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We would also like to thank the many others who offered opinions, comments, and assistance at various stages during the development of these guidelines.

Christopher D'Andrea, M.S. of the Environmental and Occupational Disease Epidemiology Unit, was the editor of this document.

For further information regarding this document please contact the New York City Department of Health at (212) 788-4290 / 4288.

(April 2000) January 2002

ATTACHMENT 2

MCI ATCT MOLD REMEDIATION PROJECT CLEARANCE PROTOCOL

Mold Remediation Project Clearance Protocol

Kansas City Airport Traffic Control Tower (MCI ATCT)

PREPARED FOR:

FEDERAL AVIATION ADMINISTRATION
CENTRAL REGION
901 LOCUST
KANSAS CITY, MISSOURI 64106

March 28, 2007



PREPARED BY:

Barbara Hebert, CIH (NISC II)

The MCI ATCT Microbiological Remediation and Restoration Project will include the removal of mold-contaminated gypsum board, shaft liner, insulation, and pipe insulation followed by the partial restoration to restore the integrity of fire-rated partitions.

Beginning in June 2007 and extending through July 2007 the project will be performed in the Cab Level stairs, Rooms SJ1, 11TS5, 11TS5A, 11TS6, 11th Floor Outer Ring, 10TS4, 10TS5, 8TS1, 8TS5, 8TS6, 4TS3, 3TS3, 3TS5, 2TS5, and G4.

After Rooms SJ1, 11TS5, 10TS5, and 3TS5 have passed a thorough visual inspection, and before the outer containment barrier is removed, clearance mold spore air sampling will be performed. All remaining rooms shall be cleared by visual inspection.

Five consecutive samples will be collected inside the containment area using a high volume air sampler and Zefon Air-O-Cell® cassettes. Sampling will be conducted at a flow rate of 15 liters per minute for a period of five minutes each, resulting in a collection volume of 75 liters of air. Should visibly dusty environmental conditions exist inside the containment area, the sample collection period may be reduced to one-minute intervals, in order to reduce the collection of non-microbial particulates that can mask the presence of mold spores.

Three consecutive samples will be collected outside the containment area, but inside the ATCT in a noncomplaint area, in the same manner as above. Sampling will be conducted at a flow rate of 15 liters per minute for a period of five minutes each, resulting in a collection volume of 75 liters of air.

Two consecutive samples will be collected outside of the building, in the same manner as above. Sampling will be conducted at a flow rate of 15 liters per minute for a period of 10 minutes each, resulting in a collection volume of 150 liters of air.

For all samples collected, the high volume air sampler will be calibrated before and after use.

All samples, one lab blank, and a completed Chain of Custody form will be sent to Aerotech Laboratories, Inc., by Federal Express Priority Overnight delivery. The samples will be mailed in a rigid container or box. There is no additional temperature handling requirement. Aerotech Laboratories, accredited by the American Industrial Hygiene Association's (AIHA) Environmental Microbiology Laboratory Accreditation Program (EMLAP), will conduct the analysis.

All samples will be clearly labeled. The sample identification number appearing on the cassette **must** match the identification number shown on the Chain of Custody form. The samples will be analyzed in accordance with Aerotech Method A001 (equivalent to the cassette manufacturer's recommended analytical procedure) via light microscopy at 600X magnification, with the entire slide (100% of the sample) being analyzed. The results will be reported as a total fungal spore count, in counts per cubic meter (counts/M³), which includes both viable and non-

viable spores. The Chain of Custody form and an example Aerotech Laboratories sampling report are shown as Attachments 1 and 2, respectively.

The area will be considered "clean" when the average airborne total mold spore concentration measured inside the containment area is not statistically different from the average airborne concentration measured outside the containment area, AND the genus level constituents are similar for all samples taken inside the containment, inside the building (but outside of the containment) and outside of the building.

Statistical significance may be determined in the following manner:

A. All containment sample airborne total concentration levels are lower than those taken from outside the containment, or

B. The Z-test score is less than or equal to 1.65 Standard Deviations from the Mean, indicating a 90% confidence interval. The Z-test is carried out by calculating:

$$Z = \frac{Y_I - Y_O}{0.8 (1/n_I + 1/n_O)^{1/2}}$$

where Y_I is the average of the natural logarithms of the inside samples, Y_O is the average of the natural logarithms of the outside samples, n_I is the number of inside samples and n_O is the number of outside samples.

Alternative A shall be considered first, then if necessary, Alternative B. Should the calculated Z-test score exceed 1.65, the abatement area must be recleaned. An additional set of 10 samples must then be collected, as defined above, in order to establish clearance.

Once the abatement area has passed the clearance criteria, the outer containment barrier will be removed and the room will be available for re-occupancy.

Visual inspections and clearance air sampling will be performed upon completion of the mold remediation, but prior to the re-installation of new building materials.

The visual inspection, clearance air sampling and air sampling data interpretation will be conducted by the government-retained National Airspace System Implementation Support Contract (NISC II) Certified Industrial Hygienist.

Attachment 1

Chain of Custody Form

Attachment 2

Aerotech Laboratories

Total Mold Spore Sampling Report



AEROTECH LABORATORIES, INC.

Federal Aviation Administration
901 Locust, Room 200A
Kansas City, MO 64108
Attn: Barbara Hobert

AIHA EMLAP No. 102297
Total Fungal Spore, Mycelia and Pollen Counts-Air
Aerotech Method: A001

Lab Number: A-309-0599
Project Name:
Date Received: 9/4/2003
Date Reported: 9/5/2003

Lab Number	1				2				3				4			
Sample Identification																
Volume(M ³)	0.0750				0.0750				0.1500				0.0750			
Media	Air-O-Cell™ Cassette				Air-O-Cell™ Cassette				Air-O-Cell™ Cassette				Air-O-Cell™ Cassette			
Date Analyzed	9/5/2003				9/5/2003				9/5/2003				9/5/2003			
Percent Of Trace Analyzed	100% of Trace at 600X Magnification				100% of Trace at 600X Magnification				100% of Trace at 600X Magnification				100% of Trace at 600X Magnification			
Debris Rating	2				2				3				3			
Analyte	Total Count	Count/M ³			Total Count	Count/M ³			Total Count	Count/M ³			Total Count	Count/M ³		
		Result	D.L.	%		Result	D.L.	%		Result	D.L.	%		Result	D.L.	%
Mycelial Fragments	2	27	13	n/a	10	133	13	n/a	17	113	7	n/a	13	173	13	n/a
Pollen	<1	<13	13	n/a	1	13	13	n/a	11	73	7	n/a	<1	<13	13	n/a
Total Fungal Spores	37	493	13	100	82	1,227	13	100	1,796	11,873	7	100	157	2,083	13	100
Fungal Spore Identification				Fungal Spore Identification				Fungal Spore Identification				Fungal Spore Identification				
<i>Alternaria</i>	2	27	13	5	3	40	13	3	48	320	7	3	2	27	13	1
<i>Americosporus</i>	5	67	13	14	11	147	13	12	11	73	7	<1	34	453	13	22
<i>Arthrinium</i>									2	13	7	<1				
<i>Ascosporus</i>	7	63	13	19	20	287	13	22	126	840	7	7	43	573	13	27
<i>Aspergillus/Penicillium</i> Like					6	87	13	5					2	27	13	1
<i>Basidiospores</i>	15	200	13	41	38	507	13	41	90	600	7	5	54	720	13	34
<i>Bipolaris/Dreschlera</i>																
<i>Botrytis</i>																
<i>Chaetomium</i>																
<i>Cladosporium</i>	7	93	13	19	10	133	13	11	1,500	10,000	7	84	17	227	13	11
<i>Curvularia</i>													1	13	13	<1
<i>Epicoccum</i>																
<i>Fusarium</i>																
<i>Memnoniella</i>																
<i>Nigrospora</i>					1	13	13	1								
<i>Oldium/Peronospora</i>									1	7	7	<1				
<i>Phthomyces/Ulocladium</i>																
<i>Rhizella</i>									2	13	7	<1				
<i>Smuts/Myxomycetes/Periconia</i>	1	13	13	3	3	40	13	3	9	60	7	<1	9	40	13	2
<i>Stachybotrys</i>																
<i>Stemphylium</i>																
<i>Taraxia</i>									1	7	7	<1				
Unidentified Conidia					1	13	13	1	8	40	7	<1	1	13	13	<1
Data Qualifiers:																

Laboratory Manager: H. H. Beck Project Manager: D. R. K. ADD1 Page 1 of 2
A001 AIR CLIENT REPORT FORM, P 1 of 2, REVISION 02, 071803, VPCS

SUPPLEMENTAL STATEMENT OF WORK
MICROBIOLOGICAL REMEDIATION AND PARTIAL RESTORATION
FOR
FEDERAL AVIATION ADMINISTRATION
KANSAS CITY AIRPORT TRAFFIC CONTROL TOWER (MCI ATCT)
KANSAS CITY, MISSOURI

FACILITY LOCATION. The facility is located at the Kansas City International Airport. The address is #4 International Square, Kansas City, MO 64153.

The Supplemental Statement of Work (SSOW) identifies additional requirements or restrictions associated with performing the work required in the Statement of Work (SOW) and provides additional information such as floor plans and notes to further clarify the remediation work required by the SOW. It also identifies any additional work required under this contract to restore fire rated partitions, provide access for visual inspection of concealed areas, to correct certain moisture related problems in the facility, to repair certain building components with water damage, to water test areas of potential leaks, or to perform other work identified as part of the remediation and restoration of the facility. The SSOW provides mandatory requirements for scheduling and sequencing the work.

1.0 WORK SUMMARY. The Contractor shall furnish all labor, material, equipment, tools, supplies, transportation, etc. required to complete all work defined in the SOW and SSOW. All work performed and all materials and equipment used shall be approved by the Contracting Officer's Technical Representative (COTR). This shall include, but not be limited to, testing, inspection, scheduling, reporting, submittals, and installation in accordance with manufacturer's written instructions and recommendations.

The work includes but is not limited to the following:

1. Perform all microbiological remediation work identified in the SOW including establishment of containment areas and negative air ventilation systems; removal of water damaged or contaminated gypsum board; removal of contaminated insulation; removal of water damaged or contaminated pipe insulation; cleaning of HVAC supply, return, or exhaust grilles, registers, or diffusers; vacuuming dust on the covers of ceiling mounted speakers; vacuuming contaminated dust on surfaces identified throughout the facility; cleaning and wet wiping walls and surfaces identified throughout the facility such as in stairwells, elevator corridors, and the elevator shaft; and clean up and removal of contaminated debris. Quantities and locations are defined in the SOW and are further defined or clarified through the floor plans and notes in the appendix.

2. Cut and frame openings and install access panels in walls and ceilings where indicated on the floor plans and notes in the appendix.
3. Perform partial restoration of the facility to restore the integrity of fire rated walls and partitions. Install gypsum board (taped and finished) at removal/remediation locations to restore all fire rated walls and partitions. Includes patching openings identified that were cut in walls during the evaluation for mold. Replace any contaminated insulation removed from walls during remediation. Restore existing vapor barriers. Includes painting walls in occupied portions of the building. Quantities and locations are defined and clarified through the floor plans and notes in the appendix.
4. Insulate piping throughout the facility where identified. The quantities and locations are defined and clarified in the SOW and through the floor plans and notes in the appendix.
5. Remove door and frame, 11TS5A, and a portion of the wall between room 11TS5 and 11TS5A. Install a header to support the remaining wall above and install gypsum board to restore the fire rated wall. Install a strut rack between the floor and header to support the existing wall mounted electric panel. Remove conduit and wiring to the light switch for room 11TS5A and rewire all lights to operate from the existing switch for room 11TS5.
6. Install and remove temporary supports and walk boards between the perimeter wall and precast panels to allow for a visual inspection of the exterior side of the 1" shaft liner panels on the west, north, and east sides of the Subjunction Level.
7. Modify the existing drain line and clean out under the Control Cab sink and install a drip pan to prevent water damage to the gypsum board below when the clean out must be opened for maintenance.
8. Perform work listed to prevent water infiltration into the building such as sealing openings in the handrail posts on the Junction Level and installing water-stops (angles) at drains in Subjunction Level air shafts.
9. Clean out/auger drain lines serving the Control Cab sink and the floor drain for the humidifier in the SW corner of room SJ1.
10. The contract includes options for additional work based on funding availability and includes additional painting, restoration of water damage, replacement of stationary louvers in the exterior wall at the third and fourth floor levels and application of spray on insulation on steel surfaces in the ASDE Penthouse and Vestibule to prevent condensation.

The work referenced above shall be staged and sequenced as defined herein and coordinated with the FAA. The facility will remain operational and occupied throughout the performance of work required by this contract. The Contractor shall plan, schedule, sequence, and execute the work in a manner that will minimize disruptions to facility operations.

1.1 SCHEDULE AND SEQUENCE. The Contractor shall plan, schedule, phase, and execute the work in accordance with the following constraints and sequence. Time or duration constraints have been placed on completion of all work in certain rooms and phases as indicated below based on FAA operational needs. Restoration of all areas shall take place immediately after the completion of microbiological remediation, unless noted otherwise, in order to return the areas to service as soon as possible. The Contractor shall meet with the COTR on a daily basis to review the work planned for that day and the following day.

- a. All work in the stairwells shall be completed before work begins in the elevator shaft.
- b. All remediation work on any one level of the ATCT shall occur concurrently unless noted otherwise.
- c. Remediation of gypsum board at the Cab Level door to the exterior walkway and of the sloped ceiling beneath the Cab sink shall not occur at the same time in order to maintain access to the Cab. Begin remediation of the second area after the first is finished. Restoration work may be performed in both locations at the same time provided access to the Cab is maintained. This work and work in the Cab shall be scheduled at the beginning of the project to avoid conflicts or overlap with a pending project to replace consoles in the Cab.
- d. Remediation work in stairwells shall proceed from the top to bottom.
- e. Remediation work in the elevator shaft shall occur only after remediation and removal of gypsum board is completed on all walls forming the exterior side of the elevator shaft. This will allow the FAA to conduct a visual inspection of the concealed side of the 1" shaft liner panels at these locations and determine if additional work will be required to remove and replace any sections of the shaft liner prior to work beginning in the elevator shaft.
- f. All work in the ASDE Level, Control Cab, Cab stairwell, Junction Level, the connecting link between the Base Building and ATCT, 2TS1, 2TS5, and 1TS1 shall be performed at night between the hours of 10:00 PM and 6:00 AM. Cleaning work in the Subjunction Level shall also be performed during these hours. Remediation (removal of gypsum board) in SJ1 may be performed during regular hours.

- g. All work in the elevator shaft shall be performed at night between the hours of 9:00 PM to 11:30 PM, 12:00 AM to 3:30 AM, and 4:00 AM to 6:00 AM. The elevator shall be available for use by FAA personnel during the time periods between these shifts.

1.2 REMOVAL AND REMEDIATION. The floor plans and notes in the appendix identify areas where cleaning is required and provide the approximate areas or quantities of contaminated items to be removed during remediation on a room by room basis. The work is further defined in the SOW as well as this document (SSOW). All gypsum board with any visible signs of mold or microbiological contamination or that is water stained or damaged shall be removed and replaced. Gypsum board shall be removed to a minimum of 12" beyond any visible mold. The plans identify the walls by types A, A1, B, B1, and C. The sheet labeled "PARTITION TYPES" shows the thickness and number of layers of gypsum board on each type wall. For all fire rated walls with multiple layers of gypsum board, the joints between the surface layer and concealed layer shall be staggered by at least 6" horizontally unless noted otherwise and by at least one stud spacing vertically. The dimensions identified on the drawings are minimum removal dimensions and generally include the 12" beyond visible mold. Removal shall be to a vertical stud if one coincides with that location or to the next stud beyond the limits identified. A new stud and section of top runner shall be installed at locations where fixed equipment prevents removal to the next stud.

2.0 MATERIALS. The following specifications provide the minimum requirements for materials furnished and installed under this contract. The Contractor shall furnish submittals for all materials proposed to be used under this contract as indicated below. Alternate products that are equal to or exceed those listed below may be submitted for approval by the FAA. Materials shall be installed in accordance with the manufacturer's written recommendations and instructions. This section also provides additional information on the scope, quantity of work to be performed, or quantity of material to be installed. It also identifies specific installation requirements applicable to these materials.

1. Gypsum board – The majority of all walls included are fire rated walls unless otherwise noted. The thickness, configuration, and number of layers of gypsum board are identified in the appendix on the sheet titled "PARTITION TYPES". The floor plans identify the partition type with a circled letter designation corresponding to the applicable partition type.

All gypsum board utilized shall be a paperless gypsum board product designed for mold and moisture resistance. Gypsum panels shall consist of a moisture resistant, noncombustible gypsum core with glass mat facings on both the front and back of the panel. Water absorption shall be less than 5% by weight. Sheets shall be 5/8" thick, 4' wide, 8 – 12' long, with tapered edges. The flame spread shall not exceed 10 and the smoke developed rating shall not exceed 5 per ASTM E84. When tested in

accordance with ASTM D 3273, the product shall show no fungal growth and have a rating of 10. Utilize fiberglass mesh tape, gypsum setting type joint compound, 1-5/8" minimum sheet rock screws, etc. as recommended by the manufacturer to tape and finish the walls. All gypsum board shall be DensArmor Plus Fireguard as manufactured by G-P Gypsum Corporation or equal. For all walls in areas with existing painted walls, all joints shall be taped and filled flush. Tape and finish visible walls to provide a smooth finish matching existing without noticeable joints or transitions leaving wall surfaces ready for painting. For concealed areas such as above ceilings, gypsum board shall be fire taped only to meet the required rating of the wall assembly. Taping and finishing are not required on walls where the gypsum board is being installed as a thermal barrier over rigid insulation. Install in accordance with manufacturer's instructions and ASTM C840, Standard Specification for Application and Finishing of Gypsum Board. For fire rated installations, the installation and details, including fastener size and spacing, shall be in accordance with the applicable details in the Gypsum Association Fire Resistance Design Manual GA-600, and the UL Fire Resistance Directory. Gypsum board shall be held a minimum of 3/8" above the floor to minimize moisture damage. This void shall be sealed with the fire stop sealant specified below to provide the required rating of the wall assembly.

Shaft liner panels shall be composed of a water resistant, noncombustible gypsum core with a coated glass mat facing on the front and back of the panel. The flame spread shall not exceed 15 per ASTM E84. Panels shall show no fungal growth when tested in accordance with ASTM D 3273. Shaft liner panels shall be 1" thick, 24" wide, and 8 - 12' long. Panels shall have a 6 month exposure warranty. All shaft liner panels shall be DensGlass Ultra as manufactured by G-P Gypsum Corporation or equal. Install in accordance with the manufacturer's recommendations and instructions and in accordance with the applicable details in the Gypsum Association Fire Resistance Design Manual GA-600, and the UL Fire Resistance Directory. Stagger horizontal joints between adjacent panels by a minimum of 12".

2. Metal Framing – Wall framing components such as studs and track shall match existing in size, profile, and gage. Metal framing is required where access panels are being installed in existing walls or ceilings, where a header will be installed to support the overhead wall between 1ITS5 and 1ITS5A, and where existing fixed equipment prohibits removal and replacement of gypsum board to an existing stud location. Utilize a minimum of 20 gage material to frame openings for access panels and for headers. Construct the header of two boxed joists. Frame openings in accordance with manufacturer's standard details and recommendations and in accordance with the recommendations of the access panel manufacturer. The openings in fire rated walls shall be framed of

sufficient size to allow wrapping all of the metal framing components around the perimeter of the opening with gypsum board as shown on the standard detail for the access panel specified. Construct supports for the drip pan under the Cab sink using metal framing components attached to the existing framing supporting the sloped ceiling beneath the Cab sink cabinet. Additional metal framing shall be installed in walls at any location where existing fixed equipment makes it difficult or impossible to remove gypsum board to an existing stud. In this case, an additional section of a vertical metal stud and horizontal track shall be installed to provide a location to fasten both the new and existing gypsum board.

3. Access Panels – Access panels shall be of the size and type (non-rated or rated) as identified on the floor plans and notes in the appendix. The frame of non-rated panels shall have a 1" exposed flange for flush installation in any wall or ceiling and be a minimum of 16 gage cold rolled steel. Doors shall be a minimum of 14 gage cold rolled steel with concealed spring hinges capable of opening to 175 degrees and have a screwdriver operated cam latch. Access panels shall be finished with the manufacturer's standard prime coat finish. Non-rated access panels shall be Nystrom NT series or approved equal. Rated access panels shall be UL listed, B label, 1 ½ hours. The rated access panel assemblies with door, frame, hinge, and latch shall be provided by a manufacturer listed in the Underwriter's Laboratories Building Materials Directory for the rating indicated. Frame shall be 16 gage cold rolled steel with a 1" flange for flush installations. Doors shall be constructed of 20 gage cold rolled steel with a minimum fill of 2" thick fire rated mineral fiber insulation and shall have a continuous piano hinge. Doors shall have a knurled knob/key operated latch bolt. Access panels shall be finished with the manufacturer's standard prime coat finish. Rated panels shall have a spring to close the door. Rated access panels shall be Nystrom IT series or approved equal. Access panels shall be installed in accordance with the manufacturer's written instructions. Framing of the openings and installation of the access panels shall meet all the requirements for maintaining the fire rating of the wall or ceiling. Frames shall be installed plumb and level in the opening. The door shall easily close and latch and shall be flush and in a smooth plane with the frame when closed. Installed access panels shall be free of warps, bows, or physical damage.
4. Plumbing Materials – Waste and vent pipe fittings for modification of the existing Cab sink drain line shall be no-hub cast iron pipe in compliance with ASTM A 888. Size shall match existing. Drain line shall be reconfigured as indicated in the notes in the appendix to allow a drip pan to be installed under the clean out. Do not use power tools to cut existing pipe in the Cab. The dimensions given for the drip pan are the minimum size and the pan shall be maximized based on the space that can be created by relocating the drain line and cleanout. The drip pan shall be

constructed of a minimum of 16 gage galvanized steel with continuous welded seams to provide a leak-proof container. Fabricate a flat support of metal framing components on top of the sloped ceiling forming the base of the sink cabinet to support the drip pan. All plumbing work shall be performed by a licensed plumber.

5. Electrical Materials – The minimum conduit size for all power wiring is ¾" EMT with compression fittings. Wire size, type, and color coding shall match existing. All circuits shall have a separate neutral and ground conductor. Ground all electrical boxes. All work shall be in compliance with the National Electric Code and applicable FAA electrical specifications as indicated through the requirements above. Remove all conduit, wiring, and supports no longer being utilized. The work required is listed on the notes and drawings in the appendix and includes removal of a light switch, conduit, and wiring for room 11TS5A and rewiring the lights from the existing circuit and switch serving room 11TS5. It also includes constructing a frame and supporting an electric panel where the wall is being removed. All penetrations through rated walls shall be fire stopped. Any openings in rated walls resulting from the removal of existing conduit shall be fire stopped. All electrical work shall be performed by a licensed electrician.
6. Support Strut – All strut members shall be a minimum of 1 5/8" x 1 5/8" and have a galvanized finish. Utilize the manufacturer's standard fittings such as base plates and brackets to design and construct the rack to support the electric panel. The electric panel shall be bolted to the rack at four places, near each corner. The rack shall consist of two vertical legs and horizontal cross members. The rack shall bolt to the floor at each leg and to the header of the wall opening above. The submittal shall include a sketch of the rack identifying the components utilized. Materials shall be by B-Line, Unistrut, or approved equal. Temporary strut bracing shall be used to brace the raised access floor at any location where more than three raised floor panels and three perimeter pedestals and stringer connections are removed to access work areas (walls) on the Subjunction Level. Braces shall consist of a horizontal strut U-bolted to multiple pedestals and diagonally braced to the floor or structure with strut components at intervals not more than 3' on center. The temporary strut shall prevent lateral movement of the floor system when portions of the system have been removed. Remove temporary strut bracing after all access floor components have been reinstalled.
7. Wall base – Resilient wall base shall be a removable and reusable system that does not utilize adhesives. The base shall be .1" thick and 4 3/8" in height and shall have an integral tabs on the back that clip into a wall mounted rail. The system shall utilize preformed outside corners and field coped interior corners. Base profile shall have a standard cove base. If

this profile is no longer available, utilize the Tempo Profile with end stops and inside and outside corner stops. Base shall be a thermoplastic rubber formulation designed to meet the dimensional and performance requirements of ASTM F 1861, Type TP, Group 1. Resilient wall base system shall be Johnsonite rePLACE or approved equal. Color to be selected from standard colors and similar to existing. Base shall be installed in accordance with the manufacturer's recommendations and instructions. Remove all existing wall base in the Subjunction Level Equipment Room and install the wall base specified above. Install government furnished wall base where removed at the exterior door at the Cab Level. Furnish and install a section of cove base to match existing where removed from the north wall of 2TS5. Furnish adhesive for use at these locations with antimicrobial protection from mold, mildew, and bacteria. Cove base shall not be reinstalled at other locations throughout the ATCT shaft where it was removed.

8. Sealant – Sealant shall be a one part silicone and meet the following requirements: FS TT-S-00230C (Class A), ASTM C 920 (Type S, Grade NS, Class 50, Use NT, G, A, and O). Sealant shall be Dow Corning 795 Silicone Building Sealant or equal. Sealant shall be utilized to seal all penetrations in the handrail posts on the Junction Level walkways. Expanding foam or other approved backers shall be used to fill the top of the tubes prior to application of the sealant. This sealant shall be acceptable for applications where a specific sealant has not been specified. See item 16 for sealant for building openings at louvers.
9. Insulation – Insulation shall match the material type and thickness of any contaminated insulation being removed under this project. Utilize a vapor barrier to match existing where present.
10. Fire Safing Insulation – Safing insulation shall be a noncombustible mineral wool type insulation (per NFPA 220 when tested in accordance with ASTM E 136) that can resist temperatures to 2000 °F. Safing shall be moisture resistant, noncorrosive, nondeteriorating, and mildew-proof. Safing insulation shall be installed in the cavity between the 11th floor slab and the precast exterior walls to provide a smoke barrier where the existing contaminated material is being removed. Safing shall be installed with a compression fit to a minimum depth of 4". Safing shall be Thermafiber Safing Insulation or approved equal.
11. Firestop Material – Fire stop material utilized shall provide a fire and smoke barrier with up to a two hour rating. Installed fire stop materials shall be the components of a UL listed and tested assembly with rating equivalent to that of the wall assembly it is being installed in. Firestop material shall be Hilti FS-ONE high performance intumescent firestop

sealant, or equal. Install firestop material between the floor and the bottom of all wall materials installed on rated walls under this contract.

12. Paint – Paint shall be a low odor, two component water based catalyzed epoxy with manufacturer's recommended primer (low odor). Paint shall be B70 Series (part A) and B60 V 25 semi-gloss hardener (part B), as manufactured by Sherwin Williams or equal. Surfaces to be painted shall receive one coat of primer (new gypsum board and joint compound only) and two finish coats unless otherwise noted. Paint all replaced sections of wall exposed to view in the Subjunction Level Equipment Room to match existing. This includes the south wall from the SE corner adjacent to stairwell SJ5 to the SW corner of the room, the entire west wall, and the NW wall. Paint entire wall surface where gypsum board has been removed and replaced to nearest natural break line (corners). On the Cab Level, paint all replaced sections of wall exposed to view and walls where patching or taping occurred due to new gypsum board on adjacent surfaces. This includes the sloped ceiling section beneath the Cab sink, and all walls from the SW corner of the landing below the exterior door to the walkway up to the cab level. Apply two coats of a latex stain-blocking primer such as Kilz to the water stains on the ceiling of the Cab stair landing below the sloped ceiling section being replaced. Paint the entire landing ceiling. Paint all of the above areas to nearest natural break line such as a corner.

Contract Option 1 – Paint all access panels installed to match adjacent wall or ceiling color. This includes the visible portions of the frame and door that will be visible with the door closed. Painting includes prime coat and two finish coats.

Contract Option 2 – Repair the water damaged tape joint along the west wall of corridor 9TS1. Prime the water stained areas on the ceiling and walls with a latex stain blocking primer. Repaint the ceiling and the entire west and south walls of corridor 9TS1 with one finish coat to match existing colors. See 9th floor notes in the appendix for additional information.

13. Pipe Insulation – Insulation shall be fiberglass pre-formed pipe insulation with a factory applied, all service, vapor barrier jacket. Thickness shall match existing. Provide a continuous vapor barrier. Install insulation, sealant, and vapor barrier in accordance with the manufacturer's written instructions. Provide re-enterable insulation at fittings and valves that must be periodically accessed or maintained to allow for easy removal and reinstallation by maintenance technicians. Locations and approximate quantities are listed in the drawing notes in the appendix. Field verify all pipe sizes.

14. Detergent – The detergent used shall be an unscented household dish washing detergent. Mix with ten parts water. Furnish in unopened original containers and provide the MSDS. Detergent shall be Palmolive Dish Washing Liquid Regular Green or approved equal.
15. Temporary Walk Boards and Supports – Construct supports of 2x6 lumber in triangular shape for a compression fit in the void between the exterior face of the perimeter shaft wall (partition type B) and the sloped precast panels at the Subjunction Level. Secure ½” plywood to the side of each support to create a rigid assembly. Place supports at 2’ on center to coincide with the locations of the existing type C-H studs. Place 2” nominal thick lumber across the top of the supports, fastened by screw to each support, to create a walkway for visual inspection of the concealed side of the perimeter walls. Allow a 3” gap against the shaft liner panels to allow for a visual inspection of the gypsum board beneath the surface of the walk boards. Access will be through the new access panels to be installed. Remove upon completion of the inspection. The quantity provided shall be enough to inspect one perimeter wall and the shorter adjacent angled wall, such as the west and NW walls (approximately 36 LF). After the visual inspection of each area is complete, the walk boards and supports may be moved and reused at another location until all walls (west, NW, north, NE, and east) have been inspected. Remove all walk boards and supports after the inspection is complete. Provide temporary lighting and extension cords to illuminate the inspection areas to at least 40 foot-candles.
16. Louvers – Replacement of existing louvers shall be priced as contract options. Louver dimensions shown on the drawings are approximate. Field verify actual louver sizes, depth, and installation configuration. The 4th floor intake louver is approximately 4’ x 7’ as indicated on the drawings. The 3rd floor exhaust louver is slightly smaller than indicated on the drawings and is approximately 4’ x 4’-7”. Louvers shall be constructed of extruded aluminum alloy, 6063-T5 with a nominal thickness of .081”. Frame depth shall be 5”. Blades shall be sightproof, double drainable, with horizontal mounting and centered 2” on center. Louver shall be furnished with insect screen. Louvers shall have 44% free area, be wind driven rain penetration class A, and have a discharge loss class of 2. Wind driven water penetration performance shall be based on testing a 39” x 39” nominal unit per AMCA 500-L: 29MPH wind velocity, 3”/hr rainfall rate, 6027 CFM air volume, 588 FPM core velocity, 1139 FPM free area velocity, and a water resistance effectiveness of at least 99.3%. Finish shall be Kynar to match existing louver color. Louvers shall be Ruskin EME520DD Wind-Driven Rain Resistant Stationary Louver or approved equal. The existing louvers are 4” nominal thickness. The existing louver shall be removed and the existing sheet metal wall sleeve or plenum shall be modified to accommodate the new 5” nominal

thick louver. The existing sleeves terminate in a bent "L" shape leg against the back side of the louver. Modify the existing sleeve to create a similar installation or cut back the sleeve and install a continuous "L" shaped angle, matching the gage of the sleeve, around the perimeter of the opening. The gap between the sleeve and the precast concrete or the gaps between the precast and the sleeve and the sleeve and the L-shape angle shall be sealed prior to installing the louver. All existing sealant shall be removed and the surface cleaned and prepared for new sealant by grinding. The existing ground wires shall be fastened to the new louvers in the same manner as the existing. The bottom of the 3rd floor louver coincides with the counterflashing for the link roof. Ensure that the removal and replacement of the louver does not damage the counterflashing or compromise the watertight integrity of the roof and flashing. Perimeter sealant shall be installed in accordance with the sealant manufacturer's recommendations and instructions and shall match the existing in color. Sealant shall be a high performance, low modulus, neutral curing, non-staining, silicone sealant capable of use in dynamically moving building joints with a +/- 50% movement. Sealant shall conform to ASTM C 920, Type S or M, Grade NS, Class 25, and Use NT, M, A, and O. Sealant shall conform to Federal Specifications TT-S-00230 (Type II, Class A) and TT-S-001543 (Class A). Tear strength shall be ≥ 23 pli in accordance with ASTM D 624. Peel strength (aluminum, concrete) shall be ≥ 15 pli in accordance with ASTM C 794. Sealant shall be Tremco Spectrem 3 Silicone Sealant (color Buff) or approved equal. All sealant work shall be performed by a specialty waterproofing contractor and workers regularly engaged in building sealant work.

Contract option 3 shall include removal and replacement of the 4th floor outside air intake louver on the west side of the ATCT shaft in accordance with the specifications listed above.

Contract Option 4 shall include removal and replacement of the 3rd floor exhaust louver on the east side of the ATCT shaft in accordance with the specifications listed above.

17. Spray-on Insulation – The application of spray-on insulation shall be priced as Contract Option 5. Structural steel and other steel surfaces such as the roof deck in the ASDE Penthouse and Vestibule typically experience condensation and frosting during the winter months. Portions of the steel surfaces are not insulated and the rigid insulation is not continuous and has gaps that leave steel surfaces exposed. The ¼" steel plate roof deck and structural steel adjacent to the exterior insulated metal wall panels create pockets without insulation that are prone to condensation. Insulate steel surfaces to prevent condensation. Contract option 5 includes the following items:

1. Remove existing rigid insulation and the reinforced fiberglass panels used for a thermal barrier from the roof deck and structural steel beams.
2. Prepare structural steel and 1/4" steel plate roof deck to receive insulation per the insulation manufacturer's instructions and recommendations. Prime or seal surfaces if required to insure bonding and to prevent discoloration.
3. Protect all surfaces not specified to be insulated to prevent overspray of the insulation. Surfaces to be insulated are structural steel below the top of the ring beneath the ASDE antenna (shown as a curb on drawing S10) and the 1/4" steel plate roof deck. Items that shall be protected and not insulated include walls, floor, light fixtures, heater, electric panels, equipment, any covers of junction or pull boxes, covers of conduit bodies, ground connections to structural steel, color code tape markings of grounding cables, the ASDE antenna and supports, smoke detectors, ground plates, etc. Items such as beam clamps, struts, or conduits attached to steel beams may be insulated.
4. Fully insulate the pockets or voids around the exterior perimeter of the ASDE Penthouse and Vestibule formed between the exterior insulated metal wall panels, the adjacent steel beams, and the 1/4" steel plate roof deck. If it is not possible to spray these areas, other suitable insulation materials shall be used to fully insulate this cavity and the spray-on insulation shall be applied to the bottom of the beam, over the opening, and terminate against the insulated metal wall panels to prevent air infiltration in this space.
5. Spray-on insulation shall be applied to all structural steel below the elevation of the top of the steel ring immediately beneath the ASDE antenna and to all surfaces of the 1/4" steel plate roof deck.
6. Clean up the site to remove all tarps and temporary coverings, over spray, insulation materials, debris, dust, etc. from all surfaces not scheduled to be insulated.

Provide certification that spray-on insulation contains no asbestos. The applicator shall be licensed by the insulation manufacturer to apply the product. Spray-on insulation shall provide an R value of 13. Insulation at the bottom flange of beams on the interior side may be tapered to 1" thick to leave the ground cables visible. Product shall be a sprayed-on cellulose thermal insulation. The cellulose fibers shall be chemically treated for resistance to fire, mold, and mildew. Insulation shall have a field tested bond strength at greater than 5 years of not less than 400 PSF and not less than 600 times its weight at 1" in compliance with ASTM E 736. Product shall comply with ASTM E 84/UL 723, tested at a minimum of 5" thickness Class 1, Class A: flame spread and smoke development not to exceed 5. The product utilized shall provide a class A finish without the need for a separate thermal barrier. Insulation shall be non-corrosive per UMB-80. Insulation shall be cured with mechanical ventilation. Dehumidifiers shall be utilized if required to prevent moisture accumulation on the floor. Insulation shall

be K-13 Spray-On-Systems by International Cellulose Corporation or approved equal. The insulation shall be sprayed with a water based vinyl acrylic emulsion coating containing interlacing/bridging fibers forming a protective coating over the fibrous surface. The coating shall provide additional protection from physical damage, protection from airborne contaminants, provide an easy to clean surface, increase light reflectivity, and have a Class 1, Class A flame spread of 5 or less. The coating shall be a heavy build coating with 99% coverage and shall be white in color. The coating shall be ProteK-13, or approved equal. This is intended to be a performance-based specification. Alternate systems may be submitted provided that the applied insulation has a Class A finish and does not require a separate thermal barrier.

- 3.0 SUBMITTALS.** The Contractor shall furnish submittals to the FAA for all materials proposed to be used or incorporated into the work under this contract. Furnish a minimum of three copies of submittals, one copy will be returned to the Contractor after FAA review. Include manufacturer's standard product and data sheets, catalogues, performance data, installation instructions and recommendations, test data, evidence of compliance, etc. Include MSDS sheets for products used under this contract. The Contractor shall maintain a set of MSDS sheets on site throughout the performance of work under this contract. Include plans for execution of work, establishment of work barriers, methods utilized to perform work, exhaust air system and calculations, and removal and disposal of materials.
- 3.1 PROJECT SCHEDULE.** The Contractor shall furnish a detailed schedule for FAA approval that shows a breakdown of all remediation and restoration activities on a room by room basis. The schedule shall show all work being performed concurrently or performed under the constraints identified in the Work Summary (1.0) and the Schedule and Sequence Requirements (1.1) sections of the Supplemental Statement of Work. The schedule shall show the duration of all activities and the time required to complete them in number of days. All remediation and restoration work in each phase, area, or room shall be completed as soon as possible to avoid disruption to facility operations. For example, any restoration work identified should begin as soon as remediation is completed and the area cleared and all furnishings shall be returned to their original location once remediation and restoration work is complete, etc. As a minimum, the follow on activity should begin the next work day after the preceding schedule activity is completed. The schedule shall be submitted and approved prior to the Contractor beginning any work on site. The schedule shall be revised and updated as necessary during the project to keep it accurate.
- 4.0 EXECUTION/INSTALLATION.** The Contractor shall perform work in accordance with any constraints and sequence requirements identified, the approved project schedule, and as coordinated with the FAA. The Contractor shall meet with the FAA COTR or designated person on a daily basis to discuss and review the work proposed for that day and the next day and review any

special procedures, constraints, impacts to the facility, or schedule requirements involved with completing the work. The Contractor shall schedule and plan all work so that normal facility operations may continue with a minimum of disruptions or interference and all work is completed within the contract time and specific durations identified herein. The Contractor shall be on site to accept all deliveries. Materials shall be brought on site and into the facility as needed for installation that day or stored in trailers or containers located in designated parking areas. The Contractor shall protect all materials from damage and keep them in a like new condition. The Contractor shall protect the existing building, grounds, furnishings, equipment, cables, etc. from damage and shall be responsible for the repair or replacement of any items damaged during the course of the work. The Contractor is responsible for moving FAA furnishings and property out of the work areas to designated storage areas or for cleaning them and wrapping them in plastic per the SOW if they remain in the work area during remediation. The Contractor is responsible for moving these items back to their original location after the completion of work in that area. Damage to operational equipment or cabling will be repaired or replaced by the FAA based on requirements to meet the FAA's mission. The FAA may, at its option, direct the Contractor to make specific repairs or purchase specific replacement material or equipment as deemed necessary to maintain the equipment and facility in accordance with FAA orders, procedures, and directives. In any case, the Contractor shall pay for the cost of repairs or replacement for any items damaged by their work under this contract. The Contractor shall maintain the job site in a neat and orderly condition. This includes prompt and daily removal of any rubbish, debris, tools, equipment, or materials not required for the work in progress. Contractor parking will be designated in remote areas of the parking lot. The Contractor shall provide portable chemical toilets for use by all personnel performing work on this project. Toilet facilities shall be maintained in a sanitary condition.

The Contractor shall perform the work detailed and quantified in the SOW and SSOW. Work shall be completed in a neat and first class workmanship manner in accordance with manufacturer's recommendations and instructions for each item of work included in this contract and as specified.

The FAA will relocate the existing equipment racks adjacent to the west wall of Equipment Room SJ1 prior to the start of work to allow for remediation and restoration work to occur. A minimum of 12 inches of clearance will be provided between the racks and the face of the wall. It is anticipated that between 18 and 24 inches of clearance will be provided.

- 4.1 DEMOLITION/REMEDICATION.** Establish barriers and negative pressure enclosures and prepare each area for remediation as required in the SOW and SSOW. Perform all remediation work indicated. Promptly notify the FAA if additional mold is found beyond the limits identified. The Contractor shall carefully execute demolition work to protect and avoid damage to all portions or

components of the building not scheduled to be removed. Execute demolition by methods that will prevent damage to other work and will provide proper surfaces to receive installation or repairs. Set the depth of cutting tools to less than the thickness of the layer being cut to avoid damage to the portions of the concealed layer below to remain. Remove gypsum board by exposing fasteners and removing them to avoid damage to metal studs and framing components. Conduct demolition work to minimize noise and prevent the spread of dust. Utilize HEPA vacuums at the point of cutting to collect dust during cutting and removal of materials or use tools with shrouds or boots connected to a HEPA vacuum. Clean up debris promptly upon removal. Items shown to be removed and not reused shall be disposed as microbiological contaminated material per the Statement of Work. Any items shown to be reused shall be cleaned, decontaminated, salvaged, and reused.

- 4.2 BARRIERS.** Barriers shall be utilized to isolate the remediation and restoration work from occupied or in-use portions of the facility where physical barriers such as walls do not exist. Barriers shall be utilized to isolate all remediation areas from occupied or in use areas during each phase of the work. A barrier is not required for removal of the Cab stair ceiling below the Cab sink. Specific requirements for the performance of work in this and other areas are included in the SOW. Barriers shall be constructed of wood or metal studs placed 24" on center. Install a compressible material such as foam between the top plate of the wall and the ceiling. Barrier walls shall be covered with two layers of 6 mil polyethylene per the Statement of Work. The method of attachment shall be inconspicuous or non-damaging to ceilings and walls. A quick to assemble or easily reusable system that allows for height adjustments is recommended. The mini-enclosure at the exterior door in the Cab stairway shall not block more than half of the landing in order to allow personnel to access and exit the Cab.
- 4.3 EXHAUST.** The HEPA ventilation system shall exhaust air to the exterior of the building where possible to maintain work areas under negative pressure in accordance with the Statement of Work. Exhaust air shall be ducted in flexible duct with wire reinforcement to maintain its shape and intended cross sectional area. A negative pressure mini-enclosure for work at the Cab Level door shall be created utilizing a HEPA vacuum located on the Cab Level walkway. This enclosure shall not block more than half of the width of the landing in order to maintain access to the Control Cab. If necessary to meet the design requirements at any location, install a second negative air machine in line or in series with the units in the work area to ensure that the sufficient exhaust air is ducted to the point of discharge to maintain the specified pressure differential between work areas and occupied areas of the facility. Ensure that sufficient make up air is provided. In locations where it is not practical or possible to exhaust to the building exterior, the discharge air shall pass through a second HEPA filter. All negative pressure enclosures shall maintain a minimum pressure differential of -.02 inches of water and have at least four air changes per hour. Negative air machines shall be rated for 80% of the listed capacity. Provide detailed

information on the exhaust system along with calculations showing that the required number of air changes will be obtained in the project submittals. See additional requirements in the Statement of Work. The Contractor shall utilize a combination sensing alarm and recording type pressure differential monitor to verify that all containments meet the minimum negative pressure requirement relative to adjacent occupied or non-work areas in the building.

- 4.4 RESTORATION.** Upon completion of all demolition and remediation work identified herein and in the Statement of Work, the Contractor shall restore the facility as specified and place all furnishings, equipment, etc. temporarily relocated back in place. Restoration includes installation of replacement materials such as insulation, gypsum board (including taping and finishing, except where excluded), insulation, wall base (where specified), painting (where specified), final clean up, etc. Taping and finishing on walls shall produce a finished surface ready to be painted. Fire taping is permitted only in concealed locations such as above ceilings. All surfaces, finishes, components, items, etc. disturbed or removed as a result of the work required under this contract shall be restored to match the existing typical conditions for similar elements of the facility. Section 2.0, MATERIALS, identifies specific replacement materials that shall be utilized in lieu of the existing materials being removed and replaced and provides additional restoration requirements. All work areas shall be thoroughly cleaned upon completion of work in each area or room. Remove all grease, mastic, adhesive, dust, dirt, stains, fingerprints, labels, other foreign materials, etc. from new or existing surfaces resulting from the performance of work included in this contract. Remove all debris from demolition or installation of new work. All new construction shall appear to be new and undamaged and free of grease, dirt, marks, blemishes, scratches, etc. Existing construction shall remain in a condition equal to or better than that which existed prior to the start of the project.
- 4.5 SEWER CLEANING.** Sewer lines serving the Control Cab sink and the floor drain (FD-3) serving humidifier H-1 in the SW corner of room SJ1 shall be cleaned by rotary cleaning with a full size auger type drain cleaner. Drain lines shall be cleaned to the length or extent described below. Remove the trap beneath floor drain FD-3 located in the outer ring on the 11th floor. Clean the trap and verify it is fully open and reinstall. This drain line shall be cleaned from the floor drain, through all 2" sections of waste piping and through all the 3" waste piping it connects to up to the riser at the pipe chase east of the elevator shaft. Clean the 1 1/2" drain line from the Cab sink to the point of connection with the 2" drain at the Subjunction Level. Utilize precautions such as plastic sheeting to protect walls and finished surfaces from dirt and water. Clean up all water and debris resulting from the cleaning of sewer lines. Cleaning of the section of drain line from the Control Cab to the Cable Access Level shall be performed at night.
- 4.6 EMERGENCY VENTILATION.** The Contractor shall keep a sufficient quantity of portable fans capable of providing ventilation and sufficient quantities of fresh air in the event occupied areas of the facility such as the Control Cab

experience high or unacceptable levels of odor during the performance of work. Include details of equipment to be provided in the submittal package. Show that fans are capable of ventilating the Control Cab or TRACON (room 203).

- 4.7 SPRAY-ON INSULATION.** All preparation work for the application of the spray on insulation below the bottom of the structural steel ring beneath the ASDE antenna may take place with the ASDE functioning. The exterior door may not be opened while the ASDE is operational. Preparation work includes removal of existing insulation and thermal barrier and covering/protecting items and surfaces from overspray. Protection of the ASDE antenna and ground connections on the steel ring shall be performed immediately before the application of the insulation when the ASDE equipment has been taken out of service. All work shall be conducted at night during the hours previously listed for night work. The Contractor will be permitted to use Room J8 on the Junction Level to set up mixing equipment and pumps. Cover all surfaces of the room to protect the finishes from damage. The hose shall be routed out the door to the microwave balcony, onto the walkway, and up to the Penthouse door at an existing Cab window mullion to avoid restricting vision from the Cab. The ASDE will only be shut down in periods of good weather. Pending rains or thunderstorms will result in cancellation of the shutdown and postpone the work to a clear day. A maximum of one 9 hour shut down will be provided for the application of the insulation and a second 9 hour maximum shut down will be provided for the application of the protective coating. Clean up all areas used in the performance of this work and application of the insulation and restore them to their original condition.
- 4.8 UTILIZATION OF ELEVATOR CAR.** The Contractor shall contract with the existing elevator maintenance contractor (Kone Elevator 816-531-2140) to provide the following services in support of any work performed in the elevator shaft. Work in the elevator shaft (cleaning shaft liner panels) shall be performed off of the top of the elevator car. The elevator maintenance contractor shall fabricate and install a temporary work platform on support members of the elevator car to provide a flat work surface, minimize trip hazards, and to prevent damage to the elevator car or equipment during the performance of work in the elevator shaft. The elevator maintenance contractor shall construct and attach the platform to the car to prevent damage to the elevator car and to provide a safe working environment and provide safeguards from any moving parts for the remediation contractor's personnel working on the car. The elevator maintenance contractor's recommendation for the maximum number of persons working on top of the car or for the maximum weight shall be followed. The elevator maintenance contractor shall be on site at all times the Contractor is working in the elevator shaft and shall take the elevator out of service and place it in manual control from the car top, operate the car, and return it to regular service for FAA use at the times designated in section 1.1. The elevator maintenance contractor shall perform all tasks such as positioning the elevator car, opening elevator doors for personnel to access the top of the elevator car, to lock out the car to clean the

bottom of the shaft, for any temporary modification of controls, etc. The car shall be positioned at 5' maximum intervals from the top of the shaft down for cleaning operations.

4.9 CLEANING TECHNIQUES. Utilize brush type attachments and crevice tools with HEPA vacuums to remove dust and dirt from all surfaces being cleaned. HEPA vacuum all walls of the elevator shaft prior to cleaning. All walls and surfaces indicated to be cleaned shall be cleaned with a detergent solution. Utilize sponges and rags to apply the solution and scrub the surface. Scrub brushes may be used on the steel stair stringers. Preclean the contaminated area in the elevator shaft below the 9th floor twice before cleaning the entire shaft. In the elevator shaft, the detergent solution shall be applied with sponges or sponge mops and the surface scrubbed to remove dirt and contaminants. Do not spray the detergent solution or water on walls. Do not use wire or stiff brushes, scouring pads, or other aggressive methods that will remove the face paper. Clean the walls in 5' maximum increments and reposition the elevator car to clean the next 5' section. Mark each 5' increment on a metal stud on each wall with a permanent marker.

5.0 FACILITY DRAWINGS. Reduced copies of the floor plan are included in the appendix for each level of the ATCT where work is required. The drawings are annotated with hexagon notes referencing specific work to be performed. Floor plans of the connecting link between the ATCT and Base Building are not included. Field verify the quantity of HVAC diffusers and grilles to be cleaned. The following facility drawings are provided as reference drawings to provide the Contractor additional information about the facility or conditions under which work must be performed. These drawings are for reference only and do not depict work to be performed under this contract. They are provided to show the facility layout and to assist in clarifying the work required. The drawings provided have been reduced to fit in this document and are not intended to be scaled from. A list of reference drawings is included below and pertinent information for each drawing is annotated.

CE-E-7893-A5: This drawing is included to show the exterior elevations of the ATCT tower shaft and the names and elevations of the different floor levels. It also identifies the location of the two exterior louvers identified for replacement in Contract Options 3 and 4.

CE-E-7893-A6: This drawing is included to show building sections 1 and 2 at the top of the tower shaft. See floor plans in the appendix for the location of the section cuts. The sections show the layout and configuration of the Cab stairs and tower shaft stairs that will be cleaned as part of the project. The ASDE Penthouse above the Control Cab is shown as well as the pull down-stairs that provide access to this level. The space between the perimeter shaft walls and precast concrete at the Subjunction Level where the temporary walk boards will be installed can be seen.

CE-E-7893-A8: This drawing is included to show sections 4 and 5 depicting the space where the temporary walk boards will be installed. See the floor plans in the appendix for the location of the section cuts.

CE-E-7893-A9: This drawing is included to show a section through the Control Cab and a larger view of the ASDE Penthouse and pull-down stairs that provide access from the Control Cab to the ASDE Vestibule and Penthouse.

CE-E-7893-A13: This drawing is included to show section 1 providing a more detailed view of the pull-down stairs and fixed ladder providing access to this area. The door shown next to the exhaust fan opening has an alarm and interlock that will shut down the ASDE equipment when opened. The Contractor shall not open this door. The door may only be opened for the application of spray-on insulation (Contract Option 5) at times when the ASDE equipment has been taken out of service.

CE-E-7893-A14: This drawing is included to show section cuts through the lower portions of the tower shaft stairwell and elevator shaft where cleaning work will be performed. Details of items to be cleaned such as handrails and stringers are shown.

CE-E-7893-A17: This drawing is included to show the reflected ceiling plans for the Junction Level and the Subjunction Level. These plans show typical locations of ceiling mounted speakers and HVAC diffusers, registers, and grills that will be cleaned as part of this project. Verify quantity on these levels as well as those on the 2nd and Ground Floor Levels of the ATCT and both levels of the connecting link.

CE-E-7893-M2: This drawing is included to show the approximate location and routing of sanitary sewer lines and clean outs that will be augered/cleaned out as part of the work under this contract. Field verify routing and clean out locations.

CE-E-7893-M3: This drawing is included to show the approximate location and routing of sanitary sewer lines and clean outs that will be augered/cleaned out as part of the work under this contract. Field verify routing and clean out locations.

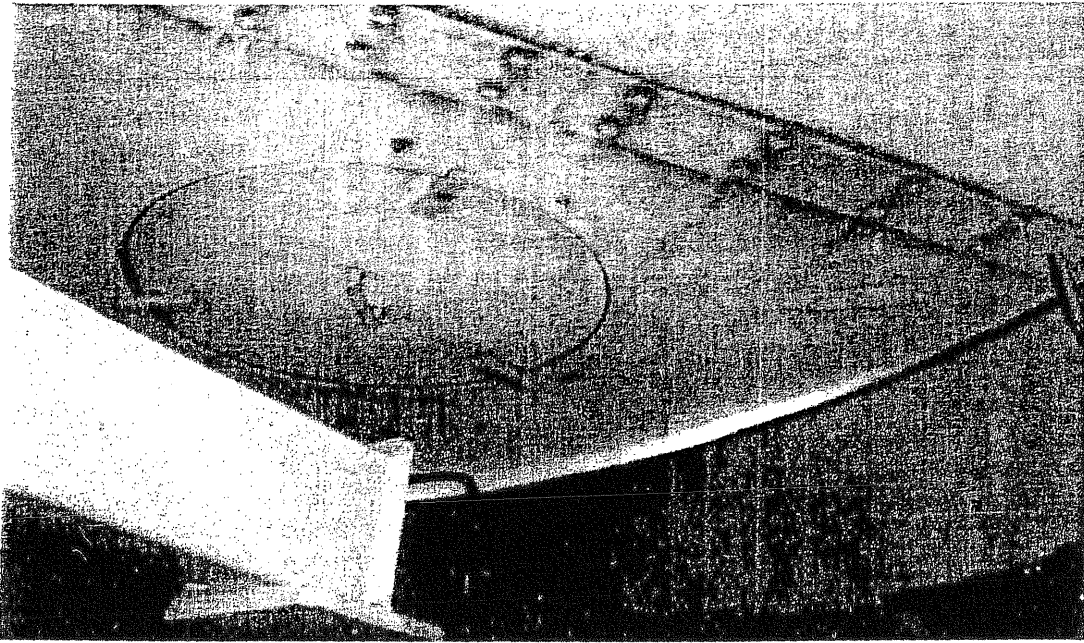
CE-E-7893-M6: This drawing is included to show the duct for smoke relief between the elevator shaft and Cab Level walkway that will be used to exhaust air from the elevator shaft during cleaning.

CE-E-7893-M7: This drawing is included for reference to show the waste and vent riser diagram. This shows the approximate configuration of the sanitary sewer (drain) lines to be augered/cleaned out.

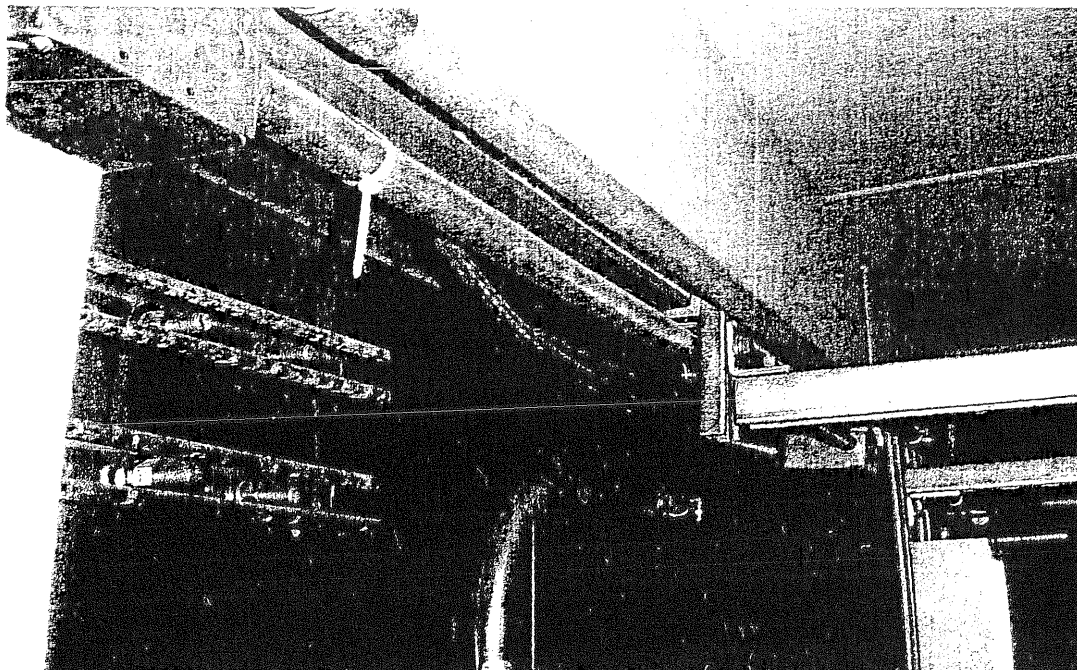
CE-E-7893-S10: This drawing is included for the Penthouse Roof Framing Plan that shows the configuration and sizes of the structural steel framing forming the

roof of the ASDE Penthouse and Vestibule. The application of insulation begins at the top of the ring identified in the Curb Framing Plan, detail 19.

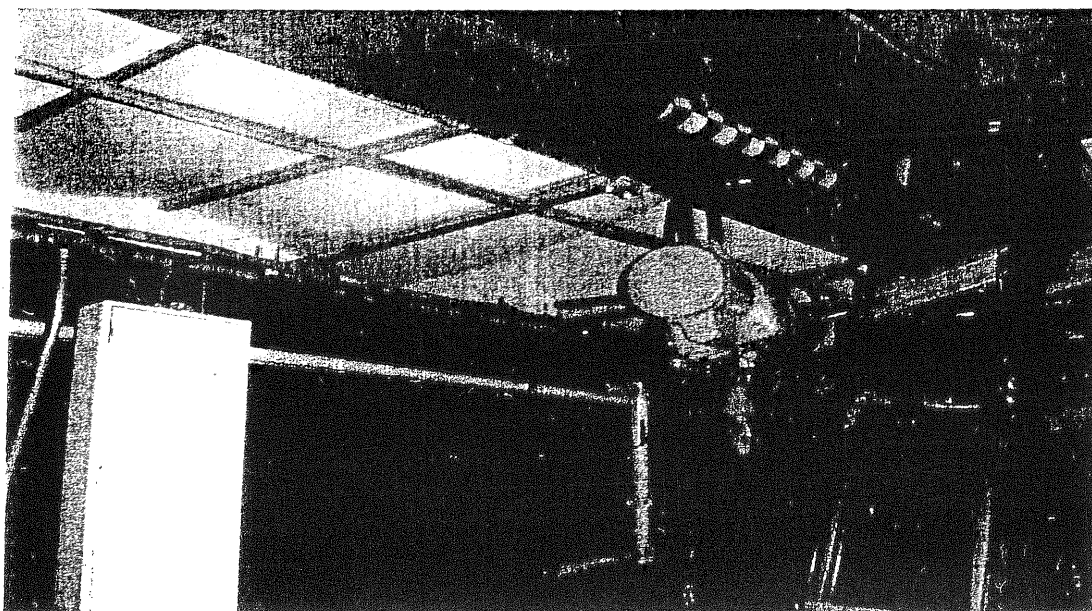
6.0 PHOTOS. The following photographs and descriptions are included to provide additional details of the existing site conditions. Photographs are included for areas that have limited access due to facility operations or for areas that may be difficult to visualize based on the description of work required.



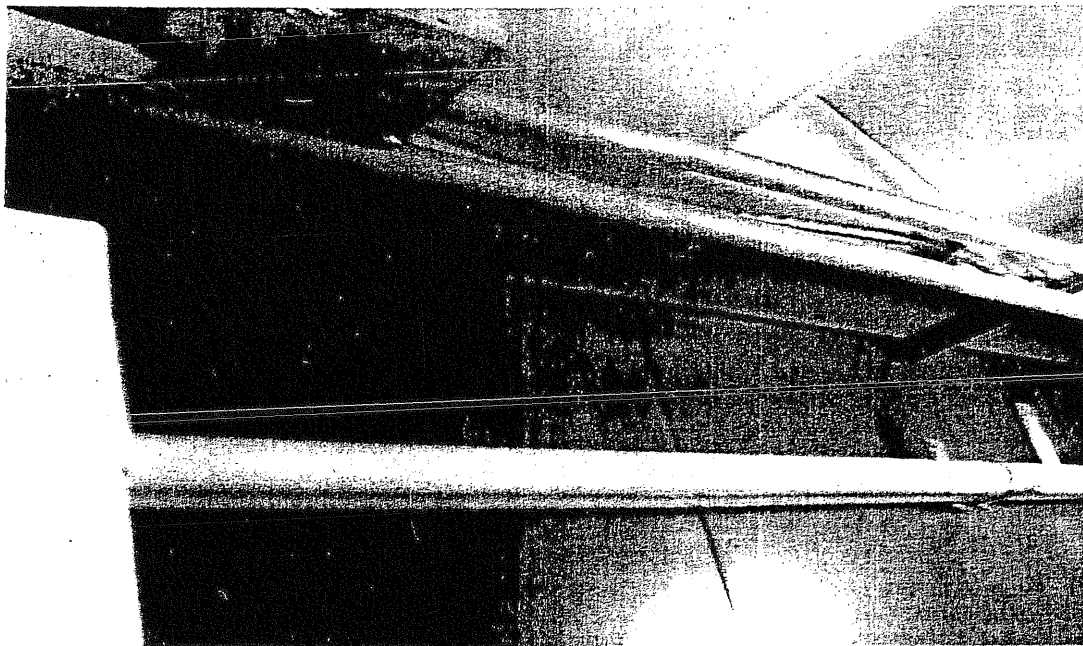
This photo shows the structural steel ring or curb beneath the ASDE antenna. The application of spray-on insulation (Contract Option 5) begins at the top of the ring and covers all structural steel below as well as the 1/4" steel plate roof. A ground cable is seen at the base of the ring.



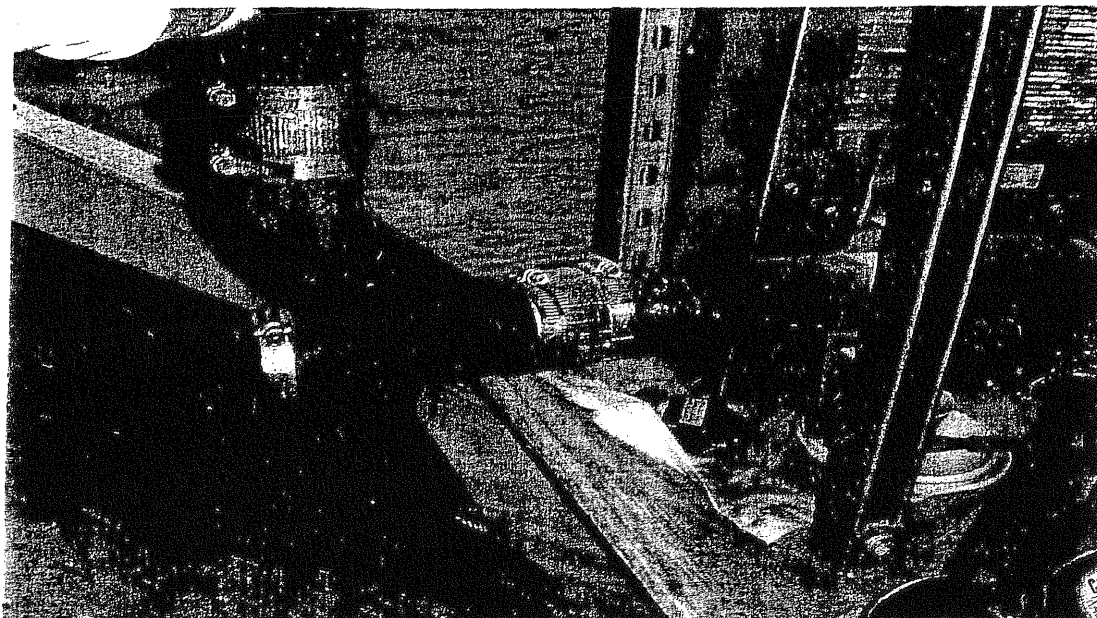
This photograph shows a typical beam at the perimeter wall insulated on one side. Junction box covers shall remain accessible after application of the insulation. Typical beam clamps and hangers can be seen.



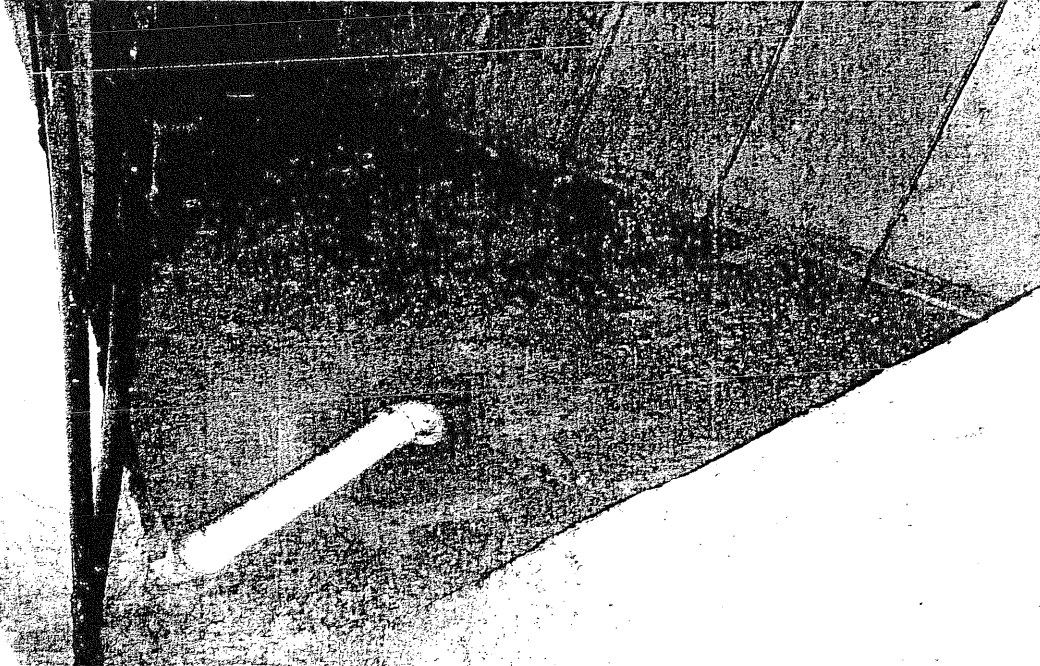
This photo shows the insulated roof deck with the fiberglass panels (thermal barrier) coming loose at many locations. Items to be protected from overspray such as a light fixture, conduit body cover, and heater can be seen in the background.



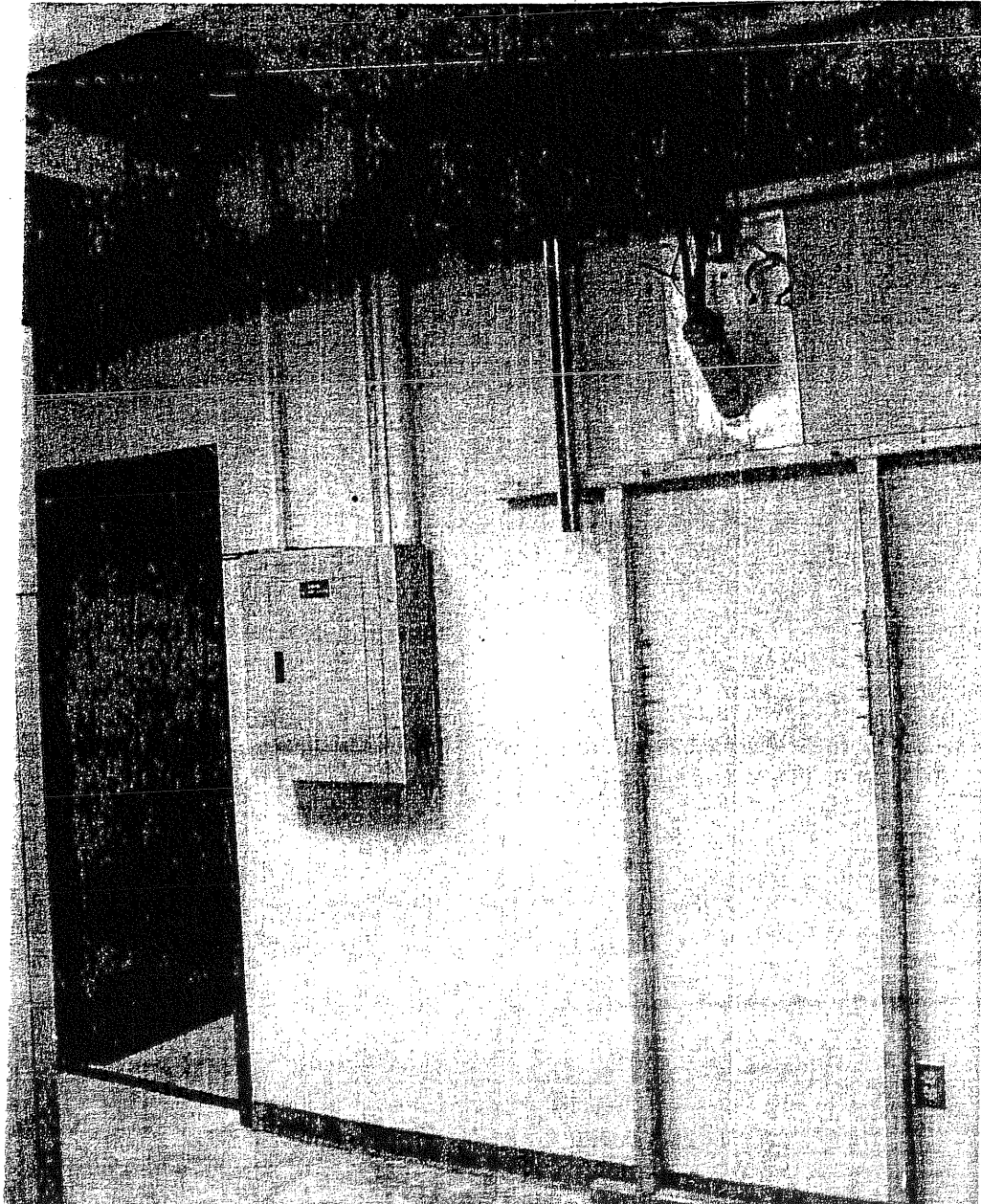
This photo shows the uninsulated pocket formed between the beam, insulated metal siding panel and the steel plate roof deck.



This photo shows the drain line under the Cab sink. The cast iron drain line section shall be removed and cut shorter allowing the cleanout to move to the right creating more space beneath it for a drip pan. The horizontal section of the drain line may also be moved up. A new drain line will be installed from this point to the sink.



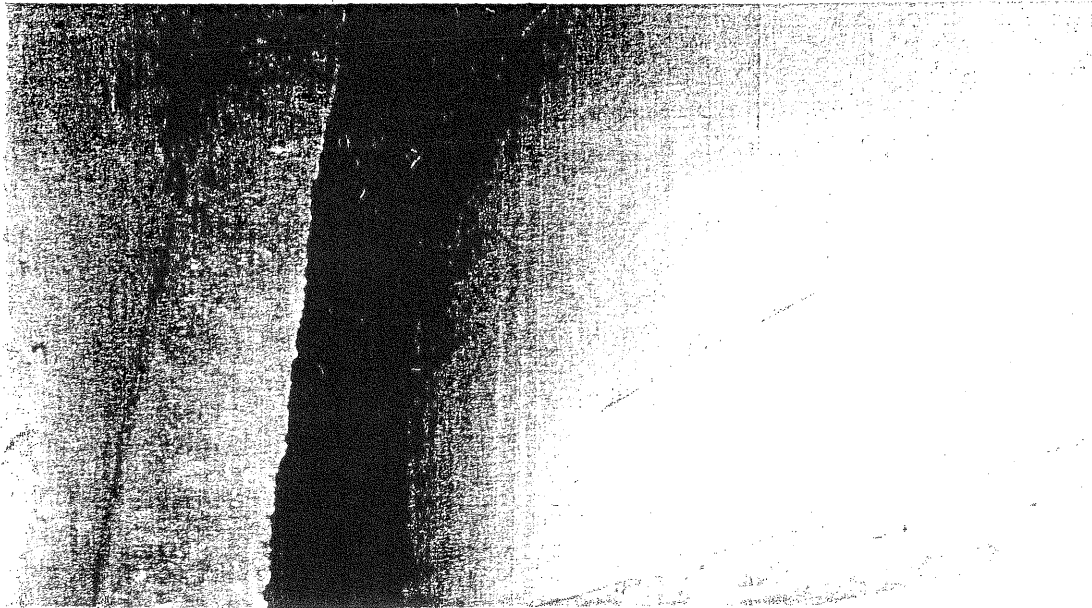
This photo shows the pigeon droppings and fire proofing to be HEPA vacuumed in one of the Subjunction Level air shafts. An angle will be installed behind the drain as a water stop to prevent water entry into the building at the column. The vertical drain line may have to be cut shorter in order to install the angle.



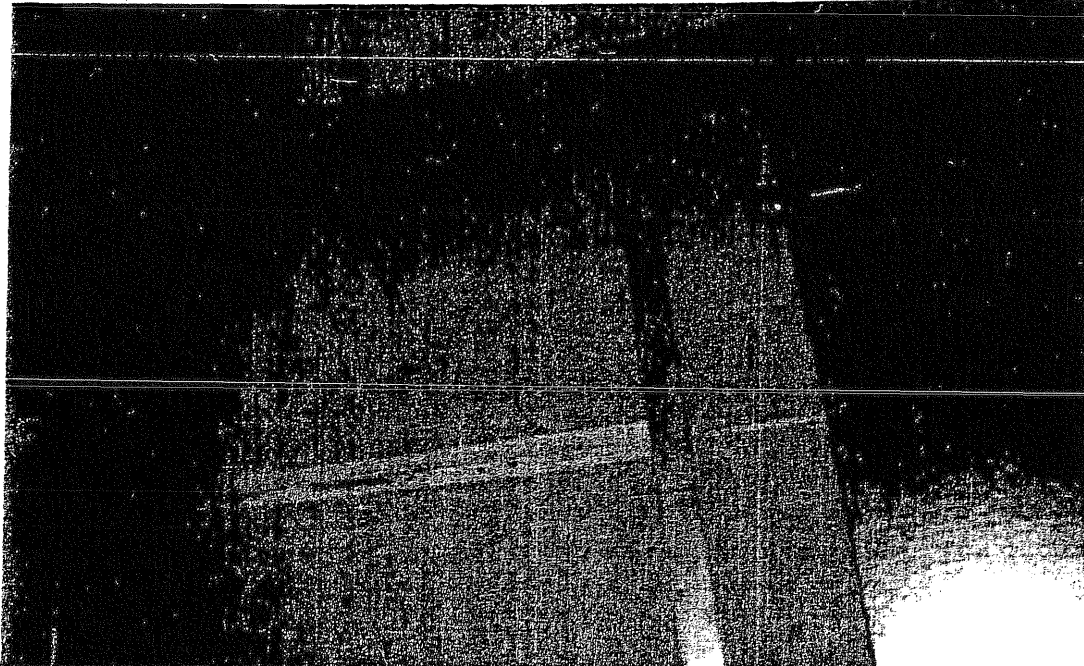
This photo shows the east wall of room 11TS5. The strut support will be temporarily removed to remove and replace gypsum board. The door and a section of wall will be removed and a header installed to support the wall above since an electric panel in the corner of room 11TS5A will prevent replacing the wall. The new gypsum board will terminate at the NW corner of the elevator shaft. A strut rack shall be installed between the floor and header where the wall is being removed.



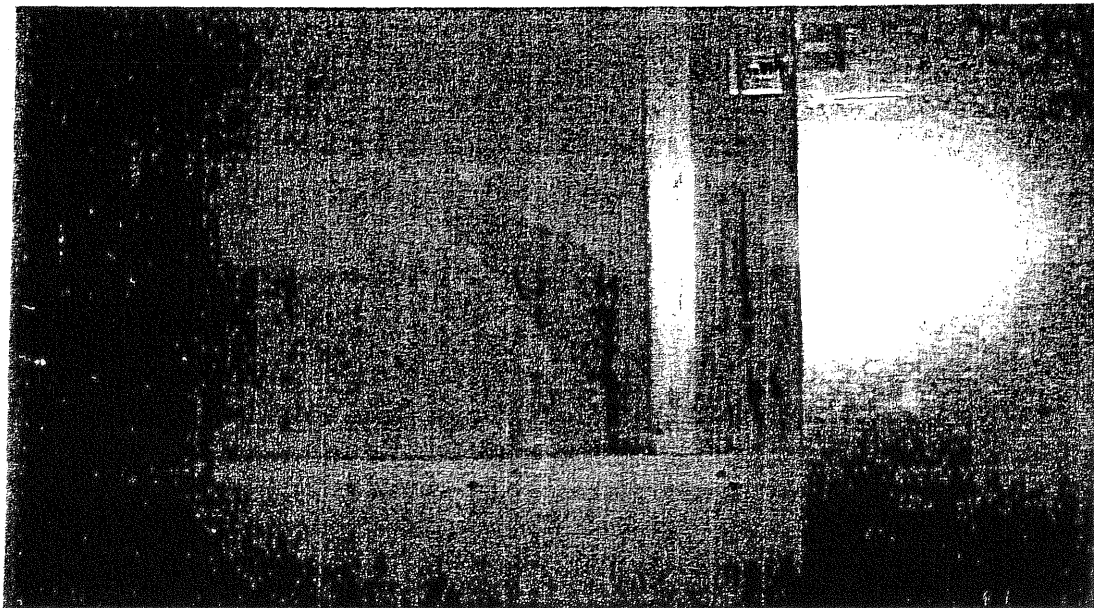
This photo shows debris and fire safing insulation in the void between the floor slab and precast panels in the 11th Floor Outer Ring. This condition is typical where gypsum board partitions are not adjacent to the exterior precast.



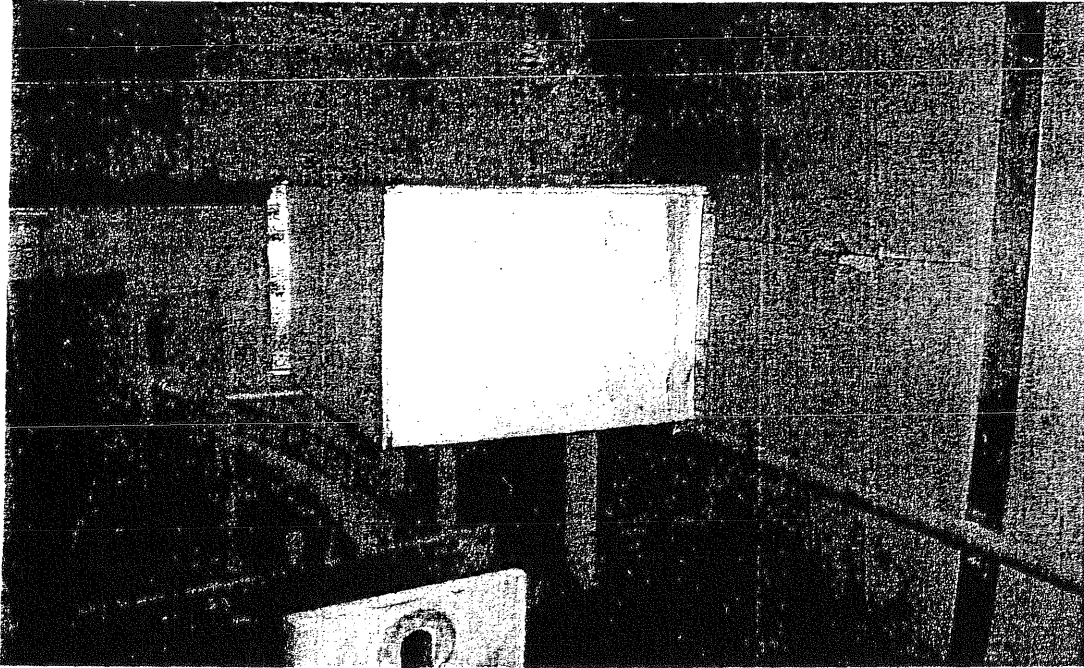
This photo shows debris and fire safing insulation in the void between the floor slab and precast panels in the 11th Floor Outer Ring. This condition is typical where gypsum board partitions are adjacent to the exterior precast.



This is a typical photo of the shaft liner panels in the elevator shaft.



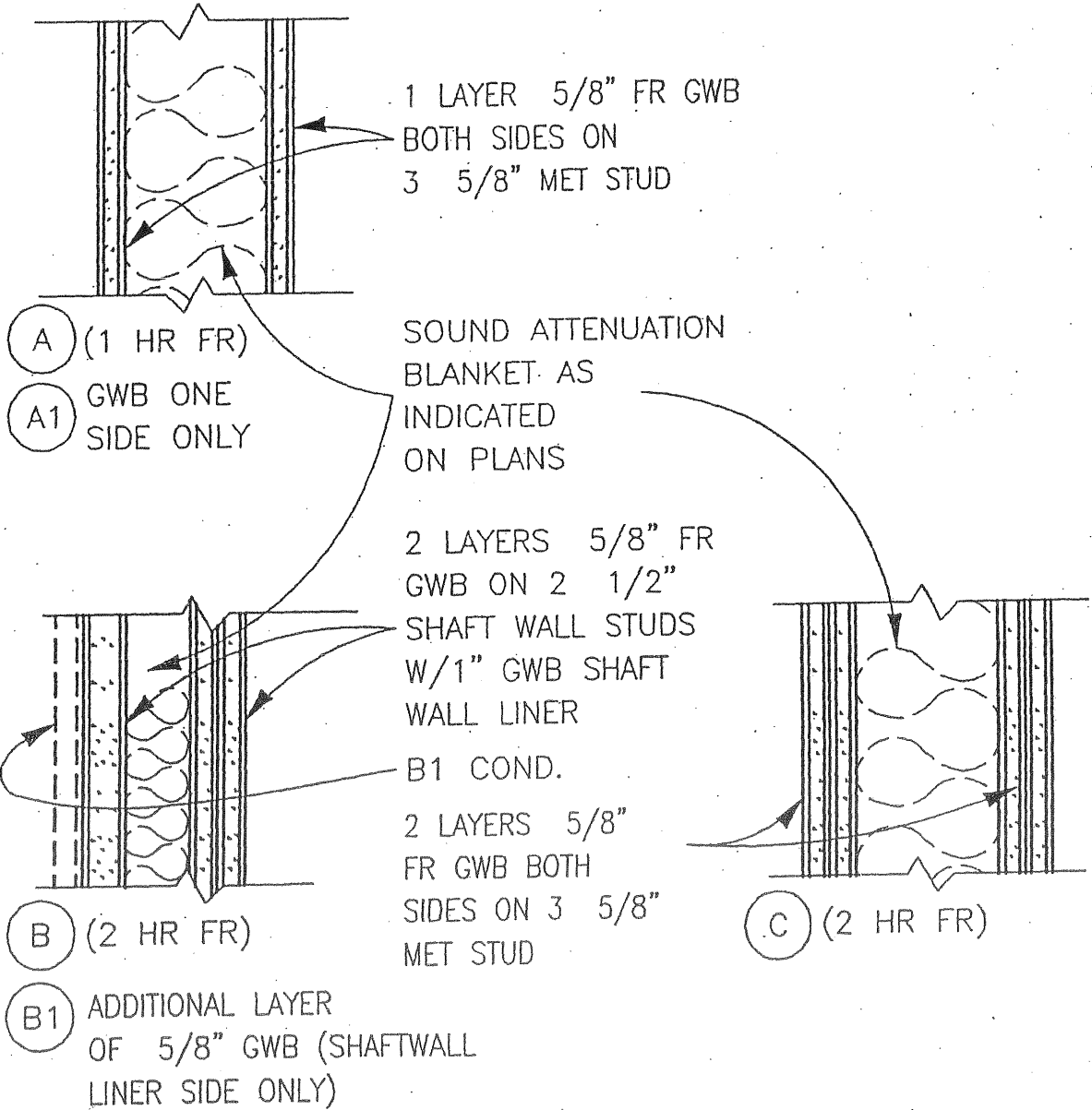
This photo shows a small band of mold on the north wall of the elevator shaft approximately ten feet below the ninth floor. This area and the adjacent contaminated panels shall be precleaned prior to cleaning the entire elevator shaft.



This photo shows the duct for smoke relief at the top of the elevator shaft. This duct shall be used to exhaust air to the building exterior and create a negative pressure containment during cleaning procedures in the elevator shaft.

APPENDIX

PARTITION TYPES



ASDE PENTHOUSE LEVEL NOTES

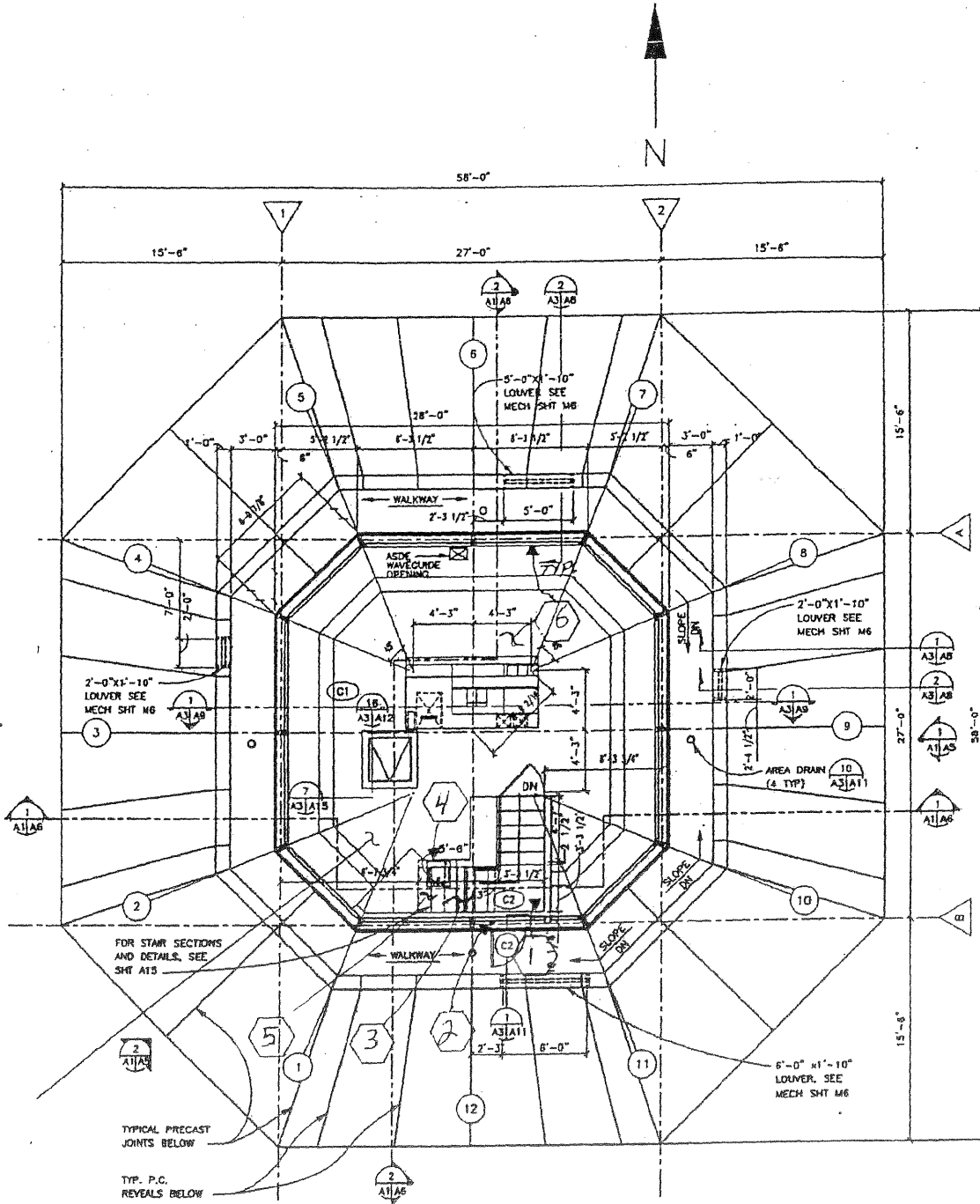
- 1 Wet wipe all insulated metal panel walls in the ASDE Penthouse and the ASDE Vestibule to remove water marks and stains.
- 2 Scrub and clean floor tile in the ASDE Vestibule and the ASDE Penthouse to remove white water marks and stains.
- 3 Contract Option 5: Remove existing rigid insulation and fiberglass reinforced panels used as a thermal barrier from structural steel and the roof deck in the ASDE Penthouse and Vestibule. Protect surfaces not to be insulated and apply a spray-on insulation system to the structural steel and roof deck below the elevation of the top of the steel ring or curb beneath the ASDE antenna as specified.

CAB LEVEL NOTES

- 1 The location shown for door C2 is incorrect. It is located on the landing and the east edge of the frame aligns with the east wall of the cab stairs. Remove vinyl cove base to the first joint beyond the remediation limits shown. Starting at the east side of the door frame, remove a minimum of 2 linear feet (LF) of gypsum board to a height of 18" above floor finish (AFF). Remove any water damaged or contaminated insulation. Complete remediation work as specified. Replace any insulation removed and install new gypsum board. Prime new gypsum board. Paint entire wall. Install Government furnished cove base where removed.
- 2 Remove vinyl cove base to the first joint beyond the remediation limits shown. Starting at the west side of the door frame, remove approximately 1 LF of gypsum board between the door frame and the corner bead to a height of 18" AFF. Remove any water damaged or contaminated insulation. Complete remediation work as specified. Replace any insulation removed and install new gypsum board. Prime new gypsum board. Paint all walls in the door recess. Install Government furnished cove base where removed.
- 3 Remove the water stained and contaminated gypsum board ceiling over the Cab stairs below the landing at door C2. This section of gypsum board is located beneath the Cab sink and is approximately 3'-2" x 7'-2". Minimize damage to adjacent gypsum board to remain. Remove in as large of sections as possible to minimize dust and to avoid cutting through any stained or contaminated areas. Install new gypsum board. Prime and paint the gypsum board ceiling. Apply two coats of stain blocking primer to the water stains on the ceiling above the landing immediately below this section and paint the ceiling above the landing with one finish coat. Paint all walls from the SW corner of this landing up to the Control Cab.
- 4 Modify existing drain line and cleanout to raise it further above the gypsum board and install a drip pan beneath the cleanout plug. The cleanout may be raised or shifted to the west to increase the clearance between it and the gypsum board below. The drip pan shall be fabricated of 16 gage galvanized steel and have minimum dimensions of 12" x 30" x 1.5" deep. Install metal studs or sheet metal supports to create a flat spot on the sloped ceiling framing to support the bottom of the pan. Modify/replace the drain line between the sink and vent and connect it to the relocated drain line.
- 5 Clean the entire stairwell as described in the Statement of Work. HEPA vacuum to remove all visible dust on surfaces such as stair stringers, gypsum board caps, ledges, pipes, conduits, etc. Wet wipe all surfaces in the stairwell. See the Statement of Work. Locate the HEPA vacuum remotely from the Control Cab and utilize longer hoses to reach work areas or insulate the vacuum to reduce noise to an acceptable level for facility operations.

- 6 HEPA vacuum and wet wipe all supply and return air grilles, registers, diffusers, etc. See the Statement of Work. Locate the HEPA vacuum remotely from the Control Cab and utilize longer hoses to reach work areas or insulate the vacuum to reduce noise to an acceptable level for facility operations.

CAB LEVEL



CABLE ACCESS LEVEL NOTES

- 1 Remove and replace approximately 9 LF of water stained pipe insulation at the roof drain indicated. Test piping for leaks by utilizing a garden hose and the hose bib on the Cab Level walkway to flood the area around the drain and check for leaks. Water test for 15 minutes.
- 2 Clean the entire stairwell as described in the Statement of Work. HEPA vacuum to remove all visible dust on surfaces such as stair stringers, gypsum board caps, ledges, pipes, conduits, window framing, etc. Wet wipe all surfaces in the stairwell. See the Statement of Work.
- 3 HEPA vacuum and wet wipe all supply and return air grilles, registers, diffusers, etc. See the Statement of Work. This includes the return air grille on the wall of the Cab stairwell at the landing below the door to the Cable Access Level. Remove the return grille from the wall and clean from both sides.
- 4 Clean all gypsum board walls in the entire elevator shaft per the Statement of Work.

JUNCTION LEVEL NOTES

- 1 Seal the vent hole from the hot galvanizing process left in each tube handrail post (approximately 28) on the four Junction Level walkways. Fill the top of the post with expanding foam to create a backer. Clean the edges of the opening and core out foam to provide a 3/8" to 1/2" deep opening for sealant. Seal all vent holes with silicone sealant, bronze in color.
- 2 Clean all gypsum board walls in the entire elevator shaft per the Statement of Work.
- 3 Clean the entire stairwell as described in the Statement of Work. HEPA vacuum to remove all visible dust on surfaces such as stair stringers, gypsum board caps, ledges, pipes, conduits, window framing, etc. Wet wipe all surfaces in the stairwell. See the Statement of Work.

- 4 HEPA vacuum and wet wipe all supply, return, and exhaust air grilles, registers, diffusers, etc. See the Statement of Work.
- 5 HEPA vacuum all visible dust from the wall recess around the elevator doors. Clean and wet wipe all walls in the corridor to the north and east of the elevator shaft per the Statement of Work.

SUBJUNCTION LEVEL NOTES

- 1 Remove vinyl cove base to the first joint beyond the remediation limits. Remove one raised floor panel and carpet tile along length of wall to beyond the limits. Install a 6 mil plastic barrier between the concrete floor and the top of the raised floor to keep debris from entering this space. Install support strut to brace the raised floor as specified. Carefully remove ceiling tiles and grid components adjacent to the remediation limits and salvage materials for reinstallation upon completion of work. Install a 6 mil plastic barrier between the ceiling grid and floor deck above. Beginning at the southwest corner of the room extending northward, remove 15 LF of gypsum board to its full height of 12' (surface layer) and 13 LF for its full height of 12' (concealed layer). Remove insulation. Complete remediation work as specified. Replace any insulation removed, repair any damage to the vapor barrier, and install new gypsum board. Replace ceiling tile and any grid components removed to access the work area. Prime new gypsum board. Paint the west and NW walls in their entirety. Reinstall raised floor panels and carpet tiles. Remove temporary strut supports.

- 2 Remove and replace contaminated shaft liner panels on the west and northwest walls. The Contractor shall assume that approximately 50% of the shaft liner on the west and northwest walls will be replaced, an area equal to 20' wide to a height of 12'. Where contamination is limited to less than 50% of the shaft liner, it shall be cut out 12" beyond visible mold and only the contaminated portion shall be removed and replaced and counted against this quantity.

- 3 Cut and frame the rough openings in the walls at five locations shown and install 22" x 36" insulated, fire rated, B label, access panels. The Contractor shall install temporary supports and walk boards between the precast panels and perimeter walls on the east, north, and west sides to allow for inspection of the shaft liner. Cut and frame the rough opening in the plywood wall of room SJ7 and install a 22" x 30" non-rated access panel. Remove the temporary supports and walk boards after the inspection.

- 4 Remove vinyl cove base from the north wall. Clean and scrub the surface of the gypsum board to remove any contamination. See the Statement of Work. The existing equipment racks are approximately 3' from the wall and are installed parallel to the wall instead of perpendicular to it as shown on the drawing.

- 5 Remove vinyl cove base to the first joint beyond the remediation limits. Remove one raised floor panel and carpet tile along length of wall to beyond the limits. Install a 6 mil plastic barrier between the concrete floor and the top of the raised floor to keep debris from entering this space. Install support strut to brace the raised floor as specified. On the south wall, beginning on the west side of the

door of Mechanical Room SJ7, remove 10 LF of contaminated gypsum board to a height of approximately 36" AFF (from concrete slab to bottom of door to SJ8). Remove approximately 2 LF of contaminated gypsum board on the concealed layer to a height of 30" AFF. The concealed layer begins at the door to SJ7 and ends at the intersection with the wall between SJ7 and SJ8. Remove and replace any contaminated or water damaged insulation and contaminated or damaged vapor barrier. Install new gypsum board. Prime new gypsum board. Paint the entire wall from the SE corner of the room adjacent to stairwell SJ5 to the SW corner of the room. Reinstall raised floor panels and carpet tiles. Remove temporary strut supports.

- 6 Patch the type B shaft wall at four locations where inspection openings approximately 12" x 12" were cut through both layers of 5/8" gypsum board and the 1" shaft liner panels. Openings are located above the suspended ceiling. Cut out gypsum board at openings to adjacent studs, stagger joints, install gypsum board in openings, and fire tape joints around the perimeter of the patch.
- 7 Repair fire rated partition where a 2.5" diameter inspection hole was drilled through the surface layer of 5/8" gypsum board below raised floor on the west side of the elevator shaft. Cut out surface layer of gypsum board from floor slab to above hole, approximately 8" high, and extend horizontally to the stud on each side of the hole. Install new gypsum board.
- 8 HEPA vacuum all debris on the floor of shafts SJ6 and SJ8. Clean all surfaces per the Statement of Work. Install a 3" x 3" x 1/4" galvanized angle on the floor of the shaft to prevent water from bypassing the drain and entering the building at the opening in the slab near the column. The angle shall be set in a bed of sealant and fastened to the floor in two places with Tapcon screws. Extend the angle out to the side walls of shaft. Cut off/shorten the riser pipe from microwave balcony drain above and raise horizontal drain line if there is not sufficient room to install the 3" angle beneath it.
- 9 Remove and replace any water stained or damaged insulation on the domestic cold water line above the ceiling in the SW corner of room SJ1, adjacent to Mechanical Room SJ7. Insulate any portions of the water line or valves not currently insulated. This work includes approximately 4 LF of pipe insulation on domestic cold and/or hot water lines above the ceiling near the point of connection of the water line serving the humidifier on the south wall.
- 10 Clean all gypsum board walls in the entire elevator shaft per the Statement of Work.
- 11 Clean the entire stairwell as described in the Statement of Work. HEPA vacuum to remove all visible dust on surfaces such as stair stringers, gypsum board caps, ledges, pipes, conduits, window framing, etc. Wet wipe all surfaces in the stairwell. See the Statement of Work.

- 12 HEPA vacuum and wet wipe all supply and return air grilles, registers, diffusers, etc. See the Statement of Work.
- 13 HEPA vacuum all visible dust from the wall recess around the elevator doors. Clean and wet wipe the wall on the north side of the elevator shaft in room SJ1 per the Statement of Work.
- 14 Remove all remaining vinyl cove base in room SJ1. Install the new resilient base system specified on all walls in room SJ1.
- 15 Clean surfaces beneath the raised access floor in Equipment Room SJ1 per the Statement of Work.

11th FLOOR NOTES

- 1 Remove vinyl cove base to the first joint beyond the remediation limits. Beginning in the southwest corner, remove 3.5 LF of contaminated gypsum board to a height of 36" AFF on the surface layer and 2.25 LF to a height of 30" AFF on the concealed layer. Remove insulation. Complete remediation work as specified. Install new insulation and repair any damage to the vapor barrier. Install new gypsum board.
- 2 Remove vinyl cove base within the limits shown. Remove 3.5 LF of contaminated gypsum board between the SE corner of the room and the door to a height of 42" AFF. Complete remediation work as specified. Install new gypsum board.
- 3 Remove vinyl cove base within the limits shown. Remove 10.5 LF of contaminated gypsum board between the SE corner of the room to the door to 11TS5A to a height of 48" AFF on the surface layer and to a height of 42" AFF on the concealed layer. Remove the lower section of struts supporting the conduit sleeve and ground cables through the wall if necessary to install the new gypsum board and provide temporary support for the remaining strut. Reinstall existing strut sections after the installation of new gypsum board. Complete remediation work as specified. Install new gypsum board.
- 4 Remove vinyl cove base within the limits shown. Remove 2.5 LF of contaminated gypsum board between the SW corner of the room and the door to 11TS5 to a height of 48" AFF on the surface layer and to a height of 42" AFF on the concealed layer. Complete remediation work as specified.
- 5 Remove door and frame 11TS5A. The lockset and closer shall remain the property of the FAA. Remove the lower portion of the gypsum board wall and metal studs between the NW corner of the elevator shaft and the wall to the north. Install a header between the NW corner of the elevator shaft and the north wall to support the wall above with the bottom of the finished wall (opening) 7' AFF. A short section of wall may be left at each end to support the header. This will create a 7' high opening across the west wall of 11TS5A. This opening is being created since the limited space in 11TS5A between panel DPCT-6 and the wall makes it difficult to restore the fire rated walls. Remove the conduit and wiring for the light switch in room 11TS5A and rewire the lights to operate off of the light switch for room 11TS5. Patch any penetrations through rated walls where conduits are removed. Install gypsum board to restore the 2-hour rating at the NW corner of the elevator shaft. Install two layers of gypsum board on all modified sections of wall and header between room 11TS5 and 11TS5A. Install a 1 5/8" galvanized strut rack bolted to the floor and header to support the central battery system electrical panel in room 11TS5 where the wall is being removed.

- 6 Remove vinyl cove base to the first joint beyond the remediation limits. Beginning in the SW corner, remove 4 LF of contaminated gypsum board to a height of 18" AFF on the surface layer and 2.67 LF of contaminated gypsum board to a height of 12" AFF on the concealed layer. Complete remediation work as specified. Install new gypsum board.
- 7 Remove vinyl cove base within the limits shown. Remove contaminated gypsum board for the length of the south wall, approximately 3.5 LF, to a height of 18" AFF on the surface layer and to a height of 12" on the concealed layer. Complete remediation work as specified. Install new gypsum board.
- 8 Remove all gypsum board scraps, debris, and fire safing insulation from the void between the edge of the floor slab and the exterior precast wall panels. The majority of this material is contaminated. This area includes the entire perimeter of the tower shaft. Install new fire safing insulation in the void between the floor slab and the exterior precast wall panels as specified.
- 9 Cut and frame the rough opening and install an 18" x 24" insulated, fire rated, B label, access panel in the ceiling of corridor 11TS1.
- 10 Remove and replace approximately 11 LF of water stained pipe insulation on the storm sewer piping beneath the floor drain for SJ6 in the outer ring area. Water test the drain and piping for 10 minutes and check for leaks. Correct any leaks found in piping connections.
- 11 Clean all gypsum board walls in the entire elevator shaft per the Statement of Work.
- 12 Clean the entire stairwell as described in the Statement of Work. HEPA vacuum to remove all visible dust on surfaces such as stair stringers, gypsum board caps, ledges, pipes, conduits, window framing, etc. Wet wipe all surfaces in the stairwell. See the Statement of Work.
- 13 HEPA vacuum all visible dust from the wall recess around the elevator doors. Clean and wet wipe walls in the corridor (11TS1) per the Statement of Work.

10th FLOOR NOTES

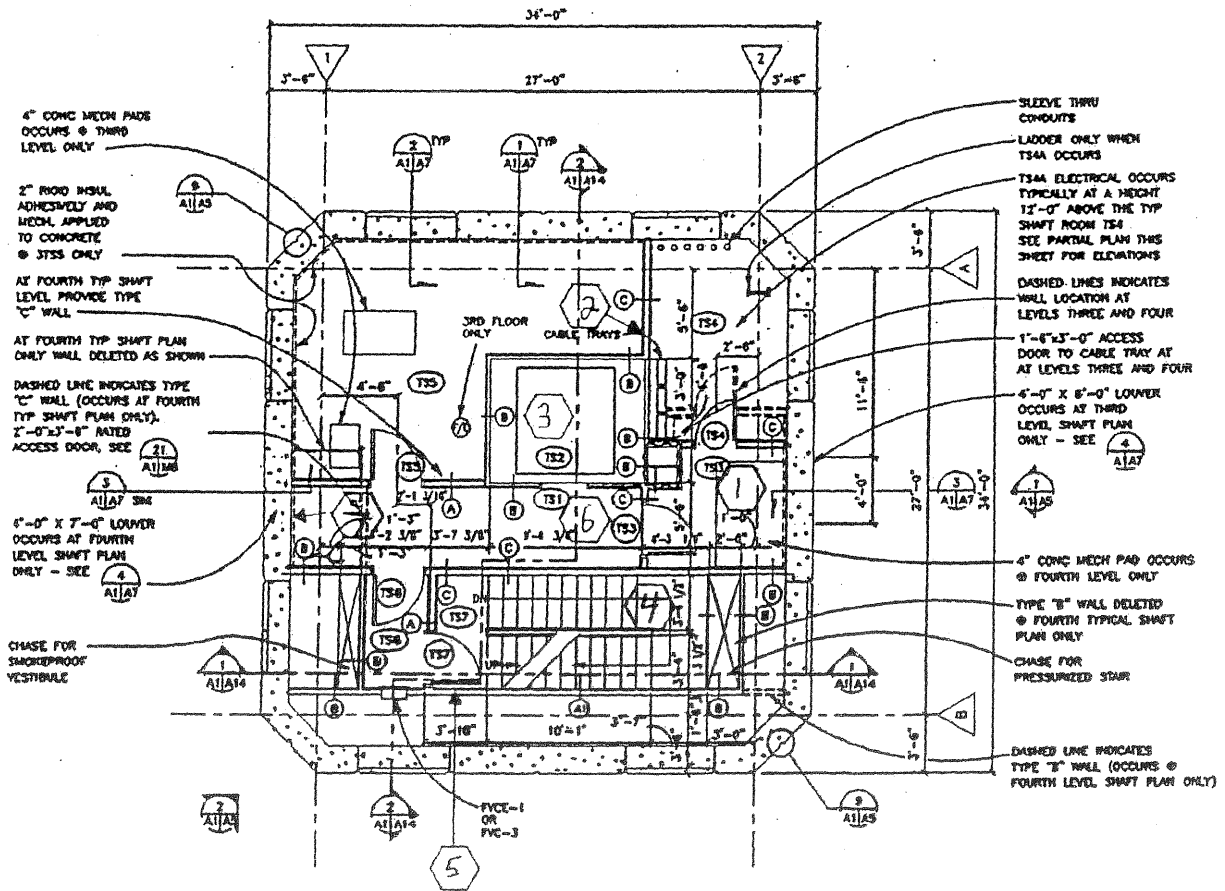
- 1 Remove vinyl cove base within the remediation limits. Remove 21.5 LF of contaminated gypsum board between the NE corner up to and including the west wall of the NW column enclosure to a height of 72" AFF on the surface layer and to a height of 60" AFF on the concealed layer. Remove insulation. The Contractor shall assume that a quantity equal to approximately 5 pieces of shaft liner, each 2' wide to a height of 5' are contaminated and must be replaced. Where contamination is limited, it shall be cut out 12" beyond visible mold and only the contaminated portion shall be removed and replaced. Complete remediation work as specified. Replace insulation and repair any damage to the vapor barrier. Install new gypsum board.
- 2 Remove vinyl cove base within the remediation limits. Remove 7.25 LF of contaminated gypsum board from the NE corner of the room to the elevator shaft to a height of 24" AFF on the surface layer and 12" AFF on the concealed layer. Complete remediation work as specified. Install new gypsum board.
- 3 Remove vinyl cove base within the remediation limits. Remove 9.67 LF of contaminated gypsum board from the north side of the elevator shaft to a height of 48" AFF on the surface layer and to a height of 24" AFF on the concealed layer. Complete remediation work as specified. Install new gypsum board.
- 4 Remove vinyl cove base within the remediation limits. Remove 7.83 LF of contaminated gypsum board from the west side of the elevator shaft to a height of 48" AFF on the surface layer and to a height of 24" AFF on the concealed layer. Complete remediation work as specified. Install new gypsum board.
- 5 Remove vinyl cove base within the remediation limits. Remove 3 LF of contaminated gypsum board between the east wall and the door to room 10TS4 to a height of 48" AFF on the surface layer and to a height of 24" AFF on the concealed layer. Complete remediation work as specified. Install new gypsum board.
- 6 Remove vinyl cove base to the first joint beyond the remediation limits shown. Remove contaminated gypsum board from the column enclosure in the NE corner for a minimum of 4.83 LF to the south to a height of 24" AFF on the surface layer. Remove contaminated gypsum board from the column enclosure in the NE corner for a minimum of 3.5 LF to the south to a height of 18" AFF on the concealed layer. Remove insulation and repair any damage to the vapor barrier. Complete remediation work as specified. Replace insulation. Install new gypsum board.

- 7 Cut and frame the rough opening and install a 16" x 20" non-rated access panel in the ceiling of corridor 10TS1.
- 8 Repair the fire rated partition where a 2.5" diameter inspection hole was drilled through two layers of 5/8" gypsum board (approximately 9' AFF). Cut out the surface layer of gypsum board 12" high centered on hole and extend horizontally to the second stud beyond on each side of the hole. Cut out the concealed layer of gypsum board to 6" high centered on the hole and extend horizontally to the stud on each side of the hole. Install new gypsum board.
- 9 Remove and replace approximately 3 LF of water stained pipe insulation on overhead hot water supply piping in room 10TS3.
- 10 Clean all gypsum board walls in the entire elevator shaft per the Statement of Work.
- 11 Clean the entire stairwell as described in the Statement of Work. HEPA vacuum to remove all visible dust on surfaces such as stair stringers, gypsum board caps, ledges, pipes, conduits, window framing, etc. Wet wipe all surfaces in the stairwell. See the Statement of Work.
- 12 Cut and frame the rough opening and install a 22" x 36" insulated, fire rated, B label, access panel in the south wall of the stairwell. Locate the bottom of the panel 24" above the landing.
- 13 HEPA vacuum all visible dust from the wall recess around the elevator doors. Clean and wet wipe all walls in the corridor (10TS1) per the Statement of Work.
- 14 Contract Option 2: Prime water stains on the ceiling of stair vestibule 10TS6 with two coats of stain blocking primer. Paint the entire ceiling of 10TS6. This option also includes additional work in corridor 9TS1.

9th FLOOR NOTES

- 1 Remove and replace approximately 3 LF of water stained pipe insulation on the overhead hot water supply piping in room 9TS3.
- 2 Repair the fire rated partition between 9TS5 and 9TS4 where a 2.5" diameter inspection hole was drilled through the surface layer of 5/8" gypsum board (approximately 1' AFF). Cut out the surface layer of gypsum board 16" AFF and extend horizontally to the stud on each side of the hole. Install new gypsum board.
- 3 Clean all gypsum board walls in the entire elevator shaft per the Statement of Work. Pre-clean the contaminated area approximately 10 feet below the 9th floor.
- 4 Clean the entire stairwell as described in the Statement of Work. HEPA vacuum to remove all visible dust on surfaces such as stair stringers, gypsum board caps, ledges, pipes, conduits, window framing, etc. Wet wipe all surfaces in the stairwell. See the Statement of Work.
- 5 Cut and frame the rough opening and install a 24" x 36" non-rated access panel in the south wall of the stairwell. Locate the bottom of the panel approximately 24" above the landing.
- 6 HEPA vacuum all visible dust from the wall recess around the elevator doors. Clean and wet wipe all walls in the corridor (9TS1) per the Statement of Work. Scrub and clean floor tile at west end of corridor to remove white water stains between floor tiles.
- 7 Contract Option 2: remove, repair, and refinish the water damaged tape joint along the ceiling at the west wall in corridor 9TS1. Apply two coats of a stain blocking primer to the water stains along the west wall and a portion of the south wall. Repaint the entire ceiling of corridor 9TS1. This option also includes additional work in stair vestibule 10TS6.

9TH FLOOR



8th FLOOR NOTES

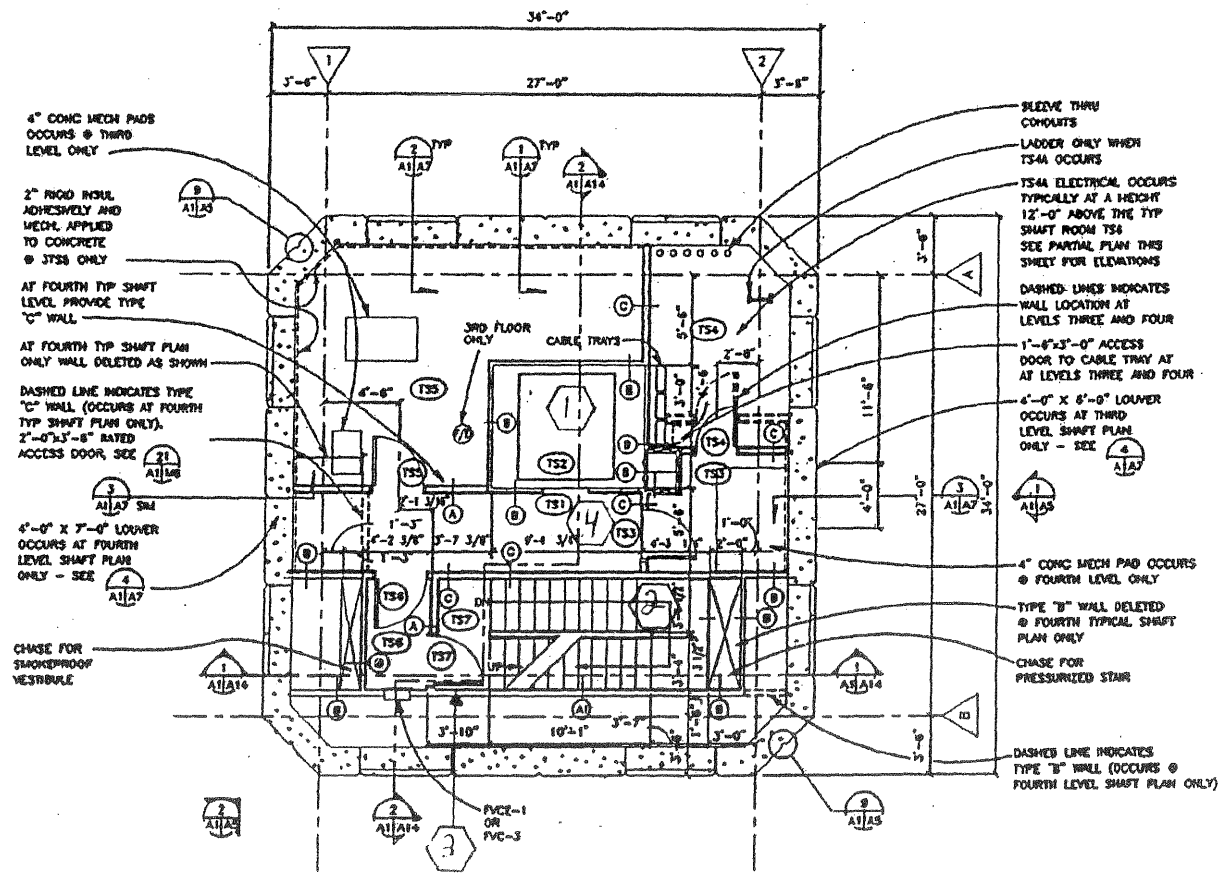
- 1 Cut and frame the rough opening and install a 24" x 48" non-rated access panel in the ceiling of corridor 8TS1. Locate the opening to provide access to the contaminated gypsum board above the ceiling. The Contractor may at his option remove and replace a portion of the ceiling in 8TS1 to access this work area instead of installing this access panel. Ceiling replacement includes reinstallation of the gypsum board ceiling, framing, taping and finishing, painting the entire ceiling and any walls affected, etc.
- 2 Remove an area of contaminated gypsum board from the area above the ceiling of 8TS1. Remove an area of stained and contaminated gypsum board above the horizontal beam approximately 6' wide to a height of 4' on the surface layer and 5' wide to a height of 3' on the concealed layer. Cut out to existing studs and stager joints. Gypsum board on the opposite side of the wall shall be removed to allow replacement gypsum board to be passed through the wall into the space above the ceiling of 8TS6. Complete remediation work as specified. Install new gypsum board.
- 3 Remove an area of contaminated gypsum board from the area above the ceiling of 8TS6. Remove an area of stained and contaminated gypsum board approximately 4' wide to a height of 5' on the surface layer and 32" wide to a height of 4' on the concealed layer. Remove additional gypsum board on the north wall to provide an opening to pass new materials through the wall from the space above the ceiling of 8TS1. Cut out to existing studs and stager joints. Complete remediation work as specified. Install new gypsum board. The Contractor may at his option remove and replace the ceiling in 8TS6 and/or install a larger access panel to access this area. Ceiling replacement includes reinstallation of gypsum board ceiling, framing, light fixture, access door, fire stopping, painting, etc.
- 4 Clean all gypsum board walls in the entire elevator shaft per the Statement of Work.
- 5 Clean the entire stairwell as described in the Statement of Work. HEPA vacuum to remove all visible dust on surfaces such as stair stringers, gypsum board caps, ledges, pipes, conduits, window framing, etc. Wet wipe all surfaces in the stairwell. See the Statement of Work.
- 6 Cut and frame the rough opening and install a 24" x 36" non-rated access panel in the south wall of the stairwell. Locate the bottom of the panel approximately 24" above the landing.
- 7 HEPA vacuum all visible dust from the wall recess around the elevator doors. Clean and wet wipe all walls in the corridor (8TS1) per the Statement of Work.

- 8 Remove a 3' high x 6' wide section of gypsum board on the surface layer and a 2' high x 4' wide section of gypsum board on the concealed layer of the south wall beginning at the NW corner of the elevator shaft and extending to the east. Center the opening approximately 13'-6" AFF to coincide with the location of mold found on the shaft liner panel in the elevator shaft. This opening will be used to inspect the concealed side of the shaft liner for the presence of mold at this location. Complete remediation work as specified. Install new gypsum board.

7th FLOOR NOTES

- 1 Clean all gypsum board walls in the entire elevator shaft per the Statement of Work.
- 2 Clean the entire stairwell as described in the Statement of Work. HEPA vacuum to remove all visible dust on surfaces such as stair stringers, gypsum board caps, ledges, pipes, conduits, window framing, etc. Wet wipe all surfaces in the stairwell. See the Statement of Work.
- 3 Cut and frame the rough opening and install a 24" x 36" non-rated access panel in the south wall of the stairwell. Locate the bottom of the panel approximately 24" above the landing.
- 4 HEPA vacuum all visible dust from the wall recess around the elevator doors. Clean and wet wipe all walls in the corridor (7TS1) per the Statement of Work.

7TH FLOOR



4" CONC MECH PAD OCCURS @ THIRD LEVEL ONLY

2" RIGID INSUL ADHESIVELY AND MECH. APPLIED TO CONCRETE @ JTSS ONLY

AT FOURTH TYP SHAFT LEVEL PROVIDE TYPE "C" WALL

AT FOURTH TYP SHAFT PLAN ONLY WALL DELETED AS SHOWN

DASHED LINE INDICATES TYPE "C" WALL (OCCURS AT FOURTH TYP SHAFT PLAN ONLY). 2'-0" X 3'-6" BAYED ACCESS DOOR. SEE (21) A1/A16

4'-0" X 7'-0" LLOUVER OCCURS AT FOURTH LEVEL SHAFT PLAN ONLY - SEE (4) A1/A7

CHASE FOR SMOKEPROOF VESTIBULE

CHASE FOR PRESSURIZED STAIR

DASHED LINE INDICATES TYPE "B" WALL (OCCURS @ FOURTH LEVEL SHAFT PLAN ONLY)

34'-0"
27'-0"
3'-6"
3'-6"

3RD FLOOR ONLY
CABLE TRAYS

SLEEVE THRU CONDUITS
LADDER ONLY WHEN TSS4 OCCURS

TSS4 ELECTRICAL OCCURS TYPICALLY AT A HEIGHT 12'-0" ABOVE THE TYP SHAFT ROOM TSS4 SEE PARTIAL PLAN THIS SHEET FOR ELEVATIONS

DASHED LINES INDICATES WALL LOCATION AT LEVELS THREE AND FOUR

1'-6" X 3'-0" ACCESS DOOR TO CABLE TRAY AT LEVELS THREE AND FOUR

4'-0" X 6'-0" LLOUVER OCCURS AT THIRD LEVEL SHAFT PLAN ONLY - SEE (4) A1/A7

4" CONC MECH PAD OCCURS @ FOURTH LEVEL ONLY

TYPE "B" WALL DELETED @ FOURTH TYPICAL SHAFT PLAN ONLY

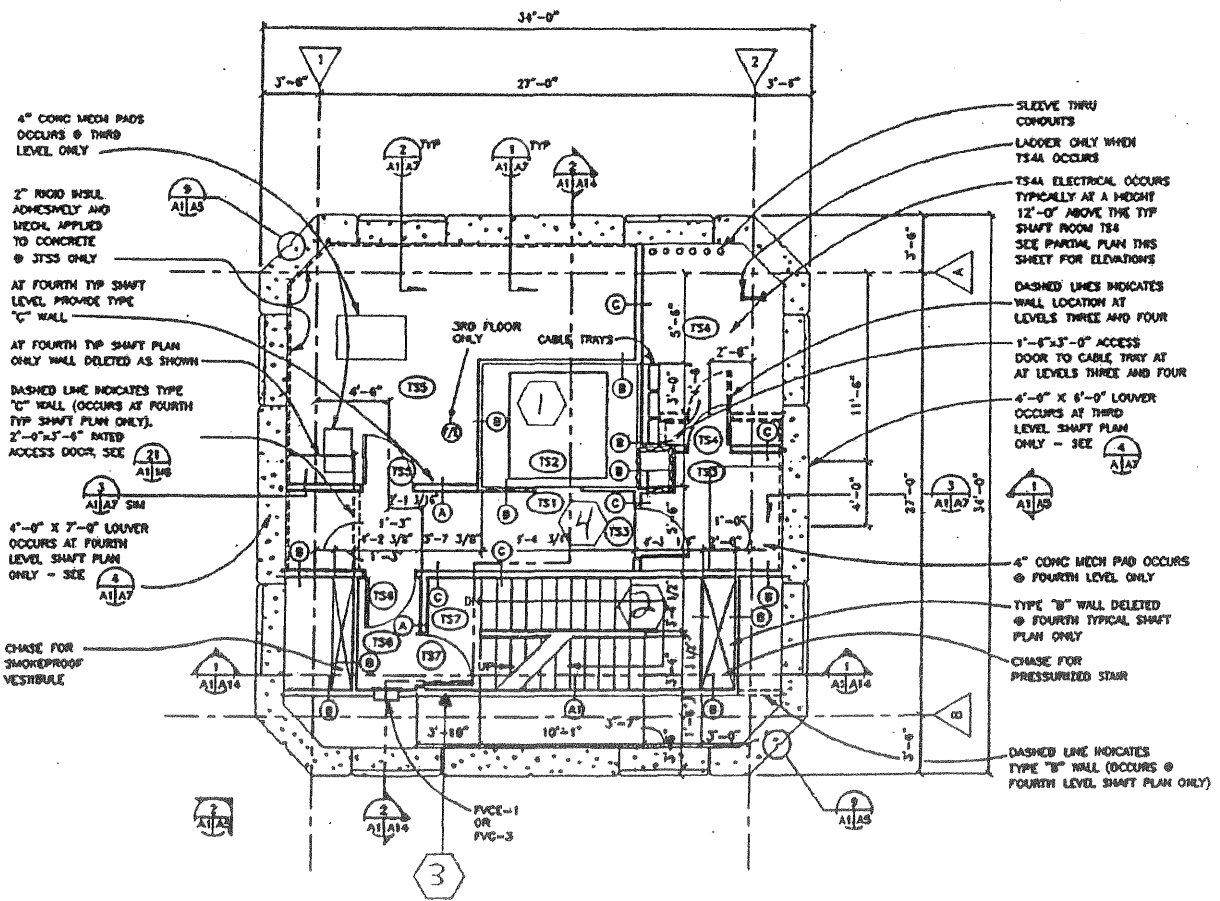
DASHED LINE INDICATES TYPE "B" WALL (OCCURS @ FOURTH LEVEL SHAFT PLAN ONLY)

PVC-1 OR PVC-3

6th FLOOR NOTES

- 1 Clean all gypsum board walls in the entire elevator shaft per the Statement of Work.
- 2 Clean the entire stairwell as described in the Statement of Work. HEPA vacuum to remove all visible dust on surfaces such as stair stringers, gypsum board caps, ledges, pipes, conduits, window framing, etc. Wet wipe all surfaces in the stairwell. See the Statement of Work.
- 3 Cut and frame the rough opening and install a 24" x 36" non-rated access panel in the south wall of the stairwell. Locate the bottom of the panel approximately 24" above the landing.
- 4 HEPA vacuum all visible dust from the wall recess around the elevator doors. Clean and wet wipe all walls in the corridor (6TS1) per the Statement of Work.

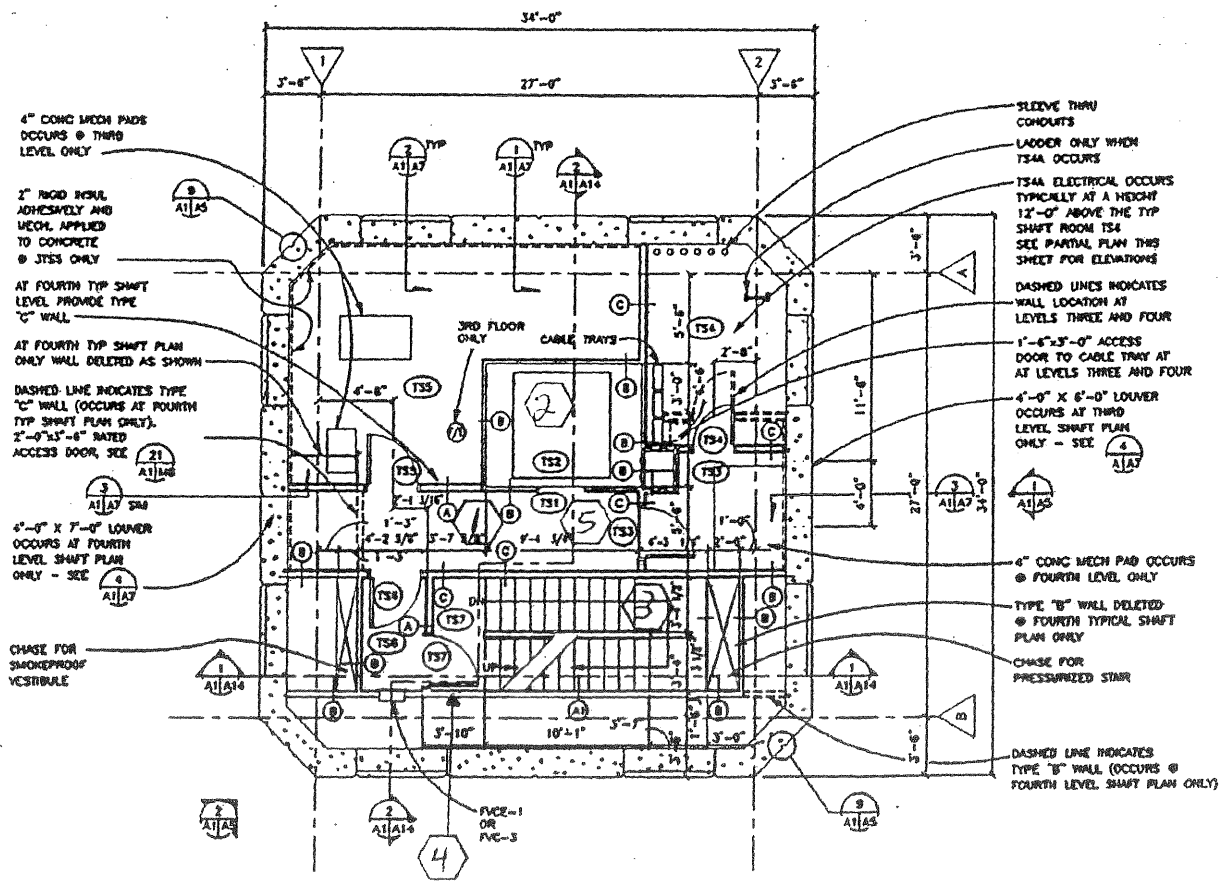
6TH FLOOR



5th FLOOR NOTES

- 1 Cut and frame the rough opening and install a 16" x 20" access panel in the ceiling of corridor 5TS1.
- 2 Clean all gypsum board walls in the entire elevator shaft per the Statement of Work.
- 3 Clean the entire stairwell as described in the Statement of Work. HEPA vacuum to remove all visible dust on surfaces such as stair stringers, gypsum board caps, ledges, pipes, conduits, window framing, etc. Wet wipe all surfaces in the stairwell. See the Statement of Work.
- 4 Cut and frame the rough opening and install a 24" x 36" non-rated access panel in the south wall of the stairwell. Locate the bottom of the panel approximately 24" above the landing.
- 5 HEPA vacuum all visible dust from the wall recess around the elevator doors. Clean and wet wipe all walls in the corridor (5TS1) per the Statement of Work.

5TH FLOOR



4" CONG MECH PADS OCCURS @ THIRD LEVEL ONLY

2" RIGID INSUL ADHESIVELY AND MECH. APPLIED TO CONCRETE @ JTSS ONLY

AT FOURTH TYP SHAFT LEVEL PROVIDE TYPE "C" WALL

AT FOURTH TYP SHAFT PLAN ONLY WALL DELETED AS SHOWN

DASHED LINE INDICATES TYPE "C" WALL (OCCURS AT FOURTH TYP SHAFT PLAN ONLY). 2'-0" X 3'-4" RATED ACCESS DOOR, SEE 21/A11A8

4'-0" X 7'-0" LOUVER OCCURS AT FOURTH LEVEL SHAFT PLAN ONLY - SEE 4/A1A7

CHASE FOR SMOKEPROOF VESTIBULE

FACE-1 OR PVC-3

SLEEVE THRU CONDUITS LADDER ONLY WHEN TSA4 OCCURS

TSA4 ELECTRICAL OCCURS TYPICALLY AT A HEIGHT 12"-0" ABOVE THE TYP SHAFT ROOM TSA SEE PARTIAL PLAN THIS SHEET FOR ELEVATIONS

DASHED LINES INDICATES WALL LOCATION AT LEVELS THREE AND FOUR

1'-6" X 3'-0" ACCESS DOOR TO CABLE TRAY AT AT LEVELS THREE AND FOUR

4'-0" X 6'-0" LOUVER OCCURS AT THIRD LEVEL SHAFT PLAN ONLY - SEE 4/A1A7

4" CONG MECH PAD OCCURS @ FOURTH LEVEL ONLY

TYPE "B" WALL DELETED @ FOURTH TYPICAL SHAFT PLAN ONLY

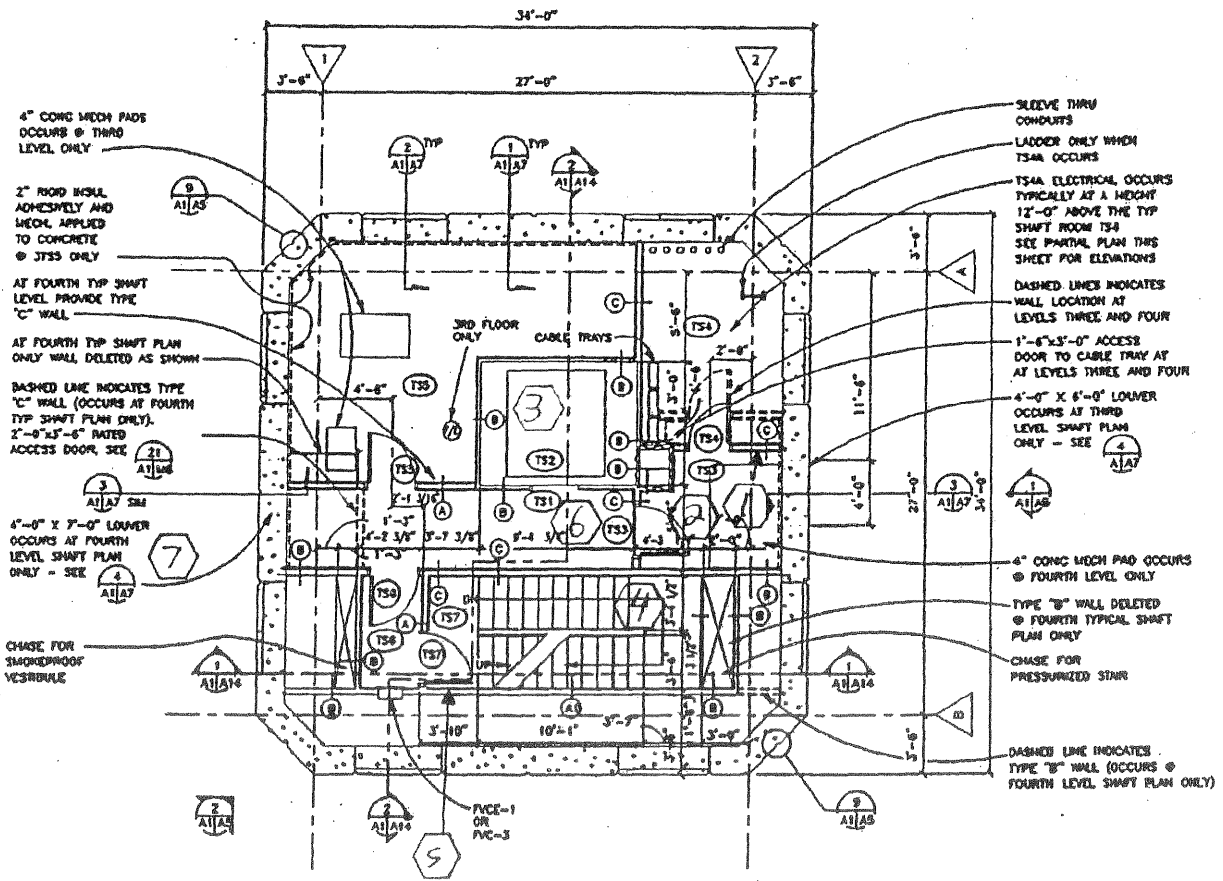
CHASE FOR PRESSURIZED STAIR

DASHED LINE INDICATES TYPE "B" WALL (OCCURS @ FOURTH LEVEL SHAFT PLAN ONLY)

4th FLOOR NOTES

- 1 Remove vinyl cove base within the remediation limits. Remove 3 LF of contaminated gypsum board between the door and the east precast wall to a height of 24" AFF on the surface layer and to a height of 18" AFF on the concealed layer. Complete remediation work as specified. Install new gypsum board.
- 2 Remove and replace approximately 5 LF of water stained or contaminated pipe insulation on the overhead chilled water lines in room 4TS3. Insulate uninsulated piping and caps for future connection.
- 3 Clean all gypsum board walls in the entire elevator shaft per the Statement of Work.
- 4 Clean the entire stairwell as described in the Statement of Work. HEPA vacuum to remove all visible dust on surfaces such as stair stringers, gypsum board caps, ledges, pipes, conduits, window framing, etc. Wet wipe all surfaces in the stairwell. See the Statement of Work.
- 5 Cut and frame the rough opening and install a 24" x 36" non-rated access panel in the south wall of the stairwell. Locate the bottom of the panel approximately 24" above the landing.
- 6 HEPA vacuum all visible dust from the wall recess around the elevator doors. Clean and wet wipe all walls in the corridor (4TS1) per the Statement of Work.
- 7 Contract Option 3: Remove the existing outside air intake louver. Modify the existing sheet metal plenum (sleeve) to fit the thicker replacement louver. Install a new wind-driven rain resistant stationary louver as specified. Seal between the louver, sleeve, and the precast concrete as specified.

4TH FLOOR



4" CONC MECH PADS OCCURS @ THIRD LEVEL ONLY

2" ROD MESH ADHESIVELY AND MESH APPLIED TO CONCRETE @ JTSS ONLY

AT FOURTH TYP SHAFT LEVEL PROVIDE TYPE "C" WALL

AT FOURTH TYP SHAFT PLAN ONLY WALL DELETED AS SHOWN

DASHED LINE INDICATES TYPE "C" WALL (OCCURS AT FOURTH TYP SHAFT PLAN ONLY). 2'-0" X 5'-6" RATED ACCESS DOOR, SEE 21

4'-0" X 7'-0" LOUVER OCCURS AT FOURTH LEVEL SHAFT PLAN ONLY - SEE 4

CHASE FOR SMOKEPROOF VESTIBULE

3RD FLOOR ONLY CABLE TRAYS

SLEEVE THRU CONDUITS LADDER ONLY WHEN T54A OCCURS

T54A ELECTRICAL OCCURS TYPICALLY AT A HEIGHT 12'-0" ABOVE THE TYP SHAFT ROOM T54 SEE PARTIAL PLAN THIS SHEET FOR ELEVATIONS

DASHED LINES INDICATES WALL LOCATION AT LEVELS THREE AND FOUR

1'-6" X 5'-0" ACCESS DOOR TO CABLE TRAY AT AT LEVELS THREE AND FOUR

4'-0" X 6'-0" LOUVER OCCURS AT THIRD LEVEL SHAFT PLAN ONLY - SEE 4

4" CONC MECH PAD OCCURS @ FOURTH LEVEL ONLY

TYPE "B" WALL DELETED @ FOURTH TYPICAL SHAFT PLAN ONLY

CHASE FOR PRESSURIZED STAIR

DASHED LINE INDICATES TYPE "B" WALL (OCCURS @ FOURTH LEVEL SHAFT PLAN ONLY)

PVC-1 OR PVC-3

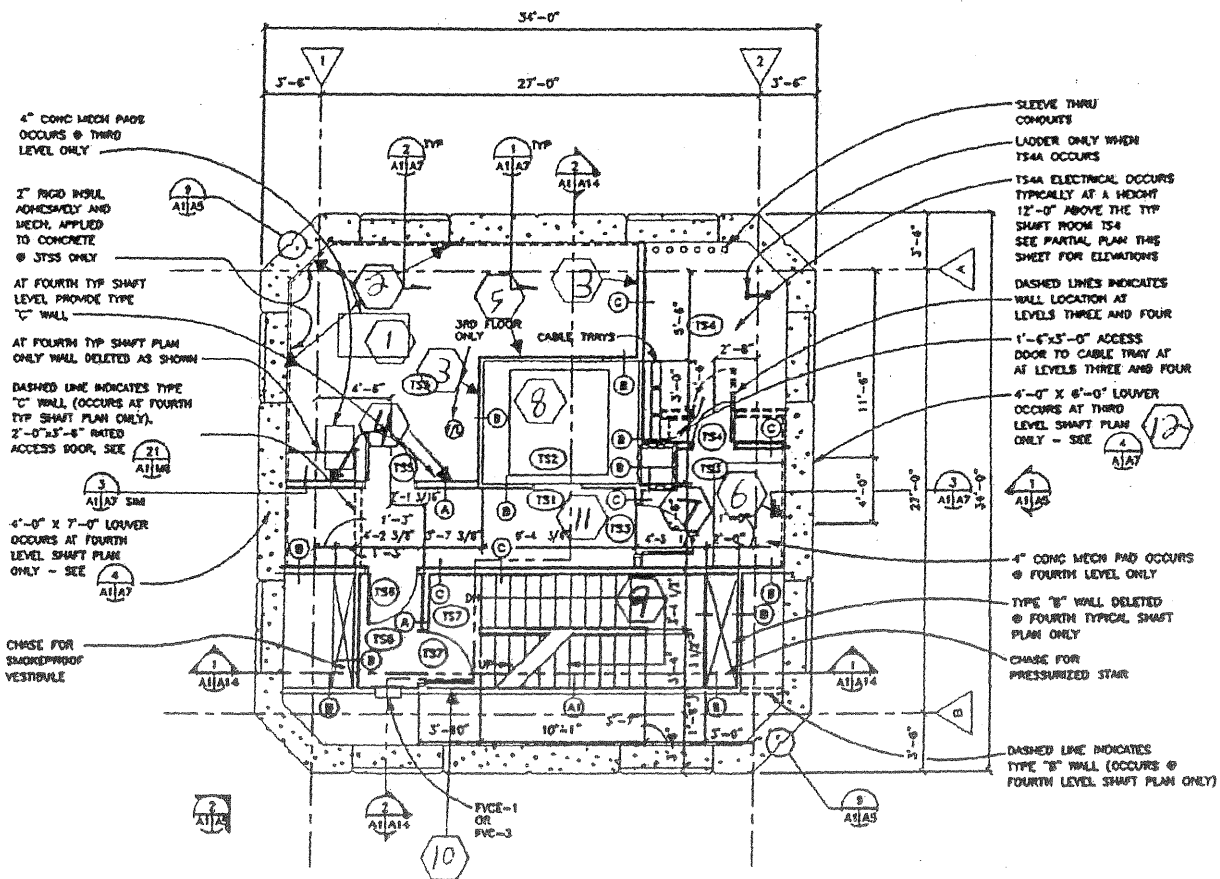
3rd FLOOR NOTES

- 1 Remove all vinyl cove base within the room.
- 2 Remove contaminated gypsum board on the north wall, 19 LF, on the northwest wall, 3.33 LF, and on the west wall, 12.1 LF, to a height of 3'. The gypsum board is utilized as a thermal barrier over the existing foam insulation. It is screwed on only without any tape or finish on joints. Complete remediation work as specified. Install new gypsum board (no tape or finish).
- 3 Remove contaminated gypsum board on the two east walls, 14.3 LF, to a height of 36" AFF on the surface layer and to a height of 24" on the concealed layer. Complete remediation work as specified. Install new gypsum board.
- 4 Remove contaminated gypsum board on both sides of the door to the corridor, 8 LF, to a height of 3'9". Complete remediation work as specified. Install new gypsum board.
- 5 On the south wall adjacent to the elevator shaft, gypsum board removal will occur with the fire pump panels left in place. Remove contaminated gypsum board along the entire length of the wall, 10 LF, to a height of 6" AFF on the surface layer and to a height of 4" AFF on the concealed layer. Remove additional gypsum board if contaminated on the east and west ends of fixed equipment, approximately 4 LF, to a height of 36" AFF on the surface layer and to a height of 30" AFF on the concealed layer. Complete remediation work as specified. Install new gypsum board.
- 6 Remove vinyl cove base within the remediation limits. Remove water stained and contaminated gypsum board across full length of the east wall, 9.6 LF to a height of 8' AFF. The gypsum board is utilized as a thermal barrier over the existing foam insulation. It is screwed on only without any tape or finish on joints. Complete remediation work as specified. Install new gypsum board (no tape or finish).
- 7 Remove and replace approximately 10 LF of contaminated and water stained pipe insulation on the overhead hot water supply and return lines. Insulate uninsulated piping, fittings, and components. Provide re-enterable insulation on valves, strainers, etc. to allow access for maintenance.
- 8 Clean all gypsum board walls in the entire elevator shaft per the Statement of Work.
- 9 Clean the entire stairwell as described in the Statement of Work. HEPA vacuum to remove all visible dust on surfaces such as stair stringers, gypsum board caps,

ledges, pipes, conduits, window framing, etc. Wet wipe all surfaces in the stairwell. See the Statement of Work.

- 10 Cut and frame the rough opening and install a 24" x 36" non-rated access panel in the south wall of the stairwell. Locate the bottom of the panel approximately 24" above the landing.
- 11 HEPA vacuum all visible dust from the wall recess around the elevator doors. Clean and wet wipe all walls in the corridor (3TS1) per the Statement of Work.
- 12 Contract Option 4: Remove the existing exhaust louver. Modify the existing sheet metal plenum (sleeve) to fit the thicker replacement louver. Install a new wind-driven rain resistant stationary louver as specified. Seal between the louver, sleeve, and the precast concrete as specified. The louver size is slightly smaller than shown on the drawing, see the section on louvers in the Supplemental Statement of work and field verify the size.

3RD FLOOR



4" CONC MECH PAD OCCURS @ THIRD LEVEL ONLY

2" RIGID INSUL ADHESIVELY AND MECH. APPLIED TO CONCRETE @ JTSS ONLY

AT FOURTH TYP SHAFT LEVEL PROVIDE TYPE "C" WALL

AT FOURTH TYP SHAFT PLAN ONLY WALL DELETED AS SHOWN

DASHED LINE INDICATES TYPE "C" WALL (OCCURS AT FOURTH TYP SHAFT PLAN ONLY). 2'-0" X 3'-6" RATED ACCESS DOOR, SEE

4'-0" X 7'-0" LOUVER OCCURS AT FOURTH LEVEL SHAFT PLAN ONLY - SEE

CHASE FOR SMOKEPROOF VESTIBULE

SLEEVE THRU CONCRETE LADDER ONLY WHEN TS4A OCCURS

TS4A ELECTRICAL OCCURS TYPICALLY AT A HEIGHT 12'-0" ABOVE THE TYP SHAFT ROOM TS4 SEE PARTIAL PLAN THIS SHEET FOR ELEVATIONS

DASHED LINES INDICATES WALL LOCATION AT LEVELS THREE AND FOUR

1'-6" X 3'-0" ACCESS DOOR TO CABLE TRAY AT LEVELS THREE AND FOUR

4'-0" X 6'-0" LOUVER OCCURS AT THIRD LEVEL SHAFT PLAN ONLY - SEE

4" CONC MECH PAD OCCURS @ FOURTH LEVEL ONLY

TYPE "B" WALL DELETED @ FOURTH TYPICAL SHAFT PLAN ONLY

CHASE FOR PRESSURIZED STAIR

DASHED LINE INDICATES TYPE "B" WALL (OCCURS @ FOURTH LEVEL SHAFT PLAN ONLY)

PVCE-1 OR PVCE-3

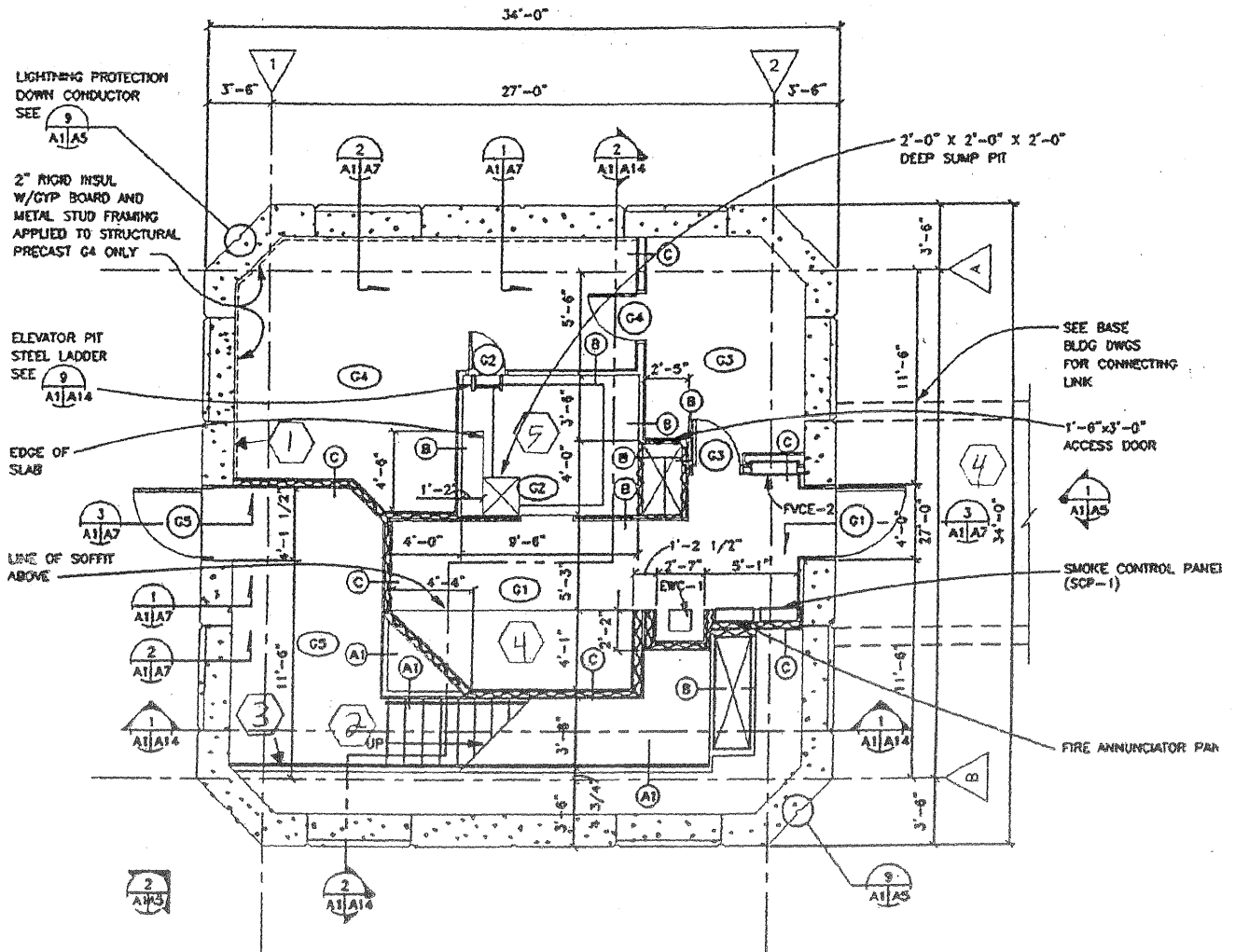
2nd FLOOR NOTES

- 1 Remove vinyl cove base to the first joint beyond the remediation limits. Beginning in the NE corner, remove 6.5 LF of contaminated gypsum board to a height of 24" AFF. Complete remediation work as specified. Install new gypsum board. Prime new gypsum board. Paint patched area. Paint entire north wall with one coat of paint.
- 2 Insulate 1 LF of uninsulated chilled water return piping passing between two metal studs adjacent to the door between the corridor and room 2TS5. Trim flange of metal stud to install insulation and brace cut studs to adjacent uncut studs with a section of metal stud or runner.
- 3 Repair fire rated partition where a 2.5" diameter inspection hole was drilled through the surface layer of 5/8" gypsum board behind the vinyl cove base. Cut out the surface layer of gypsum board approximately 3" high (from floor to top of hole) and extend horizontally to the stud beyond on each side of the hole. Install new gypsum board.
- 4 Clean all gypsum board walls in the entire elevator shaft per the Statement of Work.
- 5 Clean the entire stairwell as described in the Statement of Work. HEPA vacuum to remove all visible dust on surfaces such as stair stringers, gypsum board caps, ledges, pipes, conduits, window framing, etc. Wet wipe all surfaces in the stairwell. See the Statement of Work.
- 6 Cut and frame the rough opening and install a 24" x 36" non-rated access panel in the south wall of the stairwell. Locate the bottom of the panel approximately 24" above the landing.
- 7 HEPA vacuum and wet wipe all supply and return air grilles, registers, diffusers, etc. Include the connecting link between the ATCT shaft and Base Building. See the Statement of Work.
- 8 Contract Option 6: Paint all walls in room 2TS5 with one finish coat of paint. The north wall is not included in this option; it is required to be painted in note 1. The wall line/configuration varies along the west wall due to additional furred out chases that are not shown on the drawing.

GROUND FLOOR NOTES

- 1 Remove approximately 14 square feet of water stained gypsum board covering the rigid insulation beneath the outside air duct. The gypsum board is utilized as a thermal barrier over the existing foam insulation. It is screwed on only without any tape or finish on joints. Complete remediation work as specified. Install new gypsum board (no tape or finish).
- 2 Clean the entire stairwell as described in the Statement of Work. HEPA vacuum to remove all visible dust on surfaces such as stair stringers, gypsum board caps, ledges, pipes, conduits, window framing, etc. Wet wipe all surfaces in the stairwell. See the Statement of Work.
- 3 Cut and frame the rough opening and install a 24" x 36" non-rated access panel in the south wall of the stairwell. Locate the bottom of the panel approximately 24" above the landing (above conduit for ground wire).
- 4 HEPA vacuum and wet wipe all supply and return air grilles, registers, diffusers, etc. Include the connecting link between the ATCT shaft and base building. See the Statement of Work.
- 5 Clean all gypsum board walls in the entire elevator shaft per the Statement of Work.

GROUND FLOOR



STATEMENT OF WORK

MICROBIOLOGICAL REMEDIATION

FOR

FEDERAL AVIATION ADMINISTRATION

ST. LOUIS AIRPORT TRAFFIC CONTROL TOWER (STL ATCT)

ST. LOUIS, MISSOURI

1.0 WORK SUMMARY. The Contractor is required to furnish all labor, materials, services, equipment, insurance, and perform all the work to remove and dispose of all microbiological contaminated materials (MCM) and microbiological contaminated elements (MCE) described in this scope of work. The Contractor shall be responsible for the cleanup and removal of microbiological-contaminated wallpaper, gypsum board, and pipe insulation (including water stained or damaged) in the STL Base Building Rooms 215, 217, 218, 220, 221, 233, and 235, and the STL ATCT Rooms G6, 3TS5 and SJ7 in accordance with the guidelines established by the New York City Department of Health entitled *Guidelines on Assessment and Remediation of Fungi in Indoor Environments* (GARFIE) attached and incorporated herein by reference (See Attachment 1). Included in the scope of work is the removal of any MCM between the bottom metal runner/track and the concrete floor and between the top metal runner/track and the structural deck. The Contractor shall minimize dust generation and use the methodologies outlined in GARFIE for dust prevention and suppression. Prior to performing microbiological remediation procedures, the Contractor shall seal all critical penetrations and openings to the work areas with a minimum of 2-layers of 6-mil polyethylene. Additionally, the Contractor shall be responsible for ensuring adjoining areas are not exposed to the microbial contamination during the remediation. The Contractor shall provide additional cleaning procedures as described herein in Rooms 217, 218, 221, BL2, SJ6, SJ8, and 4TS5. A complete list of the work required is included in Section 7.0 Work Procedure and the Supplemental Statement of Work (SSOW). All Base Building MCM removals, painting, and other cleaning procedures shall be conducted at night between the hours of 6:00 PM and 6:00 AM. The facility shall be suitable for restricted/normal re-occupancy by 6:00 AM each morning. Negative air pressure equipment shall be equipped with a HEPA filter and discharged outside of the building whenever possible, otherwise discharged through a second HEPA filter in order to permit recirculation of air inside the building. See SSOW for additional requirements and work required to restore the facility.

1.1. CONTRACTOR'S RESPONSIBILITY. The Contractor shall perform all work required to give a complete and satisfactory job as required by this statement of work. The Contractor shall be responsible for performing this scope of work in accordance with GARFIE. The Contractor shall perform the work per the schedule and sequence identified in the SSOW. The Contractor shall be responsible for all debris generated under this contract at the job site and during transport of microbiological containing or contaminated materials to the FAA dumpster.

- 1.1.1 **Site Visit.** The Contractor is responsible for inspecting the work space and field verifying all quantities for: constructing a negative pressure enclosure for each phase of the work, MCM, MCE removal and disposal, work area physical parameters, access limitations, and Government phasing limitations. The Contractor shall be required to work around existing furniture, fixtures and finishes during the performance of this contract. The site visit shall be scheduled by the Government for interested microbiological remediation Contractors to identify specific work area and phasing requirements.
- 1.1.2 **Property Damage.** The Contractor shall take all precautions to avoid damage to Government property or equipment. Any damage to Government property by the Contractor shall be repaired by the Contractor to its original state or better condition at no additional expense to the Government.
- 1.1.3 **Working Conditions.** The Base Building and portions of the ATCT will be occupied and Government operations will continue on a normal, temporary, or restricted basis for the duration of the project. The Contractor shall take all precautions to ensure that their operations are conducted in a manner that does not interfere with the normal operations of the surrounding facilities and the safety and health of the occupants or the environment. Contractor's personnel will have limited access to the facility.
- 1.1.4 **Cleanup.** Upon completion of the work at the site, all staging and debris from the project shall be removed from the site and disposed of properly. The entire area shall be left clean and acceptable to the Government.
- 1.1.5 **Certifications.** The Contractor shall be certified by the Indoor Air Quality Association (IAQA), the Institute of Inspection, Cleaning and Restoration Certification (IICRC), the National Duct Cleaning Association (NADCA), or equivalent.
- 1.2. **SCHEDULE.** See contract documents for duration of contract and notice to proceed.
- 1.2.1 **Pre-Construction Meeting.** The Contractor shall attend a mandatory pre-construction meeting before starting work and the Government will schedule the meeting.
- 1.3. **TEMPORARY FACILITIES AND STAGING AREA.** The electrical energy and the water consumed shall be provided by the Government at no cost to the Contractor from existing lines and sources located in the Base Building or ATCT or from services adjacent to the work areas. Contractor's use of utilities shall be coordinated with the Government. Contractor is responsible for ensuring that adequate electrical power and water are available to complete the work. The Contractor will be permitted to use the areas as directed by the Government for

staging and storage of materials, although minimal space will be available. The area is restricted to uncontaminated work equipment and supplies. The area shall be left clean and restored to the same condition as when accepted by the Contractor.

1.4. SUBMITTAL REQUIREMENTS. The Contractor will submit the following materials to the Government for review and approval prior to starting work:

- Material Safety Data Sheets for all chemical products (including detergents).
- Respiratory Fit Test and Medical Surveillance for employees scheduled for this project.
- HEPA Vacuum Specification Sheet.
- Negative Air HEPA Filter Specification Sheet.
- Proposed Phasing Schedule.
- Configuration of typical negative enclosure system and location for each phase.

2.0 MEDICAL REQUIREMENTS. Contractor shall provide medical surveillance and have a written Respiratory Protection program in place as required by 29 CFR 1910.134 for all personnel engaged in the removal and demolition of MCM and MCE. Respirators and filters provided shall be NIOSH approved and provide the appropriate level of protection.

3.0 PROTECTIVE CLOTHING. Contractor shall provide workers and government representatives with sufficient sets of protective full body clothing. Such clothing shall consist of full body coveralls including head covers, foot covers and hand covers. Contractor shall provide additional personal protective safety equipment as required by applicable OSHA safety regulations.

4.0 REMEDIATION AREA. Contractor shall establish a remediation area and restrict the access to the microbiological work areas during work conducted in the Base Building or ATCT. Contractor shall establish a roped-off perimeter and provide warning barrier tape and signs outside the perimeter of the negative pressure enclosure system. Contractor shall establish a negative pressure enclosure system by sealing all critical penetrations or openings to the work area with a minimum of two layers of six-mil polyethylene. Negative pressure enclosure shall have a minimum of four air exchanges per hour and shall be maintained and recorded with a magnehelic gauge or equivalent device under a minimum negative pressure differential of -0.02 inches of water relative to adjacent non-work area space. Negative air pressure equipment shall be equipped with HEPA filters and exhaust shall be discharged outside the building, a minimum of 25 feet from building access points and building make-up air sources, or wherever necessary, negative air pressure equipment shall be equipped with a HEPA filter and exhaust shall be discharged through a second HEPA filter in order to permit recirculation of air inside the building. Personnel shall wear and utilize protective clothing and equipment in the regulated area as specified herein.

5.0 DECONTAMINATION AREA. Contractor shall establish a decontamination unit for passage to and from the work area during remediation operations in order to minimize the leakage of mold-contaminated dust to the outside. This unit shall consist of a minimum of two chambers, including a clean room and equipment room separated by airlocks. The airlocks shall be formed by overlapping three sheets of 6-mil polyethylene sheeting at the exit of one room and three sheets at the entrance to the next room, with three feet of space between the barriers. Airlocks shall be constructed to effectively maintain negative pressure while not inhibiting worker egress in an emergency situation.

6.0 WORKER PROTECTION PROCEDURE.

- 6.1. Each worker and authorized visitor shall, upon entering the job site, put on appropriate respirator and clean protective clothing, before entering the work area.
- 6.2. Each worker and authorized visitor shall remove gross contamination from clothing by HEPA vacuuming, prior to leaving the regulated work area. After decontamination of protective clothing, while still wearing the respirator, remove protective clothing and dispose as microbiological waste, as appropriate, in a drum or two layers of six-mil polyethylene disposal bags.
- 6.3. Workers shall not eat, drink, smoke, or chew gum or tobacco at the work site. Workers shall be fully protected with respirators and protective clothing immediately prior to the first disturbance of MCM or MCE and until final cleanup is completed.

7.0 WORK PROCEDURE.

- 7.1. Moisture damage restoration and mold remediation shall be conducted as necessary and as described in Rooms 215, 217, 218, 220, 221, 233 and 235 (Base Building) and Rooms G6, 3TS5 and SJ7 (ATCT).
- 7.2. Prior to performing microbiological remediation procedures, the Contractor shall seal all critical penetrations and openings to the work area. Establish phasing schedule with Government for each days work activity. Contractor shall HEPA-vacuum and/or wet wipe with a detergent solution all non-porous furniture and fixtures. Contractor will remove any furnishings from the remediation area after it has been pre-cleaned. Upon completion, the Contractor will return the furnishings to the original location. If necessary, furnishings can be pre-cleaned and wrapped with two layers of 6-mil polyethylene and allowed to remain in the remediation area. Electrical equipment that poses an electrical hazard shall be HEPA vacuumed only.
- 7.3. Maintain a minimum of four air exchanges per hour within the remediation work area and a minimum negative pressure differential of -0.02 inches of water, continuously recorded by use of a magnehelic gauge or equivalent device. Negative air pressure equipment shall be equipped with a HEPA filter and discharged outside of the building whenever possible, otherwise discharged through a second HEPA filter in order to permit recirculation of air inside the

building. Contractor will secure entrance into the regulated area at the conclusion of each workday.

- 7.4. The scope identifies partition types, such as fire rated partitions, and the number of layers of gypsum board. Removal limits shall coincide with existing metal studs at or beyond the limits identified below. Where multiple layers of gypsum board are indicated, joints between gypsum board on the surface and concealed layer shall be staggered horizontally and vertically, unless limits are the entire wall and less than the length of the gypsum board utilized. Demolition work shall be conducted utilizing methods to minimize noise and the spread of dust, such as the use of HEPA vacuums at the point of cutting and/or tools with shrouds or boots connected to a HEPA vacuum. See SSOW for additional requirements. The locations and approximate quantities for gypsum board remediation are listed below:

In Room 220, gypsum board totaling approximately three square feet will be removed. The 12" base cabinet next to the refrigerator shall be pulled out to allow for inspection of the concealed wall behind it. On the east wall, this area includes a section of gypsum board behind the refrigerator and cabinet, approximately 2' wide to a height of 18". The cabinet shall be taken outside of the facility and cleaned with a biocide. If any visible mold remains after cleaning, a price may be requested to remove and replace portions of the cabinet such as the shelf, side panel, or the back panel of the base cabinet. Contaminated components will be removed and replaced if the vast majority of the cabinet can be salvaged. Otherwise, it shall be discarded and replaced in its entirety. See contract option 1.

In Room 233, gypsum board and insulation totaling approximately 90 square feet will be removed. This area includes the four sides of the shaft from the suspended ceiling to the roof hatch and on the bottom of the south wall. Height dimensions in the roof hatch shaft are measured from the hatch downward. The north side is 36" wide by 4' 5" high; the west side is 30" wide by 4' 5" high; the south side is 36" wide by 4' 5" (surface layer) and 36" wide by 4' high (concealed layer); and the east side is 30" wide by 21" high (surface layer) and 30" wide by 18" high (concealed layer). On the bottom of the south wall, this area begins in the southeast corner extending to the corridor door, 4.75' wide to a height of 4' (surface layer) and 4.75' wide to a height of 3' (concealed layer).

In Room G6, gypsum board totaling approximately 35 square feet will be removed. This area includes the entire ceiling from the north wall to the line formed by the south edge of the rough opening for the ceiling access panel. The west wall shall be wet wiped with a detergent solution to clean existing water stains.

In Room 3TS5, gypsum board totaling approximately 11 square feet will be removed. On the west wall, this area begins at the south side of the outside air duct extending southward, 1.5' wide to a height of 4'. On the south wall, this area begins in the southwest corner extending eastward, 1.3' wide to a height of 4'.

In Room SJ7, gypsum board totaling approximately eight square feet will be removed. On the west wall, this area includes the portion between the bottom of the concrete stairs and the concrete curb at the base of the sloped south wall, 5.3' wide to a height of 18".

- 7.5. In Rooms 215 and 233, a containment and negative pressure enclosure system shall be established as described in Section 4.0 Remediation Area. A decontamination unit shall be established as described in Section 5.0 Decontamination. Upon completion, the work area shall be HEPA vacuumed and then wet wiped with a detergent solution.
- 7.6. In Room 220, a mini containment shall be established consisting of a single layer of 6-mil polyethylene sheeting but a negative pressure enclosure system is not required. Mist and cover any contaminated areas prior to removal. Upon completion, the work area shall be HEPA vacuumed and then wet wiped with a detergent solution.
- 7.7. In Rooms 3TS5, and SJ7, the work area shall be unoccupied, however, a containment and negative pressure enclosure system are not required. Prior to remediation, the work area shall be misted. Upon completion, the work area shall be HEPA vacuumed and then wet wiped with a detergent solution.
- 7.8. In Room G6, the work area shall be unoccupied, however, a containment and negative pressure enclosure system are not required. The water stained area below the contaminated gypsum board shall first be covered and sealed with two layers of 6-mil polyethylene sheeting. From above the ceiling, the visibly mold-contaminated area shall then be misted, sealed with sheeting, and be cut out and removed, followed by HEPA vacuuming and wet wiping with a detergent solution. The intent of this procedure is to seal the damaged portion, prior to removal, in order to eliminate the likelihood of airborne contamination. Upon completion, the remainder of the gypsum board, as defined in Paragraph 7.4, shall be removed.
- 7.9. In Room 215, all wallpaper shall be removed from the building exterior walls to inspect the concealed gypsum board for visible mold. Removal of wallpaper in this area shall be performed in order to evaluate conditions that may typically exist for those with wall coverings. If visible mold is found, a contract modification will be issued for removal and replacement of contaminated gypsum board. Restoration shall include preparation, priming, and painting of all walls. See SSOW for additional requirements.
- 7.10. In Room 217, beginning in the northeast corner, all wallpaper shall be removed from both sides of the column enclosure and from the north wall between the column enclosure, up to the edge of the accordion partition. Removal of wallpaper in this area shall be performed in order to evaluate conditions that may typically exist for those with wall coverings. If visible mold is found, a contract modification will be issued for removal and replacement of contaminated gypsum board. See SSOW for additional requirements.

- 7.11. In Rooms SJ6 and SJ8, floors shall be HEPA vacuumed and then wet wiped with a detergent solution. Metal walls shall be wet wiped with a detergent solution. Prior to vacuuming the floor in Room SJ8, the air intake opening shall be sealed with 2 layers of 6-mil polyethylene sheeting.
 - 7.12. In Room 217, and extending into stair 218, corridor 221, and electrical distribution room 235 (approximately 15 linear feet) and 3TS5 (approximately 12 linear feet), the water stained pipe insulation shall be removed and replaced.
 - 7.13. In Rooms BL2, 217, and 233, water stained ceiling tiles shall be removed and replaced.
 - 7.14. In Room 4TS5, the gypsum board walls enclosing the outside air ducts shall be wet wiped with a detergent solution to clean and remove the water marks.
 - 7.15. Place MCM and MCE in a fiber/cardboard type drum or 2-layers of 6-mil polyethylene disposal bags with contents clearly labeled. At completion of each phase, notify the Government of completion so that Government can perform a visual inspection of the work area. Allow negative pressure system to operate a minimum of two hours after the last clean-up effort.
 - 7.16. Upon approval of Government, remove barriers and disassemble regulated work area. Additional cleaning required in the work area because of the Government inspection, shall be performed by Contractor, at no additional cost to the Government.
- 8.0 **AIR MONITORING AND INSPECTION.** The Government-retained industrial hygienist will determine any requirement for air monitoring, both during the remediation process and/or upon completion of the remediation process. Such area sampling will be conducted using Zefon filters and a high volume sampling pump. Procedural modifications to the decontamination procedures may be necessary at the discretion of the Government-retained industrial hygienist. The Government has the right to inspect the remediation work at times to be determined by the Government, but, at a minimum, once removal of contaminated materials is completed.
- 9.0 **FINAL CLEARANCE.** Acceptance of work will be dependant upon visual inspection. The Contractor shall notify the Government when the microbiological removal is completed and a thorough visual inspection of the phase shall be conducted within twenty-four hours.
- 10.0 **DISPOSAL.** All microbiological waste shall be disposed of in the FAA dumpster. Waste bags shall not be overloaded and shall be securely sealed and stored in the designated area until disposal. See SSOW for additional details and requirements.

ATTACHMENT I

**Guidelines on Assessment and Remediation of
Fungi in Indoor Environments**

31b



WONDER MAKERS
ENVIRONMENTAL

June 26, 2009

Mr. Vince Sugent
7768 Pleasant Lane
Ypsilanti, MI 48197

RE: Review of Statement of Work, Microbial Remediation for FAA, STL ATCT, dated July 2, 2007; WM project GC09-8593

Dear Vince:

As part of the FAA's response to your whistleblower complaint to the Office of Special Counsel the Agency submitted a number of documents to support their contention that mold and other indoor air quality problems at the Detroit Metro Tower were handled properly. A review of the first set of FAA submittals revealed a number of referenced documents that were missing. Over the past weeks we have been examining the second set of documents submitted by the FAA and offering our insights regarding the Agency's response to mold at DTW and other facilities.

We have reviewed the Statement of Work for Microbial Remediation at the St. Louis, Missouri, (STL) ATCT and base building that is dated July 2, 2007. We reviewed the content of the document to ensure that it made sense in light of the current standard of care for the mold remediation industry. We also compared it to the Trip Report authored by Ed Winkler (ACE-472) regarding a trip he made to the St. Louis ATCT and base building on December 7, 2006, to evaluate leaks and investigate for mold growth. The trip report included a detailed set of conclusions and recommendations. The intent of the comparison was to ensure that issues addressed in the Trip Report were addressed in this Statement of Work.

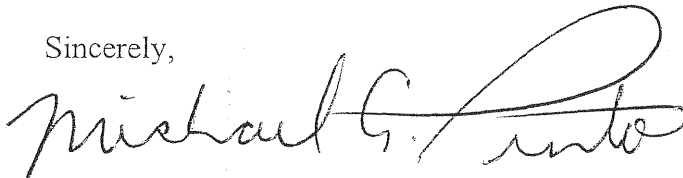
This Statement of Work is similar to others we have reviewed in the recent past. It references only one of the documents that make up the mold remediation industry standard of care, and it minimizes the hazards of mold by allowing work to be conducted without a negative pressure enclosure. **It is important to note that the Agency has once again failed to provide all documents related to a particular project. This Statement of Work references a Supplemental Scope of Work (SSOW) seven times; however, this document was not provided to NATCA with the most recent set of documents requested by OSC.**

Attached to this document is our initial review of the Scope of Work for the STL ATCT and base building. For ease of organization a comparison to the original document we have referenced sections in the same format used by the author of the Statement of Work.

Some references to the Trip Report written by Ed Winkler are noted in the attachment as well. Section titles and page numbers will be used to reference the location of the cited materials. Our comments are included in italics after each item.

Please let us know if we can be of further assistance.

Sincerely,

A handwritten signature in cursive script that reads "Michael A. Pinto". The signature is written in black ink and is positioned above the typed name.

Michael A. Pinto, CSP, CMP
CEO

Enclosure: Critique of Statement of Work for St. Louis Air Traffic Control Tower

Critique of:

Statement of Work
Microbiological Remediation
for
Federal Aviation Administration
St. Louis Airport Traffic Control Tower (STL ATCT)
St. Louis, Missouri

1.0 – Work Summary. “The Contractor is required to furnish all labor, materials, services, equipment, insurance, and perform all the work to remove and dispose of all microbiological contaminated materials (MCM) and microbiological contaminated elements (MCE) described in this scope of work. The Contractor shall be responsible for the cleanup and removal of microbiological-contaminated wallpaper, gypsum board, and pipe insulation (including water stained or damaged) in the STL Base Building Rooms 215, 217, 218, 220, 221, 233, and 235, and the STL ATCT Rooms G6, 3TS5 and SJ7...” *These initial sentences describe the rooms in the building where fungus-contaminated materials are to be removed; however, there is no indication in this or any other document that we have seen that would indicate whether or not the water or moisture that caused the mold has been corrected. If these moisture sources have not been corrected the work described in this SOW is moot. Prior to any effective remediation and restoration the water issues in the building must be addressed. By not addressing the water infiltration it is likely that the Agency will need to conduct this remediation again in the very near future.*

A more significant problem is that the SOW was developed without the benefit of a comprehensive inspection. The experience at DTW has shown that projects such as these often waste considerable resources as partial remediation is completed in areas where additional hidden fungal growth must later be addressed.

The remediation will be conducted “in accordance with the guidelines established by the New York City Department of Health entitled *Guidelines on Assessment and Remediation of Fungi in Indoor Environments* (GARFIE)...” *Although following the guidance in this document is important, it is critical to understand that there are additional documents that make up the industry standard of care for the mold remediation industry. Some of the most important additional documents include:*

- Texas Mold Assessment and Remediation Rules (25 TAC Sections 295.301-295.338)
- Occupational Safety & Health Administration (OSHA), *A Brief Guide to Mold in the Workplace*
- Health Canada, *Fungal Contamination in Public Buildings: A Guide to Recognition and Management*

- American Conference of Governmental Industrial Hygienists, *Bioaerosols: Assessment and Control*
- American Industrial Hygiene Association, *Recognition, Evaluation, and Control of Indoor Mold*
- The Institute of Inspection Cleaning and Restoration Certification (IICRC), *S500 Standard and Reference Guide for Professional Water Damage Restoration*
- The Institute of Inspection Cleaning and Restoration Certification (IICRC), *S520 Standard and Reference Guide for Professional Mold Remediation*
- American Industrial Hygiene Association, *Report of Microbial Growth Task Force*
- Environmental Protection Agency, *Mold Remediation in Schools and Commercial Buildings*

Several of these documents, including those from EPA, ACGIH, and OSHA, suggest that mold remediation contractors consider following the requirements in several documents rather than just one.

“Prior to performing microbiological remediation procedures, the Contractor shall seal all critical penetrations and openings to the work areas with a minimum of 2-layers of 6-mil polyethylene.” Do these openings include doorways? Installing an S-flap door in each door frame where work is being performed is one way of minimizing the transfer of fungal spores and dust during remediation.

“The Contractor shall provide additional cleaning procedures as described herein in Rooms 217, 218, 221, BL2, SJ6, SJ8 and 4TS5.” We have concerns about the term “additional cleaning”. In the Trip Report written by E. Winkler on December 7, 2006, the author noted that water had stained the wallpaper in the northeast corner of Room 217. Since paragraph 7.10 of the SOW acknowledges that mold is possibly growing behind the wallpaper we strongly recommend that Room 217 be moved to the preceding list found in the introductory sentences of the paragraph.

We also have concerns about the fact that Rooms SJ6 and SJ8 were included in this Statement of Work. The nature of the hazard in these rooms is different than the water-damaged and mold-contaminated materials that are in the other rooms described in the document. The primary contaminants in these rooms are fireproofing debris and bird droppings. The fireproofing is a suspect asbestos-containing material that should be tested before anyone starts “cleaning it up”. If it is an asbestos-containing material it will need to be addressed by trained employees.

The second material contaminating these rooms according to E. Winkler’s trip report is pigeon droppings. Persons conducting remediation of bird feces must upgrade their personal protective equipment to ensure they are not exposed to harmful fungi and bacteria contained in the bird feces. According to the New York City Department of Health and Mental Hygiene (the same organization that wrote GARFIE) areas

contaminated with bird droppings should be contained with plastic sheeting to prevent cross contamination. This is especially true if power washers are use; however, since this is a critical use facility we strongly recommend that both rooms be contained and put under negative pressure before they are cleaned.

“Negative air pressure equipment shall be equipped with a HEPA filter and discharged outside of the building whenever possible, otherwise discharged through a second HEPA filter in order to permit recirculation of air inside the building.” The requirement to discharge HEPA filtered negative pressure equipment out-of-doors is impractical given the fact that floors 3–9 at the STL ATCT have no windows or exterior doorways. While directing the air through a second HEPA filter provides additional protection it will reduce the airflow and negative pressure inside the containment. Generally in such situations this exhaust of the primary negative air machine is ducted to the intake of a second machine as ducting directly to a HEPA filter would create such back pressure that the performance of the negative air machine would be compromised. Even with the exhaust being directed to another machine the pressure drop will have to be taken into consideration when designing the remediation program.

1.1.1 – Site Visit. *“The Contractor is responsible for inspecting the work space and field verifying all quantities for: constructing a negative pressure enclosure for each phase of the work...” This sentence implies that a negative pressure enclosure (NPE) will be built for each phase of this project. We concur with this requirement since this is a critical use facility. Step 4.0 Remediation Area re-affirms this requirement by stating, “Contractor shall establish a roped-off perimeter and provide warning barrier tape and signs outside the perimeter of the negative pressure enclosure system.” Step 7.3 reinforces the statement: “Maintain a minimum of four air exchanges per hour within the remediation work area and a minimum negative pressure differential of -0.02 inches of water continuously recorded by use of a magnehelic gauge or equivalent device.” These requirements are circumvented in steps 7.6, 7.7 and 7.8 later in this document. This makes no sense. Any type of remediation, whether cleaning or the removal of contaminated materials, should be done in a negative pressure enclosure since this is a critical use facility where the lives of thousands of travelers depend on the safety and good health of our nations’ air traffic controllers.*

1.1.5 – Certifications. *“The Contractor shall be certified by the Indoor Air Quality Association (IAQA), the Institute of Inspection, Cleaning and Restoration Certification (IICRC), the National Duct Cleaning Association (NADCA), or equivalent.” We have several concerns with this statement. First, the name of the National Air Duct Cleaners Association is inaccurately written.*

The above requirement implies that certification through any one of these three organizations is equivalent to any of the others. This is incorrect. The IAQA no longer provides certification. Classes previously taught by IAQA are now certified through an organization known as the American Indoor Air Quality Council. This organization

certifies individuals in various disciplines related to indoor air quality including mold remediation. The American Indoor Air Quality Council does not certify entire companies under one blanket certification.

*The IICRC, on the other hand, does certify companies as well as individuals working for the company. The IICRC notes on its website that in order "to qualify for IICRC Certified Firm status businesses must demonstrate proof of insurance, maintain a written customer complaint policy with documented follow-up and provide ongoing education and training leading to certification for **all technicians** (emphasis added). IICRC Certified Firms are also required to abide by the IICRC Code of Ethics. Services provided by IICRC Certified professionals range from flooring inspection and cleaning to mold remediation and water and fire damage restoration." The IICRC offers a variety of certifications from rug cleaning to mold remediation. Those people responsible for selecting contractors need to ensure that the contractors' employees are trained to conduct the appropriate type of work.*

Finally, NADCA has three distinct certifications for individuals:

- *Air System Cleaning Specialist (ASCS)*
- *Certified Ventilation Inspector (CVI)*
- *Ventilation System Mold Remediator (VSMR).*

Like IAQA, NADCA does not certify companies. NADCA's website defines Regular Members as "companies that are actively engaged in the business of performing residential, commercial and/or industrial air duct cleaning services while retaining at least one certified Air System Cleaning Specialist (ASCS) on staff at each location." The member organization is not required to have a VSMR on staff. Finally, cleaning and remediating mold contaminated HVAC ducts is not the same as conducting a full mold remediation involving evaluation and cleaning of contents and the removal of contaminated finish building materials.

If the Agency wants to do this properly two contractors will be needed. The first contractor will need to have employees that are trained and certified to conduct mold remediation. The certifications should come from recognized industry trade associations such as the Restoration Industry Association (RIA), the IICRC, or the American Indoor Air Quality Council. The second contractor should be a member of NADCA and have at least one person on staff that is certified as an ASCS and a VSMR.

1.4 – Submittal Requirements. "The Contractor will submit the following materials to the Government for review and approval prior to starting work:

- Material Safety Data Sheets for all chemical products (including detergents).
- Respiratory Fit Test and Medical Surveillance for employees scheduled for this project.
- HEPA Vacuum Specification Sheet.
- Negative Air HEPA Filter Specification Sheet.
- Proposed Phasing Schedule.

- Configuration of typical negative enclosure system and location for each phase.”
Certificates of training, accreditation, qualification for the company and for each employee working at this site should also be provided to the Agency by the contractor.

3.0 – Protective Clothing. “Contractor shall provide workers and government representatives with sufficient sets of protective full body clothing. Such clothing shall consist of full body coveralls including head covers, foot covers and hand covers.” *This type of disposable clothing does not come equipped with “hand covers”. Most professionals call “hand covers” gloves. Contractors should require their employees to wear surgical style gloves under some type of heavier work glove while performing remediation.*

5.0 – Decontamination Area. “Contractor shall establish a decontamination unit for passage to and from the work area during remediation operations in order to minimize the leakage of mold-contaminated dust to the outside.” *While we concur with this entire section we are concerned about the execution. Implemented correctly this requirement will have a positive impact on the entire project.*

7.3 – (final sentence). “Contractor will secure entrance into the regulated area at the conclusion of each workday.” *We are concerned about how this will be done. If doors are shut that lead into regulated areas, negative pressure will be reduce or eliminated during off hours. If negative pressure is to be maintained make-up air must be supplied to the regulated area. The lack of make-up air will create a vacuum in the regulated area and barriers or poly walls will come loose, possibly exposing other areas and workers to the hazards in the regulated area. A better plan with regard to set-up is required.*

7.4 – (2nd & 3rd sentences). “Removal limits shall coincide with existing metal studs at or beyond the limits identified below. Where multiple layers of gypsum board are indicated, joints between gypsum board on the surface and concealed layer shall be staggered horizontally and vertically, unless limits are the entire wall and less than the length of the gypsum board utilized.” *Industry experts usually recommend that remediation contractors continue removing drywall two stud bays beyond the last sign of water damage or fungal contamination. This is generally recommended because most floor systems are not level. Water sometimes travels and pools in other areas, causing additional contamination in other wall cavities.*

7.4 – (4th sentence). “Demolition work shall be conducted utilizing methods to minimize noise and the spread of dust, such as the use of HEPA vacuums at the point of cutting and/or tools with shrouds or boots connected to a HEPA vacuum.” *The Agency should ensure that contractors are using HEPA vacuums and not vacuums with HEPA filtration. While the difference in names is subtle the construction of the vacuums is very different. True HEPA vacuums are constructed so that the entire frame is sealed. The only way air exits the vacuum is through a series of 3–5 filters, the final one being a HEPA filter. The other vacuums are commercial style shop vacuums, uprights, etc. These vacuums*

generally have a bag filter and may even have a HEPA filter placed somewhere in the frame of the vacuum. The difference in the two is that the commercial-style vacuum frames are not sealed so that air exhausts only through the HEPA filter. Fugitive emissions are often exhausted through cracks and seams in the frame of these vacuums. The Agency must ensure that true HEPA vacuums are used during this project.

7.4 – (4th paragraph, last sentence). “The west wall shall be wet wiped with a detergent solution to clean existing water stains.” According to E. Winkler’s Trip Report the ceiling near the west wall had visible fungal growth. Portions of the drywall were observed above the ceiling and vinyl cove base molding was removed at the base of the wall in an attempt to determine if mold was growing at the base of the wall. Winkler noted in his report that mold was not observed in either location. The assumption was made that mold is not present anywhere on the wall. Experience indicates that this is the wrong assumption to make. Water may have traveled down the wall but not in sufficient quantities to pool at the base of the wall. It is possible that the water was absorbed by the paper covering on the back side of the drywall. This level of moisture may have been sufficient to support a mold colony in the middle of the wall. It is recommended that a section of the wall be removed below the water staining for inspection purposes to confirm or deny that mold is not growing in the middle of the wall.

7.4 – (6th paragraph). “In Room SJ7, gypsum board totaling approximately eight square feet will be removed. On the west wall, the area includes the portion between the bottom of the concrete stairs and the concrete curb at the base of the sloped south wall, 5.3' wide to a height of 18”.” E. Winkler’s Trip Report indicates that the amount of contaminated material along the south wall was 24" tall. This discrepancy needs to be explained.

7.6 – “In Room 220, a mini containment shall be established consisting of a single layer of 6-mil polyethylene sheeting but a negative pressure enclosure system is not required.” We strongly disagree with this statement. The total amount of contaminated materials is unknown. It could be the estimated 3 square feet or it might be ten times that amount. This is a critical use facility and, as such, all remediation work should be conducted inside a negative pressure enclosure. This section goes on to say, “Mist and cover any contaminated areas prior to removal.” This is a crossover remediation procedure that comes from the asbestos industry. While it makes sense to use water to keep asbestos fibers from being released into the air, the use of misting on a mold project can do more harm than good. The IICRC S520 Standard and Reference Guide for Professional Mold Remediation says on pages 169-170:

Misting is a method of atomizing water or other aqueous solutions into the air for the purpose of controlling airborne and surface particulates during remediation. Applying misting during demolition, prior to removing contaminant or during final cleaning, is controversial in the remediation industry. Some remediators routinely advocate using

misting techniques in the field, while others believe misting is inappropriate and do not use such techniques.

Some documents and organizations recommend using misting during mold remediation. Other research indicates that the hydrophobic nature of mold spores and hyphae unreasonably promotes aerosolization of mold spores and growth fragments during the misting process, and introduces moisture into the work environment possibly promoting further mold growth. Further research is needed to determine the effectiveness and propriety of using misting during mold remediation. Therefore, if deemed acceptable, in the professional judgment of a remediator, misting may be considered for dust suppression and clean-up purposes, when applied in conjunction with adequate engineering controls.

Spraying, wetting or misting moldy building materials can release or disperse mold spores, and mold growth may be promoted by introducing excessive moisture.

7.7 – “In Rooms 3TS5, and SJ7, the work areas shall be unoccupied, however, a containment and negative pressure enclosure system are not required. Prior to remediation, the work area shall be misted.” *While the estimated amounts of contaminated finish building materials are small, experience suggests that the size of the project could increase significantly. That being said these projects should be completed inside negative pressure enclosures.*

7.8 – “In Room G6, the work area shall be unoccupied, however, a containment and negative pressure enclosure system are not required.” *This statement is an excellent example of the narrow approach used by the FAA in their focus on the New York City Guidelines rather than the comprehensive industry standard of care.*

Paragraph 7.4 indicates that approximately 35 ft² of drywall will be removed from the ceiling. According to GARFIE this is a Level III: Large Isolated Area. That only requires isolation barriers rather than a containment area under negative pressure. However, the EPA has offered more stringent recommendations. In the EPA document Mold and Remediation in Schools and Commercial Buildings “limited containment” is recommended for areas with 10-100 square feet of mold contamination. This includes the requirement to keep the area under negative pressure while work is completed. Since this is a critical use facility we recommend that at a minimum a negative pressure enclosure as described in the procedures for medium size projects in the EPA Mold Guidelines be used for mold remediation conducted in this facility.

7.9 – “In Room 215, all wallpaper shall be removed from the building exterior walls to inspect the concealed gypsum board for visible mold. Removal of wallpaper in this area shall be performed in order to evaluate conditions that may typically exist for those with wall coverings. If visible mold is found, a contract modification will be issued for removal and replacement of contaminated gypsum board.” *Although not specified this*

work must be conducted in conjunction with step 7.5 so that all the work is conducted inside a negative pressure enclosure.

7.10 – “In Room 217, beginning in the northeast corner, all wallpaper shall be removed from both sides of the column enclosure and from the north wall between the column enclosure, up to the edge of the accordion partition. Removal of wallpaper in this area shall be performed in order to evaluate conditions that may typically exist for those with wall coverings.” *Just like Room 215 this work should be conducted in a negative pressure enclosure.*

7.11 – *Work inside Rooms SJ6 and SJ8 were discussed on the second page of this attachment.*

7.12 – “In Room 217, and extending into stair 218, corridor 221, and electrical distribution room 235 (approximately 15 linear feet) and 3TS5 (approximately 12 linear feet), the water stained pipe insulation shall be removed and replaced.” *Since these materials are likely contaminated with fungus we recommend that this work be conducted inside a glovebag system similar to ones used by asbestos contractors to remove asbestos pipe and fitting insulation.*

7.13 – “In Rooms BL2, 217, and 233, water stained ceiling tiles shall be removed and replaced.” *Laboratory analysis of water-stained drop-in ceiling tiles made of pressed cellulose has found that a substantial majority (approximately 80%) of such tiles contain fungal growth both in and on the surface of the ceiling tile. As a result the ceiling tiles in these rooms should be removed inside a negative pressure enclosure or a negatively pressurized mini-enclosure.*

7.14 – “In Room 4TS5, the gypsum board walls enclosing the outside air ducts shall be wet wiped with a detergent solution to clean and remove the water marks.” *E. Winkler's Trip Report indicates that a complete investigation of this room was not possible as it was “full of stored materials”. He recommended that “a complete inspection of this room should be conducted in the future when the space is cleaned out and accessible”. There is no evidence that this has been done. As such, cleaning the water marks from the walls enclosing the air duct is premature, especially since Winkler also notes that the water source is likely the air ducts behind the wallboard. Mold may be growing on the back side of this drywall.*

7.15 – “Place MCM and MCE in a fiber/cardboard type drum or 2-layers of 6-mil polyethylene disposal bags with contents clearly labeled.” *Fiber/cardboard type drums must have secure lids placed on them before they are transferred through the building to a designated dumpster.*

9.0 – Final Clearance. “Acceptance of work will be dependant upon visual inspection. The Contractor shall notify the Government when the microbiological removal is

completed and a thorough visual inspection of the phase shall be conducted within twenty-four hours." *GARFIE recommends for Level IV projects that "air monitoring should be conducted prior to occupancy to determine if the area is fit to reoccupy."* *Since this is critical use facility it is strongly recommended that air monitoring be used to determine if all NPE and mini-enclosures are ready to be dismantled.*