, pump type and serial number, and sample cassette identification.
   5. Laboratory results, signed and dated by the analyst.
   6. Data sheets and visual inspection sheets shall be signed and dated by the Industrial Hygiene Technician performing the work.

1.15 PROJECT COMPLIANCE DOCUMENTS: Prepare and submit the following records of compliance with hazardous materials regulations following each work area clearance. Submittals may contain segregated submittals for more than one (1) work area. Submittal shall be received by Owner within four (4) weeks following work area clearance. Compliance documents shall be signed and dated and shall include as a minimum:

A. Waste transport records (40 CFR 61, Figure 4).

B. Disposal site receipts.

C. Contractor's "Start" and Finish" dates for the work area(s).

D. Daily logs, including regulated area sign in sheets, materials summary, etc. (if not previously submitted).

E. Final work area inspection report(s) and inspector certifications (if not previously submitted).

F. Final, signed, clean copies of all bulk and air sampling field data sheets, location drawings, negative air tapes and air monitoring log, including all clearance data.

G. Final, signed, clear, legible copies of all analytical laboratory bulk and air monitoring test results, including all clearance data, and current laboratory certifications (if changed from previously submitted).

H. Copies of Asbestos Worker Training certificates for workers performing work on this project and all approved Alaska DOL notifications for those workers, and any revisions to the EPA notification(s).

1.16 SANITARY FACILITIES: Provide adequate toilet and hygiene facilities.

1.17 MATERIAL STORAGE: Store all materials subject to damage off the ground and secure from damage, weather, or vandalism.

1.18 ON-SITE DOCUMENTATION: The Contractor shall maintain on the job site, at a location approved by the owner, copies of the following data for safety procedures, equipment, and supplies used for the work

A. Equipment: Show the model, style, capacity and the operation and maintenance procedures for the following, as applicable:
   1. High-Efficiency, Particulate, Air (HEPA) Filtration units.
   2. HEPA Vacuum cleaners.
   3. Pressure differential recording equipment.
   4. Heat stress monitoring equipment.

B. Safety Data Sheets (SDS): Maintain SDSs for each encapsulant, surfactant, solvent, detergent, and other material proposed to be used.

C. Respiratory Protection Plan: The Contractor's and/or Subcontractor's written respirator program.

PART 2 - PRODUCTS

2.1 PERSONAL PROTECTIVE EQUIPMENT: Provide personal protective clothing as approved and selected by the IH.

A. Respirators: Provide personally issued and marked respirators approved by the National Institute of Occupational Safety and Health (NIOSH). Provide sufficient replacements for respirators with disposable canisters. Use respirators equipped with dual cartridges whenever both asbestos hazards and other respiratory hazards exist in the work area.

B. Provide filter cartridges approved for each airborne contaminant which may be present. NIOSH approved filter cartridges shall be used. At no time shall the permissible exposure limit (PEL) for the contaminant exceed the PEL listed in 8 AAC 61.1100.

C. Whole Body Protection: Provide approved disposable fire retardant, full body coveralls and hoods fabricated from nonwoven fabric, gloves, eye protection, and hard-hats, and other protective clothing as required to meet applicable safety regulations to personnel potentially exposed to asbestos above the permissible exposure limits (PELs). Wear this protection properly. Full facepiece respirators shall meet the requirements of ANSI Z87.1.

D. Provide protective personal equipment and clothing at no cost to the workers.

2.2 DECONTAMINATION UNIT

A. Provide a temporary three-stage decontamination unit, attached in a leak-tight manner to each negative pressure work area. Decontamination units shall consist of a clean room equipped with separate lockers for each worker, a shower room, and an equipment locker room equipped with separate lockers for each worker.

B. Shower specifications: Locate flow and temperature controls within the shower where adjustable by the user. Hot water service may be secured from the building hot water system if available, but only with back-flow protection installed by the Contractor at the point of connection, and with prior notification and approval by the Owner. Should sufficient hot water be unavailable, the Contractor shall provide a minimum 40-gallon electric hot water heater with a minimum recovery rate of 20 gallons per minute. Water from the shower room shall not be allowed to wet the floor in the clean room.

2.3 WASTE WATER FILTERS: Provide Water Filtration Units with filters of adequate capacity to treat decontamination water and shower flows. Water filtration unit effluent shall contain less than 7,000,000 asbestos fibers per liter prior to discharge to sanitary sewer or storm drains.

2.4 DANGER SIGNS AND TAPE: Post danger signs and tape signs to demarcate areas where asbestos waste is temporarily stored, and, in areas not accessible to the public, where asbestos-containing materials are left in place. Signs and labels shall be in accordance with applicable regulations and codes. The signs posted at work area entrances, exits, decontamination areas, emergency egress, and waste disposal areas shall comply with 29 CFR 1926.1101 and the International Fire Code.

2.5 WARNING LABELS: Affix warning labels to all components or containers containing asbestos wastes. Conform labeling to 29 CFR 1926.1101 and 49 CFR 172.

2.6 HEPA FILTRATION UNITS: (if required) shall conform to ANSI Z9.2, and HEPA filters shall be UL-586 labeled.

2.7 PRESSURE DIFFERENTIAL MONITORING EQUIPMENT: Provide continuous monitoring of the pressure differential with an automatic recording instrument for each negative pressure enclosure. Locate the instrument in a clean area where personnel have access to it without respiratory protection. The instrument shall be fitted with an alarm should the negative pressure drop below -0.02 inches of water column relative to the air outside containment.

2.8 CHEMICALS

A. Adhesives: Adhesives shall be capable of sealing joints of adjacent sheets of polyethylene to finished or unfinished surfaces and of adhering under both dry and wet conditions.

B. Mastic Removal Solvents: Mastic removal solvents shall not contain halogenated compounds or compounds with flashpoints less than 60° C (140° F). Solvents shall be compatible with replacement materials.

C. Sealants and Encapsulants: Penetrating and bridging encapsulants for asbestos applications. Tint "Lock-Down" encapsulants used in non-finished areas for identification in a color that will not obscure residual asbestos. Encapsulants shall be compatible with replacement materials.

D. Surfactant: Use a surfactant specifically designed to effectively wet asbestos. Mix and apply the surfactant as recommended by the manufacturer.

2.9 SAFETY DATA SHEETS (SDSs): Provide SDSs for all chemical materials brought onto the work-site.

2.10 MATERIALS

A. Disposal Containers: Use disposal containers to receive, retain, and dispose of asbestos-containing or contaminated materials. Label leak tight containers in accordance with the applicable regulations. Non-leak tight containers are not acceptable. Plastic bags shall be a minimum 6-mil polyethylene, pre-printed with approved warning labels. Plastic wrap shall be 6-mil polyethylene sheets, securely wrapped and taped. Disposal containers shall be labeled with "ASBESTOS NA 2212," Contractor's name and location, and a Class 9 label.

B. Glove Bags: The glove bags shall be a minimum of 6-mil polyethylene or polyvinylchloride plastic, and specially designed for removal of asbestos-containing materials, with two inward projecting long sleeves and rubber gloves, one inward projecting water wand sleeve, an internal tool pouch, and an attached, labeled receptacle for asbestos waste.

C. Plastic Sheet: A minimum 6-mil thick flame resistant polyethylene (in accordance with NFPA 701) shall be used unless otherwise specified.

D. Tape: Tape shall be capable of sealing joints of adjacent sheets of polyethylene, for attachment of polyethylene sheets to finished or unfinished surfaces and of adhering under both dry and wet conditions.

2.11 OTHER MATERIALS: The Contractor shall provide standard commercial quality of all other materials as required to prepare and complete the work.

2.12 TOOLS AND EQUIPMENT

A. The Contractor shall provide tools and equipment as required to prepare and complete the work. Tools and equipment shall meet all applicable safety regulations.

B. Transportation equipment shall be suitable for loading, temporary storage, transit, and unloading of contaminated waste without exposure to persons or property. All trucks or vans used to transport asbestos shall be enclosed and all containers sealed leaktight. Truck drivers shall have a commercial driver's license with hazardous material endorsement.

PART 3 - EXECUTION

3.1 WORK AREAS

A. Regulated Work Areas: Establish regulated work areas in compliance with 29 CFR 1926.1101.

B. Decontamination Area: Install decontamination areas in compliance with 29 CFR 1926.1101. Decontamination area shall meet fire-exiting requirements of the International Fire Code. Showers shall be provided with hot water and water filtration units.

C. Negative Pressure Enclosure System: Construct Negative Pressure Enclosure Systems as required by 29 CFR 1926.1101, these specifications, and approved work plan. Signage shall conform to the International Fire Code and 29 CFR 1926.1101. Exhausts from HEPA Filtration Units shall terminate outside of the building.

D. Notify applicable Fire Marshal as required by the International Fire Code.

3.2 PERSONNEL PROTECTION PROCEDURES

A. Contractor's Competent Person shall strictly enforce personal protection procedures as required by the approved work plan and all applicable regulations.

B. Post the decontamination, safety, and work procedures to be followed by workers.

C. Provide continuous on-site supervision by the approved Competent Person.

D. Maintain a daily log of all workers and visitors entering regulated work areas. Log shall contain the name of each individual, his or her organization, accurate time of entering and leaving, and purpose of visit.

3.3 ASBESTOS REMOVAL PROCEDURES: Remove asbestos in accordance with the Contractor's Approved Work Plan, applicable regulations and this specification. The Owner shall be notified 24-hours in advance of any asbestos disturbance taking place outside of a Negative Pressure Enclosure System.

3.4 AIR MONITORING

A. Perform personal, work area, and environmental monitoring for airborne asbestos fibers by industrial hygiene technicians who are employees of (one of) the Contractor's Independent Testing Laboratories.

B. Conduct air monitoring in accordance with 29 CFR 1926.1101, current EPA guidance, and as specified herein. Calibrate all sampling pumps on-site with a calibrated

transfer standard before and after each sample. Built-in rotameters on pumps are not acceptable for calibration. Additional samples beyond the minimum numbers shown below may be necessary if samples are overloaded or require shorter sampling periods to achieve readable samples, due to size of the work force, or due to more than one 8-hour work shifts.

C. Conduct daily work area and environmental air monitoring per shift as follows:
   1. Three (3) air samples within the work area.
   2. One (1) air sample located outside the entrance to the work area.
   3. One (1) air sample located at the exhaust(s) of the HEPA filtration unit(s) (if more than one unit is used, the sampling may be rotated between units, however, each unit must be sampled at least once every three days).
   4. Three (3) air samples located in adjacent occupied areas.
   5. Two (2) waste load-out samples for the full duration of the operation, one taken inside the wash-down station and one taken on the clean side of the wash-down station, in addition to the daily work area and environmental samples, (no samples are necessary if no load-out operation is performed).

D. Clearance air monitoring shall be conducted by the Contractor's Independent Testing Laboratory subcontractor. The Independent Testing Laboratory may not be hired by the Abatement Subcontractor to perform visual inspections and clearance air monitoring. Owner approval is required before a work area is released to unprotected workers. The Contractor is responsible for all costs associated with clearance and scheduling of visual inspection and clearance air monitoring. The maximum acceptable level of airborne asbestos fibers for work area clearance is as published in 40 CFR 763 for PCM analysis. A minimum of five aggressive clearance samples are required for each work area, regardless of the type of analysis. PCM analysis shall be used unless Transmission Electron Microscopy (TEM) analysis is required by 40 CFR 763 due to quantities of materials removed. The Contractor has the option, at its expense and at no cost to the Owner, of re-cleaning the work area and repeating the clearance air monitoring procedures or of having failed phase contrast microscopy (PCM) sample media sent to an approved NVLAP accredited laboratory for TEM analysis by NIOSH Method 7402.

E. Conduct personal air monitoring in accordance with 29 CFR 1926.1101 and as specified herein.
   1. Take personnel samples (excluding excursion samples) at least twice per eight-hour work shift at the rate of one sample for every six people performing that task in the same work area. Persons performing separate tasks or in separate work areas shall be sampled separately.
   2. Collect and analyze excursion samples as required by 29 CFR 1926.1101.
   3. Continuously monitor all workers disturbing asbestos outside of a Negative-Pressure Enclosure System if that work is conducted indoors.

F. Daily personnel monitoring may be discontinued only after the Contractor's Independent Testing Laboratory certifies in writing that a Negative Exposure Assessment has been obtained and the Owner has reviewed and approved the negative exposure assessment data.

G. Submit air monitoring results to the Owner as specified in Paragraphs 1.14 and 1.15.

3.5 DISPOSAL

A. Dispose of asbestos wastes in an EPA/DEC permitted asbestos landfill.

B. Comply with current waste disposal, handling, labeling, storage, and transportation requirements of the waste disposal facility, U.S. Department of Transportation, and EPA regulations.

C. Workers handling waste shall wear protective clothing and canister type respirators.

D. Drivers of the waste transport vehicles need not wear respirators while enroute.

E. Workers shall wear respirators when handling asbestos material at the disposal site.

3.6 CLEANING OF WORK AREA

A. Remove all asbestos material and debris upon completion of asbestos repair or removal within a work area. Wet clean or HEPA vacuum all surfaces within the work area.

B. Notify the Owner and the Independent Testing Laboratory that asbestos work has been completed and the work area is ready for visual inspection. Visual inspections are required even if clearance air monitoring is not required. Include in the visual inspection report a statement that all asbestos in the work area has been removed, repaired and/or encapsulated as required by the contract, and that all debris has been removed.

C. All required demolition (ACM and non-ACM) shall be completed in each work area prior to clearance air monitoring. Exceptions may be made with prior approval of the Owner.

D. A lockdown encapsulant shall be applied to all surfaces within the abatement areas prior to performing clearance air monitoring.

3.7 CLEARANCE AIR MONITORING

A. The Contractor and its Independent Testing Laboratory shall conduct and document a visual inspection to verify that all asbestos in the work area has been removed, repaired and/or encapsulated as required by the contract, and that all debris has been removed.

B. Final clearance air monitoring tests shall not be performed until all areas and materials within the work area are fully clean and dry.

C. Final clearance air monitoring shall be conducted by the Contractor's Independent Testing Laboratory in accordance with all applicable regulations and the Contractor's approved work plan after passing the visual inspection. The clearance criteria shall include a minimum of five clearance samples using "aggressive methods" collected and analyzed in accordance with 40 CFR 763. PCM analysis is allowed, unless TEM analysis is specifically required due to the quantities of asbestos removed.

D. If the final clearance air monitoring results show that the work area has failed to meet the clearance criteria, the Independent Testing Laboratory shall notify the Owner and the Contractor. The Contractor shall reclean the work area and request the Independent Testing Laboratory to conduct a follow-up inspection to be followed by another set of clearance air monitoring samples. All work specified in this paragraph shall be done at no additional expense to the Owner.

E. If the clearance air monitoring results meet the clearance criteria of 40 CFR 763 and the specifications for the work and the Owner has reviewed and accepted the clearance results as required by 1.14 D, then the HEPA filtration units may be deactivated (if applicable) and all seals, barriers, barricades, and decontamination areas shall be dismantled and removed and the work area released to unprotected workers.

F. Submit the final work area inspection report, clearance air monitoring field data sheets and the laboratory air monitoring report to the Owner as specified in Paragraph 1.15.

3.8 SUBSTANTIAL COMPLETION

A. After the work area barriers and temporary construction and equipment have been removed, the Contractor shall inspect the work area to verify that no asbestos debris, contaminated water, or other residue remains. Any remaining residue shall be cleaned up using HEPA vacuum cleaners and wet wiping methods.

B. The Contractor shall certify that the work area has been cleaned of all asbestos in compliance with the contract, and that there is no unrepaired damage to walls, ceilings, doors, surfaces, equipment or finishes other than that called for by the scope of work.

C. Costs of restoration of damaged finishes shall be borne by the Contractor.

END OF SECTION

SECTION 02 8333

REMOVAL AND DISPOSAL OF MATERIALS CONTAINING LEAD

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

A. The work may require the disturbance (including cleanup of existing loose paint), demolition, or removal, and disposal of lead painted and/or lead-containing materials related to the Snowden Admin Building Mechanical Upgrades as shown on the drawings and as specified herein. Items to be disturbed may include, but are not limited to:
   1. Painted interior and exterior surfaces, including, but not limited to painted windows, doors and frames, painted mechanical and electrical equipment, painted structural and miscellaneous steel, etc.
   2. Metallic lead flashings at VTR's, roof drain bowl clamping rings, and other roof penetrations, etc.
   3. Metallic lead caulking in bell and spigot pipe joints.
   4. Metallic lead in pipe solder at copper pipe fittings.
   5. Lead-containing dust in and on architectural, structural, mechanical, and electrical components.
   6. Lead-acid batteries for exit and emergency lights, and other equipment.

B. In addition to the above materials, the following materials are located in other areas of the building, and may require disturbance for auxiliary support, such as electrical and mechanical equipment and installation of equipment. Not all lead-containing materials are to be removed from these areas, only that required to complete the project work need be removed:
   1. Painted interior and exterior surfaces, including, but not limited to painted windows, doors and frames, painted mechanical and electrical equipment, painted structural and miscellaneous steel, etc.
   2. Metallic lead flashings at VTR's, roof drain bowl clamping rings, and other roof penetrations, etc.
   3. Metallic lead caulking in bell and spigot pipe joints.
   4. Metallic lead in pipe solder at copper pipe fittings.
   5. Lead-containing dust in and on architectural, structural, mechanical, and electrical components.
   6. Lead-acid batteries for exit and emergency lights, and other equipment.

C. Notification of Potential Hazards: Asbestos, lead and other potentially hazardous materials are present in the building that may impact the work of all trades. Regulated air contaminants, including asbestos and lead, are also present in settled and concealed dust in and on architectural, structural, mechanical and electrical components or systems throughout the building. All trades shall coordinate with other trades and conduct their work to prevent worker exposure or site contamination. Refer to Specification Divisions 0, 1 and 2 for specific information concerning disturbing, removing and disposing of these materials and the installation of new materials or components. This notification is provided in accordance with EPA and OSHA requirements.

D. This building was constructed prior to 1978 and representative components affected by this project have been tested for lead-based paint. The building is not classified as a child occupied facility and therefore most requirements of 40 CFR 745 do not apply.

E. The work includes all air monitoring, dust sampling, waste testing and disposal as specified herein. Materials listed are not necessarily hazardous waste or hazardous to handle. Lead-containing paints or materials identified for demolition and disposal shall be tested by the Toxicity Characteristics Leaching Procedure (TCLP) to determine if they are hazardous waste prior to disposal. Metal waste shall be recycled where practical.

F. All work disturbing lead–containing materials shall comply with 29 CFR 1926.62, and other applicable regulations. OSHA regulations apply equally to lead-containing materials, lead-containing paints, and lead-based paints, and are referred herein as lead-containing materials.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Section 02 26 00 Hazardous Materials Assessment

B. Section 01 35 45 Airborne Contaminant Control

C. Section 02 82 33 Removal and Disposal of Asbestos Containing Materials

D. Section 02 84 18 Removal and Disposal of Chemical Hazards

1.3 DEFINITIONS AND ABBREVIATIONS: Definitions and abbreviations are provided in the applicable publications listed in Paragraph 1.04 of this section.

1.4 APPLICABLE PUBLICATIONS: The publications listed below form a part of this specification to the extent referenced.

A. General Requirements: All work shall be performed in compliance with the International Building (IBC), Fire, Fuel Gas, Mechanical, Residential, Energy Conservation and Administrative Code; Uniform Plumbing Code; the National Electrical Code; and the publications listed in this section that are in effect at the time of the bidding of this contract.

B. Title 29 Code of Federal Regulations (CFR), Department of Labor (USDOL)

Part 1910	General Occupational Safety and Health Standards
Part 1926	Safety and Health Regulations for Construction

C. Title 40 CFR, Environmental Protection Agency (EPA)

Part 260	Hazardous Waste Management System: General
Part 261	Identification and Listing of Hazardous Wastes
Part 262	Standards Applicable to Generators of Hazardous Waste
Part 263	Standards Applicable to Transporters of Hazardous Waste
Part 270	Hazardous Waste Permit Program
Part 273	Standards for Universal Waste Management
Part 311	Worker Protection

Part 745	Lead Based Paint Poisoning Prevention in Certain Residential Structures

D. Title 49 CFR, Department of Transportation (DOT)

Part 171	General Information, Regulations and Definitions
Part 172	Hazardous Materials Communication and Regulations
Part 173	General Requirements for Shipments and Packaging
Part 176	Carriage by Vessel
Part 177	Carriage by Public Highway
Part 178	Specifications for Packaging
Part 382	Requirements for Drug Testing
Part 383	Commercial Driver's License Standards

E. Alaska Administrative Codes (AAC)

8 AAC 61	Occupational Safety and Health Standards
18 AAC 60	Solid Waste Management
18 AAC 62	Hazardous Waste Management
18 AAC 70	Water Quality Standards
18 AAC 75	Oil and Hazardous Substances Pollution Control

F. Alaska Statues (AS)

AS 45.50.477	Titles Relating to Industrial Hygiene

G. Municipality of Anchorage

AMC 26.50.060	Specific Discharge Limitations

H. Federal Standards

313E	Safety Data Sheets

I. American National Standards Institute (ANSI)

Z9.2	Local Exhaust Systems
Z87.1	Eye and Face Protection
Z88.2	Practices for Respiratory Protection

J. American Society For Testing and Materials (ASTM)

D 4397	Polyethylene Sheeting
E 1728	Standard Practice for Collection of Settled Dust Samples Using Wipe Sampling Methods for Subsequent Lead Determination
E 1792	Specification for Wipe Sampling Materials for Lead in Surface Dust

K. International Code Council

International Building (IBC), Fire, Fuel Gas, Mechanical, Residential, Energy Conservation and Administrative Code	Current Standards

L. National Fire Protection Association (NFPA)

NFPA 701	Fire Tests for Flame Resistant Textiles and Films

M. National Institute of Occupational Safety and Health (NIOSH)
Manual of Analytical Methods, Current Edition

N. Underwriters Laboratories (UL)
UL 586 High-Efficiency, Particulate, Air (HEPA) Filter Units

1.5 QUALITY ASSURANCE

A. On-site Observation:
1. The safety and protection of the Contractor's employees, Subcontractor's employees, Owner's employees, the facility, and the public is the sole responsibility of the Contractor.
2. The Owner, the Owner's Representative, or representatives of State or Federal agencies may make unannounced visits to the site during the work. The Contractor shall make available two complete sets of clean, protective clothing for such visitor use. If the work requires the use of PAPR or Supplied Air Respirators, the contractor shall provide respirators to the visitor to ensure compatibility with fresh batteries or supplied air system. It is the visitor's responsibility to ensure medical qualification, training, and current "fit test" prior to using any respirator provided by the Contractor.
3. If the Owner or agency visitor determines that practices are in violation of applicable regulations, they will immediately notify the Contractor that operations must cease until corrective action is taken. Such notification will be followed by formal confirmation.
4. The Contractor shall stop work after receiving such notification. The work may not be restarted until the Contractor receives written authorization from the Owner.
5. All costs resulting from such a stop work order shall be borne by the Contractor and shall not be a basis for an increase in the contract amount or an extension of time.

B. Monitoring and Testing: Monitoring and testing during the work shall be performed as follows:
1. The Contractor shall hire Independent Testing Laboratories to collect and evaluate all air, dust, bulk, and toxicity characteristic leaching procedure (TCLP) samples that are the responsibility of the Contractor. The Contractor shall direct its laboratories, in writing, to release monitoring and testing data, and all other pertinent data and records, to the Owner.
2. The Contractor shall be responsible for monitoring its employees for potential exposure to airborne contaminants as required by this specification and all applicable regulations.
3. The Contractor shall be responsible for work area monitoring and environmental monitoring outside the work area as required by this specification.
4. The Owner may perform monitoring and testing inside the building, inside the work areas, and on the Contractor's employees while work is underway and at any time during the work.
5. Final inspection and clearance testing shall be conducted by the Contractor.
6. The Contractor shall have its Independent Testing Laboratories archive all samples until the successful completion of the project.

C. Additional Sampling of Suspect Materials:
   1. The Contractor and all Subcontractors shall be vigilant during demolition and construction in the event additional suspect lead or hazardous materials are encountered. If suspect lead or hazardous materials not previously identified are encountered, the contractor shall stop work that may be affected by this material and immediately notify the Owner. The Owner or the Owner's Representative will provide recommendations and additional testing if necessary. All sampling by the Contractor shall be at their own cost.
   2. The Contractor and all Subcontractors shall notify the Owner prior to any bulk sampling of suspect lead-containing material or other hazardous materials to allow the Owner or Owner's Representative to be present during such sampling.

1.6 PROTECTION OF EXISTING WORK TO REMAIN: Perform lead removal in the project work areas without damage or contamination of adjacent work or the facility.

1.7 MEDICAL REQUIREMENTS

A. Institute and maintain a surveillance program in accordance with 29 CFR 1926.62 and 29 CFR 1910.134.

B. Institute and maintain a random drug testing program, as required by 49 CFR 382, for all drivers of vehicles transporting hazardous materials.

1.8 TRAINING: Employ only workers who are trained and certified as required by 29 CFR 1910, 29 CFR 1926, 40 CFR 311, 40 CFR 745 and 49 CFR 383 to remove, encapsulate, barricade, transport, or dispose of lead-containing materials.

1.9 PERMITS, IDENTIFICATION NUMBERS AND NOTIFICATIONS: Secure necessary permits for hazardous material removal, storage, transport and disposal and provide timely notification as required by federal, state, and local authorities.

1.10 SAFETY AND ENVIRONMENTAL COMPLIANCE: Comply with laws, ordinances, rules, and regulations of federal, state, and local authorities regarding handling, storing, transporting, and disposing of hazardous materials and all other construction activities.

1.11 RESPIRATOR PROGRAM: Establish a respirator program as required by ANSI Z88.2 and 29 CFR 1910.134.

1.12 HAZARD COMMUNICATION PROGRAM: Implement a hazard communication program in accordance with 29 CFR 1910.1200.

1.13 SUBMITTALS

A. Submit the following documentation to the Owner for review, approval or rejection. Work shall not begin until submittals are approved.
   1. Shop drawings.
   2. Work plan.
   3. Liability insurance policy and performance bond.
   4. Schedule.
   5. Independent testing laboratory and laboratory personnel.
   6. Disposal site designations.

7. Waste transporter designations.
8. Representations.
9. "Competent Person" designation and experience.
10. EPA Training certifications and notification plan, if required.
11. Request for substitutions.

B. Shop drawings shall show:
   1. Boundaries of each lead work area, if required.
   2. Location and construction of decontamination stations, if required.
   3. Location of temporary site storage facilities.
   4. Location of air monitoring stations, both in and outside of the work area.
   5. Emergency egress route(s).
   6. Location of negative pressure exhaust systems, if required.

C. The work plan shall include procedures for:
   1. Work area set-up and protection.
   2. Worker protection and decontamination.
   3. Initial exposure determination(s).
   4. Lead removal procedures.
   5. Waste testing, transport, and disposal procedures.
   6. Monitoring and testing procedures (Sampling and Analysis Plan).
   7. Spill clean-up emergency procedures.

D. Insurance Policy and Bond: Submit copies of the Contractor's or Subcontractor's insurance policy and performance bond. Submittal requirement is only to ensure that the insurance certificate(s) show specific coverage for the potentially hazardous materials being handled by this project. The insurance and bond amounts and certificate holder requirements are addressed in other portions of the contract documents and are not covered as part of this submittal requirement.

E. Schedule: Submit construction schedule by work area.

F. Independent Testing Laboratories and Laboratory Personnel: Submit the name, location, and phone number of proposed independent testing laboratories, and the names and certifications of the industrial hygiene technicians. Include the laboratory's accreditation. Not all laboratories will require all accreditations.
   1. The Independent Testing Laboratories shall be acceptable to Owner.
   2. Submit evidence that the laboratory is currently judged proficient in lead analysis, as determined by the Environmental Lead Proficiency Analytical Testing (ELPAT) Program, of the American Industrial Hygiene Association (AIHA) Environmental Lead Laboratory Accreditation Program (ELLAP) for lead in paint chip, soil, and dust wipe samples.
   3. Submit evidence that the laboratory is currently certified by OSHA to perform blood lead analysis.
   4. Submit evidence that the laboratory has demonstrated proficiency as determined by ELPAT or ELLAP performance for NIOSH Method 7082 and/or NIOSH Method 7105 analytical method for the determination of lead in air.

5. Submit evidence that the laboratory has demonstrated proficiency in performing analyses according to Method 1311 TCLP, corresponding to the current version of Test Methods for Evaluating Solid Wastes (Chemical Physical Methods), SW-846. Evidence may include successful participation in a recognized inter-laboratory quality control program such as a laboratory certified by the California Health and Welfare Agency, Department of Health Services, or a more informal inter-laboratory quality control program.
6. Submit evidence that the laboratory is currently accredited by the American Industrial Hygiene Association (AIHA).
7. Submit the name, address, telephone number, and résumé of the Contractor's Industrial Hygienist (IH) who prepared the Sampling and Analysis Plan and will oversee the on-site monitoring, visual inspections and clearance testing. Submit the names, addresses, and résumés of industrial hygiene technicians who may assist the IH for on-site tasks. Submit documentation that the IH has all the qualifications for the assigned duties as required by the Contractor's liability insurance policy.
8. Submit copies of the Contractor's letter to each of the independent testing laboratories, directing each to release all the results for this project to the Owner, as these results become available and as specified herein.

G. Disposal Site: Submit the name and location of the proposed Environmental Protection Agency (EPA) permitted disposal site.

H. Waste Transporter: Submit the name and address of the proposed waste transporter.

I. Representations: Submit statement by the Contractor that records of employees' work assignments, certifications, respirator fit tests, and medical records are accurate, up-to-date, and available for inspection.

J. Competent Person: Submit the name and certifications of the Contractor's proposed Competent Person and a list of their previous projects. Certify that the Competent Person has the knowledge and training to supervise the work in compliance with the publications listed in Paragraph 1.04 above.

K. Substitutions: Submit requests for substitutions of materials, equipment and methods.

L. Updated Project Information: Submit changes to the submitted project information at least 24 hours prior to the effective time of change for the following:
   1. Updated schedules for lead removal.
   2. Change in Competent Person.
   3. Changes to work plan.

1.14 TEST REPORTS: Submit the following documentation produced during the work as soon as received:

A. Project Daily Logs: Submit the previous day's Daily Logs. Logs shall include regulated area sign-in sheets and list of lead-containing materials removed, including quantities and locations of those materials, in the units used on the drawings. Claims for additional quantities will not be addressed unless daily quantities are submitted.

B. Daily Monitoring: Submit daily, all results of Contractor's air, and dust monitoring (submit no later than 24 hours after the end of the shift). Submittal shall consist of daily monitoring report, field data sheets, the analytical laboratory's results, and sketch of sample locations. Submit all results of any TCLP sampling or testing of bulk materials to Owner within 24 hours of receipt of results. Bulk or TCLP sample submittal shall consist of daily monitoring report, field data sheets, the analytical laboratory's results, and sketch of sample locations (sketch not required for TCLP samples, but descriptions of materials included is required).

1.15 PROJECT COMPLIANCE DOCUMENTS: Submit the following documents to the Owner with application for final payment:

A. Contractor's actual project "Start and Finish" dates.

B. Waste testing results per Paragraph 3.05 (A).

C. Waste Shipment Records (Manifest EPA form 8700-22) if required.

D. Clearance sampling and soil sampling data sheets (if required) and laboratory reports.

E. Disposal site receipts, or certification of acceptance for recycling.

F. Final clearance submittals as outlined in 3.07 (if required).

G. Evidence that each employee who was engaged in lead disturbance/removal work or who was exposed to lead completed training on lead covering the requirements of 29 CFR 1926.62

1.16 SANITARY FACILITIES: Provide adequate toilet and hygiene facilities.

1.17 MATERIAL STORAGE: Store all materials subject to damage off the ground and secure from damage, weather, or vandalism.

1.18 ON-SITE DOCUMENTATION: The Contractor shall maintain on the job site, at a location approved by the owner, copies of the following data for safety procedures, equipment, and supplies used for the work

A. Equipment: Show the model, style, capacity and the operation and maintenance procedures for the following, as applicable:
   1. High-Efficiency, Particulate, Air (HEPA) Filtration units.
   2. HEPA Vacuum cleaners.
   3. Pressure differential recording equipment.
   4. Heat stress monitoring equipment.

B. Safety Data Sheets (SDSs): Maintain SDSs for each encapsulant, surfactant, solvent, detergent, and other material proposed to be used.

C. Respiratory Protection Plan: The Contractor's written respirator program.

PART 2 - PRODUCTS

2.1 PERSONAL PROTECTIVE EQUIPMENT: Provide personal protective clothing as approved and selected by the IH.

A. Respirators: Provide personally issued and marked respirators approved by the National Institute of Occupational Safety and Health (NIOSH). Provide sufficient replacements for respirators with disposable canisters. Use respirators equipped with dual cartridges whenever both lead hazards and other respiratory hazards exist in the work area.

B. Provide filter cartridges approved for each airborne contaminant which may be present. NIOSH approved filter cartridges shall be used. At no time shall the permissible exposure limit (PEL) for the contaminant exceed the PEL listed in 8 AAC 61.1100.

C. Whole Body Protection: Provide approved aprons, gloves, eye protection, and hard-hats, and other protective clothing as required to meet applicable safety regulations to personnel potentially exposed to lead dust or fumes above the permissible exposure limit (PEL). Wear this protection properly. Full facepiece respirators shall meet the requirements of ANSI Z87.1.

D. Provide protective personal equipment and clothing at no cost to the workers.

2.2 DECONTAMINATION UNIT

A. Provide a temporary three-stage decontamination unit, attached in a leak-tight manner to each Contained Work Area. Decontamination units shall consist of a clean room equipped with separate lockers for each worker, a shower room, and an equipment locker room equipped with separate lockers for each worker.

B. Shower specifications: Locate flow and temperature controls within the shower and be adjustable by the user. Hot water service may be secured from the building hot water system if available, but only with back-flow protection installed by the Contractor at the point of connection, and with prior notification and approval by the Owner. Should sufficient hot water be unavailable, the Contractor shall provide a minimum 40 gallon electric hot water heater with a minimum recovery rate of 20 gallons per hour. Water from the shower room shall not be allowed to wet the floor in the clean room.

2.3 WASTE WATER FILTERS: Install the waste water filters in a series of stages with the final filtration stage sufficient to meet discharge standard of 18 AAC 70 and/or any local sewage system discharge limit for lead. Size the waste water pump for 1.25 times the shower head flow-rate. Dispose all filters as lead contaminated waste.

2.4 WARNING SIGNS AND TAPE: Post warning signs and tape at the boundaries and entrances to lead disturbance and removal work areas. Signs required by other statutes, regulations, or ordinances may be posted in addition to, or in combination with, this warning sign. Conform warning signs and tape to the requirements of 29 CFR 1926.62.

2.5 WARNING LABELS: Affix warning labels to all hazardous waste disposal containers as described in the Contractor's approved Solid Waste Disposal Plan. Conform labeling to 29 CFR 1926.62 and 49 CFR 100-199.

2.6 NEGATIVE PRESSURE EXHAUST SYSTEM: Use the negative pressure exhaust systems to exhaust each contained work area where the PEL will or is expected to be exceeded. Operate the negative pressure exhaust system continuously (24 hours a day) during lead work. Select the negative pressure exhaust system equipment to provide a minimum of 4 air changes per hour under load within the work area. The negative pressure exhaust system shall have a minimum of two stages of pre-filtration ahead of the HEPA filter: The HEPA filter shall bear the UL-586 label. In no case shall the building ventilation system be used as the local exhaust for the contained work area. Terminate the exhaust outside of the building. The exhaust ventilation system equipment shall be equipped with lock-out protection to prevent operation without a HEPA filter properly installed. The exhaust system equipment shall be equipped with the following instrumentation: a static pressure gauge with low flow alarm, an elapsed time indicator, automatic shutdown capability in the event of a major rupture in the HEPA filter or blocked air discharge and an automatic re-start when power is restored after a power failure.

2.7 PRESSURE DIFFERENTIAL MONITORING EQUIPMENT: Provide continuous monitoring of the pressure differential with an automatic recording instrument for each contained work area. Locate the instrument in a clean area where personnel have access to it without respiratory protection. The instrument shall be fitted with an alarm should the negative pressure drop below -0.02 inches of water column relative to the air outside containment.

2.8 TOOLS: Vacuum cleaners shall be equipped with HEPA filters. Use only approved power tools to remove lead-containing material. Do not use open-flame and electric element heat-gun type tools with temperatures in excess of 700° F to remove lead-containing material. Remove all residual lead contamination from reusable tools being removed from lead disturbance or removal work areas. Electrical tools and equipment shall be UL listed.

2.9 AIR MONITORING EQUIPMENT: The Contractor's IH shall select the air monitoring equipment to be used for the evaluation of airborne lead.

2.10 EXPENDABLE SUPPLIES: Provide flame resistant 6-mil thick polyethylene sheet plastic in widths necessary to minimize seams.

2.11 SAFETY DATA SHEETS (SDSs): Provide SDSs for all chemical materials brought onto the work-site.

2.12 OTHER ITEMS: Provide other items, such as consumable materials, disposable and/or reusable cleaning equipment and hand tools, or miscellaneous construction equipment and materials, in sufficient quantity as necessary to fulfill and complete the requirements of the contract. Electrical equipment and supplies shall be UL listed.

2.13 ENCAPSULANTS: Encapsulants shall contain no toxic or hazardous substances. Encapsulants shall be compatible with the products to which they are applied and be compatible with replacement products.

PART 3 - EXECUTION

3.1 WORK AREAS

A. Lead Control Areas: A control area, structure or containment where lead-containing or contaminated materials are being disturbed. Critical barriers and/or physical boundaries shall be employed to isolate the lead control area and to prevent migration of lead contamination and unauthorized entry of personnel.

B. Contained Lead Work Area Requirements: Construct contained lead work areas as described in the Contractor's approved work plan. A contained lead work area is required whenever airborne lead levels cannot be maintained below the OSHA action level at the boundary of a lead work area.

C. Building Ventilation System: Shut down and isolate by air-tight seals all building ventilation systems supplying air into or returning air from a lead control area or contained lead work area.

D. Building Electrical Systems: Verify that the electrical service is deactivated, disconnected and locked out where necessary for wet washing and/or removal. Provide temporary electrical service, equipped with ground fault protection, where needed.

3.2 PERSONNEL PROTECTION PROCEDURES

A. Initial Determination: An initial determination is required in the absence of acceptable prior exposure data in accordance with 29 CFR 1926.62. Establish an initial lead work area for each material to be disturbed and each disturbance procedure if required. Isolate these lead work areas from the rest of the building. Personnel working in these areas shall wear respiratory protection and personal protective equipment as directed by the IH. Perform personal and work area air monitoring as directed by the IH. Operational decontamination facilities shall be available. Work performed shall be representative of the work to be done during the remainder of the project.

B. Respirator Evaluation: Upgrading, downgrading, or not requiring respirators shall be recommended by the Contractor's IH based on the measured airborne lead-containing dust or fume concentrations. Immediately implement recommendations to upgrade the respiratory protection, followed by notification to the Owner. NOTE: Submit recommendations in writing to downgrade respirator type or not require respirators to the Owner for review and written approval prior to implementation.

C. Decontamination Procedures: Worker and material decontamination procedures shall be as described in the Contractor’s approved work plan. Worker decontamination shall be as directed by the Contractor’s competent person.

D. Work Stoppage: Stop work if the IH, the Owner, or a representative of a regulatory agency determines that the work is not in compliance with the Contractor's approved work plan, these specifications, or applicable laws and regulations. The Contractor shall stop work and notify the Owner whenever the measured concentrations of lead outside the lead control area equal or exceed 30 $\mu g/m^3$ for airborne lead or 200 $\mu g/ft^2$ for lead dust on surfaces that would normally be accessible by building occupants. When such work stoppage occurs, the cause of the contamination shall be corrected and the damaged or contaminated area shall be restored to its original decontaminated condition by the Contractor at no expense to the Owner. The Contractor is responsible for removing dusts and debris that were generated as a result of his work.

E. The Contractor shall adhere to all applicable regulations regarding entry into confined spaces.

3.3 LEAD DISTURBANCE AND REMOVAL PROCEDURES:

A. General: Perform lead disturbance or removal work in accordance with the Contractors approved work plan, applicable regulations and this specification.

B. Pre-Cleaning: Removal of existing loose paint chips is included in the scope of work. Pre-clean surfaces by HEPA vacuum and wet washing/wiping prior to the establishment of a work area.

C. Perform waste battery storage and disposal in accordance with 40 CFR 261, 40 CFR 264, 40 CFR 265, 40 CFR 273 and 8 AAC.

3.4 MONITORING AND TESTING: Conduct daily sampling in accordance with the Contractor's accepted Sampling and Analysis Plan and this specification. The Owner may conduct air monitoring in the Contractor’s work areas and on the Contractor’s employees.

A. Perform environmental air monitoring outside the lead work area for each lead work area without a negative initial determination. Take a minimum of two lead-in-air samples inside the work area, and two lead-in-air samples in adjacent areas.

B. Perform dust wipe sampling for each lead work area without a negative initial determination. Include at least one sample immediately outside the entrance to the work area daily.

C. Take personnel samples in accordance with 29 CFR 1926.62. Personal samples for an employee will include a minimum of two samples per 8 hour shift. Employees will be monitored at the rate of at least one employee for every eight people performing each task in each work area. Persons performing separate tasks or in separate lead work areas shall be sampled separately.

D. Reduction of monitoring: For each operation for which the Negative Initial Determination established workers’ exposure will be below the action level, the Contractor’s IH may petition the Owner’s Representative to recommend that the monitoring as required above be reduced for the specific task or operation.

3.5 DISPOSAL

A. Sampling of Waste Materials: The Contractor shall test waste materials according to 40 CFR 261 and the disposal site's permit to determine if they are hazardous waste and to dispose of them accordingly. Collect, package and transport to an EPA approved Hazardous Waste Disposal Site all bulk debris, loose paint chips, fines, dust from HEPA filters and vacuum bags, unfiltered waste water, water filter cartridges, disposable personal protective equipment (including respirator filters, poly, and tape) which do not have TCLP test results that classify the material as non-hazardous for lead. Lead-acid batteries and other batteries are classified by the EPA as Universal Wastes. The EPA encourages that all Universal Wastes be recycled in accordance with 40 CFR 273, or in the case of lead-acid batteries, in accordance with 40 CFR 266, subpart G.

B. Hazardous Waste Disposal: Dispose of hazardous project wastes as required by 40 CFR 260 and the Contractor's approved work plan.

C. Construction (Non-Hazardous) Waste Disposal: Dispose of solid (non-hazardous) waste in a permitted waste facility, in accordance with applicable federal, state, and local laws and regulations. Burning of waste is prohibited.

D. Salvageable Materials: The Contractor may salvage metallic lead, lead-acid batteries and other materials to keep such materials from entering the project waste stream. Sell or transfer salvage with a document of exempt status as provided by 40 CFR 261.

E. Waste Storage: Temporarily store solid wastes as described in the approved work plan.

3.6 FINAL CLEANING AND VISUAL INSPECTION: Perform a final cleaning and visual inspection of each lead control area prior to release to unprotected workers in accordance with the Contractor's approved work plan. Clean the lead control area by vacuuming with a HEPA filtered vacuum cleaner, wet mopping or wet wiping. Do not dry sweep or use pressurized air to clean up the area. A final visual inspection report shall be provided verifying that all lead disturbance required by the contract has been completed and that all visible dust and debris subject to disturbance by the planned work under this contract have been removed and the area HEPA vacuumed, wet mopped or wet wiped.

3.7 WORK AREA CLEARANCE TESTING: Work area clearance testing by the Contractor is required for each lead control area where the lead action level has been exceeded. Clearance testing shall be performed only after a visual inspection report by the Contractor's IH Technician has documented that the work area is clean and that all lead disturbance required by the contract has been completed. Clearance testing shall include the following:

A. A visual inspection report by the Contractor's IH Technician verifying that all lead disturbance required by the contract has been completed and that all visible dust and debris subject to disturbance by the planned work under this contract have been removed and the area HEPA vacuumed, wet mopped or wet wiped.

B. Three (3) lead wipe and/or lead soil sample results from within the lead control area per the Contractor's approved work plan and in accordance with NIOSH method 9100. Clearance levels shall be 200 µg/ft^2 for wipes or 500 ppm in soil.

C. Work area barriers or containments shall not be removed until clearance testing results are reviewed and approved by the Owner.

3.8 SUBSTANTIAL COMPLETION

A. After the work area barriers and temporary construction and equipment have been removed, the Contractor shall inspect the work area to verify that no lead debris, contaminated water, or other residue remains. Any remaining residue shall be cleaned up using HEPA vacuum cleaners and wet wiping methods.

B. The Contractor shall certify that the work area has been cleaned of all lead in compliance with the contract, and that there is no unrepaired damage to walls, ceilings, doors or surfaces or finishes other than that called for by the scope of work.

C. Costs of restoration of damaged finishes shall be borne by the Contractor.

END OF SECTION

SECTION 02 8418

REMOVAL AND DISPOSAL OF CHEMICAL HAZARDS

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK: The work includes proper removal and disposal of electrical equipment and chemical hazards related to the Snowden Admin Building Mechanical Upgrades as shown on the drawings and as specified herein. Items to be removed or disturbed may include, but are not limited to:

A. Mercury and mercury compounds in electrical equipment and light fixtures, switches, etc.

B. PCB containing ballasts and light fixture components contaminated with PCB-containing oil.

C. Electrical equipment and building components containing or contaminated with PCB-containing oil. Note: Where the ballasts have previously been replaced, fixtures and all components may be contaminated with PCB-Containing Oils, and shall either be decontaminated or disposed of as PCB contaminated equipment.

D. Materials with measurable amounts of PCB's present, that may be classified as PCB Bulk Product Wastes.

E. Heat transfer fluids.

F. Radioactive components in smoke detectors and self-illuminating exit signs.

G. Stored common household chemicals, including construction materials, water treatment chlorine, paint thinners, fuels, new and used lubrication products. Contractor to coordinate, characterize and quantify stored materials required to be removed.

H. Ozone Depleting Substances (ODS) in refrigeration equipment.

I. Universal Waste batteries for exit and emergency lights, and other equipment.

J. Notification of Potential Hazards: Asbestos, lead and other potentially hazardous materials are present in the building that may impact the work of all trades. Regulated air contaminants, including asbestos and lead, are also present in settled and concealed dust in and on architectural, structural, mechanical and electrical components or systems throughout the building. All trades shall coordinate with other trades and conduct their work to prevent worker exposure or site contamination. Refer to Specification Divisions 0, 1 and 2 for specific information concerning disturbing, removing and disposing of these materials and the installation of new materials or components. This notification is provided in accordance with EPA and OSHA requirements.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A. Section 02 26 00 Hazardous Materials Assessment

B. Section 01 35 45 Airborne Contaminant Control

C. Section 02 82 33 Removal and Disposal of Asbestos Containing Materials

D. Section 02 83 33 Removal and Disposal of Materials Containing Lead

1.3 DEFINITIONS AND ABBREVIATIONS: Definitions and abbreviations are provided in the applicable publications listed in Paragraph 1.04 of this Section.

1.4 APPLICABLE PUBLICATIONS: The publications listed below form a part of this specification to the extent referenced.

A. General Requirements: All work shall be performed in compliance with the International Building (IBC), Fire, Fuel Gas, Mechanical, Residential, Energy Conservation and Administrative Code; Uniform Plumbing Code; the National Electrical Code; and the publications listed in this section that are in effect at the time of the bidding of this contract.

B. Title 10 Code of Federal Regulations (CFR), Nuclear Regulatory Commission
Part 20 Standard for Protection Against Radiation

C. Title 29 CFR, Department of Labor (USDOL)
Part 1910 General Occupational Safety and Health Standards
Part 1926 Safety and Health Regulations for Construction

D. Title 40 CFR, Environmental Protection Agency (EPA)
Part 61 National Emission Standards for Hazardous Air Pollutants
Part 260 Hazardous Waste Management System: General
Part 261 Identification and Listing of Hazardous Waste
Part 262 Standards Applicable to Generators of Hazardous Waste
Part 263 Standards Applicable to Transporters of Hazardous Waste
Part 270 The Hazardous Waste Permit Program
Part 273 Standards for Universal Waste Management
Part 311 Worker Protection
Part 761 Polychlorinated Biphenyls (PCBs)

E. Title 49 CFR, Department of Transportation (DOT)
Part 171 General Information, Regulations and Definitions
Part 172 Hazardous Materials Communication and Regulations
Part 173 General Requirements for Shipments and Packaging
Part 177 Carriage by Public Highway
Part 178 Specifications for Packagings
Part 382 Requirements for Drug Testing
Part 383 Commercial Driver's License Standards

F. State of Alaska Administrative Codes (AAC)

8 AAC 61	Occupational Safety and Health Standards
18 AAC 60	Solid Waste Management
18 AAC 62	Hazardous Wastes
18 AAC 75	Oil and Hazardous Substances Pollution Control

G. State of Alaska Statutes (AS)

AS 45.50.477	Titles Relating to Industrial Hygiene

H. Federal Standards

313E	Safety Data Sheets

I. American National Standard Institute (ANSI)

Z9.2	Local Exhaust Systems
Z87.1	Eye and Face Protection
Z88.2	Practices for Respiratory Protection
C78.LL 1256	Procedures for Fluorescent Lamp Sample Preparation and Toxicity Characteristic Leaching Procedure.

J. American Society for Testing and Materials (ASTM)

D-4397	Polyethylene Sheeting

K. International Code Council

International Building (IBC), Fire, Fuel Gas, Mechanical, Residential, Energy Conservation and Administrative Code Current IC Standards

L. National Fire Protection Association (NFPA)

NFPA 701	Fire Tests for Flame Resistant Textiles and Films

M. National Institute of Occupational Safety and Health (NIOSH)

Manual of Analytical Methods, Current Edition

1.5 QUALITY ASSURANCE

A. On-site Observation:

1. The safety and protection of the Contractor's employees, sub-contractor's employees, Owner's employees, the facility, and the public is the sole responsibility of the Contractor.
2. The Owner, the Owner's Representative, or representatives of State or Federal agencies may make unannounced visits to the site during the work. The contractor shall make available two complete sets of clean protective clothing for such visitor use. If the work requires the use of PAPR or Supplied Air Respirators, the contractor shall provide respirators to the visitor to ensure compatibility with fresh batteries or supplied air system. It is the visitor's responsibility to ensure medical qualification, training, and current "fit test" prior to using any respirator provided by the Contractor.
3. If the Owner or agency visitor determines that practices are in violation of applicable regulations, they will immediately notify the Contractor that operations must cease until corrective action is taken. Such notification will be followed by formal confirmation.

4. The Contractor shall stop work after receiving such notification. The work may not be restarted until the Contractor receives written authorization from the Owner.
5. All costs resulting from such a stop work order shall be borne by the Contractor and shall not be a basis for an increase in the contract amount or an extension of time.

B. Monitoring and Testing: Monitoring and testing during the work shall be performed as follows:
1. The Contractor shall hire Independent Testing Laboratories to collect and evaluate all air, bulk, and toxicity characteristic leaching procedure (TCLP) samples, which are the responsibility of the Contractor. The Contractor shall direct its laboratories, in writing, to release monitoring and testing data, and all other pertinent data and records, to the Owner.
2. The Contractor shall be responsible for monitoring its employees for potential exposure to airborne contaminants as required by specification 01 35 45 and all applicable regulations.
3. The Contractor shall be responsible for work area monitoring and environmental monitoring outside the work area as required by this specification. All sampling by the Contractor shall be at their own cost.
4. The Owner may perform monitoring and testing inside the building, inside the work areas, and on the Contractor's employees while work is underway and at any time during the work.
5. The Contractor shall have its Independent Testing Laboratories archive all samples until the successful completion of the project.
6. Final inspection and clearance testing shall be conducted by the Contractor.

1.6 PROTECTION OF EXISTING WORK TO REMAIN: Perform hazardous material removal work without damage or contamination of adjacent work or the site.

1.7 MEDICAL REQUIREMENTS

A. Institute and maintain a medical surveillance program in accordance with 29 CFR 1910.134.

B. Institute and maintain a random drug testing program, as required by 49 CFR 382, for all drivers of vehicles transporting hazardous materials.

1.8 TRAINING: Employ only workers who are trained and certified as required by 29 CFR 1910, 29 CFR 1926, 40 CFR 311, and 49 CFR 383 to remove, encapsulate, barricade, transport, or dispose of hazardous materials.

1.9 PERMITS AND NOTIFICATIONS: Secure necessary permits for hazardous material removal, storage, transport and disposal and provide timely notification as required by federal, state, and local authorities.

1.10 SAFETY AND ENVIRONMENTAL COMPLIANCE: Comply with laws, ordinances, rules, and regulations of federal, state, and local authorities regarding handling, storing, transporting, and disposing of hazardous materials and all other construction activities.

1.11 RESPIRATOR PROGRAM: Establish a respirator program as required by ANSI Z88.2 and 29 CFR 1910.134.

1.12 HAZARD COMMUNICATION PROGRAM: Implement a hazard communication program in accordance with 29 CFR 1910.1200.

1.13 SUBMITTALS

A. Approval: Submit the following documentation to the Owner for review, approval, or rejection. Work shall not begin until submittals are approved.
   1. Shop drawings.
   2. Hazardous material removal work plan.
   3. Liability insurance policy and performance bond.
   4. Schedule.
   5. Independent testing laboratories.
   6. Disposal site designations.
   7. Waste Transporter Designations.
   8. Notifications and certifications.
   9. Competent Person Designation Notifications and Certifications.
   10. Request for Substitutions.

B. Shop drawings shall show:
   1. Boundaries of all hazardous material removal areas.
   2. Location and construction of decontamination stations, if required.
   3. Location of temporary site storage facilities.
   4. Location of air monitoring stations, if required.
   5. Emergency egress route(s).

C. The work plan shall include procedures for:
   1. Work area set-up and protection.
   2. Worker protection and decontamination.
   3. PCB removal procedures.
   4. Mercury-containing lamp removal and packaging procedures.
   5. Mercury-containing material removal procedures.
   6. Monitoring and testing procedures (Sampling and Analysis Plan).
   7. Radioactive materials removal and tracking procedures.
   8. Waste handling, packaging, labeling, manifesting and disposal procedures.

D. Insurance Policy and Performance Bond: Submit copies of the Contractor's or Subcontractor's insurance policy and performance bond. Submittal requirement is only to ensure that the insurance certificate(s) show specific coverage for the potentially hazardous materials being handled by this project. The insurance and bond amounts and certificate holder requirements are addressed in other portions of the contract documents and are not covered as part of this submittal requirement.

E. Schedule: Submit construction schedule by work area.

F. Independent Testing Laboratories and Laboratory Personnel: Submit the name, location, and phone number of proposed independent testing laboratories, and the names and certifications of industrial hygiene technicians. Include the laboratory's accreditation. Not all laboratories will require all accreditations.

1. The Independent Testing Laboratories shall be acceptable to the Owner.
2. Evidence that a laboratory has demonstrated proficiency in performing analyses according to Method 1311 TCLP, corresponding to the current version of Test Methods for Evaluating Solid Wastes (Chemical Physical Methods), SW-846. Evidence may include successful participation in a recognized inter-laboratory quality control program such as a laboratory certified by the California Health and Welfare Agency, Department of Health Services, or a more informal inter-laboratory quality control program.
3. Submit the name, address, telephone number, and résumé of the Industrial Hygienist (IH) who prepared the Sampling and Analysis Plan and will oversee the on-site monitoring. Submit the names, addresses, and résumés of industrial hygiene technicians who may assist the IH for on-site tasks. The Contractor shall submit documentation that the IH has all the qualifications for the assigned duties as required by the Contractor's liability insurance policy.
4. Submit copies of the Contractor's letters to the independent testing laboratories, directing each to release all the results for this project to the Owner, as these results become available and as specified herein.

G. Disposal Site: Submit the name and location of the proposed Alaska Department of Environmental Conservation (DEC) or U.S. Environmental Protection Agency (EPA) permitted disposal sites.

H. Waste Transporter: Submit the name, address and EPA Hazardous Waste Transporter identification number for the proposed waste transporters.

I. Certifications, Permits, and Notifications: Obtain and submit copies of EPA Hazardous Waste Generator identification number for the purpose of accumulating hazardous waste in accordance with 40 CFR 262. Submit copies of refrigerant recovery technician’s EPA certification and company name when refrigeration systems are being demolished or deactivated. If the site does not have an EPA ID number for hazardous wastes, the contractor will need to assist the Owner in obtaining the EPA ID number, but the Owner will be available to sign the application documents and shipment records prepared by the contractor.

J. Representations: Submit statement by the Contractor that records of employees' work assignments, certifications, respirator fit tests, and medical records are accurate, up-to-date, and available for inspection.

K. Competent Person: Submit the name and certifications of the Contractor's proposed Competent Person and a list of their previous projects. Certify that the Competent Person has the knowledge and training to supervise the work in compliance with the publications listed in Paragraph 1.04 above.

L. Substitutions: Submit requests for substitutions of materials, equipment and methods.

M. Updated Project Information: Submit changes to the submitted project information at least 24 hours prior to the effective time of change for the following:
   1. Updated schedules for hazardous material removal.
   2. Change in competent person.
   3. Changes to work plan.

1.14 TEST REPORTS: Submit the following documentation produced during the work as received:

A. Project Daily Logs: Submit the previous day's Daily Logs. Logs shall include regulated area sign-in sheets and list of chemical hazards removed including quantities and locations of those materials, in the units used on the drawings. Claims for additional quantities will not be addressed unless daily quantities are submitted.

B. Monitoring and testing data sheets and laboratory reports.

1.15 PROJECT COMPLIANCE DOCUMENTS: Submit the following documents with the application for final payment.

A. Daily sign-in sheets.

B. Contractor's actual "start and finish" project dates.

C. All hazardous waste shipping manifests.

D. Disposal site receipts, including manufacturer name and serial numbers from each radioactive exit sign (if removed).

E. All final laboratory results.

F. Submit legible copies of the each Worker's Hazardous Waste Operations and Emergency Response (HAZWOPR) cards and/or a copy of the refresher training certificate to show that all workers have received their initial training or an eight-hour refresher course within the past year.

1.16 SANITARY FACILITIES: Provide adequate toilet and hygiene facilities.

1.17 MATERIAL STORAGE: Store all materials subject to damage off the ground and secure from damage, weather, or vandalism.

1.18 ON-SITE DOCUMENTATION: The Contractor shall maintain on the job site, at a location approved by the owner, copies of the following data for safety procedures, equipment, and supplies used for the work.

A. Equipment: Show the model, style, operations, and maintenance for the following, as applicable:
   1. Respirators, PAPR and canister types.
   2. Decontamination facilities.
   3. Specialized hazards handling equipment.

B. Expendable supplies: Maintain the manufacturer's safety data, and use the data for the following supplies:
   1. Coveralls and headgear.
   2. Boots, aprons, and gloves.
   3. Disposal containers.
   4. Solvents and degreasers.

C. Safety Data Sheets (SDS): Maintain SDSs for each encapsulant, surfactant, solvent, detergent, and other material proposed to be used.

D. Respirator Program: The Contractor's written respirator program.

PART 2 - PRODUCTS

2.1 PERSONAL PROTECTIVE EQUIPMENT: Provide personal protective clothing as approved and selected by the IH.

A. Respirators: Provide personally issued and marked respirators approved by the National Institute of Occupational Safety and Health (NIOSH). Provide sufficient replacements for respirators with disposable canisters.

B. Provide filter cartridges approved for each airborne contaminant which may be present. NIOSH approved filter cartridges shall be used. At no time shall the permissible exposure limit (PEL) for the contaminant exceed the PEL listed in 8 AAC 61.1100.

C. Whole Body Protection: Provide approved aprons, gloves, goggles, face shields, and hard-hats, and other protective clothing as required to meet applicable safety regulations to all workers engaged in hazardous materials removal. Full facepiece respirators shall meet the requirements of ANSI Z87.1.

D. Provide protective personal equipment and clothing at no cost to the workers.

2.2 DECONTAMINATION UNIT: Provide a decontamination station in accordance with the Contractor's accepted work plan and applicable regulations.

2.3 WARNING SIGNS AND TAPE: Post warning signs and tape at the boundaries and entrances to chemical hazards removal areas. Signs required by other statutes, regulations, or ordinances may be posted in addition to, or in combination with, this warning sign.

2.4 WARNING LABELS: Affix warning labels to all hazardous waste disposal containers as described in the Contractor's approved Solid Waste Disposal Plan. Conform labeling to 49 CFR 100-199.

2.5 SPECIALIZED EQUIPMENT: Lamp crushers and other specialized equipment to consolidate, reduce or treat hazardous materials are classified as RCRA treatment and the EPA specifically prohibits the use of Drum Top Crushers for management of fluorescent lamps as universal waste unless an equivalency determination is made by the state.

2.6 EXPENDABLE SUPPLIES: Provide flame resistant 6-mil thick polyethylene sheet plastic in widths necessary to minimize seams.

2.7 SAFETY DATA SHEETS (SDSs): Provide SDSs for all chemical materials brought onto the work-site.

2.8 OTHER ITEMS: Provide other items, such as consumable materials, disposable and/or reusable cleaning equipment and hand tools, or miscellaneous construction equipment and materials, in sufficient quantity as necessary to fulfill and complete the requirements of the contract. Electrical equipment and supplies shall be UL listed.

2.9 ENCAPSULANTS: Encapsulants shall contain no toxic or hazardous substances. Encapsulants shall be compatible with the products to which they are applied and be compatible with any replacement products.

PART 3 - EXECUTION

3.1 WORK AREAS

A. Electrical Power: Verify that the electrical power to the equipment being removed is deactivated, disconnected, and locked-out.

B. Loaded Disposal Drums: The Contractor shall provide handling equipment to move disposal drums loaded with hazardous wastes.

3.2 PERSONNEL PROTECTION PROCEDURES

A. All personnel entering the work area shall sign the daily log and put on clean protective clothing.

B. Basic protective clothing shall consist of aprons, gloves, goggles, face shields, and hard hats--with the addition of approved full body coveralls, bib-type aprons, and respirators as conditions warrant.

C. Make available a contaminated material disposal drum, 6-mil. plastic wrapping and tape, or appropriate bagging materials for leaking ballasts and/or oil-contaminated components.

D. Decontamination Procedures: All personnel handling or removing hazardous materials will comply with the decontamination procedures as described in the approved work plan.

3.3 HAZARDOUS MATERIAL REMOVAL PROCEDURES: Conduct hazardous materials removal, handling, packaging, storage, transport and disposal in accordance with the Contractor's approved work plan, applicable regulations, and this specification.

A. Perform PCB related work in accordance with 40 CFR 761, 8 AAC 61, 18 AAC 60 and 18 AAC 62.

B. Perform mercury-containing lamps work in accordance with 40 CFR 261, 40 CFR 264, 40 CFR 265, 40 CFR 273 and 8 AAC.

C. Perform waste battery work in accordance with 40 CFR 261, 40 CFR 264, 40 CFR 265, 40 CFR 273 and 8 AAC.

D. Perform radioactive smoke detector and exit sign work in accordance with 10 CFR 20, 8 AAC 61, 18 AAC 60 and 18 AAC 62.

E. Perform ozone depleting substances work in accordance with 40 CFR 82, 8 AAC 61, 18 AAC 60, and 18 AAC 62.

F. Perform heat transfer fluid work in accordance with 40 CFR 261, 40 CFR 264, 40 CFR 265, 40 CFR 273 and 8 AAC.

3.4 MONITORING AND TESTING: Conduct daily sampling in accordance with the Contractor's accepted Sampling and Analysis Plan and this Specification. The Owner may conduct air monitoring in the Contractor's work areas and on the Contractor's employees.

A. Personal, work area, and environmental monitoring for airborne contaminants shall be performed by industrial hygiene technicians who are employees of (one of) the Contractor's Independent Testing Laboratories.

B. Perform air monitoring in accordance with 29 CFR 1926, current EPA guidance, and as specified herein. Calibrate all sampling pumps on-site with a calibrated transfer standard before and after each sample. Built-in rotameters on pumps are not acceptable for calibration.

C. Monitor for all airborne contaminants listed in 29 CFR 1926.55 and 8 AAC 61.1100, which are produced by the Contractor's operations.

D. Contractor shall test waste materials as required by 40 CFR 261, the disposal site's permit, and it's approved work plan. If performed, TCLP testing of fluorescent lamps shall comply with ANSI/NEMA Standard Procedure for Fluorescent Lamp Sample Preparation and Toxicity Characteristic Leaching Procedure, C78.LL 1256-2003 or latest version.

3.5 DISPOSAL

A. Dispose of hazardous wastes in an EPA permitted hazardous waste disposal site as required by 40 CFR 260 and 40 CFR 761, the Contractor's approved plan, and the disposal site operator.

B. Comply with current waste disposal, handling, labeling, storage, and transportation requirements of the waste disposal facility, U.S. Department of Transportation, and EPA regulations.

C. Dispose of PCB Containing ballasts and/or other PCB Equipment in accordance with 40 CFR 761.

D. Fluorescent, mercury vapor, metal halide and high pressure sodium lamps are classified by the EPA as hazardous mercury waste under the Universal Waste Rule under 40 CFR 273. Mercury and mercury-containing products are considered hazardous waste unless TCLP testing of the waste for mercury confirms the mercury content to be less than the EPA criteria of 0.2 mg/l. If mercury-containing lamps and thermostats are handled and disposed of in accordance with the Universal Waste Regulations, no TCLP test is required. If the Contractor chooses to perform a TCLP test of fluorescent lamps, the test shall be conducted in accordance with the requirements of ANSI/NEMA Standard Procedure for Fluorescent Lamp Sample

Preparation and Toxicity Characteristic Leaching Procedure, C78.LL 1256-2003 or latest version.

E. Dispose or recycle universal waste batteries as required by 40 CFR 273, the Contractor's approved plan, and the disposal/recycling site operator.

F. Dispose of radioactive materials and equipment in accordance with the manufacturer's recommendations, the disposal site's requirements and 10 CFR 20, Subpart K. Provide list of manufacturer name and serial numbers for all removed radioactive exit signs to owner.

G. Refrigerants in refrigeration and cooling systems in the building contain ODS components that must be recovered and recycled or disposed of in accordance with 40 CFR 82. Personnel decommissioning or removing ODS refrigerants shall hold appropriate EPA training and certificate for handling and recovering these materials.

H. Waste heat transfer fluids (such as used heating/cooling system glycol or other circulating heating/cooling fluids) are a potentially hazardous waste and shall be drained and collected in appropriate waste containers for recycling or disposal. Fluids shall be TCLP tested prior to disposal to determine if the fluids are classified as hazardous or non-hazardous waste per the EPA's RCRA regulations governing hazardous wastes. Fluids that failed the TCLP test shall be packaged for disposal as hazardous waste.

3.6 CLEANING OF WORK AREA

A. Remove all hazardous materials and debris within a work area. Wet clean all work area surfaces.

B. Notify the Owner that hazardous materials removal has been completed and the work area is ready for visual inspection. Include a statement that all hazardous materials and debris in the work area have been removed as required by the contract.

END OF SECTION

THIS PAGE IS INTENTIONALLY LEFT BLANK

SECTION 03 1000

CONCRETE FORMING AND ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Form-facing material for cast-in-place concrete.
2. Form liners.
3. Insulating concrete forms.
4. Shoring, bracing, and anchoring.

1.3 DEFINITIONS

A. Form-Facing Material: Temporary structure or mold for the support of concrete while the concrete is setting and gaining sufficient strength to be self-supporting.

B. Formwork: The total system of support of freshly placed concrete, including the mold or sheathing that contacts the concrete, as well as supporting members, hardware, and necessary bracing.

1.4 ACTION SUBMITTALS

A. Product Data: For each of the following:

1. Exposed surface form-facing material.
2. Concealed surface form-facing material.
3. Forms for cylindrical columns.
4. Pan-type forms.
5. Void forms.
6. Form liners.
7. Insulating concrete forms.
8. Form ties.
9. Waterstops.
10. Form-release agent.

B. Shop Drawings: Prepared by, and signed and sealed by, a qualified professional engineer responsible for their preparation, detailing fabrication, assembly, and support of forms.

1. For exposed vertical concrete walls, indicate dimensions and form tie locations.
2. Indicate dimension and locations of construction and movement joints required to construct the structure in accordance with ACI 301

    a. Location of construction joints is subject to approval of the Architect.

3. Indicate location of waterstops.
4. Indicate form liner layout and form line termination details.
5. Indicate proposed schedule and sequence of stripping of forms, shoring removal, and reshoring installation and removal.
6. Indicate layout of insulating concrete forms, dimensions, course heights, form types, and details.

C. Samples:

1. For waterstops.
2. For Form Liners: 12-inch by 12-inch sample, indicating texture.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For testing and inspection agency.

B. Research Reports: For insulating concrete forms indicating compliance with International Code Council Acceptance Criteria AC353.

C. Field quality-control reports.

1.6 QUALITY ASSURANCE

A. Testing and Inspection Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified in accordance with ASTM C1077 and ASTM E329 for testing indicated.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Form Liners: Store form liners under cover to protect from sunlight.

B. Insulating Concrete Forms: Store forms off ground and under cover to protect from moisture, sunlight, dirt, oil, and other contaminants.

C. Waterstops: Store waterstops under cover to protect from moisture, sunlight, dirt, oil, and other contaminants.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Concrete Formwork: Design, engineer, erect, shore, brace, and maintain formwork, shores, and reshores in accordance with ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads, so that resulting concrete conforms to the required shapes, lines, and dimensions.

1. Design wood panel forms in accordance with APA's "Concrete Forming Design/Construction Guide."
2. Design formwork to limit deflection of form-facing material to 1/240 of center-to-center spacing of supports.

    a. For architectural concrete specified in Section 033300 "Architectural Concrete," limit deflection of form-facing material, studs, and walers to 0.0025 times their respective clear spans (L/400).

B. Design, engineer, erect, shore, brace, and maintain insulating concrete forms in accordance with ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads, so that resulting concrete conforms to the required shapes, lines, and dimensions.

2.2 FORM-FACING MATERIALS

A. As-Cast Surface Form-Facing Material:

1. Provide continuous, true, and smooth concrete surfaces.
2. Furnish in largest practicable sizes to minimize number of joints.
3. Acceptable Materials: As required to comply with Surface Finish designations specified in Section 033000 "Cast-In-Place Concrete, and as follows:

    a. Plywood, metal, or other approved panel materials.
    b. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and as follows:

        1) APA HDO (high-density overlay).
        2) APA MDO (medium-density overlay); mill-release agent treated and edge sealed.
        3) APA Structural 1 Plyform, B-B or better; mill oiled and edge sealed.
        4) APA Plyform Class I, B-B or better; mill oiled and edge sealed.

B. Concealed Surface Form-Facing Material: Lumber, plywood, metal, plastic, or another approved material.

1. Provide lumber dressed on at least two edges and one side for tight fit.

C. Pan-Type Forms: Glass-fiber-reinforced plastic or formed steel, stiffened to resist plastic concrete loads without detrimental deformation, with [**straight**] [**or**] [**tapered**] end forms.

D. Void Forms: Biodegradable paper surface, treated for moisture resistance, structurally sufficient to support weight of plastic concrete and other superimposed loads.

2.3 RELATED MATERIALS

A. Reglets: Fabricate reglets of not less than 0.022-inch-thick, galvanized-steel sheet. Temporarily fill or cover face opening of reglet to prevent intrusion of concrete or debris.

B. Dovetail Anchor Slots: Hot-dip galvanized-steel sheet, not less than 0.034 inch thick, with bent tab anchors. Temporarily fill or cover face opening of slots to prevent intrusion of concrete or debris.

C. Chamfer Strips: Wood, metal, PVC, or rubber strips, 3/4 by 3/4 inch, minimum.

D. Rustication Strips: Wood, metal, PVC, or rubber strips, kerfed for ease of form removal.

E. Form-Release Agent: Commercially formulated form-release agent that does not bond with, stain, or adversely affect concrete surfaces and does not impair subsequent treatments of concrete surfaces.

1. Formulate form-release agent with rust inhibitor for steel form-facing materials.
2. Form release agent for form liners shall be acceptable to form liner manufacturer.

F. Form Ties: Factory-fabricated, removable or snap-off, glass-fiber-reinforced plastic or metal form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.

1. Furnish units that leave no corrodible metal closer than 1 inch to the plane of exposed concrete surface.
2. Furnish ties that, when removed, leave holes no larger than 1 inch in diameter in concrete surface.
3. Furnish ties with integral water-barrier plates to walls indicated to receive dampproofing or waterproofing.

PART 3 - EXECUTION

3.1 INSTALLATION OF FORMWORK

A. Comply with ACI 301.

B. Construct formwork, so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117 and to comply with the Surface Finish designations specified in Section 033000 "Cast-In-Place Concrete" for as-cast finishes.

C. Limit concrete surface irregularities as follows:

1. Surface Finish-1.0: ACI 117 Class D, 1 inch.
2. Surface Finish-2.0: ACI 117 Class B, 1/4 inch.
3. Surface Finish-3.0: ACI 117 Class A, 1/8 inch.

D. Construct forms tight enough to prevent loss of concrete mortar.

1. Minimize joints.
2. Exposed Concrete: Symmetrically align joints in forms.

E. Construct removable forms for easy removal without hammering or prying against concrete surfaces.

1. Provide crush or wrecking plates where stripping may damage cast-concrete surfaces.
2. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical.
3. Install keyways, reglets, recesses, and other accessories, for easy removal.

F. Do not use rust-stained, steel, form-facing material.

G. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces.

1. Provide and secure units to support screed strips
2. Use strike-off templates or compacting-type screeds.

H. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible.

1. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar.
2. Locate temporary openings in forms at inconspicuous locations.

I. Chamfer exterior corners and edges of permanently exposed concrete.

J. At construction joints, overlap forms onto previously placed concrete not less than 12 inches.

K. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work.

1. Determine sizes and locations from trades providing such items.
2. Obtain written approval of Architect prior to forming openings not indicated on Drawings.

L. Construction and Movement Joints:

1. Construct joints true to line with faces perpendicular to surface plane of concrete.
2. Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
3. Place joints perpendicular to main reinforcement.

4. Locate joints for beams, slabs, joists, and girders in the middle third of spans.

    a. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.

5. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.

M. Provide temporary ports or openings in formwork where required to facilitate cleaning and inspection.

1. Locate ports and openings in bottom of vertical forms, in inconspicuous location, to allow flushing water to drain.
2. Close temporary ports and openings with tight-fitting panels, flush with inside face of form, and neatly fitted, so joints will not be apparent in exposed concrete surfaces.

N. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

O. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

P. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.2 INSTALLATION OF EMBEDDED ITEMS

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete.

1. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
2. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC 303.
3. Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.
4. Install dovetail anchor slots in concrete structures, as indicated on Drawings.
5. Clean embedded items immediately prior to concrete placement.

3.3 REMOVING AND REUSING FORMS

A. Formwork for sides of beams, walls, columns, and similar parts of the Work that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F for 24 hours after placing concrete. Concrete has to be hard enough to not be damaged by form-removal operations, and curing and protection operations need to be maintained.

1. Leave formwork for beam soffits, joists, slabs, and other structural elements that support weight of concrete in place until concrete has achieved at least 70 percent of its 28-day design compressive strength.
2. Remove forms only if shores have been arranged to permit removal of forms without loosening or disturbing shores.

B. Clean and repair surfaces of forms to be reused in the Work.

1. Split, frayed, delaminated, or otherwise damaged form-facing material are unacceptable for exposed surfaces.
2. Apply new form-release agent.

C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints.

1. Align and secure joints to avoid offsets.
2. Do not use patched forms for exposed concrete surfaces unless approved by Architect.

3.4 SHORING AND RESHORING INSTALLATION

A. Comply with ACI 318 and ACI 301 for design, installation, and removal of shoring and reshoring.

1. Do not remove shoring or reshoring until measurement of slab tolerances is complete.

B. In multistory construction, extend shoring or reshoring over a sufficient number of stories to distribute loads in such a manner that no floor or member will be excessively loaded or will induce tensile stress in concrete members without sufficient steel reinforcement.

C. Plan sequence of removal of shores and reshore to avoid damage to concrete. Locate and provide adequate reshoring to support construction without excessive stress or deflection.

3.5 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a special inspector and qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Testing Agency: Engage a qualified testing and inspecting agency to perform tests and inspections and to submit reports.

C. Inspections:

1. Inspect formwork for shape, location, and dimensions of the concrete member being formed.
2. Inspect insulating concrete forms for shape, location, and dimensions of the concrete member being formed.

END OF SECTION 03 1000

SECTION 03 2000
CONCRETE REINFORCING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Steel reinforcement bars.

1.3 ACTION SUBMITTALS

A. Product Data: For the following:

1. Each type of steel reinforcement.
2. Epoxy repair coating.
3. Zinc repair material.
4. Bar supports.
5. Mechanical splice couplers.
6. Structural thermal break insulated connection system.

B. Shop Drawings: Comply with ACI SP-066:

1. Include placing drawings that detail fabrication, bending, and placement.
2. Include bar sizes, lengths, materials, grades, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, location of splices, lengths of lap splices, details of mechanical splice couplers, details of welding splices, tie spacing, hoop spacing, and supports for concrete reinforcement.
3. For structural thermal break insulated connection system, indicate general configuration, insulation dimensions, tension bars, compression pads, shear bars, and dimensions.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Statements: For testing and inspection agency.

B. Welding certificates.

1. Reinforcement To Be Welded: Welding procedure specification in accordance with AWS D1.4/D1.4M

C. Material Certificates: For each of the following, signed by manufacturers:

1. Epoxy-Coated Reinforcement: CRSI's "Epoxy Coating Plant Certification."
2. Dual-Coated Reinforcement: CRSI's "Epoxy Coating Plant Certification."

D. Material Test Reports: For the following, from a qualified testing agency:

1. Steel Reinforcement:

a. For reinforcement to be welded, mill test analysis for chemical composition and carbon equivalent of the steel in accordance with ASTM A706/A706M.

2. Mechanical splice couplers.

E. Field quality-control reports.

F. Minutes of preinstallation conference.

1.5 QUALITY ASSURANCE

A. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified in accordance with ASTM C1077 and ASTM E329 for testing indicated.

B. Welding Qualifications: Qualify procedures and personnel in accordance with AWS D1.4/D 1.4M.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Steel Reinforcement: Deliver, store, and handle steel reinforcement to prevent bending and damage.

1. Store reinforcement to avoid contact with earth.
2. Do not allow epoxy-coated reinforcement to be stored outdoors for more than 60 days without being stored under an opaque covering.
3. Do not allow dual-coated reinforcement to be stored outdoors for more than 60 days without being stored under an opaque covering.
4. Do not allow stainless steel reinforcement to come into contact with uncoated reinforcement.

PART 2 - PRODUCTS

2.1 STEEL REINFORCEMENT

A.

B. Reinforcing Bars: ASTM A615/A615M, Grade 60, deformed.

2.2 REINFORCEMENT ACCESSORIES

A. Joint Dowel Bars: ASTM A615/A615M, Grade 60, plain-steel bars, cut true to length with ends square and free of burrs.

B. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded-wire reinforcement in place.

1. Manufacture bar supports from steel wire, plastic, or precast concrete in accordance with CRSI's "Manual of Standard Practice," of greater compressive strength than concrete and as follows:

a. For concrete surfaces exposed to view, where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected steel wire, all-plastic bar supports, or CRSI Class 2 stainless steel bar supports.
b. For epoxy-coated reinforcement, use CRSI Class 1A epoxy-coated or other dielectric-polymer-coated wire bar supports.
c. For dual-coated reinforcement, use CRSI Class 1A epoxy-coated or other dielectric-polymer-coated wire bar supports.
d. For zinc-coated reinforcement, use galvanized wire or dielectric-polymer-coated wire bar supports.
e. For stainless steel reinforcement, use CRSI Class 1 plastic-protected steel wire, all-plastic bar supports, or CRSI Class 2 stainless steel bar supports.

C. Steel Tie Wire: ASTM A1064/A1064M, annealed steel, not less than 0.0508 inch in diameter.

1. Finish: Plain.

D. Stainless Steel Tie Wire: ASTM A1022/A1022M, not less than 0.0508 inch in diameter.

E. Zinc Repair Material: ASTM A780/A780M.

2.3 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

PART 3 - EXECUTION

3.1 PREPARATION

A. Protection of In-Place Conditions:

1. Do not cut or puncture vapor retarder.
2. Repair damage and reseal vapor retarder before placing concrete.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that reduce bond to concrete.

3.2 INSTALLATION OF STEEL REINFORCEMENT

A. Comply with CRSI's "Manual of Standard Practice" for placing and supporting reinforcement.

B. Accurately position, support, and secure reinforcement against displacement.

1. Locate and support reinforcement with bar supports to maintain minimum concrete cover.
2. Do not tack weld crossing reinforcing bars.

C. Preserve clearance between bars of not less than 1 inch, not less than one bar diameter, or not less than 1-1/3 times size of large aggregate, whichever is greater.

D. Provide concrete coverage in accordance with ACI 318.

E. Set wire ties with ends directed into concrete, not toward exposed concrete surfaces.

F. Splices: Lap splices as indicated on Drawings.

1. Bars indicated to be continuous, and all vertical bars shall be lapped not less than 36 bar diameters at splices, or 24 inches, whichever is greater.
2. Stagger splices in accordance with ACI 318.
3. Mechanical Splice Couplers: Install in accordance with manufacturer's instructions.
4. Weld reinforcing bars in accordance with AWS D1.4/D 1.4M, where indicated on Drawings.

3.3 JOINTS

A. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.

1. Place joints perpendicular to main reinforcement.
2. Continue reinforcement across construction joints unless otherwise indicated.
3. Do not continue reinforcement through sides of strip placements of floors and slabs.

B. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt coat one-half of dowel length, to prevent concrete bonding to one side of joint.

3.4 INSTALLATION TOLERANCES

A. Comply with ACI 117.

3.5 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a special inspector and qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Testing Agency: Engage a qualified testing and inspecting agency to perform tests and inspections and to submit reports.

C. Inspections:

1. Steel-reinforcement placement.
2. Steel-reinforcement mechanical splice couplers.
3. Steel-reinforcement welding.

D. Manufacturer's Inspections: Engage manufacturer of structural thermal break insulated connection system to inspect completed installations prior to placement of concrete, and to provide written report that installation complies with manufacturer's written instructions.

END OF SECTION 03 2000

SECTION 03 3000
CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Cast-in-place concrete, including concrete materials, mixture design, placement procedures, and finishes.

B. Related Requirements:

1. Section 031000 "Concrete Forming and Accessories" for form-facing materials, form liners, insulating concrete forms, and waterstops.
2. Section 032000 "Concrete Reinforcing" for steel reinforcing bars and welded-wire reinforcement.

1.3 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash, slag cement, other pozzolans, and silica fume; materials subject to compliance with requirements.

B. Water/Cement Ratio (w/cm): The ratio by weight of water to cementitious materials.

1.4 ACTION SUBMITTALS

A. Product Data: For each of the following.

1. Portland cement.
2. Fly ash.
3. Slag cement.
4. Blended hydraulic cement.
5. Silica fume.
6. Performance-based hydraulic cement
7. Aggregates.
8. Admixtures:

a. Include limitations of use, including restrictions on cementitious materials, supplementary cementitious materials, air entrainment, aggregates, temperature at time of concrete placement, relative humidity at time of concrete placement, curing conditions, and use of other admixtures.

9. Color pigments.
10. Fiber reinforcement.
11. Vapor retarders.
12. Floor and slab treatments.
13. Liquid floor treatments.
14. Curing materials.

a. Include documentation from color pigment manufacturer, indicating that proposed methods of curing are recommended by color pigment manufacturer.

15. Joint fillers.
16. Repair materials.

B. Design Mixtures: For each concrete mixture, include the following:

1. Mixture identification.
2. Minimum 28-day compressive strength.
3. Durability exposure class.
4. Maximum w/cm.
5. Calculated equilibrium unit weight, for lightweight concrete.
6. Slump limit.
7. Air content.
8. Nominal maximum aggregate size.
9. Steel-fiber reinforcement content.
10. Synthetic micro-fiber content.
11. Indicate amounts of mixing water to be withheld for later addition at Project site if permitted.
12. Include manufacturer's certification that permeability-reducing admixture is compatible with mix design.
13. Include certification that dosage rate for permeability-reducing admixture matches dosage rate used in performance compliance test.
14. Intended placement method.
15. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For the following:

1. Installer: Include copies of applicable ACI certificates.
2. Ready-mixed concrete manufacturer.
3. Testing agency: Include copies of applicable ACI certificates.

B. Material Certificates: For each of the following, signed by manufacturers:

1. Cementitious materials.
2. Admixtures.
3. Fiber reinforcement.
4. Curing compounds.
5. Floor and slab treatments.
6. Bonding agents.
7. Adhesives.
8. Vapor retarders.
9. Semirigid joint filler.
10. Joint-filler strips.
11. Repair materials.

C. Material Test Reports: For the following, from a qualified testing agency:

1. Portland cement.
2. Fly ash.
3. Slag cement.
4. Blended hydraulic cement.
5. Silica fume.
6. Performance-based hydraulic cement.
7. Aggregates.
8. Admixtures:

    a. Permeability-Reducing Admixture: Include independent test reports, indicating compliance with specified requirements, including dosage rate used in test.

D. Floor surface flatness and levelness measurements report, indicating compliance with specified tolerances.

E. Research Reports:

1. For concrete admixtures in accordance with ICC's Acceptance Criteria AC198.
2. For sheet vapor retarder/termite barrier, showing compliance with ICC AC380.

F. Field quality-control reports.

G. Minutes of preinstallation conference.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: A qualified installer who employs Project personnel qualified as an ACI-certified Flatwork Technician and Finisher and a supervisor who is a certified ACI Flatwork Concrete Finisher/Technician or an ACI Concrete Flatwork Technician.

B. Ready-Mixed Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C94/C94M requirements for production facilities and equipment.

1. Manufacturer certified in accordance with NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

C. Laboratory Testing Agency Qualifications: A testing agency qualified in accordance with ASTM C1077 and ASTM E329 for testing indicated and employing an ACI-certified Concrete Quality Control Technical Manager.

1. Personnel performing laboratory tests shall be an ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician, Grade I. Testing agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician, Grade II.

D. Field Quality Control Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified in accordance with ASTM C1077 and ASTM E329 for testing indicated.

1. Personnel conducting field tests shall be qualified as an ACI Concrete Field Testing Technician, Grade 1, in accordance with ACI CPP 610.1 or an equivalent certification program.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Comply with ASTM C94/C94M and ACI 301.

1.8 FIELD CONDITIONS

A. Cold-Weather Placement: Comply with ACI 301 and ACI 306.1 and as follows.

1. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
2. When average high and low temperature is expected to fall below 40 deg F for three successive days, maintain delivered concrete mixture temperature within the temperature range required by ACI 301.
3. Do not use frozen materials or materials containing ice or snow.
4. Do not place concrete in contact with surfaces less than 35 deg F, other than reinforcing steel.
5. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.

B. Hot-Weather Placement: Comply with ACI 301 and ACI 305.1, and as follows:

1. Maintain concrete temperature at time of discharge to not exceed 95 deg F.
2. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade uniformly moist without standing water, soft spots, or dry areas.

1.9 WARRANTY

A. Manufacturer's Warranty: Manufacturer agrees to furnish replacement sheet vapor retarder/termite barrier material and accessories for sheet vapor retarder/ termite barrier and accessories that do not comply with requirements or that fail to resist penetration by termites within specified warranty period.

1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 CONCRETE, GENERAL

A. ACI Publications: Comply with ACI 301unless modified by requirements in the Contract Documents.

2.2 CONCRETE MATERIALS

A. Source Limitations:

1. Obtain all concrete mixtures from a single ready-mixed concrete manufacturer for entire Project.
2. Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant.
3. Obtain aggregate from single source.
4. Obtain each type of admixture from single source from single manufacturer.

B. Cementitious Materials:

1. Portland Cement: ASTM C150/C150M.

C. Normal-Weight Aggregates: ASTM C33/C33M, coarse aggregate or better, graded. Provide aggregates from a single source.

1. Maximum Coarse-Aggregate Size: 3/4 inch nominal.
2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

D. Air-Entraining Admixture: ASTM C260/C260M.

E. Chemical Admixtures: Certified by manufacturer to be compatible with other admixtures that do not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.

1. Water-Reducing Admixture: ASTM C494/C494M, Type A.
2. Retarding Admixture: ASTM C494/C494M, Type B.
3. Water-Reducing and -Retarding Admixture: ASTM C494/C494M, Type D.
4. High-Range, Water-Reducing Admixture: ASTM C494/C494M, Type F.

5. High-Range, Water-Reducing and -Retarding Admixture: ASTM C494/C494M, Type G.
6. Plasticizing and Retarding Admixture: ASTM C1017/C1017M, Type II.
7. Set-Accelerating Corrosion-Inhibiting Admixture: Commercially formulated, anodic inhibitor or mixed cathodic and anodic inhibitor; capable of forming a protective barrier and minimizing chloride reactions with steel reinforcement in concrete and complying with ASTM C494/C494M, Type C.

8. Non-Set-Accelerating Corrosion-Inhibiting Admixture: Commercially formulated, non-set-accelerating, anodic inhibitor or mixed cathodic and anodic inhibitor; capable of forming a protective barrier and minimizing chloride reactions with steel reinforcement in concrete.

9. Permeability-Reducing Admixture: ASTM C494/C494M, Type S, hydrophilic, permeability-reducing crystalline admixture, capable of reducing water absorption of concrete exposed to hydrostatic pressure (PRAH).
   a. Permeability: No leakage when tested in accordance with U.S. Army Corps of Engineers CRC C48 at a hydraulic pressure of 200 psi for 14 days.

F. Water and Water Used to Make Ice: ASTM C94/C94M, potable

2.3 CURING MATERIALS

A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete.

B. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.

C. Moisture-Retaining Cover: ASTM C171, polyethylene film burlap-polyethylene sheet.

1. Color:

   a. Ambient Temperature Below 50 deg F: Black.
   b. Ambient Temperature between 50 deg F and 85 deg F: Any color.
   c. Ambient Temperature Above 85 deg F: White.

D. Curing Paper: Eight-feet-wide paper, consisting of two layers of fibered kraft paper laminated with double coating of asphalt.

E. Water: Potable or complying with ASTM C1602/C1602M.

F. Clear, Waterborne, Membrane-Forming, Dissipating Curing Compound: ASTM C309, Type 1, Class B.

G. Clear, Waterborne, Membrane-Forming, Nondissipating Curing Compound: ASTM C309, Type 1, Class B.

H. Clear, Waterborne, Membrane-Forming, Curing Compound: ASTM C309, Type 1, Class B, 18 to 25 percent solids, nondissipating.

I. Clear, Solvent-Borne, Membrane-Forming, Curing and Sealing Compound: ASTM C1315, Type 1, Class A.

J. Clear, Waterborne, Membrane-Forming, Curing and Sealing Compound: ASTM C1315, Type 1, Class A.

2.4 RELATED MATERIALS

A. Bonding Agent: ASTM C1059/C1059M, Type II, nonredispersible, acrylic emulsion or styrene butadiene.

B. Epoxy Bonding Adhesive: ASTM C881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade and class to suit requirements, and as follows:

C. Floor Slab Protective Covering: Eight-feet-wide cellulose fabric.

2.5 REPAIR MATERIALS

A. Repair Underlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/8 inch and that can be feathered at edges to match adjacent floor elevations.

1. Cement Binder: ASTM C150/C150M portland cement or hydraulic or blended hydraulic cement, as defined in ASTM C219.
2. Primer: Product of underlayment manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand, as recommended by underlayment manufacturer.
4. Compressive Strength: Not less than 4100 psi at 28 days when tested in accordance with ASTM C109/C109M.

B. Repair Overlayment: Cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/4 inch and that can be filled in over a scarified surface to match adjacent floor elevations.

1. Cement Binder: ASTM C150/C150M portland cement or hydraulic or blended hydraulic cement, as defined in ASTM C219.
2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by topping manufacturer.
4. Compressive Strength: Not less than 5000 psi at 28 days when tested in accordance with ASTM C109/C109M.

2.6 CONCRETE MIXTURES, GENERAL

A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, in accordance with ACI 301.

1. Use a qualified testing agency for preparing and reporting proposed mixture designs, based on laboratory trial mixtures.

B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:

1. Fly Ash or Other Pozzolans: 25 percent by mass.
2. Slag Cement: 50 percent by mass.
3. Silica Fume: 10 percent by mass.
4. Total of Fly Ash or Other Pozzolans, Slag Cement, and Silica Fume: 50 percent by mass, with fly ash or pozzolans not exceeding 25 percent by mass and silica fume not exceeding 10 percent by mass.
5. Total of Fly Ash or Other Pozzolans and Silica Fume: 35 percent by mass with fly ash or pozzolans not exceeding 25 percent by mass and silica fume not exceeding 10 percent by mass.

C. Admixtures: Use admixtures in accordance with manufacturer's written instructions.

1. Use water-reducing admixture in concrete, as required, for placement and workability.
2. Use water-reducing and -retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
3. Use water-reducing admixture in pumped concrete,.
4. Use corrosion-inhibiting admixture in concrete mixtures where indicated.
5. Use permeability-reducing admixture in concrete mixtures where indicated.

D. Color Pigment: Add color pigment to concrete mixture in accordance with manufacturer's written instructions and to result in hardened concrete color consistent with approved mockup.

2.7 CONCRETE MIXTURES

A. Normal-weight concrete used for footings, grade beams, and tie beams.

1. Exposure Class: ACI 318 F0 S0 W0 C0.
2. Minimum Compressive Strength: 4500 psi at 28 days.
3. Maximum w/cm: 0.45.
4. Slump Limit: 4 inches, plus or minus 1 inch.
5. Slump Flow Limit: 22 inches, plus or minus 1.5 inches.
6. Air Content: 6% (+/- 1%), except for troweled interior slabs which shall not exceed 3% air content.

7. Limit water-soluble, chloride-ion content in hardened concrete to 1.00 percent by weight of cement.

2.8 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete in accordance with ASTM C94/C94M, and furnish batch ticket information.

B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete in accordance with ASTM C94/C94M. Mix concrete materials in appropriate drum-type batch machine mixer.

1. For mixer capacity of 1 cu. yd. or smaller, continue mixing at least 1-1/2 minutes, but not more than five minutes after ingredients are in mixer, before any part of batch is released.
2. For mixer capacity larger than 1 cu. yd., increase mixing time by 15 seconds for each additional 1 cu. yd..
3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixture time, quantity, and amount of water added. Record approximate location of final deposit in structure.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verification of Conditions:

1. Before placing concrete, verify that installation of concrete forms, accessories, and reinforcement, and embedded items is complete and that required inspections have been performed.
2. Do not proceed until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Provide reasonable auxiliary services to accommodate field testing and inspections, acceptable to testing agency, including the following:

1. Daily access to the Work.
2. Incidental labor and facilities necessary to facilitate tests and inspections.
3. Secure space for storage, initial curing, and field curing of test samples, including source of water and continuous electrical power at Project site during site curing period for test samples.
4. Security and protection for test samples and for testing and inspection equipment at Project site.

3.3 INSTALLATION OF EMBEDDED ITEMS

A. Place and secure anchorage devices and other embedded items required for adjoining Work that is attached to or supported by cast-in-place concrete.

1. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
2. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of ANSI/AISC 303.
3. Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.

3.4 INSTALLATION OF VAPOR RETARDER

A. Sheet Vapor Retarders: Place, protect, and repair sheet vapor retarder in accordance with ASTM E1643 and manufacturer's written instructions.

1. Install vapor retarder with longest dimension parallel with direction of concrete pour.
2. Face laps away from exposed direction of concrete pour.
3. Lap vapor retarder over footings and grade beams not less than 6 inches, sealing vapor retarder to concrete.
4. Lap joints 6 inches and seal with manufacturer's recommended tape.
5. Terminate vapor retarder at the top of floor slabs, grade beams, and pile caps, sealing entire perimeter to floor slabs, grade beams, foundation walls, or pile caps.
6. Seal penetrations in accordance with vapor retarder manufacturer's instructions.
7. Protect vapor retarder during placement of reinforcement and concrete.

    a. Repair damaged areas by patching with vapor retarder material, overlapping damages area by 6 inches on all sides, and sealing to vapor retarder.

B. Bituminous Vapor Retarders: Place, protect, and repair bituminous vapor retarder in accordance with manufacturer's written instructions.

3.5 JOINTS

A. Construct joints true to line, with faces perpendicular to surface plane of concrete.

B. Construction Joints: Coordinate with floor slab pattern and concrete placement sequence.

1. Install so strength and appearance of concrete are not impaired, at locations indicated on Drawings or as approved by Architect.
2. Place joints perpendicular to main reinforcement.

    a. Continue reinforcement across construction joints unless otherwise indicated.
    b. Do not continue reinforcement through sides of strip placements of floors and slabs.

3. Form keyed joints as indicated. Embed keys at least 1-1/2 inches into concrete.

4. Locate joints for beams, slabs, joists, and girders at third points of spans. Offset joints in girders a minimum distance of twice the beam width from a beam-girder intersection.
5. Locate horizontal joints in walls and columns at underside of floors, slabs, beams, and girders and at the top of footings or floor slabs.
6. Space vertical joints in walls as indicated on Drawings. Unless otherwise indicated on Drawings, locate vertical joints beside piers integral with walls, near corners, and in concealed locations where possible.
7. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
8. Use epoxy-bonding adhesive at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.

C. Control Joints in Slabs-on-Ground: Form weakened-plane control joints, sectioning concrete into areas as indicated. Construct control joints for a depth equal to at least one-fourth of concrete thickness as follows:

1. Grooved Joints: Form control joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch. Repeat grooving of control joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces.
2. Sawed Joints: Form control joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch-wide joints into concrete when cutting action does not tear, abrade, or otherwise damage surface and before concrete develops random cracks.

D. Isolation Joints in Slabs-on-Ground: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.

1. Extend joint-filler strips full width and depth of joint, terminating flush with finished concrete surface unless otherwise indicated on Drawings.
2. Terminate full-width joint-filler strips not less than 1/2 inch or more than 1 inch below finished concrete surface, where joint sealants, specified in Section 079200 "Joint Sealants," are indicated.
3. Install joint-filler strips in lengths as long as practicable. Where more than one length is required, lace or clip sections together.

E. Doweled Joints:

1. Install dowel bars and support assemblies at joints where indicated on Drawings.
2. Lubricate or asphalt coat one-half of dowel bar length to prevent concrete bonding to one side of joint.

F. Dowel Plates: Install dowel plates at joints where indicated on Drawings.

3.6 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, embedded items, and vapor retarder is complete and that required inspections are completed.

1. Immediately prior to concrete placement, inspect vapor retarder for damage and deficient installation, and repair defective areas.
2. Provide continuous inspection of vapor retarder during concrete placement and make necessary repairs to damaged areas as Work progresses.

B. Notify Architect and testing and inspection agencies 24 hours prior to commencement of concrete placement.

C. Do not add water to concrete during delivery, at Project site, or during placement unless approved by Architect in writing, but not to exceed the amount indicated on the concrete delivery ticket.

1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.

D. Before test sampling and placing concrete, water may be added at Project site, subject to limitations of ACI 301, but not to exceed the amount indicated on the concrete delivery ticket.

1. Do not add water to concrete after adding high-range water-reducing admixtures to mixture.

E. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete is placed on concrete that has hardened enough to cause seams or planes of weakness.

1. If a section cannot be placed continuously, provide construction joints as indicated.
2. Deposit concrete to avoid segregation.
3. Deposit concrete in horizontal layers of depth not to exceed formwork design pressures and in a manner to avoid inclined construction joints.
4. Consolidate placed concrete with mechanical vibrating equipment in accordance with ACI 301.

    a. Do not use vibrators to transport concrete inside forms.
    b. Insert and withdraw vibrators vertically at uniformly spaced locations to rapidly penetrate placed layer and at least 6 inches into preceding layer.
    c. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity.
    d. At each insertion, limit duration of vibration to time necessary to consolidate concrete, and complete embedment of reinforcement and other embedded items without causing mixture constituents to segregate.

F. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.

1. Do not place concrete floors and slabs in a checkerboard sequence.
2. Consolidate concrete during placement operations, so concrete is thoroughly worked around reinforcement and other embedded items and into corners.
3. Maintain reinforcement in position on chairs during concrete placement.
4. Screed slab surfaces with a straightedge and strike off to correct elevations.

5. Level concrete, cut high areas, and fill low areas.
6. Slope surfaces uniformly to drains where required.
7. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, before excess bleedwater appears on the surface.
8. Do not further disturb slab surfaces before starting finishing operations.

3.7 FINISHING FORMED SURFACES

A. As-Cast Surface Finishes:

1. ACI 301 Surface Finish SF-1.0: As-cast concrete texture imparted by form-facing material.

    a. Patch voids larger than 1-1/2 inches wide or 1/2 inch deep.
    b. Remove projections larger than 1 inch.
    c. Tie holes do not require patching.
    d. Surface Tolerance: ACI 117 Class D.
    e. Apply to concrete surfaces not exposed to public view.

2. ACI 301Surface Finish SF-2.0: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams.

    a. Patch voids larger than 3/4 inch wide or 1/2 inch deep.
    b. Remove projections larger than 1/4 inch.
    c. Patch tie holes.
    d. Surface Tolerance: ACI 117 Class B.
    e. Locations: Apply to concrete surfaces exposed to public view,.

3. ACI 301 Surface Finish SF-3.0:

    a. Patch voids larger than 3/4 inch wide or 1/2 inch deep.
    b. Remove projections larger than 1/8 inch.
    c. Patch tie holes.
    d. Surface Tolerance: ACI 117 Class A.
    e. Locations: Apply to concrete surfaces exposed to public view,.

B. Rubbed Finish: Apply the following to as cast surface finishes where indicated on Drawings:

1. Smooth-Rubbed Finish:

    a. Perform no later than one day after form removal.
    b. Moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture.
    c. If sufficient cement paste cannot be drawn from the concrete by the rubbing process, use a grout made from the same cementitious materials used in the in-place concrete.

2. Grout-Cleaned Rubbed Finish:

a. Clean concrete surfaces after contiguous surfaces are completed and accessible.
b. Do not clean concrete surfaces as Work progresses.
c. Mix 1 part portland cement to 1-1/2 parts fine sand, complying with ASTM C144 or ASTM C404, by volume, with sufficient water to produce a mixture with the consistency of thick paint. Add white portland cement in amounts determined by trial patches, so color of dry grout matches adjacent surfaces.
d. Wet concrete surfaces.
e. Scrub grout into voids and remove excess grout. When grout whitens, rub surface with clean burlap, and keep surface damp by fog spray for at least 36 hours.

C. Related Unformed Surfaces:

1. At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a color and texture matching adjacent formed surfaces.
2. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.8 FINISHING FLOORS AND SLABS

A. Comply with ACI 302.1R recommendations for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. Scratch Finish:

1. While still plastic, texture concrete surface that has been screeded and bull-floated or darbied.
2. Use stiff brushes, brooms, or rakes to produce a profile depth of 1/4 inch in one direction.
3. Apply scratch finish to surfaces to receive concrete floor toppings.

C. Float Finish:

1. When bleedwater sheen has disappeared and concrete surface has stiffened sufficiently to permit operation of specific float apparatus, consolidate concrete surface with power-driven floats or by hand floating if area is small or inaccessible to power-driven floats.
2. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture and complies with ACI 117 tolerances for conventional concrete.
3. Apply float finish to surfaces to receive trowel finish.

D. Trowel Finish:

1. After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel.

2. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance.
3. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
4. Do not add water to concrete surface.
5. Do not apply hard-troweled finish to concrete, which has a total air content greater than 3 percent.
6. Apply a trowel finish to surfaces exposed to view.
7. Finish surfaces to the following tolerances, in accordance with ASTM E1155, for a randomly trafficked floor surface:

    a. Suspended Slabs:

        1) Finish and measure surface so gap at any point between concrete surface and an unleveled, freestanding, 10-ft.- long straightedge resting on two high spots and placed anywhere on the surface does not exceed 1/4 inch.
        2) Specified overall values of flatness, F_F 25; and of levelness, F_L 20; with minimum local values of flatness, F_F 17; and of levelness, F_L 15.
        3) Specified overall values of flatness, F_F 35; and of levelness, F_L 20; with minimum local values of flatness, F_F 24; and of levelness, F_L 15.
        4) Specified overall values of flatness, F_F 45; and of levelness, F_L 35; with minimum local values of flatness, F_F 30; and of levelness, F_L 24.

E. Trowel and Fine-Broom Finish: Apply a first trowel finish to surfaces indicated on Drawings. While concrete is still plastic, slightly scarify surface with a fine broom perpendicular to main traffic route.

1. Coordinate required final finish with Architect before application.
2. Comply with flatness and levelness tolerances for trowel-finished floor surfaces.

F. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, ramps, and locations indicated on Drawings.

1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route.
2. Coordinate required final finish with Architect before application.

3.9 INSTALLATION OF MISCELLANEOUS CONCRETE ITEMS

A. Filling In:

1. Fill in holes and openings left in concrete structures after Work of other trades is in place unless otherwise indicated.
2. Mix, place, and cure concrete, as specified, to blend with in-place construction.
3. Provide other miscellaneous concrete filling indicated or required to complete the Work.

B. Curbs: Provide monolithic finish to interior curbs by stripping forms while concrete is still green and by steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

C. Equipment Bases and Foundations:

1. Coordinate sizes and locations of concrete bases with actual equipment provided.
2. Construct concrete bases 4 inches high unless otherwise indicated on Drawings, and extend base not less than 6 inches in each direction beyond the maximum dimensions of supported equipment unless otherwise indicated on Drawings, or unless required for seismic anchor support.
3. Minimum Compressive Strength: 4500 psi at 28 days.
4. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch centers around the full perimeter of concrete base.
5. For supported equipment, install epoxy-coated anchor bolts that extend through concrete base and anchor into structural concrete substrate.
6. Prior to pouring concrete, place and secure anchorage devices.

    a. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
    b. Cast anchor-bolt insert into bases.
    c. Install anchor bolts to elevations required for proper attachment to supported equipment.

D. Steel Pan Stairs: Provide concrete fill for steel pan stair treads, landings, and associated items.

1. Cast-in inserts and accessories, as shown on Drawings.
2. Screed, tamp, and trowel finish concrete surfaces.

3.10 CONCRETE CURING

A. Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

1. Comply with ACI 301 and ACI 306.1 for cold weather protection during curing.
2. Comply with ACI 301 and ACI 305.1 for hot-weather protection during curing.
3. Maintain moisture loss no more than 0.2 lb/sq. ft. x h before and during finishing operations.

B. Curing Formed Surfaces: Comply with ACI 308.1 as follows:

1. Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces.
2. Cure concrete containing color pigments in accordance with color pigment manufacturer's instructions.
3. If forms remain during curing period, moist cure after loosening forms.

4. If removing forms before end of curing period, continue curing for remainder of curing period, as follows:

    a. Continuous Fogging: Maintain standing water on concrete surface until final setting of concrete.
    b. Continuous Sprinkling: Maintain concrete surface continuously wet.
    c. Absorptive Cover: Pre-dampen absorptive material before application; apply additional water to absorptive material to maintain concrete surface continuously wet.
    d. Water-Retention Sheeting Materials: Cover exposed concrete surfaces with sheeting material, taping, or lapping seams.
    e. Membrane-Forming Curing Compound: Apply uniformly in continuous operation by power spray or roller in accordance with manufacturer's written instructions.

        1) Recoat areas subject to heavy rainfall within three hours after initial application.
        2) Maintain continuity of coating and repair damage during curing period.

C. Curing Unformed Surfaces: Comply with ACI 308.1 as follows:

1. Begin curing immediately after finishing concrete.
2. Interior Concrete Floors:

    a. Floors to Receive Floor Coverings Specified in Other Sections: Contractor has option of the following:

        1) Absorptive Cover: As soon as concrete has sufficient set to permit application without marring concrete surface, install prewetted absorptive cover over entire area of floor.

            a) Lap edges and ends of absorptive cover not less than 12-inches.
            b) Maintain absorptive cover water saturated, and in place, for duration of curing period, but not less than seven days.

        2) Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive.

            a) Immediately repair any holes or tears during curing period, using cover material and waterproof tape.
            b) Cure for not less than seven days.

        3) Ponding or Continuous Sprinkling of Water: Maintain concrete surfaces continuously wet for not less than seven days, utilizing one, or a combination of, the following:

            a) Water.

b) Continuous water-fog spray.

b. Floors to Receive Penetrating Liquid Floor Treatments: Contractor has option of the following:

1) Absorptive Cover: As soon as concrete has sufficient set to permit application without marring concrete surface, install prewetted absorptive cover over entire area of floor.

a) Lap edges and ends of absorptive cover not less than 12 inches.
b) Maintain absorptive cover water saturated, and in place, for duration of curing period, but not less than seven days.

2) Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive.

a) Immediately repair any holes or tears during curing period, using cover material and waterproof tape.
b) Cure for not less than seven days.

3) Ponding or Continuous Sprinkling of Water: Maintain concrete surfaces continuously wet for not less than seven days, utilizing one, or a combination of, the following:

a) Water.
b) Continuous water-fog spray.

c. Floors to Receive Polished Finish: Contractor has option of the following:

1) Absorptive Cover: As soon as concrete has sufficient set to permit application without marring concrete surface, install prewetted absorptive cover over entire area of floor.

a) Lap edges and ends of absorptive cover not less than 12 inches.
b) Maintain absorptive cover water saturated, and in place, for duration of curing period, but not less than seven days.

2) Ponding or Continuous Sprinkling of Water: Maintain concrete surfaces continuously wet for not less than seven days, utilizing one, or a combination of, the following:

a) Water.
b) Continuous water-fog spray.

d. Floors to Receive Chemical Stain:

1) As soon as concrete has sufficient set to permit application without marring concrete surface, install curing paper over entire area of floor.
2) Install curing paper square to building lines, without wrinkles, and in a single length without end joints.
3) Butt sides of curing paper tight; do not overlap sides of curing paper.
4) Leave curing paper in place for duration of curing period, but not less than 28 days.

e. Floors to Receive Urethane Flooring:

1) As soon as concrete has sufficient set to permit application without marring concrete surface, install prewetted absorptive cover over entire area of floor.
2) Rewet absorptive cover, and cover immediately with polyethylene moisture-retaining cover with edges lapped 6 inches and sealed in place.
3) Secure polyethylene moisture-retaining cover in place to prohibit air from circulating under polyethylene moisture-retaining cover.
4) Leave absorptive cover and polyethylene moisture-retaining cover in place for duration of curing period, but not less than 28 days.

f. Floors to Receive Curing Compound:

1) Apply uniformly in continuous operation by power spray or roller in accordance with manufacturer's written instructions.
2) Recoat areas subjected to heavy rainfall within three hours after initial application.
3) Maintain continuity of coating, and repair damage during curing period.
4) Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer unless manufacturer certifies curing compound does not interfere with bonding of floor covering used on Project.

g. Floors to Receive Curing and Sealing Compound:

1) Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller in accordance with manufacturer's written instructions.
2) Recoat areas subjected to heavy rainfall within three hours after initial application.
3) Repeat process 24 hours later, and apply a second coat. Maintain continuity of coating, and repair damage during curing period.

3.11 TOLERANCES

A. Conform to ACI 117.

3.12 APPLICATION OF LIQUID FLOOR TREATMENTS

A. Penetrating Liquid Floor Treatment: Prepare, apply, and finish penetrating liquid floor treatment in accordance with manufacturer's written instructions.

1. Remove curing compounds, sealers, oil, dirt, laitance, and other contaminants and complete surface repairs.
2. Do not apply to concrete that is less than three days' old.
3. Apply liquid until surface is saturated, scrubbing into surface until a gel forms; rewet; and repeat brooming or scrubbing.
4. Rinse with water; remove excess material until surface is dry.
5. Apply a second coat in a similar manner if surface is rough or porous.

B. Sealing Coat: Uniformly apply a continuous sealing coat of curing and sealing compound to hardened concrete by power spray or roller in accordance with manufacturer's written instructions.

3.13 CONCRETE SURFACE REPAIRS

A. Defective Concrete:

1. Repair and patch defective areas when approved by Architect.
2. Remove and replace concrete that cannot be repaired and patched to Architect's approval.

B. Patching Mortar: Mix dry-pack patching mortar, consisting of 1 part portland cement to 2-1/2 parts fine aggregate passing a No. 16 sieve, using only enough water for handling and placing.

C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.

1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension to solid concrete.

    a. Limit cut depth to 3/4 inch.
    b. Make edges of cuts perpendicular to concrete surface.
    c. Clean, dampen with water, and brush-coat holes and voids with bonding agent.
    d. Fill and compact with patching mortar before bonding agent has dried.
    e. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.

2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement, so that, when dry, patching mortar matches surrounding color.

    a. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching.

b. Compact mortar in place and strike off slightly higher than surrounding surface.

3. Repair defects on concealed formed surfaces that will affect concrete's durability and structural performance as determined by Architect.

D. Repairing Unformed Surfaces:

1. Test unformed surfaces, such as floors and slabs, for finish, and verify surface tolerances specified for each surface.

   a. Correct low and high areas.
   b. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.

2. Repair finished surfaces containing surface defects, including spalls, popouts, honeycombs, rock pockets, crazing, and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.
3. After concrete has cured at least 14 days, correct high areas by grinding.
4. Correct localized low areas during, or immediately after, completing surface-finishing operations by cutting out low areas and replacing with patching mortar.

   a. Finish repaired areas to blend into adjacent concrete.

5. Correct other low areas scheduled to receive floor coverings with a repair underlayment.

   a. Prepare, mix, and apply repair underlayment and primer in accordance with manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.
   b. Feather edges to match adjacent floor elevations.

6. Correct other low areas scheduled to remain exposed with repair topping.

   a. Cut out low areas to ensure a minimum repair topping depth of 1/4 inch to match adjacent floor elevations.
   b. Prepare, mix, and apply repair topping and primer in accordance with manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.

7. Repair defective areas, except random cracks and single holes 1 inch or less in diameter, by cutting out and replacing with fresh concrete.

   a. Remove defective areas with clean, square cuts, and expose steel reinforcement with at least a 3/4-inch clearance all around.
   b. Dampen concrete surfaces in contact with patching concrete and apply bonding agent.
   c. Mix patching concrete of same materials and mixture as original concrete, except without coarse aggregate.
   d. Place, compact, and finish to blend with adjacent finished concrete.

e. Cure in same manner as adjacent concrete.

8. Repair random cracks and single holes 1 inch or less in diameter with patching mortar.

a. Groove top of cracks and cut out holes to sound concrete, and clean off dust, dirt, and loose particles.
b. Dampen cleaned concrete surfaces and apply bonding agent.
c. Place patching mortar before bonding agent has dried.
d. Compact patching mortar and finish to match adjacent concrete.
e. Keep patched area continuously moist for at least 72 hours.

E. Perform structural repairs of concrete, subject to Architect's approval, using epoxy adhesive and patching mortar.

F. Repair materials and installation not specified above may be used, subject to Architect's approval.

3.14 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a special inspector to perform field tests and inspections and prepare testing and inspection reports.

B. Testing Agency: Owner will engage a qualified testing and inspecting agency to perform tests and inspections and to submit reports.

1. Testing agency shall be responsible for providing curing container for composite samples on Site and verifying that field-cured composite samples are cured in accordance with ASTM C31/C31M.
2. Testing agency shall immediately report to Architect, Contractor, and concrete manufacturer any failure of Work to comply with Contract Documents.
3. Testing agency shall report results of tests and inspections, in writing, to Owner, Architect, Contractor, and concrete manufacturer within 48 hours of inspections and tests.

a. Test reports shall include reporting requirements of ASTM C31/C31M, ASTM C39/C39M, and ACI 301, including the following as applicable to each test and inspection:

1) Project name.
2) Name of testing agency.
3) Names and certification numbers of field and laboratory technicians performing inspections and testing.
4) Name of concrete manufacturer.
5) Date and time of inspection, sampling, and field testing.
6) Date and time of concrete placement.
7) Location in Work of concrete represented by samples.
8) Date and time sample was obtained.
9) Truck and batch ticket numbers.
10) Design compressive strength at 28 days.

11) Concrete mixture designation, proportions, and materials.
12) Field test results.
13) Information on storage and curing of samples before testing, including curing method and maximum and minimum temperatures during initial curing period.
14) Type of fracture and compressive break strengths at seven days and 28 days.

C. Batch Tickets: For each load delivered, submit three copies of batch delivery ticket to testing agency, indicating quantity, mix identification, admixtures, design strength, aggregate size, design air content, design slump at time of batching, and amount of water that can be added at Project site.

D. Inspections:

1. Headed bolts and studs.
2. Verification of use of required design mixture.
3. Concrete placement, including conveying and depositing.
4. Curing procedures and maintenance of curing temperature.
5. Verification of concrete strength before removal of shores and forms from beams and slabs.
6. Batch Plant Inspections: On a random basis, as determined by Architect.

E. Concrete Tests: No testing required.

3.15 PROTECTION

A. Protect concrete surfaces as follows:

1. Protect from petroleum stains.
2. Diaper hydraulic equipment used over concrete surfaces.
3. Prohibit vehicles from interior concrete slabs.
4. Prohibit use of pipe-cutting machinery over concrete surfaces.
5. Prohibit placement of steel items on concrete surfaces.
6. Prohibit use of acids or acidic detergents over concrete surfaces.
7. Protect liquid floor treatment from damage and wear during the remainder of construction period. Use protective methods and materials, including temporary covering, recommended in writing by liquid floor treatments installer.
8. Protect concrete surfaces scheduled to receive surface hardener or polished concrete finish using Floor Slab Protective Covering.

END OF SECTION 03 3000